14th International Congress of Cleft Lip and Palate and Related Craniofacial Anomalies

11th to 15th July 2022
Edinburgh International Conference Centre (EICC), Edinburgh, UK

Book of Abstracts

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K1

When the Going Gets Tough: How can cleft professionals contribute to positive psychological outcomes in patients and their families?

Professor Nichola Rumsey
[1]*UWE, Bristol, Bristol, United Kingdom*

MO4.1 Keynote: Nichola Rumsey - When the Going Gets Tough: How can cleft professionals contribute to positive psychological outcomes in patients and their families? English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 15:00 - 16:00

Most health care professionals working with children and families affected by cleft are motivated by the desire to make life better for their patients. To this end, they are trained to deliver interventions designed to optimise the patient's facial appearance and to correct functional impairments. Although the challenges of life with a cleft can be ameliorated if function and form are optimised, looking and/or sounding different need not be a barrier to a happy and successful life. A key element in psychological wellbeing and positive adjustment to cleft is 'resilience' – having the resources to cope positively with challenges and to 'bounce back' quickly from periods of stress.
Resilience is often assumed to be innate – people either have it, or they don't - but research has demonstrated that resilience can be learned and assimilated by children, young people & adults. Furthermore, recent work has highlighted the potential of cleft professionals from a range of disciplinary backgrounds to facilitate this learning. The global pandemic has highlighted the lack of resources for psychological care for people affected by cleft worldwide. In efforts to generate cost-effective ways of improving outcomes, the potential benefits of equipping all cleft professionals with the knowledge and skills to promote psychological resilience in their patients should be considered.

K2

SDGs and compassion in improving global cleft care

Professor Liz Grant

TU2.1 Keynote: Liz Grant - SDGs and compassion in improving global cleft care - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 09:30 - 10:30

The United Nation Sustainable Development Goals (SDGs) have set out a blueprint for a flourishing world with the health of people and the planet at its heart. Now into the last decade of meeting the goals, and living with the backlash of a pandemic that was predictable but not imaginable, we are caught in a syndemic, in the eye of the storm of the crisis of COVID-19, the biosphere crisis, the climate crisis and the crises of selected health coverage for the few, instead of universal health coverage. Daily we are leaving children and adults behind who can never enjoy a quality of life where they can flourish.

In much of our medicine, in our community spirit, in our technologies, we have the science to deliver to the global challenges, and we know the urgency, but something is missing that is holding systems, services and people back. Somehow globally and nationally, while the intention and commitment to care is there, sustainable scalable holistic healthcare remains elusive
This presentation will explore whether compassion is the missing ingredient, the glue that holds the Sustainable Development Goals together. We will look at compassion in action, and how the design principles of compassion can change the way that we design and deliver global Cleft Care together.

K3

The First Embrace: getting it right at birth for the Mother Newborn Dyad

Dr Maria Asuncion Silvestre

TU6.1 Keynote - Maria Asuncion Silvestre - The First Embrace: getting it right at birth for the Mother Newborn Dyad - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 17:15 - 18:15

All mother/newborn dyads stand to benefit from Early Essential Newborn Care, whether the newborns have clefts or not. What is EENC or The First Embrace and why are improved breastfeeding outcomes more within reach because of it?

Formative research data from Philippine hospitals in 2008 exposed gaps in labor/delivery and immediate newborn care practices. This led to evidence-based clinical practice guideline development and a "rechoreography" of the actions into the "Four Core Steps" of immediate drying, early skin-to-skin contact, properly-timed cord clamping, and non-separation for early breastfeeding initiation. This sequence of time-bound interventions – the Essential Intrapartum and Newborn Care (EINC) Protocol evolved into a national quality improvement initiative and was later adopted by the WHO Western Pacific Regional Office as EENC. Our social marketing handle "Unang Yakap" became "The First Embrace" in 2014 with scaleup in 9 priority countries, targeting both supply and demand sides for behavioral change.

This standard package of services, practice-based training or "coaching", multidisciplinary working groups, and regular assessments emphasizes the actions to improve policies and enabling environments to improve birth outcomes. Quality improvement has been supported by incorporation in pre-service medical, nursing and midwifery curricula and licensure exams, health communication, and health financing packages. Evidence has demonstrated that uninterrupted skin-to-skin contact does impact on the chances of successful breastfeeding initiation and exclusive breastfeeding thereafter.

Newborn care practices have improved through health systems approaches to improve clinical outcomes. The path to wider implementation of EENC is still strewn with obstacles but as many as there are challenges, so are there creative solutions, practical lessons and low-hanging fruit. As we target the comprehensive care of children with clefts, we will all benefit from a sharper focus on breastfeeding, zeroing in on what we can all do to grant them the environments that will enable their best start.

K4

Current and future needs of surgical training

Mr Justin Collins

WE2.1 Keynote - Justin Collins: Current and future needs of surgical training - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 09:30 - 10:30

Current levels of patient harm are poor when comparing healthcare with other high-risk industries. Development of standardised and validated training programmes are becoming increasingly important. In this presentation we complete a systematic literature review of the current evidence. We compare current surgical training curricula with training in aviation, to evaluate current similarities and to provide insight into how healthcare can further learn from replicating initiatives in aviation training. There are significant similarities between modern surgical training curricula and pilot training. Both undergo basic training before proceeding to advanced training. Aviation training methods include classroom instruction, e-learning and practical training, in both the aircraft and flight simulation training devices. Both surgeon and pilot training include technical and procedural instruction as well as training in non-technical skills such as crisis management, decision making, leadership and communication. However, there is more regulation in aviation, with international standards for training curricula, simulation devices and instructors/trainers that are legally binding. Continuous learning with re-qualification with benchmarked high stakes tests are also mandatory throughout a pilot's and instructor's career. Adopting established and proven aviation methods of assessment and regulation could help surgical training become more efficient, more effective and ultimately safer.

Experts' perceptions of the future of surgical training have been transformed by recent developments in data science in general and machine learning. Surgical Data Science (SDS) is a new research field that aims to improve the quality of interventional healthcare through the capture, organization, analysis and modelling of data. While an increasing number of data-driven approaches and clinical applications have been studied in the fields of radiological and clinical data science, translational success stories are still lacking in surgery. In this presentation, we shed light on the underlying reasons. We review current practice, key achievements and initiatives as well as available standards and tools for a number of topics relevant to the field, namely infrastructure for data acquisition, storage and access in the presence of regulatory constraints. Data annotation, sharing and data analytics. We also describe a roadmap for future advances in the field of surgical training with faster clinical translation and exploitation of the full potential of SDS, based on an international multi-round Delphi process.

K5

The impact of pandemics on children: lessons learned

Professor Miliard Derbew Beyene

WE6.1 Keynote - Miliard Derbew: The impact of pandemics on children: lessons learned, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 17:15 - 18:15

The COVID-19 pandemic has resulted in several lessons learned on ways to mitigate the impact of pandemics on children. While statistically, children represented a small percentage of the cumulative COVID-19 cases, the pandemic still impacted them in several ways. From our experience with COVID-19, we can take several lessons learned to protect children in future
pandemics or health crises, specifically with regards to congenital nomalies and implications on vaccination and treatment on pregnant women; pediatric surgical access; sexual and reproductive health strategies; and the psychosocial impact that pandemics have on children.

K6
Global Surgery - The Jyotsna Murthy Memorial Oration

Dr Nobhojit Roy

TH2.1 Keynote: Nobhojit Roy - The Jyotsna Murthy Memorial Oration, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 09:30 - 10:30

I present the 'recipient's view' of Cleft mission surgeries as a LMIC surgeon, starting with setting the context of shared days of residency with Jyotsna Patel Murthy in Mumbai, India. The mixed early Cleft experiences evolving into longer follow ups, nutrition/speech therapy and local capacity building in LMICs is contrasted against the regionalization and centralization of surgeries in HICs. We end with a look into the future with surgeons' embedding their work within Government schemes for LMIC populations, addressing the unmet surgical burden of disease with Universal healthcare frameworks and establishing social, collegial & practice networks with surgical champion colleagues/comrades practicing in non-university and remote field settings.

K7

Unlimited minutes, unlimited text, unlimited data – the power of cohort studies to answer clinical questions

Dr Yvonne Wren

FR4.1 Keynote: Yvonne Wren - Unlimited minutes, unlimited text, unlimited data – the power of cohort studies to answer clinical questions, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 14:00 - 15:00

Our focus as clinicians is on the care of the individual. Sometimes acting as detective, we discern their needs based on information we gather from investigations, assessment and discussion, leading to a customized package of care specific to their requirements. So it makes sense that we might look for evidence in the literature which reports on single cases and small group studies with a narrowly defined sample at a specific point in time.

Cohort studies, in contrast, can involve large and heterogeneous samples that are followed longitudinally. Designed to track disease over time and inform on risk and protective factors for outcomes, they sit between case-control studies and randomized controlled trials in the hierarchy of evidence.

Birth cohort studies take this one step further by recruiting a large sample before or soon after birth and following them over time through repeated surveys and direct assessment as well as linkage to existing records. The extensive dataset which is created can then be used to investigate the determinants of health and social outcomes, and crucially what factors can be modified to influence these outcomes.

The UK is home to a number of birth cohorts including the National Survey of Health and Development (established in 1946), the National Child Development Study (established in 1958), the 1970 British Cohort Study, and the Millennium Cohort Study (established in 2000). These have all been used to influence policy and practice in education, social mobility, welfare and inequality and indeed the setting up of the National Health Service.

In Bristol, a birth cohort study was established in the early 90s which had a particular focus on health and development. Avon Longitudinal Study of Parents and Children (ALSPAC) recruited over 14,000 pregnant women in 1991/92 and has followed those women, their partners and their offspring over a 30 year period. Combining data from biological samples, parent report, direct assessment, health and educational records, the resource has been used to investigate the environmental and genetic factors which influence an individual's health and development. This has included providing the evidence which lead to campaigns such as 'Back to Sleep' which promoted the importance of putting babies to sleep on their backs to reduce the risk of Sudden Infant Death Syndrome. The resource has also been used to investigate risk factors for outcomes which have direct relevance for cleft including speech, oral health and mental health.

In this keynote, I will provide an overview of birth cohorts in general with a specific focus on ALSPAC. Together, we will consider what we can learn from ALSPAC with regards to the individuals in our care. We will also explore the value and importance of The Cleft Collective, a birth cohort specific to children born with cleft and their families and a resource designed for use by the cleft academic and clinical communities. In short, we will find that the answer to the question of what cohort studies can do for us is quite a lot!

P1

Holistic management of 22q11 deletion syndrome: a parent/patient driven comprehensive service

Dr Alex Habel, Dr Suzanne Kelleher, Ms Anne Lawlor, Dr Julia Cadogan, Dr MARIA Rogdaki, Mrs Anne Roberts, Dr David Orr, Mrs jayne Oconnell

MO5.1 Holistic management of 22q11 deletion syndrome: a parent/patient driven comprehensive service, Sidlaw, EICC - Streamed, July 11, 2022, 16:30 - 18:00

22q11 deletion syndrome occurs 1 in 4000 across the globe, and is familial in 10%. Although facial appearance can assist diagnosis, it varies between racial groups, reducing its reliability. Diagnosis is frequently delayed for years.

Affected individuals may come to attention through many doors. Cardiac, psychiatric and education difficulties, characteristic speech and language development with cleft palate or velopharyngeal insufficiency, and immune disorders affect 70%, with a host of other features affecting many body systems. No two individuals, even in the same family, are necessarily affected in a similar way. Changes in presentation and pathology are a major feature throughout the life cycle, from birth to old age. A whole person approach is the most appropriate form of management. Yet it is commonplace not to appreciate the individual's needs which are frequently lifelong. This session aims to fill in the blanks in participants understanding of the condition and how working as a team benefits the family unit which can be profoundly affected. We will explore the implications for 22q11DS in poorer resourced countries, presenting as complex cases of unknown cause.

P2

Early management of Robin sequence

Ms Catherine de Blacam, Dr Marie Wright, Prof. dr. Corstiaan Breugem, Dr Sheila Javadpour, Professor Christian Poets, Mrs Helen Robson, Professor Jocelyn Shand

MO5.2 Early management of Robin sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 16:30 - 18:00

Co-chairs:
Catherine de Blacam, Children's Health Ireland at Crumlin, Dublin, Ireland
Marie Wright, BC Children's Hospital, Vancouver, Canada

Panellists:
Corstiaan Breugem, Amsterdam UMC, Emma Children's Hospital, Netherlands
Brigitte Fauroux, Necker Enfants Malades, Paris, France
Sheila Javadpour, Children's Health Ireland at Crumlin, Dublin, Ireland
Christian Poets, Universitätsklinikum Tübingen, Germany
Helen Robson, Great Ormond Street Children's Hospital, London, UK
Jocelyn Shand, Royal Children's Hospital of Melbourne, Australia

Infants born with Robin Sequence continue to present diagnostic and management challenges. Early management strategies vary widely between centres and to date no one approach has emerged as clearly superior to another. Panellists will describe their strategies for managing mild through to severe presentations of Robin Sequence.

The aim of this panel is to address the following questions and challenges:
• What is the current consensus on diagnostic criteria and investigations used to define Robin Sequence?
• Can we safely recommend prone positioning as a first line management and what if any, safety measures should be put in place?
• What are the limits of non-surgical airway interventions?
• How do the various non-surgical airway interventions compare in terms of how well they treat airway obstruction?
• What are the indications for mandibular distraction and other surgical airway interventions?
• How do different airway management strategies affect feeding and growth?
• What is the role of oral myostimulation?
• What is the optimum timing of palate repair?
• How can we incorporate patient-reported outcomes in to clinical decision making?
• How does local health service infrastructure influence clinical decision making?
• What long-term outcomes should we be recording, and how should they be measured?

During the discussion, areas of consensus and divergence will be identified. Subjects requiring further investigation and research will be agreed upon.

P3

Cleft support groups: roles, models and challenges

Ms Claire Cunniffe, Mr Gareth Davies, Mr Zainal Ahmad, Prof. Youri Anastassov, Mrs Jana Anguelova, Mr Kenny Ardouin, Mr Matthew Bolz-johnson, Mrs Helena Cullis, Dr. Marwa Elkassaby, Mrs Kim Robertson Smith

MO5.3 Cleft support groups: roles, models and challenges, Fintry, EICC - Streamed, July 11, 2022, 16:30 - 18:00

Chairs:

- Claire Cunniffe, Cleft Lip and Palate Association (CLAPA)
- Gareth Davies, European Cleft Organisation (ECO)

The panel will explore how cleft support groups can improve overall outcomes for patients and families by building partnerships with cleft teams, addressing communication needs and forging links with the community beyond the hospital walls. We will summarise the range of activities and roles undertaken by support groups around the world and provide illustrations of how this is working with real life examples introduced by panellists from Africa, Europe, Malaysia, New Zealand, South America and the United Kingdom.

These will include:

- Patients and parents* supporting each other constructively (lessening burden on cleft team)
- Confidence building and resilience for young people
- Campaigning/lobbying for resources to provide best practice
- Raising awareness at community level and 'normalising' cleft
- Raising awareness in education settings and the workplace
- Raising money to support the cleft team
- Conduit for funds where international donations might be lost in hospital bureaucracy
- Recruiting outlying families in remote areas for cleft treatment
- Identifying where there are unmet needs

We additionally have a panellist from EURORDIS with a long history of working across support groups covering a range of different conditions, providing examples of how clinical practice and delivery of care can be improved by working in tandem with patient groups.
One of the key themes we want to focus on is how we can encourage cleft teams to embrace the development of support groups and see them as a positive asset. For this reason, some of our panellists will 'be doubled up' – we may suggest that patient representatives bring with them a cleft team member who they work alongside. We believe this will help illustrate the synergies of a mutually supportive relationship, with all involved working towards the same end goal – that of providing the best support possible for those directly and indirectly affected by cleft.

Discussion themes will include challenges of ensuring longer-term sustainability of patient groups – (they are often dependent on one or two committed individuals) and ways of securing resources for undertaking activities and working alongside the cleft team. Other topics will include the importance of setting boundaries, ensuring parents are aware of their roles as patient experts and not medical experts, which may necessitate the need for some training. . Conversely there may also be a need for training of health

professionals to help them understand patient centred care, communication needs and shared decision-making.
Looking to the future, we may wish to make recommendations around online resources available for cleft support groups around the world together with a global directory that may facilitate a system of buddy-type mutual support.

*Where we refer to parents, this also refers to prospective parents who have received an antenatal diagnosis of cleft and other carers including foster carers and grandparents

P4

The Cleft Collective Cohort Studies – building a resource for the international clinical research community

Ms Kerry Humphries, Dr Yvonne Wren, Miss Kanwalraj Moar, Mrs Stephanie Van Eeden, Mrs Anna Hobbs, Associate Professor John Thompson

MO5.6 PANEL: The Cleft Collective Cohort Studies – building a resource for the international clinical research community, Tinto, EICC - Onsite Only, July 11, 2022, 16:30 - 18:00

Background and purpose: Research in the field of cleft lip and palate is challenged by small sample sizes, limited data on exposures and confounders and the need for longitudinal follow up. Yet understanding the causes of cleft, the best treatments for cleft and outcomes for those affected is vital to our management of this population throughout the world.
While much previous research has been carried out collecting biological samples for genotyping to determine the causal pathway for clefting, typically this has not been combined with phenotypic data including information on specific cleft types, syndromic status and co-morbidities. In response to this and a request from the cleft specialist clinical teams in the UK, the Cleft Collective was established to develop a resource which could be used by the global research community.

Description: The Cleft Collective contains data on nearly 10,000 participants from more than 3500 families of children born with cleft. By following these patients longitudinally, there is a baseline of genotype and detailed phenotype data supported by information on environmental and lifestyle factors. The impact of these on the development of cleft or in response to treatment is also assessed by including clinical data on treatment received and parent reported data such as parent well- being, child development and outcomes.

The panel will begin with a presentation from Yvonne Wren, Chief Investigator of the Cleft Collective and then consist of a question and answer session with key stakeholders in the Cleft Collective, specifically:

- Kanwalraj Moar, Cleft Surgeon and Principal Investigator for recruiting site in the Cleft Collective - will describe what is involved in being a recruiting site for the study.
- Ana Hobbs, Parent participant of the Cleft Collective -will explain what it is like to be a participant in the study.
- Steph van Eeden, cleft specialist speech and language therapist clinical academic and data user of the Cleft Collective -will describe the process of requesting and obtaining data from the Cleft Collective and explain how they use the data to address clinical research questions.
- John Thompson, International affiliate of the Cleft Collective -will explain how the model from the Cleft Collective has been used to develop a similar study in New Zealand.

An open discussion between Yvonne Wren, the panellists and Cleft Collective Research Operations Manager, Kerry Humphries and delegates will follow with a focus on how people can access and use the Cleft Collective resource and how the model could be replicated in other countries, promoting international collaboration and data sharing.

P5
Pre-surgical infant orthopaedics and naso-alveolar moulding

Professor Puneet Batra, Prof. Anne Marie Kuijpers-Jagtman, Professor Richard Hopper, Dr Pradip Shetye, Mr Brian Sommerlad, Dr. Mohamed Abd El-Ghafour

TU5.1 Pre-surgical Infant Orthopaedics and Naso-Alveolar Moulding, Sidlaw, EICC - Streamed, July 12, 2022, 15:15 - 16:45

Patients with cleft lip and/or palate go through a long journey of interdisciplinary care, starting from before birth and extending until adulthood. Presurgical infant orthopedic (PSIO) treatment is one of the earliest stages of this care plan. The proposed advantages of PSIO is that it aids in the surgical repair of the lip and palate by reducing defect width of the palatal and alveolar ridge, which in turn will reduce lip tension and benefits wound healing postoperatively, achieves arch symmetry, improves alar base, improves growth of maxilla, reduces tongue interference with the palatal shelves may encourage the normal growth of the palatal shelves and better speech, better feeding and a positive psychological effect on the parents. However, the opponents believe that is a complex and expensive therapy that is ineffective and unnecessary because parents are obliged to travel frequently to the treatment centre and endure an increased burden of care, no significant improvement in parents' satisfaction, orthopedics restricts maxillary development, not necessary for feeding, Influences speech negatively due to delayed surgery of the hard palate and has little effect on arch dimensions and facial asymmetry. First, the panelists will each give a short introduction on a certain aspect of PSIO and then will discuss the issues related with PSIO considering its controversial nature and inconclusive long-term evidence. The role of technology for PSIO and its influence in reducing the burden of care will be discussed.

Learning outcomes:
- Participants have insight into the controversies related to different types of infant orthopedics
- Participants are able to value digital technology as an aid in infant orthopedic treatment
- Participants are able to value the evidence regarding assumed advantages and disadvantages of different types of infant orthopedics

P6

How can cleft NGOs contribute to the work of cleft teams in low and middle-income countries to provide local care, build professional capacity, and influence national agendas?

Mr Hugh Brewster, Professor Liz Grant, Mr Patrick Canagasingham, Prof Roopa Nagarajan, Ruben Ayala, Ms. Erin Stieber, Professor Andriamanarivo Mamy Lalatiana

TU5.2 How can cleft NGOs contribute to the work of cleft teams in low and middle-income countries to provide local care, build professional capacity, and influence national agendas? English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 15:15 - 16:45

- Panel Co-Chairs:

Prof. Liz Grant is an Assistant Principal of the University of Edinburgh, and a Professor of Global Health and Development. She is Director of the University's Global Health Academy, and Co-Director of the Global Compassion Initiative, a University wide initiative to embed a culture of compassion and care across all Colleges, and to support the science of compassion studies.

Hugh Brewster is the Executive Director of Transforming Faces (TF), an international cleft NGO based in Toronto, Canada. TF is a founding member of the Circle of Cleft Professionals (CoCP), and the Solutions for Comprehensive Cleft Care (S4CCC) conferences, with the goal of promoting locally rooted Comprehensive Cleft Care in Low and Middle-Income Country (LMIC) contexts.

- Introduction:

Global Health is evolving. Unilateral north to south activity by international NGOs is disappearing and partnership frameworks built from joint, more equitable commitments are emerging. This panel will explore the contours of collaboration in cleft care. What have non-cleft international development NGOs learned about navigating this transition? How do we redefine partnerships in contexts buffeted by pandemics, climate change, wars and instability, where Comprehensive Cleft Care has never been prioritised? How will we measure our progress in providing excellent care, building local capacities, and ultimately influencing national health agendas?

This panel aims to:
discuss the following questions:
• How do we ensure that funding priorities are LMIC partner-led and informed by multidisciplinary perspectives on care?
• What does a commitment to local leadership capacity-building entail within a Comprehensive Cleft Care approach?
• What are the downstream impacts of "free" cleft treatments, when international donors foot the bill?
• How do we root Comprehensive Cleft Care within wider development concerns?
• How do we support locally-led advocacy by/for families affected by cleft in LMIC contexts?

identify areas of consensus and uncertainty about:
• The appropriate role of international volunteers within a Comprehensive Cleft Care (CCC) approach in LMIC contexts.

• Promoting sustainable solutions in contexts where certain CCC disciplines are not available, recognized or valued.

achieve the following learning outcomes:

• Articulated cross-cutting development themes for NGOs and local cleft teams to address when navigating funding relationships.

• Named key local leadership capacity-building indicators that NGOs and local cleft teams will engage within their funding relationships.

• Considered tangible strategies for ensuring that CCC initiatives benefit LMIC health sectors as a whole.

P7

Congenital Anomaly Registries for Better Care: Barriers, Solutions and Collaboration

Dr Mekonen Eshete Abebe, Dr Lubna Samad, Dr Ali Dastgiri Mehri, Dr. Alexandre Rezende Vieira

TU5.3 Congenital Anomaly Registries for Better Care: Barriers, Solutions and Collaboration, Fintry, EICC - Streamed, July 12, 2022, 15:15 - 16:45

An estimated 6% of babies are born with congenital anomalies globally every year, of which approximately 94% belong to Low- and Middle-Income Countries (LMICs). Congenital anomalies are responsible for 25.3–38.8 million disability-adjusted life-years (DALYs) and caused an estimated 549,000 deaths in 2019.

Two thirds of the congenital anomalies' health burden can be averted through timely and effective diagnosis and management. A Congenital Anomaly Registry (CAR) is an essential initial step for early diagnosis of anomalies, setting into motion subsequent steps of timely referral and appropriate management, thereby leading to improved health outcomes. Yet, the vast majority of countries do not have a national CAR. Existing health systems strengthening initiatives like birth registration and immunization registries provide a platform for CARs to be established in resource constrained settings.

This panel will discuss initiatives to develop national CARs, with a view to understanding the challenges and successes in different parts of the world, focussing on transferrable lessons, sharing data and breaking down silos. With UNICEF committed to registering all births by 2030, we will explore how CARs can be linked to this initiative to improve outcomes for affected children.

Our aim is to bring together all stakeholders across disciplines and nations, to develop an action plan to ensure that every baby with a congenital anomaly, born anywhere in the world is diagnosed, registered and has access to timely management. Patients and parents are critical partners in such plans. We welcome all delegates to share challenges with solutions, during the discussion and to contribute to the development of our post-congress action plan.

P8

Early Parental Psychological Adjustment and Support Needs

Dr Matthew Hotton, Kate le Marechal, Mr Daniel Mena, Dr. Alexis Johns, Ms Camila Osorio, Prof Omolola Orenuga

TU5.4 Parental Psychological Adjustment and Support Needs, Kilsyth, EICC - Streamed, July 12, 2022, 15:15 - 16:45

Chairs:
• Dr Matthew Hotton - Clinical Psychologist, Spires Cleft Centre
• Dr Kate le Maréchal – Consultant Clinical Psychologist, Evelina London Cleft Service

Cleft lip and/or palate not only affects the individual with the condition, but the whole family. For expectant or new parents, the antenatal or postnatal diagnosis of a cleft lip and/or palate can be a huge shock, and many parents have difficulties adjusting to this information. This can not only have an impact on the psychological wellbeing of parents, but also on their child's longer-term adjustment to the condition.

Aims:
• To discuss the common difficulties experienced by parents following their baby's diagnosis of a cleft and introduce ways of meeting parents' psychological support needs during the early stages of their baby's life
• To identify areas of consensus and uncertainty regarding how best to provide psychological support for parents
• To agree any relevant future actions or opportunities for international collaboration

Specific aspects discuss will include:
• Using adult learning principles to include parent understanding of cleft care
• How to provide immediate emotional care for parents following a cleft diagnosis
• How to supports caregivers to cope with feelings and emotions to promote the wellbeing of the family and child as they proceed through the treatment plan
• Discussion of the impact of a cleft on early attachment and parent-infant interaction

Learning outcomes:
• To learn about the psychological impact of a cleft diagnosis on family members, as well as and how to assess parental adjustment and identify any early worries or concerns held by the parents
• To help clinicians of all disciplines to feel more confident and better able to support new parents in their adjustment to an antenatal or postnatal cleft lip and/or palate diagnosis

P9

Fistulae: a small hole with smoke and mirrors! Creating consensus on definition, reporting and management.

Mr Bruce Richard, Ms Kezia Echlin, Dr Thomas Sitzman, Dr Raymond Tse, Professor Ghulam Qadir Fayyaz, Mr Jason Neil-dwyer

TU5.6 Fistulae: a small hole with smoke and mirrors! Creating consensus on definition, reporting and management, Tinto, EICC - Onsite Only, July 12, 2022, 15:15 - 16:45

This panel will debate why fistulae are a poorly understood outcome of primary cleft surgery and discuss the following questions.

• What is a real-world incidence of fistula? Can we agree why fistulae are difficult to report and plan future audit of fistulae?
• What effect can a fistula have on speech and how do we know that?
• What fistulae should you repair and when should you do it?
• Discussion: Can we agree a data set that will allow better comparison of what we do and its effect on the incidence of fistulae?
• Discussion: Can we agree a data set that will allow better comparison of what we do and its effect on the incidence of fistulae?
• Can we create the data to be able to say which fistula repair techniques are best and in what circumstances?
• What evidence is there for various manoeuvres to prevent fistula after primary surgery?
• Discussion: What do we need to do to get adequate evidence to guide best practice?
• What techniques have worked best in surgical management of massive fistulas in children and adults?

P10

Technical approaches to primary cleft rhinoplasty. Who nose?

Mr David Chong, Mr P HALL, Dr Raymond Tse, Professor RENATO DA FREITAS, Mr Luca Autelitano, Dr Lay-Hooi Lim

WE5.1 Panel: Technical approaches to primary cleft rhinoplasty. Who nose?, Sidlaw, EICC - Streamed, July 13, 2022, 15:15 - 16:45

The various approaches to primary cleft rhinoplasty will be discussed by experts from differing schools of thinking and geographical influences. Emphasis will be placed on technical nuances, evolution of approach, consistency of results and long term outcomes. Pearls and pitfalls of each technique will be explored , with the goal to find areas of consensus , as well as exploring differences regarding the extent of intervention. Both unilateral and bilateral techniques will be discussed.

P11

Where are we on the journey towards excellence in perceptual cleft speech assessment?

Associate Professor Kristina Klintö, Professor VALERIE PEREIRA, Ms. Yoshiko Takei, Mrs Beth Fitzpatrick, Dr Renata Yamashita, Miss Oi-yan Yiu

WE5.2 Panel: Where are we on the journey towards excellence in perceptual cleft speech assessment?, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 15:15 - 16:45

Perceptual assessment is at the core of assessment of cleft palate speech/velopharyngeal dysfunction (VPD) globally and is the decisive factor in decisions made around clinical treatment and management. It also serves as an important outcome measure of primary and secondary surgery, thereby informing regarding surgical protocol. It's reliability and validity are therefore imperative. The perceptual cleft speech assessment tool should be specifically developed for a particular language and/or region and adhere to the available international guidelines pertaining to speech sample sets, phonetic content, elicitation methods and rating protocols. It is also necessary to develop and include speech sample sets for cross-linguistic and international outcome comparisons. The processes and methods are complex and not without challenges. In addition, whilst the focus has tended to be on the school-age child (around 5 years of age), there is a push towards more appropriate and standardized speech sample sets and sampling protocols for the pre-school child in early identification and treatment of cleft palate speech and/or velopharyngeal dysfunction. An added and pertinent issue is the measurement method for the perceptual rating of hypernasality, the key speech feature of velopharyngeal dysfunction. Whilst the use of the ordinal scale is the mainstay in the evaluation of a speech parameter such as hypernasality, there is increasing evidence of better reliability and validity with other measurement methods. As hypernasality is internationally regarded as the classic and primary feature of velopharyngeal dysfunction, it is important that this issue is given due diligence.

This panel comprises three parts:

• Part A. Panellists will share their experiences and motivations in the development and construction of a speech outcome tool based on current published frameworks and will focus on the potential challenges they faced particularly in the application of international guidelines around the construction of language-specific speech sampling material and a restricted word list for cross-linguistic comparisons and subsequent necessary adaptations made.

• Part B. Panellists will discuss the development and implementation of additional and/or different speech sample sets and sampling procedures for the pre-school child (aged 3 years). They will advocate for the inclusion of single word picture naming which could also include the recommended Restricted Word List (Cleft palate International Speech Issues, https://clispi.com) for cross-linguistic comparisons. The clinical and research utility of the speech outcome measure of Percentage of Consonants Correct (PCC) will be discussed.

• Part C. Panellists will examine and share current and recent evidence for and against the continued use of the ordinal scale in rating hypernasality and explore evidence supporting the use of other types of measurement methods such as the Visual Analog Scale (VAS) and the Borg centiMax scale.

AIMS & ANTICIPATED OUTCOMES

1. To set up an Advisory group to offer support, advice and direction to Speech and Language Therapists looking to develop their own language-specific perceptual speech tool.
2. To discuss whether teams/authors of published tools need to consider extending their tools to include an additional speech sample set of single words (picture naming) that also encompasses a Restricted Word List for cross-linguistic comparisons
3. To have an international discussion on whether teams/authors of published tools need to consider the use of alternative measurement methods for resonance (and maybe nasal airflow errors) and to agree on a decision/way forward.

P12

Building Research Capacity in LMICs

Dr Lubna Samad, Dr Justina Seyi-Olajide, Dr Nobhojit Roy, Dr. Nivaldo Nivaldo Alonso, Dr. Christy McKinney, Mrs NK Obi

TH5.1 Panel: Building Research Capacity in LMICs, Sidlaw, EICC - Streamed, July 14, 2022, 15:15 - 16:45

Research is considered a luxury in most LMICs, with the allocation of scarce resources to research considered wasteful in view of urgent and competing priorities. As a result, research is led and funded to a large extent by HIC parthers, who dirive the agenda and determine the methodology. LMIC settings are thus used as “field sites” with variable token or genuine involvement of LMIC partners. This inequity in research is being increasingly recognized and questioned. In the coming years, it is hoped that there will be a transition to more meaningful, contextual and relevant research led by LMIC partners.
This panel aims to discuss this transition to LMIC-centric and LMIC-run research and how this can be facilitated. This panel will explore the following broad themes:

1. Training to address gaps in skill sets and knowledge in LMICs required to implement contextualized research
2. Strengthening research capacity in LMIC institutions to support contextual research
3. The role of HICs and academia in facilitating this transition without hegemonizing the agenda.
4. Discuss strategies to institutionalize research and strengthen research funding and infrastructure in LMIC settings without poaching on already limited-service delivery manpower and funding.

At the end of the discussion, we hope to agree on a broad action-plan and roadmap with timelines, agreeing to disagree on differing approaches in line with different needs and on the ground realities.

P13

National Outcome Studies and Registries

Plasticsurgeon Magnus Becker, Associate Professor John Thompson, Dr. Kathy Chapman, Professor Jonathan Sandy, Associate Professor Kristina Klintö, Mrs Anna Hobbs

TH5.2 Panel: National Outcome Studies and Registries, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 15:15 - 16:45

This panel will present the background, results, and outcomes from a number of outcomes studies from a number of countries across the globe. Presentations will include the development of outcomes studies, challenges encountered in the setting up, and conduct and overall results. Panellists will discuss the implications and resulting changes as a result of the studies.

Registries provide an opportunity to help standardise outcomes across centres, to help ensure that patients are receiving treatment that is as optimal as possible. Presentations will include the challenges and extent of the development of registries, and how they can be used to help improve outcomes.

Presenters come from across the globe, across specialties and include a parent perspective. Presentations will be kept short to enable plenty of audience input and discussion.

P14

Controversies in Speech Therapy Intervention

Dr Caitriona (Triona) Sweeney, Dr. Linda Vallino-Napoli, Dr Cassandra Alighieri, Speech Language Pathologist, PhD Student Emilie Hagberg, Dr Jill Titterington

TH5.3 Panel: Controversies in Speech Therapy Intervention, Fintry, EICC - Streamed, July 14, 2022, 15:15 - 16:45

Speech sound disorders (SSD) attributed to structural abnormalities associated with cleft palate have been traditionally treated using an articulation model. More recently, attention has been paid to the benefit of a phonological approach to treat these speech errors. Hence, many questions remain regarding the best and efficacious approach to treatment and how that approach is delivered.

Aims: To explore phonological and articulatory approaches to speech intervention and how delivery may influence the outcomes.

The session will begin by identifying those cleft associated speech errors that are amenable to therapy and those which are not. The opinions of the speech-language pathologist regarding management to these problems (Williams et al 2021 and Hardin- Jones et al 2020) will be explored.

Three presentations include:
1."Phonological intervention in children with a cleft palate: A balancing act between scientific evidence and use in clinical practice". Dr. Cassandra Alghieri will outline different phonological interventions, for example, minimal pair, maximum opposition, distinctive features, the Cycles, and Metaphon. Available evidence in children with a cleft palate and suggestions for the use of these approaches in clinical practice will be discussed.

2. "Articulation therapy, when is it suitable? - and how to apply clinical practice into research". Emilie Hagberg will describe what we mean by "conventional articulation therapy" and the current evidence supporting this approach. Repeated single subject case study design will be presented as a viable means of evaluating clinically relevant outcomes which can be incorporated into clinical practice.

3. "Time for change: Closing the gap between research and practice for dosage when treating children with SSD". Dr Jill Titterington will highlight that dosage (or intensity of intervention) is a fundamental and important ingredient contributing towards successful intervention for children with SSD. An effective and efficient dosage for these children appears to be a high dose (number of target trials within sessions) delivered with a frequency of 2-3 times weekly. Delivering this dosage in practice means packaging dosage differently than found in most current service delivery models. Reflection is required by the speech and language therapy profession on current and emerging research findings to help close the current gap between research and practice in this very important area.

Following the presentations, these approaches, their delivery, and their application in different regions globally will be discussed. This session will provide an opportunity for all members to discuss and explore evidence-based intervention and how this can be brought into clinical practice and further evaluated, perhaps using single case studies.

Learning Outcomes:

1. To identify speech sound disorders in cleft palate that are amenable to speech therapy.
2. To describe various phonologic and articulation approaches to treatment.
3. To describe how speech therapy intervention can best be delivered
4. To demonstrate how single subject case study design can be conducted within clinical practice.

Next Steps:

1. Encourage therapists to use evidence-based interventions.
2. Identify research-clinical gaps in intervention and research methodologies to address them.
3. Develop research questions targeting dosage of intervention.

P15

Oral Health in Comprehensive Cleft Care

Prof Omolola Orenuga, Murugan Satta Muthu, Dr Ankita Saikia, Dr. Marina Campodonico, Dr Robert Anthonappa

TH5.4 Panel: Oral Health in Comprehensive Cleft Care, Kilsyth, EICC - Streamed, July 14, 2022, 15:15 - 16:45

Oro-facial clefts are one of the most common congenital craniofacial anomalies globally. The management and care of children with cleft lip and or palate involves a multidisciplinary team of specialists and entails surgical, nursing, nutritional, psychosocial, speech therapy, preventive, restorative and rehabilitative interventions. The management of these patients starts as soon as they are born and continues into adulthood with the paediatric dentist playing a pivotal role in their management. This early visits to the health care system provides great opportunities to engage them in preventive oral health care thereby providing possibilities to raise them cavity free. Though the standard of care has improved in the last two decades in the developed countries due to advances in technology and development of medical devices, the capacity for treatment is still very low in the low and middle-income countries (LMIC). In addition, due to the complexity of the surgical interventions coupled with the financial implications, feeding concerns, psychosocial and cultural norms, inadequate emphasis is placed on the oral health care of children with clefts who are likely to experience oral health diseases such as poor oral hygiene, dental caries and traumatic dental injuries like their peers. In order to address these gaps in their management, there's a need for a minimum standard of care to be adopted globally. Education, training of health professionals including advocacy, capacity building for patients/caregivers form the pillars of strategies to optimize oral health in comprehensive cleft care. This panel discussion will provide opportunities to discuss and develop a preliminary roadmap to bring children with clefts caries free.

P16

Experiences of Living with Cleft

Mr Kenny Ardouin, Dr Liliana Arias-Urueña, Dr Amanda Bates

TH5.5 Panel: Experiences of living with Cleft, Moorfoot, EICC - Streamed, July 14, 2022, 15:15 - 16:45

Panel Discussion: Experiences of Living with Cleft
Panel Co-Chairs: Kenny Ardouin and Dr Liliana Arias-Urueña

Panellist names and affiliation

- Kenny Ardouin (chair), adult born with a cleft, Speech Language Therapist, and Lecturer in the School of Psychology, Speech and Hearing, University of Canterbury, New Zealand
- Dr Liliana Arias-Urueña (chair), Medical Doctor, Social Scientist and associate Researcher of The Centre for Research on Families and Relationships (CRFR) University of Edinburgh.
- Danielle Keohane, adult born with a cleft (UK-based)
- Dr Amanda Bates, University of Kent – adult born with a cleft and Patient Experience and Public Involvement Lead for the Centre for Health Services Studies (UK-based)
- Prof. Ignacio Briceño-Balcazar – Universidad de La Sabana (Bogota, Colombia) - Geneticist and Professor of Human Genetics

Historic research and discussion on cleft has been dominated by remedying physiological deficits experienced by those affected by cleft in paediatric populations. Less attention has been paid to explore the social, psychological and vocational implications of this condition from people's own perspective, as well as the lifelong impact of this condition. Understanding what it is like to live with cleft from children, young people and adults' own perspectives are pivotal to better understand the diverse ways in which cleft, treatments and health outcomes/expectations are understood and experienced by people. Gathering together adults from the international cleft community with a personal story of cleft and a specialist in clinical genetics from Colombia who is aware of how people and families' questions, concerns and expectations about their lives with cleft change over time, this panel aims to:

- discuss the ongoing physical, social and emotional support needs of children, young people and adults who have a history of cleft, including facilitators and barriers for accessing cleft care in their locale.
- identify what service provision for children, young people and adults with cleft looks like across the world today, and begin a discussion on what an ideal lifelong cleft service could one day look like.
- discuss the benefits, limitations and challenges of listening to children's, young people's and adults' views and experiences within clinical practice, and how service users' voices can have a more collegial position in discussions about topics that affect their healthcare.
- understand why the patient voice remains underrepresented at events such as conferences and to identify ongoing opportunities for collaboration to bridge the gap between health professionals and lived experience.

Bringing together the expertise of living with cleft, academic or healthcare backgrounds supporting those with the condition, this panel will provide insights into what it is like to live with cleft. The discussion will enable us to identify the aspects of cleft care that are working well, and those where there is scope for improvement. The panel discussion is an opportunity to propose strategies and actions to ensure that individuals with cleft receive holistic support across the lifespan to get the most out of life. It is also an opportunity to make a statement about acknowledging the special needs of those with facial difference and

the role of cleft care as part of oral care in overall health and wellbeing. These messages are part of the NCDA “inclusion oral health” agenda that is integral to achievement of the sustainable development goals (SDGs) and Universal Health Coverage (UHC) in particular.

P17

Class III correction in growing cleft patients: benefits and burden

Professor Dr. OP KHARBANDA, Dr Costanza Meazzini, Dr. Daniela Garib, Professor VALERIE PEREIRA, Professor Servet Dogan, Dr Rebecca Crawford, Dr. Syed Altaf Hussain

FR1.2 Class III correction in growing cleft patients: benefits and burden, Pentland, EICC, July 15, 2022, 08:00 - 09:30

Children with orofacial clefts are at higher risk of poor craniofacial growth, particularly in the midface. It is generally observed that unoperated cleft children have the potential for average growth, whereas operated cleft children show a midface deficiency of varying severity. Maxillary hypoplasia can manifest as early as in the deciduous dentition stage and worsen with age, leading to functional problems, aesthetic concerns, and speech disturbances.

Maxillary protraction is considered a viable alternative for mild to moderate maxillary retrognathism during adolescence, expecting to eliminate the need for orthognathic surgery in adulthood. It was thought that the early intervention would improve prognosis by enhancing function. It now appears that early maxillary protraction may relapse and be invariably followed by rebound growth of the mandible during puberty. The predictors of a good prognosis are not clearly outlined. Novel orthopaedic techniques like the Alt-RAMEC protocol and bone-anchored maxillary protraction (BAMP) tend to produce more promising and stable results, albeit their burden-to-benefit ratio has yet to be determined. This session will feature a detailed multidisciplinary discussion leading to a better understanding of the benefits and burden of treating midface hypoplasia in growing cleft patients. The following questions will be addressed during the panel discussion.

- What severity of maxillary hypoplasia should receive dentofacial orthopaedic protraction therapy, at what age, and what protocol in terms of burden-to-benefit ratio?
- Can maxillary expansion augment the magnitude of maxillary protraction?
- What are the optimal timing for SABG and maxillary expansion when maxillary protraction is planned?
- Are the results of maxillary protraction stable in the long term?
- When to consider early orthognathic surgical procedures in cleft maxillary hypoplasia?
- What are the effects on speech, velopharyngeal function, and airway dimensions of early interventions?
- What are the psychosocial consequences of midface hypoplasia, and how do they affect treatment priorities?

T1

Taskforce: Holistic Outcomes

Dr Nicola Stock, Professor Nichola Rumsey, Professor Martin Persson

MO2.1 Task Force Holistic Outcomes, Sidlaw, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Chair: Prof. Nichola Rumsey, OBE, UWE, Bristol, UK
Congress Co-Chair: Dr. Nicola Stock, UWE, Bristol, UK

Chair Elect: Prof. Martin Persson, Kristianstad University, Sweden.
Website Co-ordinator: Bruna Costa, UWE Bristol, UK

Background:

Since 2009, the overarching goal of this Task Force has been to facilitate the assessment of patient-centred outcomes in cleft care in a way that is appropriate to all cultures and resource levels.

Aims & Progress:

We are pleased to report excellent progress against the Task Force's Aims, as follows:
Aim 1. To identify an agreed focus for the measurement of patient-centred outcomes with cross-cultural relevance.

- Achieved

Aim 2. To develop a framework for measurement that could accommodate teams with varying level of resources.

- Achieved

Aim 3. To assemble a package of measures appropriate for patients and families with varying levels of literacy/education.

- Achieved

Aim 4. To build and launch a dedicated website to facilitate dissemination of the measures

- Prototype website completed; this website will be showcased at Cleft2022

Aim 5. To increase knowledge about the psychosocial impacts of craniofacial conditions through the development and delivery of training to healthcare professionals and volunteers

- Achieved in part; progress stalled due to lack of funding

Future Plans:
This Task Force has a membership from 32 countries and a broad range of disciplinary backgrounds and yet, to date, the group's achievements to date have relied in the main on the determination, effort and goodwill of a small core group. No further progress will be possible without funding and/or the sponsorship and infrastructure of a global organisation. Having largely achieved our aims, the Core Team will showcase the

work of the Task Force at Cleft2022, outline the current roadblocks to further progress, and propose to stand the Task Force down, with effect July 2022.

T2

Taskforce: Global Cleft Team Networking

Dr Ron Hathaway, Professor Gunvor Semb

MO2.2 Task Force Global Cleft Team Network - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 09:30 - 10:30

Chair: Ron Hathaway[1]
Honorary Chair: Gunvor Semb[2]

1. University of Michigan, Craniofacial/Orthodontics, USA drhathaway54@gmail.com
2. University of Oslo, Dept., Orthodontics, NORWAY gunvor.semb@outlook.com

Aims: After the Cleft 2013 Congress in Orlando, the International Confederation felt the need to restructure the Beyond Eurocleft Task Force. Our task force was renamed as the Global Cleft Team Network with new charges for Cleft 2017 in Chennai. We then developed the following aims: (1) to establish a web based Global Cleft Directory that is filterable for specific aims such as identifying cleft organizations, parent support groups, teams, individuals by discipline and research/outcome study initiatives (2) to support colleagues in developing countries via greater connectivity through this directory in terms of clinical resources, expertise and initiatives for patient care, intra-center audits and/or collaborative studies. It was recognized that establishing an outcomes registry would necessarily be a more distant goal. The current task force consists of 18 members with expertise in cleft studies representing the various World Health Organization (WHO) regions.

Activities:

1. To date we have established “proof of concept” for a web based Global Cleft Directory in map form that is filterable for specific aims such as identifying cleft organizations, parent support groups, teams, and individuals by discipline. Research interests and expertise can also be filtered. This was accomplished through a 2021 project with University of Michigan IT interns and senior faculty advisors in areas of technology and engineering.

2. Elasticsearch is used to store the information about individuals, teams, and organizations in the cloud. Kibana is the tool used for visualizing the data in Elasticsearch in the form of a map. Google Cloud is used for log-in and identity management. Amazon Web Services (AWS) is used for hosting and Security Sockets Layer (SSL) is used. Django is used to construct the website with Bootstrap to format the look, create forms, as well as create a navigation bar.

3. Although the directory is currently “in the cloud” it has not been made accessible nor has data been loaded to the directory. We are in search of solutions for management of the directory and will likely solicit one or two cleft organizations that may wish to manage this and thus make international relations part of their strategic plan. Corporate funding is also being considered.

4. The maintenance of this directory as well as monitoring of all of the stakeholders is beyond the capability of our task force. We have given proof of concept for a version 1.0.

5. With future support, data for individual professionals and team/centers could be loaded at various professional meetings at computer kiosks or as part of meeting registration processes.

6. Questions remain pertaining to how admission to the site can be monitored and how colleagues who do not have English as a first or second language could participate.

7. Finally, we have begun collecting data from global regions for their various cleft organizations and teams.

Future Plans: Our ultimate aim continues to be “elevating the standard of care for all individuals- everywhere- who were born with a cleft or other craniofacial condition” through global networking. We look forward to strategic discussions, planning and collaborative sessions at the Cleft 2022 Congress in Edinburgh. We encourage thinking that focuses on long term goals, creative technology and management of current and future networking projects.

T3

Taskforce: Cleft Without Caries

Dr Ankita Saikia, Murugan Satta Muthu

TH4.1 Task Force Cleft without Caries, Sidlaw, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Task Force Co-chairs: Dr Muthu Murugan and Dr Ankita Saikia

Affiliations:
Dr Muthu Murugan
Head, Centre for Early Childhood Caries Research (CECCRe),
Department of Pediatric and Preventive Dentistry, Sri Ramachandra Faculty of Dental Sciences,
Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai - 600116, India.
Adjunct Research Associate,
Centre of Medical and Bio-Allied Health Sciences Research, Ajman University, UAE

Dr Ankita Saikia
Centre for Early Childhood Caries Research (CECCRe),
Department of Pediatric and Preventive Dentistry, Sri Ramachandra Faculty of Dental Sciences,
Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai - 600116, India.

Task Force Aims
The objectives of the Caries free clefts TF are,
i. To establish and grow an international network of oral health champions, committed to promoting oral health in children born with CL/P,
ii. To identify the barriers to optimising oral health in all children born with CL/P,
iii. To describe examples of practice, policy and interventions that make a difference to the oral health of children born with CL/P, and
iv. To make recommendations for the development of oral health promotion and dental hygiene programmes for children born with CL/P.

Summary of recent Task Force activity
The TF comprises diverse team members from different countries, who are passionate about promoting oral health within the global population of people who have CL/P. Currently we have 18 active members across the globe who are working towards promoting oral health in children with CL/P. The TF have held five quarterly meetings since 2021. The members share their work on children with CL/P during the meeting. Recently, the members of TF have submitted a grant proposal titled “Sleep Time Feeding Practices of Children with Early Childhood Caries and Cleft Lip and Palate - A Multi-Country Assessment using FeAST Scale” for the IADR Smile Train Award. The TF as a team is writing a paper on “Global Availability of Manpower and Services for Individuals with Cleft lip and Palate”.

Future plans for Task Force
The vision of the Task Force (TF) Cleft without Caries (CwC) is “To enable individuals with oro-facial clefts, a lifetime of optimal oral health”. To achieve this, the TF’s mission is “To build and sustain a global

collaboration working towards the wellbeing of individuals with cleft through research, education, and clinical practice.”

T4

Taskforce: Epidemiology, Aetiology and Prevention

Dr. Azeez Butali, Professor Peter Mossey, Subodh Singh

TH4.2 Task Force Epidemiology, Aetiology and Prevention, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 14:00 - 15:00

Co-Chairs: Peter Mossey1, Subodh Singh2 and Azeez Butali3
1. University of Dundee Dental School, 1 Park Place, Dundee, Scotland, UK. p.a.mossey@dundee.ac.uk
2. G S Memorial Plastic Surgery Hospital Varanasi, Uttar Pradesh 221010, India. singsubodh@gmail.com

3. College of Dentistry, Director, African Craniofacial Anomalies Network, University of Iowa. 500 Newton Road, Iowa City. 52242, USA. azeez-butali@uiowa.edu

Aims: The Global Task Force on cleft "Epidemiology, Aetiology and Prevention" established in Orlando in 2013, aims to keep alive collaborations in a range of relevant areas where co-operation enhances and/ or accelerates research progress. This effort is purely voluntary, is unfunded, but is boosted by dialogue at the World Health Assembly in May 2021 involving FDI, IADR and Smile Train and the inclusion of CLP in the 2022 WHO Draft Global Strategy on Oral Health. Alongside this significant global research initiatives in epidemiology and aetiology supported by the Smile Train Research & Innovation Advisory Committee (STRIAC) will help drive the CLP research agenda in LMICs.

Activities: In terms of recent activity, it is apparent that many of our members contribute to the range of tasks and achievements and the following research areas remain active:

1. Improve surveillance data quality & evidence synthesis, with standardisation of OFC sub-phenotyping across all units via consensus on CLP classification.
2. Define and quantify genetic and environmental attributable risks for nsOFC in populations, utilising GWAS (common variants) and NGS (rare variants)
3. Epigenetics /Mendelian Randomisation /Metabolomics and systems biology approaches
4. Identify the amendable risk factors (including consanguinity) with special emphasis on nutrition & environmental exposures in LMICs
5. Smart technologically e.g. APPs, algorithms and innovative analyses

Future plans: The ultimate scientific and humanitarian objective in the field of OFC remains primary prevention underpinned by estimation of individualised genetic predisposition. Task force members from all over the world will be involved in the discussions on areas of common interest and how global collaboration, large data sets, combined analyses and capacity building in research expertise in LMICs can be harnessed in future research.

Abstracts: 3 free papers for presentation in this Task Force session:

1. Subodh Singh (India) on “Genomics of OFC in India” (Abstract 1331)
2. Emad Ghabrial (S. Africa) on “Global Cleft Surveillance App to standardise data collection” (Abstract 2114)
3. Ruben Houkes (Netherlands) on “Classification of cleft lip and palate in scientific manuscripts: a literature review” (Abstract 3366)

T5

Taskforce: Speech

Professor VALERIE PEREIRA, Dr Debbie Sell, Ms. Karen Goldschmied

WE4.1 Task Force SPEECH, Sidlaw, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Chair Task Force1 & Presentation2, Co-Chair Task Force3 : Subramaniyan B 1 ,Pereira Valerie 2,Sell Debbie3

Task Force Members: Bostock Erika4, Goldschmied Karen5, Jahan Nargis6, Jayathilake Malka7, Muthamia Lorna8, Nagarajan Roopa9, Prathanee Benjamas10, Sweeney Triona11, Takei Yoshiko 12, Young Selena 13, Yu Veronica14

1 Associate Professor, Dept of SLHS, SRIHER, Chennai, India
2 Assistant Professor, Dept. of Otorhinolaryngology, Head & Neck Surgery, Faculty of Medicine, The Chinese University of Hong Kong; Honorary Assistant Professor (Speech Therapist), Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Prince Philip Dental Hospital, The University of Hong Kong, Hong Kong
3Independent Consultant Speech and Language Therapist; Co-Director, Speech@Home; Hon. Senior Research Fellow, Great Ormond Street Hospital; Visiting Reader, University of Surrey, London, UK
4ST volunteer at Operation Smile, HoD of Speech Therapy and Audiology department at Witbank Hospital, Witbank, South Africa
5Therapist Hospital Luis Calvo Mackenna & Smile Train Partner, Chile
6 Consultant, Speech and Language Therapist, Dhaka, Bangladesh
7Speech and Language Therapist, Lady Ridgeway Hospital for Children, Colombo, Sri Lanka
8 Consultant Speech Pathologist; Director- Speech Therapy Totos; Smile Train Partner, Nairobi, Kenya
9Academic officer & Professor, Dept of SLHS SRIHER, Chennai, India
10 Department of Otorhinolaryngology, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand
11 Consultant Speech and language therapist, Co-director Speech@Home,Dublin
12 Speech Language Hearing Therapist, Showa University Dental Hospital, Tokyo, Japan
13Head & Senior Principal Speech Therapist, Kandang Kerbau Women's and Children's Hospital; Associate Faculty, Singapore Institute of Technology; Guest Lecturer, National University of Singapore, Singapore
14 SLP volunteer at Smile Train Philippines; Faculty at University of Santo Tomas, Manila, Philippines

Taskforce Aims
The aims of this Taskforce were to:
I. Establish the different types of providers (described as levels), providing speech and language therapy input to clients with CLP in different service delivery models across global contexts
II. Profile the roles/tasks, knowledge and skills, and boundary of scope of practice at each level

Summary of Recent Taskforce Activity
(i). In 2021, three Speech and Language Therapists/Pathologists (SLT/Ps) were invited by the Taskforce Chairs, based on their known specialty work in the field of Cleft Lip and Palate (CLP), with representation from High Income Countries (HIC) and Low and Middle (LMIC) countries, to lead the Speech Taskforce in preparation for ICCPCA-CLEFT 2022. Previous Speech Taskforces had addressed questions relating to models of service delivery and methods of speech assessment and documentation. Fourteen SLT/Ps, representing 13 countries across 5 continents covering both LMIC and HIC, were identified by the core Taskforce team to

join a consensus activity to determine the topic and priorities of this Taskforce. Using consensus methods and tools (Lightning Decision Jam and MURAL), members participated in a group activity led by an external facilitator via Zoom, to agree on the area on which the Taskforce wanted to focus its activities. Consensus and Impact/Effort Graph outcomes were used. It was recognised that in the absence and scarcity of SLT/Ps in many parts of the world, non-SLT/Ps have been drawn in to deliver speech services. It is against this background that the work of this Taskforce was conceptualized.
(ii). Following the consensus workshop, the working group of 14 SLT/Ps with professional careers as senior researchers, experienced therapists working in teaching hospitals as faculty and/or clinicians, clinicians in cleft teams, entrepreneurs, educationalists formed the Speech Taskforce team. This group met more than 12 times over a timeframe of 6 months using the Zoom Video Conference platform. Members also worked independently and in small groups, in asynchronous mode, to develop a framework document describing scopes of practice.

(iii). A framework document, grouping the providers involved in the delivery of speech and language services, evolved out of these discussions. The framework describes the roles/tasks (i.e. scope of practice), knowledge and skills at 5 different levels of providers of cleft-related speech/language therapy services and across varying contexts: institution-based, hospital-based and community-based, and mode i.e. speech telepractice.

Future Plans: This document serves to inform cleft care teams and charities/organizations of the typical settings and scope of practice of the different types of providers of speech services in the area of cleft, including specialist, non-specialist, and diplomate/certificate-level practitioners, and that of non-SLT/Ps. It will help cleft teams identify whether there is a mismatch between the services required and the level of provider available. It will also help define accurately what falls safely within the scope of practice of non-SLT/Ps, and what does not. This information may help teams to identify the need to advocate for a qualified SLT/P, the need for additional training for the speech provider, and to establish systems of onward referral of clients to SLT/Ps if available. Supervision is an essential component at all levels.

This document should increase the understanding of speech and language services for individuals with CLP especially in regions where few SLT/Ps exist and local adaptations have been put in place. Whilst task-shifting in speech therapy is appropriate for some tasks, the quality of services provided at each level needs to be assured/ensured. The effort of this task force is the first step towards this being achieved. Going forward this document can serve as a baseline to define the training needs of different levels of providers.

T6

Taskforce: Neonatal Safety in Cleft Care

Dr. Barbara Delage, Mrs Orla Duncan

WE4.2 Task Force on Neonatal Safety in Cleft Care (TNSCC) - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 14:00 - 15:00

CO-CHAIRS
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MISSION STATEMENT
The mission of the Task Force is to explore solutions to improve the safety of infants born with an isolated cleft of the palate in resource-constrained settings. Their safety is compromised by the lack of early cleft palate diagnosis and timely medical attention. A lack of cleft palate detection may threaten the life of a newborn whose mother faces difficulties to feed him/her. A delay in detection can adversely affect growth, development, and timely medical management. In addition, false beliefs around the cause of cleft lip (that often accompanies a cleft palate) and the lack of awareness about surgical solutions - even among health professionals - contribute to the ill-fate of patients born with a cleft.
Our objectives are as follows:
Step 1. Explore a solution through the design and implementation of a pilot project.
Step 2. Launch the Task Force at Cleft2022 to share findings and build momentum.

SUMMARY OF RECENT ACTIVITY
A project was implemented in Bungoma County, Kenya, where maternal and newborn care providers were trained to examine the palate of every newborn and to promptly refer cases of cleft to a local cleft treatment centre. Data is being collected for one year to inform various aspects of the project including barriers and opportunities for adoption, change in practice, increase in (early) referrals, increase in timely provision of feeding assistance to mothers, and timely cleft surgery. Preliminary findings will be shared at the Cleft Congress.

FUTURE PROSPECTS
Immediate prospects: (1) Open membership to new individuals willing to possibly scale the project or replicate it, and/or explore other solutions, (2) share the training resource with everyone interested in making use of it.
Beyond Cleft2022 prospects (for current members): Finish data collection (by October 2022) and disseminate findings through publications.

PILOT PROJECT SPONSOR
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MRI for VPI: Implementing and Interpreting Velopharyngeal MRI

Dr Thomas Sitzman[1], Dr. Jamie Perry[2]
[1]*Phoenix Children's Hospital, Phoenix, United States,* [2]*East Carolina University, Greenville, United States*

MO1.2 MRI for VPI: Implementing and Interpreting Velopharyngeal MRI, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 08:00 - 09:00

Introduction: The use of MRI to evaluate the anatomy and physiology of the velopharyngeal mechanism in children with velopharyngeal insufficiency (VPI) is a new and highly innovative application of MRI. MRI can directly visualize the velar muscles, can be performed at rest and during phonation, and enables quantitative measurements of anatomic structures. MRI is also noninvasive and involves no ionizing radiation, providing distinct advantages over nasopharyngoscopy and videofluoroscopy.

Learning Outcomes: In this course we provide guidance for cleft teams on how to successfully implement velopharyngeal MRI at their hospital, provide training on interpretation of velopharyngeal MRI images, and discuss how the results of velopharyngeal MRI can be used to aid VPI procedure selection. This guidance is derived from our experience using velopharyngeal MRI as part of the VPI evaluation on over 130 patients during the past three years, and from initiating velopharyngeal MRI protocols at over fifteen hospitals.

Content: This course on velopharyngeal MRI will be taught through a series of lectures from two clinician-scientists with experience in obtaining and interpreting velopharyngeal MRI. We will begin with an overview of the advantages and capabilities of velopharyngeal MRI. We will then briefly review anatomy and physiology of the velopharyngeal mechanism focusing on the structures visualized during MRI. We will provide details on the MRI protocol and image sequences we routinely obtain during clinical evaluations. We will provide guidance and resources for preparing patients and caregivers for the MRI. We will then provide an orientation to MR images of the velopharynx and a framework for characterizing key structures including levator veli palatini muscle anatomy and velopharyngeal morphology during phonation. We will review multiple clinical cases illustrating how MRI findings influenced surgical decision making. We will finish by highlighting future directions of MRI, including imaging during connected speech.

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Bilateral alveolar cleft grafting from simple to complex: A Focus on Technical Strategies

Dr Michael Lypka[1]
[1]*Children's Mercy Hospital, Fairway, United States*

MO1.3 Bilateral alveolar cleft grafting from simple to complex: A Focus on Technical Strategies, Fintry, EICC - Streamed, July 11, 2022, 08:00 - 09:00

- Introduction – Most educational content on alveolar cleft grafting is focused on the unilateral situation. The bilateral case, while occasionally straightforward, is unarguably more complicated from a technical perspective and results are typically less favorable than in the unilateral case. Bilateral cases are often complicated by a malpositioned, often diminutive, premaxilla, large anterior palatal fistulae, or multiple previous failed attempts at grafting. Surgical access for proper soft tissue closure and maintenance of blood supply to the premaxilla can be a challenge. The purpose of this presentation is to discuss the management of alveolar clefts in patients with bilateral cleft lip and palate, starting with the conventional and moving to the more complex.

- Learning Outcomes

Each learner will understand principles of grafting bilateral alveolar clefts.
Each learner will understand basic and advanced methods of closing and grafting bilateral alveolar clefts.

- Content – The basic technique of bilateral alveolar cleft grafting will be described. Splint fabrication will be discussed. More complex cases will be highlighted, including advanced methods for closure, such as premaxillary osteotomy, segmental osteotomies, distraction osteogenesis, and orthognathic surgery. Complications and failures will be presented including suggestions to avoid them. The presentation will be case based with photographic and video descriptions.

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PANEL SESSION: Communication Impact: risk reduction in cleft care through multidisciplinary teamwork

Ms Kitty Jenkin[1], Professor Miliard Derbew, Dr Zipporah Gathuya, Comrade Olubunmi Lawal-Aiyedun, Dr. Tihitena Negussie
[1]*Lifebox, Falmouth, United Kingdom*

MO1.5 Communication Impact: risk reduction in cleft care through multidisciplinary teamwork, Moorfoot, EICC - Streamed, July 11, 2022, 08:00 - 09:00

OVERVIEW:
Effective multidisciplinary teamwork and communication is recognized internationally as an essential component of safe surgical care. An effective surgical team requires individuals to work together to achieve a shared vision with good communication integral for operational effectiveness. Individuals must be trained and accountable with clearly defined roles with the strengths and weaknesses of the team acknowledged.

Feedback from cleft professionals has highlighted gaps in teamwork and communication which leads to adverse patient outcomes as well as negatively influencing job satisfaction and professional development. Despite this known gap in safe surgical care, there are few adaptable training opportunities or programs which bring the multidisciplinary surgical team together as a whole. Of these available trainings and programs, most are still in early development.

CONTENTS:
Experience of poor or suboptimal patient outcomes because of failed OR communication
Work environment change due to ineffective teamwork
Discuss the findings of a needs assessment of perioperative nurses that demonstrate the integral role of communication and teamwork in perioperative nursing care
Examples of addressing perioperative teamwork and communication in panelists' work
Strategies for improvements: Adapting a proven surgical infection reduction program for Cleft patients
Strategies for improvements: Introduction to TEAM CLEFT as an example of an improvement strategy

FORMAT: A 40 minute panel discussion followed by opportunities for questions and discussions with audience members.

NOMINATED PANELISTS: a multidisciplinary panel composed predominantly of LMIC based perioperative providers with expertise on programs to improve perioperative teamwork and communication.

Professor Miliard Derbew - pediatric surgeon and CEO King Faisal Hospital, Rwanda

Dr. Zipporah Gathuya - consultant pediatric anesthesiologist, Nairobi Hospital, Kenya

Comrade Olubunmi Lawal-Aiyedun, pediatric nurse, Nigeria. Board of the Global Initiative for Children's Surgery

Dr. Tihitena Negussie - pediatric surgeon, Addis Ababa, Ethiopia

Perioperative Clinician - an LMIC based clinician part of the TEAM CLEFT Working Group

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Why don’t they get it? Using adult learning principles to improve caregiver understanding of cleft care.

Ms Sarah Vetter[1], Dr Julia Corcoran[2]
[1]Ann & Robert H. Lurie Children’s Hospital of Chicago, Chicago, USA, [2]University of Illinois - Chicago Craniofacial Center, Chicago, USA

MO1.6 Why don’t they get it? Using adult learning principles to improve caregiver understanding of cleft care., Tinto, EICC - Onsite Only, July 11, 2022, 08:00 - 09:00

Introduction: To support patient needs and overall outcomes, teams should provide educational information about craniofacial anomalies to parents and patients. Purposeful consideration of learner understanding and application of new, unfamiliar knowledge is a prevailing concern in education. The purpose of this workshop is to provide participants with a definition of learner understanding, as well as identify the barriers to understanding that exist within their clinical practice. Within interactive activities and authentic examples, participants will gain a deeper appreciation for the importance and purposeful use of adult learning strategies to maximize caregiver education and enhance patient care.

Learning Outcomes:

Participants will:
1. Define transfer of knowledge and how it relates to understanding.
2. Identify barriers to understanding and analyze the impact of those barriers on caregiver education.
3. Experience adult learning theories which influence successful knowledge transfer, and synthesize these strategies into a basic learning model.
4. Reflect and discuss application of adult learning strategies within their clinical practice.

Content: Within group discussions and meaning-making activities, participants will develop a mutual definition of learner understanding prior to exploring three adult learning theories and strategies which contribute to deeper understanding and transfer of new knowledge: experiential, brain-based, and embodied learning theory. Experiential learning advocates for diverse delivery of information, purposeful reflection, authentic practice, and opportunities for feedback. Brain-based learning promotes the use of analogy and association to establish meaning and relevance of new material. Lastly, embodied learning leverages the whole self and its experiences as a way of knowing. In conclusion of the workshop, participants will participate in guided discussion and individual reflection to create action plans for implementation of skills learned into their own clinical practice. Session content is evidenced based, with references from the adult education literature coupled by authentic examples from the speakers’ practice serving families of children both with cleft lip/palate.

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Velopharyngeal Dysfunction: Detailed assessment and predictor of outcomes with secondary Furlow's palatoplasty

Dr Krishnamurty Bonanathaya[1,2,3], Dr Aparna V S[4]

[1]Consultant Maxillofacial Surgeon & Project Director, Smiletrain Cleft Leadership Centre, Bhagwan Mahaveer Jain Hospital , Bangalore, India, [2]Chairman , Medical Advisory council India (IMAC) Smiletrain, Vasanthkunj, India, [3]Course Director, Fellowship in Cleft lip and palate surgery , Bangalore Institute of dental sciences , Bangalore, India, [4]Consultant Speech Language Pathologist, Smiletrain Cleft Leadership Centre, Bhagwan Mahaveer Jain Hospital , Bangalore, India

TU1.1 Velopharyngeal Dysfunction: Detailed assessment and predictor of outcomes with secondary Furlow's palatoplasty, Sidlaw, EICC, July 12, 2022, 08:00 - 09:00

Introduction : Literature suggests that 20-30% of the children with repaired Cleft lip and palate can have VPD (Witt et al., 1998; Sell, Grunwell & Mildinhall,2001; Jensen &VanLue, 2015; Ha et al., 2015; Jodeh, Nguyen & Rottgers, 2019) due to various reasons like inherent length of velum (Ha et al, 2007), shorter velar length due to scarring and reduced contractility of levator- veli palatini (LVP) muscles (Akgüner et al., 1998), morphological characteristics of velum etc. (Da Silva et al., 2016). The speech errors due to VPD can be assessed perceptually complimented with a direct instrumental assessment. The decision regarding further intervention should be based on both the assessments and reported using standardized protocol for reporting outcomes. This workshop will highlight detailed assessment of VPD, discuss the role of Secondary Furlow's palatoplasty in its management with the help of outcomes from a large series. Further development of a predictive formula based on perceptual speech, and closure ratio on lateral view VFS to arrive at an algorithm for VPI surgical correction will be discussed.

Learning outcomes:

- Speech assessment in VPI.
- Differential diagnosis of VPI.
- Instrumental assessment using LVFS.
- Objective interpretation of LVFS images and measurement of closure ratio.
- Correlation between LVFS and perceptual speech parameters.
- Decision making for VPI management.
- Technique of Furlow's secondary palatoplasty and outcomes with a large series using this method.
- Derivation of a formula predicting the outcome based on the findings and validation of this formula as well.

Content:

Practical session on perceptual speech assessment and interpretation of LVFS images, correlation of speech and LVFS, research study on developing a predictive formula to determine the success of secondary Furlow's palatoplasty and algorithm to decide the surgical protocols. Research study on validity of the predictive formula. Demonstration of the surgical techniques used.

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Capacity-building global initiatives for speech therapy and VPD management in children with cleft palate and craniofacial differences: An interactive discussion-based workshop identifying challenges and solutions to comprehensive cleft care.

Dr. Chelsea Sommer[1], Ms. Veronica Yu[2], Mr. Edouardo Adjassin[3], Dr. Catherine Crowley[4]
[1]Florida International University, Miami, United States, [2]University of Santo Tomas, Manila, Philippines, [3]Fédération des organisations d'orthophonistes d'Afrique Francophone, Abomey-Calavi, Benin, [4]Teachers College, Columbia University, New York City, United States

TU1.2 Capacity-building global initiatives for craniofacial and comprehensive cleft care: An interactive discussion-based workshop identifying challenges and solutions for those engaged in speech therapy and VPD surgery worldwide, Pentland, EICC, July 12, 2022, 08:00 - 09:00

Introduction: Cleft palate with or without lip can impact speech development, which is addressed by speech-language therapists (SLTs). Access to SLTs can be quite limited in certain countries, leading to limited educational experiences and resources for children born with cleft. To account for this need, international cleft organizations and individuals have addressed this need by building capacity for cleft palate speech therapy and VPD.

Learner outcomes:
1) List several approaches to building capacity for speech therapy
2) Identify ways to build capacity for VPD care

Content:
This workshop discusses the development of various approaches to capacity building including: an online course, in person and zoom trainings, speech camps, free speech assessment and treatment materials in over 20 languages, and mentoring opportunities. Presenters will discuss effective ways to develop foundational cleft speech services in low- and middle-income countries. This workshop's interactive portion includes discussion of various models that have been used, and their effectiveness. Additional discussion questions focus on how services have been adapted in different economic, cultural, and linguistic contexts.

The second portion of this workshop targets the development of VPD care including the accessibility and use of nasopharyngoscopy, and the need for collaborative providers when assessing and treating VPD. Finally, this workshop includes a discussion on future directions such as ongoing mentoring opportunities to develop greater expertise and sustainable care.

The discussion questions throughout the presentation:
1) What have attendees done that has been effective in building capacity in cleft care?
2) How have attendees adapted their approaches to address limited resources, and/or cultural and linguistic differences?
3) What challenges remain in accessibility of comprehensive cleft care?
4) What types of instrumentation or assessments have attendees used to assess VPD?
5) What mentoring and mentorship opportunities have the attendees implemented?

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Ultrasound Visual Biofeedback for Treating Cleft Speech Characteristics

Dr Joanne Cleland[1], Lisa Crampin[2], Linsay Campbell[2], Dr Maria Dokovova[1]
[1]University Of Strathclyde, Glasgow, United Kingdom, [2]NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

TU1.3 Ultrasound Visual Biofeedback for Treating Cleft Speech Characteristics, Fintry, EICC, July 12, 2022, 08:00 - 09:00

Introduction

Ultrasound Tongue Imaging (UTI) is a visual biofeedback tool for people with Speech Sound Disorders (SSDs) including cleft lip and palate. Using standard medical ultrasound placed under the chin, tongue shape and movement is captured in either a mid-sagittal or coronal view in real-time. This enables people with cleft speech characteristics to establish new, more accurate articulations for previously in-error speech sounds. The evidence for Ultrasound visual biofeedback (U-VBF) therapy is growing in cleft lip and palate and an ongoing pilot randomised control trial by the team offering this workshop seeks to establish the feasibility of the intervention.

Learning Outcomes

Participants will be able to:
1. Explain the strengths and limitations of Ultrasound Visual Biofeedback
2. Determine intervention targets for U-VBF for people with cleft lip and palate
3. Begin to interpret ultrasound images associated with specific speech sounds

Content

This workshop is an opportunity for speech and language therapists and other interested professionals to learn about the evidence base for U-VBF and see examples and case studies of children with cleft lip and palate treated with U-VBF. The workshop will consist mainly of videos of ultrasound followed by an opportunity to use the ultrasound equipment (several sets of equipment will be available to try out, covid protocols will be in place) to view both participants' own tongue movements and those of fellow participants.

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The Impact of Virtual Reality (VR) on Cranio-Maxillofacial Surgery: The Future is Here

Dr Pravin K Patel, Dr. Lee Alkureishi, Dr. Chad Purnell, Dr. Joseph Krajekian, Dr. Linping Zhao, Dr. Neil Warshawsky
[1]*University of Illinois at Chicago, Chicago, United States*

TU1.4 The Impact of Virtual Reality (VR) on Cranio-Maxillofacial Surgery: The Future is Here, Kilsyth, EICC - Streamed, July 12, 2022, 08:00 - 09:00

INTRODUCTION:
For over half-a-century, reconstructing patients with craniofacial deformities has relied primarily on two-dimensional photographic images and radiographs. It was the surgeon's eye and experience that integrated the two-dimensional records to generate the virtual three-dimensional image for surgical planning. In the last decade of the twentieth century, multi-dimensional visualization of skeletal deformity became possible with computerized tomography(CT). This allowed the surgeon the ability to visualize the complexity of the deformity but not the ability to simulate surgery.

It is only within the last several years that rapid advances in computational software began to transform the pure visual imagery of CT to allow the surgical simulation to become a reality. Today surgeons are beginning to have the tools to simulate various craniofacial skeletal osteotomy patterns and the ability to manipulate each of the bony elements. However, the limitation of true simulation has always been the inability to fully visualize the third dimension on two-dimensional flat screen displays. Thus, surgeons relied on 3D printed models for tactile feedback and to visualize depth. With the recent introduction of immersive virtual reality (VR), and augmented reality(AR), true three-dimensional surgical simulation becomes a possibility.

CONTENT/LEARNING OBJECTIVES
This workshop will review currently accessible technology for the practicing surgeon through a series of case studies. This will include technical processing of diagnostic 3D-surface and skeletal records; integrated orthodontic-surgical digital planning, 3D-relevant software for orthodontic and skeletal manipulation, translation from virtual to the operative environment through guides, navigation and AR. This presentation will showcase the technology of the future where resident training and patient-specific planning for the surgeon will be done in a VR/AR environment with greater fidelity to simulate the operating theater.

FORMAT
Interactive lecture illustrated with clinical cases followed by hands-on use of a Virtual Reality Platform using Oculus headset for practicing surgeons for CMF surgery planning and resident training.

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Alternatives Approaches for Presurgical Infant Orthopedics.

Dr Maria del Pilar Villegas Zuluaga[3], Dr. Daniela Tanikawa[2], Dr Alvaro Figueroa[1], Dr Puneet Batra[1], Dr Daniela Escobar-Palacios[1], Dr Carolina Gutierrez[1], Dr Marina Campodonico[1]
[1]University of São Paulo School of Medicine, São Paulo, Brazil, [2]Medical Advisory Council of Smile Train Brazil, São Paulo, Brazil, [3]Fundacion Clínica Noel, , Colombia

TU1.6 Alternatives Approaches for Presurgical Infant Orthopedics., Tinto, EICC - Onsite Only, July 12, 2022, 08:00 - 09:00

Cleft lip repair and the correction of the associated nasal deformity is challenging even for experienced cleft surgeons.
Wider clefts tend to be associated with more significant nasolabial deformities, and reconstruction of the more severe nasolabial deformities tends to yield suboptimal outcomes. Thus, presurgical infant orthopedics (PSIO) is used to reduce cleft severity and improve nasal form and symmetry to ease and improve the results of the primary operation.
Currently, presurgical NAM is considered one of the most effective forms of PSIO. Indeed, greater nasal symmetry is obtained after cleft lip repair using NAM therapy, and NAM has been demonstrated to be a cost-effective method for cleft lip repair when patients are followed long-term.
However, although NAM can be very successful in reducing wide cleft alveolar spaces and flattened nasal cartilages, it can also be labor intensive for both the orthodontist and the parents. Weekly clinic visits for adjustments are needed to slowly shape the cleft alveolus, lip, and nose, while paying attention to any skin breakdown caused by the passive molding device. Besides that, only a small number of orthodontists are trained in the procedure, and all these factors compromise the NAM treatment protocol, especially in developing low- and middle-income countries.
In this workshop, the presenters will address alternatives approaches for PSIO. All participating clinicians do PSIO in a slightly different way and this will provide a wide range of experiences. Specific clinical procedures, outcomes, complications, and benefits will be discussed in detail, and an evidence-based approach will be offered whenever possible.
The material will be presented in a lecture format, moderated by Dr Figueroa, but with active open dialogue for audience participation.
All other presenters are Smile Train partners, members of Smile Train Regional Advisory Councils or Smile Train Global Medical Advisory Board.

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6 Questions to Kickstart your Comprehensive Cleft Care (CCC) Strategy in LMIC contexts

Mr Hugh Brewster[1], Ms. Yalexis Barr, Ms. Courtney Mollenhauer[1]
[1]*Transforming Faces, Toronto, Canada*

WE1.2 6 Questions to Kickstart your Comprehensive Cleft Care (CCC) Strategy in LMIC contexts, Pentland, EICC, July 13, 2022, 08:00 - 09:00

Introduction

The international consensus is clear: "Comprehensive care using a multidisciplinary team approach provides for the best possible cleft care". For teams aspiring to implement a Comprehensive Cleft Care (CCC) strategy in resource-constrained settings, a clear and accessible framework helps move discussions into action. Drawing on the experience and expertise of partners worldwide, Transforming Faces' (TF) C.L.E.F.T.+ approach has helped teams on four continents assess their CCC impact and articulate new or enhanced strategic priorities. Through this ninety-minute workshop participants will engage with CLEFT+'s six foundational questions, toward facilitating a strategic dialogue within their own cleft teams.

Learning Outcomes

Participants will:

- Gain a deeper understanding of Comprehensive Cleft Care in a variety of resource-constrained contexts through the C.L.E.F.T.+ model
- Assess their current CCC activities and generate ideas for enhancement or expansion
- Prepare to complete a CCC Action Plan with their own cleft team and communicate the results to stakeholders (e.g. NGO Funders, Hospital Administrators, Parent Supporters)

Content

TF's CLEFT+ acronym stands for: Circle, Local, Evidence-Informed, Fully-Inclusive, Team and + Growth. Informed by the experience of cleft care teams in LMIC contexts, a series of interactive activities lead participants through a reflection upon their centre's current performance in each of these six elements of Comprehensive Cleft Care.

Logistics

This workshop is designed for a maximum of twenty participants from any Cleft Lip and Palate sub-specialty with an interest in CCC leadership in resource-constrained contexts. We will provide printed workbooks for each participant and will require access to a projector, screen and microphone. The optimal room set up is one large table at the front, and four smaller workstations for up to five participants per table.

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A protocol for the surgical management of VPD based primarily on lateral videofluoroscopy and secondary palatal surgery

Mr Brian Sommerlad[1], Dr Debbie Sell[1], Mrs Marie Pinkstone[1,2], Mr Amir Sadri[1,2], Ms Patricia Rorison[1,2], Mr Richard Thomson[1]

[1]Great Ormond St Hospital For Children, London, United Kingdom, [2]North Thames Cleft Service, London and Chelmsford, United Kingdom

WE1.3 A protocol for the surgical management of VPD based primarily on lateral videofluoroscopy and secondary palatal surgery, Fintry, EICC, July 13, 2022, 08:00 - 09:00

Introduction. Internationally, the emphasis on investigations for velo-pharyngeal dysfunction has been on endoscopy and the most commonly performed surgery has been some form of pharyngoplasty.
This workshop will propose a different view. We will argue that endoscopy gives little information on palatal length and function. Lateral videofluoroscopy is the preferred investigation, is non-invasive and can be performed on younger children although it is combined with endoscopy if possible. This leads to a move away from pharyngoplasty towards secondary palatal surgery wherever this is an option.
Learning Outcomes.

1. How to perform and interpret lateral videofluoroscopy (and minimise radiation exposure).
2. To understand the shortcomings of endoscopy but the benefit of doing both if possible
3. How to use the investigations to determine the best surgical procedure
4. How to learn from follow-up

Content.
There will be presentations by surgeons and speech and language therapists explaining how videofluoroscopy is performed, how radiation exposure is minimised and the protocol for decision-making. This will be followed by time for discussion
This will be followed by case presentations where participants in the workshop will be invited to suggest how they would manage the patient and the team will then explain their decision and show the outcome. Difficulties and complications will be described.
Future evolution of the protocol will also be suggested.

This workshop is based on the accumulated experience of the North Thames Cleft Service based at Great Ormond St Hospital for Children, London and at St Andrew's Centre for Plastic Surgery, Broomfield Hospital, Chelmsford, UK. Several of the authors have also experience of working with colleagues on low-resource countries and will pass on lessons learned on management of VPI in this context

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Standardising outcomes in cleft lip and palate research; development and implementation of core outcome sets

Ms Catherine de Blacam[1,2], Mr David Sainsbury[3], Dr Debbie Sell[4], Prof Susan Smith[5], Dr Adriane Baylis[6,7], Dr Richard Kirschner[6,7], Prof Kathleen CY Sie[8], Mr David Orr[1,9]

[1]Dublin Cleft Centre, Childrens Health Ireland at Crumlin, Dublin, Ireland, [2]Royal College of Surgeons in Ireland, Dublin, Ireland, [3]Northern and Yorkshire Cleft Lip and Palate Service Royal Victoria Infirmary, Newcastle upon Tyne, UK, [4]Centre for Outcomes and Experience Research in Children's Health, Illness and Disability (OCHID), Great Ormond Street Hospital NHS Foundation Trust, London, UK, [5]Department of General Practice, Trinity College Dublin, Dublin, Ireland, [6]Section of Plastic & Reconstructive Surgery, Nationwide Children's Hospital, Columbus, USA, [7]The Ohio State University College of Medicine, Columbus, USA, [8]Pediatric Otolaryngology, Seattle Children's Hospital, Seattle, USA, [9]Departments of Surgery & Paediatrics, Trinity College Dublin, Dublin, Ireland

WE1.5 Standardising outcomes in cleft lip and palate research; development and implementation of core outcome sets, Moorfoot, EICC, July 13, 2022, 08:00 - 09:00

Introduction:
Cleft lip and palate is a condition characterised by significant heterogeneity in clinical presentation. The success of treatment is evaluated on the basis of outcomes that require prolonged follow-up and can be difficult to measure and standardize. In this context, randomised controlled trials are difficult to conduct. As a result, the evidence for clinical decision making comprises mainly single-centre studies. When systematic reviews of clef palate repair and secondary speech surgery were carried out, the presenters of this session identified mainly retrospective case series, which tended to describe results of surgical interventions using diverse parameters, particularly with regard to perceptual speech assessment. Implementation of core outcome sets would reduce both outcome reporting bias and disparity between studies, thus allowing meaningful collation and comparison of results across different aetiologies, surgical protocols and institutions.

Learning outcomes:
1. Each learner will recognise the need for core outcome sets for the reporting of outcomes of cleft palate repair and surgery for velopharyngeal insufficiency.
2. Each learner will be familiarised with the methodology for defining a core outcome set.
3. Each learner will be introduced to available core outcome sets for reporting outcomes of primary and secondary cleft surgery.

Content:
In this session, a multidisciplinary group of surgeons and speech and language therapists will describe the findings of two systematic reviews that attempted to synthesise the outcomes of cleft palate repair and secondary speech surgery. Limitations in the reporting of both baseline patient characteristics and clinical outcomes will be highlighted, particularly in relation to the perceptual speech assessment. Using the COS-VPD Initiative as an example, methodology for the development of a core outcome set will be introduced, including steering group formation, protocol development, categorization of outcomes and the Delphi process. Future directions for clinical and research applications of core outcome sets will be discussed.

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Achieving consensus on a universal cleft classification system after birth

Prof. dr. Corstiaan Breugem[1], prof Peter Mossey[2], dr Tom Sitzman[3], prof Azeez Butali[4], prof Subodh Singh[5], Prof Meshach O'ngutti[6], dr Ruben Houkes[1], prof David Fitzsimons[7]

[1]Amsterdam UMC Emma Childrens Hospital, Amsterdam, Netherlands, [2]Departement of orthodontics, University of Dundee, Scotland, , , [3]Division of Plastic Surgery, Children's Hospital Phoenix, Arizona,USA, , USA, [4]Department of Oral Pathology, Radiology and Medicine and Dows Research Institute at the College of Dentistry., university of Iowa,USA, , , [5]G S Memorial Plastic Surgery Hospital, Varanasi, , India, [6]Help a child face tomorrow,Nairobi, , Kenia, [7]The Children's Hospital at Westmead, , Australia

WE1.6 Achieving consensus on a universal cleft classification system after birth, Tinto, EICC - Onsite Only, July 13, 2022, 08:00 - 09:00

Introduction:

A recent study from 166 different centers (Houkes et al CPCJ, 2021) demonstrated that 18 different classification systems were in use among craniofacial specialists internationally.

Future advances in our understanding of the molecular pathogenesis of OFCs will require us to compare precisely phenotyped cohorts of patients with clefts.

Classifying clefts with a universally implemented classification system is essential for audit, research, policy making and for improved communication between craniofacial teams and comparison of scientific data globally. Involvement of geneticists , and especially healthcare workers from L/MIC will provide a rationale for optimal comprehension of classifying clefts.

Learning outcomes:

- Discuss essential aspects of the cleft classification process
- Discuss advantages and disadvantages of the commonly used classification systems by cleft providers around the world, including the perceived indications and limitations of each system.
- Achieve consensus about using one classification system for clefts.

Content:
The workshop coordinators have been involved in various aspects of achieving cleft consensus meetings before.
All participants will receive a questionnaire upon entering the room (when participation of the workshop starts). This is also for the participants with a hybrid connection.(10min)

Subsequently, the rationale and desirability of achieving consensus, different aspects (e.g. anatomy, embryology, documentation and reimbursement) affecting the classification process of clefts and the perceived indications and limitations of commonly used classification systems will be discussed by the workshop coordinators and compared to the literature. (15 min)

Before the general discussion, small group sessions (15 min) will be conducted before a general discussion (20 min) is conducted.

After the Workshop participants will be asked to complete another survey (by mail) to see if and how their opinion may have changed after participation in this Workshop. All aspects will be discussed in a hybrid fashion (both virtual and in real life).

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The Furlow Z-Palatoplasty: Optimizing Surgical Technique and Clinical Outcomes

Dr. Oksana Jackson[1], Dr. Richard Kirschner[2], Dr. Alison Kaye[3]
[1]Children's Hospital of Philadelphia, Philadelphia, United States, [2]Nationwide Children's Hospital, Columbus, United States, [3]University of Missouri, Kansas City, United States

TH1.1 The Furlow Z-Palatoplasty: Optimizing Surgical Technique and Clinical Outcomes, Sidlaw, EICC, July 14, 2022, 08:00 - 09:00

Introduction: First introduced by Lenard Furlow in 1978, the double-opposing z-palatoplasty has gained increased popularity worldwide. The Furlow z-palatoplasty may be used to achieve excellent outcomes in both primary repair of all cleft types and in secondary management of velopharyngeal dysfunction.

Learning Outcomes: The participants will gain understanding of the critical concepts, advantages and disadvantages, and current reported outcomes of the Furlow z-palatoplasty technique. The participants will learn technical steps of the Furlow repair including nuances in technique for primary repair of different cleft types as well as secondary re-repair for velopharyngeal dysfunction.

Content: Using an interactive lecture format, the historical background and key concepts of the Furlow palatoplasty will be reviewed by three experienced surgeons from high-volume cleft palate centers. This course, designed for both beginners and experienced surgeons, will provide a review of the detailed step-by-step surgical technique while providing tips on how to facilitate dissection and to optimize surgical outcomes in all cleft types through proper patient selection and technical precision. Video presentations will illustrate techniques steps, highlighting nuances that facilitate repair, reduce complications, and optimize outcomes. Technical tips and tricks for a variety of cleft types as well as secondary re-repair will be included. Ample time will be allotted for participant questions and discussion.

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Adult Cleft Care: An interactive workshop for MDT clinicians on how to consider psychological factors when assessing and planning ongoing adult cleft care

Dr Rebecca Crawford[1]
[1]*NHS Scotland, Glasgow, United Kingdom*

TH1.3 Adult Cleft Care: An interactive workshop for MDT clinicians on how to consider psychological factors when assessing and planning ongoing adult cleft care, Fintry, EICC, July 14, 2022, 08:00 - 09:00

Introduction

The importance of psychological factors in overall treatment outcome is well established for cleft lip and/or palate patients. It is clearly documented that collaborative, person centred assessment and treatment planning leads to patients having higher levels of satisfaction with treatment and a more positive overall outcome. The impact of past and current psychological factors is an essential part of any assessment when considering further adult treatment in cleft care. This workshop will provide an overview of the key psychological factors to be aware of and a framework for how to consider these in an MDT setting, where Clinical Psychology is part of the MDT and for clinicians working in teams with no Clinical Psychology input.

Learning Outcomes

- Increase awareness of the importance of psychological factors in adult cleft care
- Develop basic practical skills in brief assessment of key psychological factors
- Consider how to integrate assessment of psychological issues into future routine clinical practice

Content

The workshop will include a short presentation and discussion of key psychological considerations for adult cleft lip and/or palate patients. This will cover psychological assessment as part of MDT treatment planning, psychological or psychiatric difficulties that would be of concern when considering further treatment, and psychological support throughout treatment.

Delegates will then complete a 50 minute workshop aiming to give direct experience of assessing psychological issues, and an opportunity to explore and discuss factors which may influence decisions regarding treatment and management.

Delegates will be divided into groups, with each group asked to obtain specific psychological information which is likely to influence decisions regarding treatment. Delegates will have time to ask questions and to discuss their findings and conclusions.

Delegates will be given work books, including a semi-structured interview schedule which includes useful questions for future clinical use and a treatment decision section to record management plans.

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Learn the Full Digital Workflow: From Intraoral Scan to Point-of-Care 3D Design and Printing of Presurgical Orthopaedic Plates

MD DMD MHBA Benito K. Benitez[1,2], Dr. sc. med. DMD Prasad Nalabothu[1,2], MD Łukasz Wieprzowski[3], MD Zbigniew Surowiec[3], MD, MSc Ana Tache[1,2,4], Dr. sc. med. DMD Neha Sharma[1,5], DMD Paridokht Zarean[1,5], DMD Parichehr Zarean[1,5], MD DMD MHBA Florian M. Thieringer[1,5], MD DMD PhD Andrzej Brudnicki[3], MD DMD PhD Andreas A. Mueller[1,2]

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TH1.4 Learn the Full Digital Workflow: From Intraoral Scan to Point-of-Care 3D Design and Printing of Presurgical Orthopaedic Plates, Kilsyth, EICC, July 14, 2022, 08:00 - 09:00

1. Introduction: The 3-dimensional (3D) documentation of the anatomy of cleft malformations before surgery by taking impressions is standard practice since many years. Likewise, in presurgical orthodontic treatment, orthopedic plates are constructed on plaster casts based on conventional impressions. Nowadays intraoral scanners are widely available and used in maxillofacial departments and point-of-care 3D printing becomes a current practice. A breakthrough of this technology as a standard of care in the treatment of patients with clefts is likely.
We have implemented the use of intraoral scanning in our cleft treatment workflow two years ago. Moreover, we shared our know-how to different interdisciplinary cleft teams in Europe and Asia.
The aim of this hands-on workshop is to teach the key steps of a fully digital workflow comprising intraoral scanning with point-of-care 3D design and printing of presurgical orthopedic plates.

2. Learning Outcomes:

1. Step aside from classical impressions: Known advantages, challenges and limitations of digital scan technology
2. Point-of-care workflow for 3D design and printing presurgical orthopedic plates in cleft care.

3. Content:

1. Learn about the current possibilities for intraoral and face scanning in cleft care. Hands on training by scanning of anatomical models. Know-how transfer by surgeons and orthodontist using digital scan technology for patients with cleft lip and palate. Demonstration of the requirements for fully digital documentation of cleft anatomy. Demonstration of videos on how to scan newborns and infants in outpatient setting for presurgical therapy and in the operating theater prior to surgery.

2. Know-how transfer of a fully digital workflow from digital model to a point-of-care 3D printed orthopedic plate. Bring your Laptop and design your presurgical plate under guidance. A standard operating procedure will be distributed to participants. Additional details on requirements to fulfill current Medical Device Regulations for design (software) and printing (printer, materials) will be provided.

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The Cleft Collective resource; applying for data

Miss Amy Davies[1], Ms Kerry Humphries[1], Professor Sarah Lewis[1], Dr Lucy Southby[1], Dr Yvonne Wren[1]
[1]*The Cleft Collective, University Of Bristol, Bristol, United Kingdom*

TH1.5 The Cleft Collective resource; applying for data, Moorfoot, EICC, July 14, 2022, 08:00 - 09:00

Introduction
With over 3000 families from around the UK recruited to The Cleft Collective so far, we are one of the largest cleft lip and palate research programmes in the world. We are a unique resource available to researchers and clinicians who are interested in studying the environmental and genetic determinants of cleft lip and/or palate (CL/P), and the outcomes for patients and families affected by CL/P. Researchers and clinicians can apply to use the Cleft Collective resource, for access to biological samples, parental and child reported questionnaire data, speech recordings and clinical and educational data.

Learning Outcomes
Attendees will learn about the Cleft Collective resource and what it has to offer, how the resource can be used to help answer cleft related research questions and gain the knowledge of the application process to access the data.

Content
Members from the Cleft Collective team will introduce attendees to The Cleft Collective resource and provide guidance on accessing the data. Attendees will further hear from a Cleft Collective collaborator describing their experience of conducting research using the resource. The workshop will be split into four groups where attendees will be given the opportunity to complete a project proposal form. Guidance will be given by a member of the Cleft Collective team. Attendees will have the opportunity to use a research question of their own or select a research question from a research question bank provided by the Cleft Collective.

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HOW BEST TO SUPPORT SUSTAINABLE INTER-DISCIPLINARY AND COMPREHENSIVE CLEFT CARE IN LOW-RESOURCE COUNTRIES

Mr Brian Sommerlad[1], Members of the International Steering Committee BC and MG Sommerlad Account[1]
[1]*CLEFT, , United Kingdom*

TH1.6 How best to support sustainable inter-disciplinary and comprehensive cleft care in low-resource countries, Tinto, EICC - Onsite Only, July 14, 2022, 08:00 - 09:00

Introduction:
There is a global consensus that people born with cleft lip and palate anywhere in the world should be cared for by an inter-disciplinary team of professionals following a protocol of comprehensive care appropriate to the local healthcare setting.
CLEFT is a UK charity which aims to work with cleft clinicians in low and middle income countries to help them develop sustainable inter-disciplinary and comprehensive cleft centres. Support is tailored to the requirements of each centre. This may include visits by UK cleft specialists at the invitation of the hosts (who are in charge), teaching, supplying essential equipment, assisting in the development of safe paediatric anaesthesia, engaging in collaborative research and encouraging long-term care with assessment of outcomes.
Learning outcomes:
1. Cleft specialists from high income countries will learn from the providers and the recipients of support about how to best support teams in less resource-rich countries.
2. Cleft specialists from low and middle income countries will learn how they can benefit from well directed support.
3. Each will learn from the other
Content: There will be:
1. Presentations by clinicians from the UK and Ireland about what they have learned while working with colleagues in low-resource countries to help in the development of multi-disciplinary cleft centres
2. Presentations from colleagues in low-resource countries explaining what has been helpful and what has not been helpful in their interaction with visiting clinicians
3. Discussion where each will be open about successes, difficulties and failures.
4. Discussion on how to facilitate LMIC initiated and led research.
5. Dedicated time for discussion and exchange of ideas.

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Workshop on Anterior Maxillary Distraction Osteogenesis (AMD) for Cleft Midface Hypoplasia - Orthodontic and Surgical Considerations

Dr. Syed Altaf Hussain[1,2,5], Dr Prasad Koti[4], Dr Badri Thiruvenkatachari[2,3], Dr Siva Subramanian[1,2,5], Dr Charanya Vijayakumar[1,2,5], Dr Deyonna Fernandes[1,2,5], Dr Vishnu Ramachandran[1,2,5]
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TH1.7 Anterior Maxillary Distraction Osteogenesis (AMD) for Cleft Midface Hypoplasia - Orthodontic and Surgical Considerations, Carrick, EICC - Onsite Only, July 14, 2022, 08:00 - 09:00

Introduction:
Secondary Maxillary Hypoplasia related to orofacial clefts presents as antero-posterior deficiency, maxillo-mandibular discrepancy, reverse overjet and other skeletal and dental deformities. The alveolar arch is constricted with a smaller arch length which results in crowding of teeth.

Anterior Maxillary Distraction (AMD) directly addresses this deformity by increasing the dimensions of the alveolar arch, allowing the crowding to be corrected without resorting to extractions. Unlike maxillary advancement, it preserves velopharyngeal function/speech and does not reduce the masticatory grinding surfaces while correcting the midface.
The technique is fairly simple, cost effective and best suited for patients with crowding of teeth. The pre- and post-orthodontic interventions are straight forward, though they need to be meticulous and sustained till the predetermined end point is reached.
While there are limitations to the severity of the deformity that can be corrected by AMD, it can be done in both adults and adolescents. As an interim measure in the latter, it improves appearance and self esteem and also reduces the extent of antero-posterior maxillo-mandibular correction needed on completion of growth.
Though relatively unknown, it has the potential of being a powerful tool in the armamentarium of a cleft surgeon.

Learners' Objectives::
This workshop is aimed at practicing cleft surgeons, orthodontists and trainees to familiarise with the following:
1. The role of AMD in decision making and planning midface corrections including large discrepancies and crowding of teeth
2. Demonstration of surgical techniques on dry skull models correlated with actual surgical steps.
3. An overview of pre- and post-orthodontic interventions

Content:
1. Introductory remarks and the decision-making process - 10 minutes
2. Orthodontic inputs - 15 minutes
3. Step by step demonstration of the surgical techniques on dry skull models - 50 minutes
4.Closing remarks/ Q & A - 15 minutes

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Oral Examination: Normal and Abnormal findings. Improving Diagnosis for Children with Craniofacial Disorders

Dr Jay Shirley[1]

[1]Children's Healthcare of Atlanta Pediatric Hospital, Atlanta, United States, [2]Emory University School of Medicine, Atlanta, United States

FR1.1 Oral Examination: Normal and Abnormal findings. Improving Diagnosis for Children with Craniofacial Disorders, Sidlaw, EICC, July 15, 2022, 08:00 - 09:00

Introduction:

This presentation is designed for all team members involved in diagnosing and treating craniofacial conditions. Anyone who regularly performs oral assessment and therapy (speech pathologists, dentists, physicians, nursing professionals, nutrition professionals, occupational therapists, etc.) should find this session beneficial. Optimal oral health and early recognition of oral conditions are critical for optimal overall health in children. Oral conditions or dental anomalies often may be the first sign of a craniofacial genetic condition. Multi-disciplinary care requires professionals to have familiarity in multiple disciplines.

Objectives:
1. Participants should be able to improve diagnostic abilities by more effectively identifying abnormal and normal oral conditions.
2. This presentation should give any team member more information and tools to recognize oral conditions, understand management, and provide a proper referral if needed.
3. All participants will better recognize oral conditions associated with craniofacial disorders.

Content:
A common core skill should be the ability to perform a thorough oral examination. Because of different educational pathways, professionals may not always have a depth of experience in all the areas that are needed for proper diagnosis. The physician or speech pathologist may feel very comfortable assessing the velopharyngeal mechanism and tissues in the posterior pharynx but may not have experience recognizing disorders of the teeth and supporting structures or oral soft tissue conditions. The opposite could be the situation for the dental professional.
Normal and abnormal conditions will be presented to participants using clinical photographs and videos in an interactive problem-based / case-based format. Scenarios and oral conditions of children of various ages will be presented, emphasizing those associated with the diagnosis of craniofacial genetic conditions. Complex diagnostic dilemmas will be presented, and possible diagnosis and treatment options will be discussed.

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Introductory to Team Cleft

Dr. Tihitena Negussie Mammo, Dr. Mary Nabukenya[1], Dr. Adele King[3], Dr. Martin Kamau[2], BELINDA KARIMI[2], Dr. Anne Arnold[2], Dr. Esther Njoroge-Muriithi[2], Dr. Fred Bulamba[2], Dr. RONKE DESALU[2], Dr. Idris Chikophe[2], Dr. Janat Tumukunde[2], Karina Correia[3], Margaret Ruiz[2], Emma Bailey[1], Pryia Desai[2], Dr. Felicity Mehendale[2], Dr. Isabeau Walker[1]

[1]Lifebox Foundation Inc., London, United Kingdom, [2]Smile Train, New York, United States of America, [3]National Health Service (NHS), , United Kingdom

FR1.3 Introductory to Team Cleft, Fintry, EICC, July 15, 2022, 08:00 - 09:00

Introduction

Surgery is an integral, indivisible component of a properly functioning health system, and all people should have access to safe, high-quality surgical and anaesthesia care with financial protection when needed. Teamwork and communication is the key for safe surgical practice. A good team requires individuals to work together to achieve the shared vision – in the OR this should always be patient centered.
The SAFE OR course is intended as a refresher course for all members of the OR team, and emphasizes the importance of human factors and non-technical skills in surgery and the general principles underlying the WHO Standards for Surgery.

Learning Outcomes

To support the delivery of best practices for surgical care.
To reduce avoidable morbidity and mortality by having the various professionals in the operation room (OR) work more effectively as a team.
To improve the efficiency and effectiveness of the OR.

Content

Lectures:
- Introduction to Team Cleft
- How to work in a team

Breakout sessions:
- Communication
- Conflict resolution

Demonstration
- Team Briefing

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Bilateral Cleft Lip and Cleft Palate Surgery Training Using High Fidelity Simulators

Dr. Dale Podolsky[1], Dr. Abel Smerica[3], Anne Arnold[4], Dr. Roberto L. Flores[2]
[1]Division of Plastic Surgery, The Hospital for Sick Children, University of Toronto, Toronto, Canada, [2]Hansjörg Wyss Department of Plastic Surgery, NYU Langone Health, New York City, United States, [3]Division of Plastic Surgery, Baylor College Of Medicine, Texas Children's Hospital, Houston, United States, [4]Smile Train USA, New York City, United States

FR1.4 Hosting a Cleft Simulation Course Using the Simulare Medical Model, Kilsyth, EICC, July 15, 2022, 08:00 - 09:00

Introduction:
Primary cleft lip and palate (CLP) repair is a technically challenging surgery in which there is a known learning curve to competence and proficiency. Unfortunately, the challenging pathway to reach proficiency is borne on many faces of children due to a lack of training tools available to cleft specialists. Training using high fidelity simulators provides surgeons additional experience outside of the operating room to improve surgical skills without compromising the appearance or function of young children. Highly realistic physical cleft lip and cleft palate simulators have been found to be valuable by trainees, capable of increasing confidence, and augmenting hands-on experience in performing CLP procedures.

Learning Outcomes:
Two high fidelity surgical simulation sessions using bilateral cleft lip and cleft palate models created by Simulare Medical will be conducted by a senior cleft surgeon and 6 expert-level proctors. Principles of surgical reconstruction, marking and technical aspects of the surgery will be detailed through this hands-on training session. Learners will be given the opportunity to ask questions throughout the course. The value to the trainee surgeons will be recorded using both qualitative and quantitative metrics.

Content:
The Simulare Medical cleft lip and palate simulators are training tools designed from patient imaging using three-dimensional printing and life-like synthetic materials. A 2-part workshop is proposed for 60 attendees guided by senior craniofacial surgeons at a length of 2 hours for each training session. The workshop will be proctored by a 1:5 proctor to trainee ratio. At the end of each workshop, trainees will have the opportunity to complete a post-intervention survey and discuss their assessment levels in performing the simulated CLP surgeries.
AV requirements: Projector, screen, microphone, camera, and live streaming platform.
Room layout: Minimum 1000 ft2 /300 m2; 3 rows of 5 (15) tables with 2 seats at each; 2 sharps containers.

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Application and manufacturing of Preepiglottic Baton Plate in Patients with Robin Sequence

Dr. Gül Schmidt[1], Professor Dr. Dr. Max Heiland[1], M.Sc.,Ph.D. Carsten Matuschek[1,2]
[1]Charité -Universitätsmedizin Berlin, Corporate Member Of Freie Universität Berlin, Humboldt- Universität Zu Berlin, Berlin, Germany, [2]Proepi-Institut, Berlin, Germany

FR1.5 Application and manufacturing of Preepiglottic Baton Plate in Patients with Robin Sequence, Moorfoot, EICC, July 15, 2022, 08:00 - 09:00

Although the Tübinger group has proven the efficiency of PEBP in patients with Robin Sequence, it still lacks use and popularity in many cleft centers. This workshop aims to improve the awareness of this method. The complete workflow of PEBP treatment will be elucidated.
Strong support is essential for those who initiate this therapy to guarantee the successful plate insertion. It is recommended that the treatment is performed by a transdisciplinary team of neonatologists, pediatric otolaryngologists and pediatric anesthesiologists, who are familiar with treating and evaluating difficult airways in childhood. Further, an orthodontist and/or a medical engineer with the eqipment and knowledge are needed, to facilitate bedside adjustments.

Learning outcome:
The participant will gain an insight in
- How to take an impression,
- How to manufacture the PEBP,
- How to adjust size and position of the spur,
- How to insert and
- How to fixate the PEBP.

Content:
We will show a video showing the taking of impressions, manufacturing the PEPB and its effectivity.
We will demonstrate the Xantopren impression compound mixture and its use on individual baby impression trays.
Via lifelike model, we will demonstrate the mode of action and bending modalities of the PEBP.
We will demonstrate the materials and modus of extraoral fixation.
The interaction with parents and medical consent will be discussed.
This workshop is for doctors and advanced practice providers, who will participate in the initial treatment and the subsequent follow-up of the families.

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Three-dimensional Planning and Reconstruction of the Mandible in Children with Craniofacial Microsomia Using Costochondral Grafts

Dr Omri Emodi[1,2], Dr Tal Capucha[1,2], Dr Jiriys George Ginini[1,2], Dr Dekel Shilo[1,2], Prof Adi Rachmiel[1,2]
[1]Department of Oral and Maxillofacial Surgery, Rambam Health Care Campus, Haifa, Israel, [2]Academic Institution, Bruce Rappaport Faculty of Medicine, Technion - Israel Institute of Technology, Haifa, Israel

FR1.6 Three-dimensional Planning and Reconstruction of the Mandible in Children with Craniofacial Microsomia Using Costochondral Grafts, Tinto, EICC - Onsite Only, July 15, 2022, 08:00 - 09:00

Introduction:
Technological advancements in surgical planning are constantly evolving. As technology develops and becomes more user-friendly, we believe it is time to allow the surgeon the option to plan the operations and create his own patient-specific guides and plates allowing full control over the process. During this procedure we use computer-assisted design (CAD) software, and a fused deposition modeling printer for the surgical guides and a selective laser sintering printer for the titanium patient-specific fixation implants when needed.

One of these applications is 3D planning and printing of surgical gigs for temporomandibular joint reconstruction (TMJR) using costochondral graft (CCG) in children with Hemifacial Microsomia. Historically, TMJR with CCG were planned using articulators, facebow was used to register the relationship of the upper jaw to the TMJ thus positioning the patient's casts in the articulator. Later, the surgical movements were performed on the casts and an acrylic wafer was prepared. Accurate position of the CCG especially in cases with glenoid fossa hypoplasia, was based primarily on the surgeon experience. The utilization of computed tomography (CT & CBCT) together with intra-oral scanners and CAD software allowed improve accuracy and efficiency of these surgical procedures.

Learning Outcomes: Participates will be expose to the full extent and advantages of 3D surgical planning and will acquire basic tools including modeling and surgical gig designing.

Content: Participates will be provided with a unit for planning and designing the surgery. The unit will include Touch Haptic Device (https://www.3dsystems.com/haptics-devices/touch), Modeling Software (https://www.3dsystems.com/dicom-to-print), and 3D design Software (https://www.3dsystems.com/software/geomagic-freeform). During the workshop participates will get hands on experience with the software and the haptic device. Attendees will be guided and then practice key steps in 3D planning including segmentation (modeling of the jaw bones and rib cage) and designing a cutting and positioning guide for the CCG in the 3D design Software.

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Prosthetic Management of Velopharyngeal Dysfunction

Mrs. Kaylee Paulsgrove[1], Dr. Kathryn Preston[3], Dr. Randall Bly[1,2], Dr. Barbara Sheller[1]
[1]Seattle Children's Hospital, Seattle, United States, [2]University of Washington, Seattle, United States, [3]Barrow Cleft & Craniofacial Center, Phoenix, United States

FR1.7 Prosthetic Management of Velopharyngeal Dysfunction, Carrick, EICC - Onsite Only, July 15, 2022, 08:00 - 09:00

Introduction

Surgery is often the first-line approach in the management of velopharyngeal dysfunction (VPD) for individuals with cleft/craniofacial conditions. When surgical options have been exhausted or in cases where surgery is contraindicated, prosthetic management is an effective alternative. With advancements in surgical techniques, use of prosthetics has been eliminated from many centers; however, not all patients are optimal surgical candidates. Contraindications for surgical VPD management include obstructive sleep apnea, inadequate tissue due to previous surgeries, or medical conditions that contraindicate anesthesia or surgery. The decision to pursue surgical versus prosthetic management of VPD should be determined by the multidisciplinary team.

At our center, the multidisciplinary team, including otolaryngologists, plastic surgeons, speech-language pathologists (SLP), pediatricians, and orthodontists, discuss the patient's management options. Once an individual is referred for prosthetic management, the otolaryngologist performs instrumental assessments which guide management. The orthodontist fabricates and modifies the speech appliances as needed. The SLP works with the orthodontist to adjust the appliance to meet the specific needs of the patient.

Learning Outcomes

Following this presentation, learners will be able to 1) List social, behavioral, medical, speech and anatomic factors to consider during the prosthetic process. 2) Describe one team's prosthetic fabrication process. 3) Facilitate multi-disciplinary discussion around cases that may be appropriate for prosthetic VPD management.

Content

This workshop will include perspectives from a pediatric orthodontist, SLP, and otolaryngologist with experience treating children with complex craniofacial conditions. Patient populations will be described, processes defined, and protocols discussed. Cases will highlight key points. The workshop will provide an overview of the working relationship between team members as well as specific information about holistic patient assessment, appliance selection, fabrication, and medical coding. Information presented is meant to be of interest to SLPs, surgeons, dentists, orthodontists, prosthodontists, and others involved in treating VPD in children with complex medical and/or craniofacial conditions.

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Parent/Caregiver Engagement Solutions to Extend Comprehensive Cleft Care (CCC) in Low and Middle Income Countries During the Pandemic and Beyond

Prof Roopa Nagarajan[1], Mrs. Berhane Abera[3], Mr. Chicoge Azunna[9], Mr. Natnael Getnet[5], Mr. Donald Mlombwa[2], Ms. Camila Osario[7], Dr. Manu Prasad[6], Mrs. Neeti Daftari[4], Mr. Hugh Brewster[4], Dr. Triona Sweeney[8]

[1]Sri Ramachandra Institute of Higher Education And Research (DU), Chennai, India, [2]Zomba Central Hospital, Zomba, Malawai, [3]Yekatit 12 Hospital Medical College , Adis Ababa, Ethiopia, [4]Transforming Faces , Toronto, Canada, [5]Project Harar Ethopia, Adis Ababa, Ethiopia, [6]St. Joseph's Hospital, Mysore, India, [7]Fundacion Clinica Noel, Medellin, Colombia, [8]Speech at Home , Dublin, Ireland, [9]Happy Child Foundation , Lagos, Nigeria

MO2.1 Task Force Holistic Outcomes, Sidlaw, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Aim

To identify practical solutions for cleft professionals in low and middle income countries (LMIC) toward promoting parental/ caregiver engagement in Comprehensive Cleft Care (CCC) during the pandemic and beyond.

Method

Eight multidisciplinary professionals representing both High Income Countries (HIC) and LMIC met in a phased manner over 8 weeks through a videoconferencing portal to explore and make recommendations relating to parent/ caregiver engagement with reference to CCC. The group used a theme template to obtain information from 10 professionals / organizations in 6 LMICs / HICs and also compiled open source resources from around the world. The results of the themed analysis and recommendations were presented in a roundtable to a multidisciplinary group of cleft professionals for discussion.

Results

Recognising the fundamental role of parents/ caregivers for achieving optimum outcomes., two broad themes emerged:

A. the need to provide accurate information about i. COVID-19 and its impact upon cleft care, ii. protocols for accessing hospital /community/ home based services , and iii. the importance of multidisciplinary team care for cleft;

B. developing strategies to support parents/caregivers across disciplines including feeding and nutrition, surgery, speech, dental, psychosocial and hearing.

Recommendation #1 Provide comprehensive, technology-oriented interventions that encourage and facilitate participation of parents/caretakers in taking an active role within treatment needs across specialties

Recommendation #2 Provide timely materials/information specific to each specialty at each stage of care to maintain engagement

Recommendation #3 Employ varied modes of communication to promote and deliver CCC including awareness campaigns, distributing leaflets, radio messages, online tele assessment and intervention.

Conclusions

The pandemic has sparked several innovative and creative initiatives to promote parental engagement that can be incorporated into comprehensive cleft care even beyond the pandemic.

Parent/caregiver engagement, LMIC, Covid19, CCC

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EFFECT OF EDUCATIONAL TECHNOLOGY ON QUALITY OF LIFE AND OVERLOAD OF CAREGIVERS OF CHILDREN WITH CRANIOFACIAL ANOMALIES

PhD Rui Pereira[1], MSc. Liliane Neves[2], MSc. Juliana Cabral[3], Nurse Cristina Alcântara[4], PhD Manuela Figueira[5], PhD Dione Valle[6], PhD Amanda Oliveira[7]

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MO2.1 Task Force Holistic Outcomes, Sidlaw, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: The continuous tasks imposed on the caregiver in the rehabilitation process of children with Cleft Lip and/or Palate can generate overload, with changes in their daily lives, which may even compromise their quality of life. In this context, offering support to families of children with CLP becomes necessary.

Objective: To compare the level of burden and quality of life of caregivers of children in the postoperative period of Cheiloplasty or Palatoplasty between an intervention group and a control group.

Methodology: This is an experimental, validation study with a qualitative and quantitative approach. The study was carried out at the Center for Attention to Facial Defects of the Instituto de Medicina Integral Prof. Fernando Figueira – IMIP. The study population consisted of caregivers of children aged up to three years with cleft lip and/or palate, admitted to the study service. Participants were divided into a control group (group 1) and intervention (group 2).

Results: The sample consisted of 33 participants, of which 16 participated in the control group and 17 in the intervention group. Cleft lip and palate was observed, 64.7% in group 1 and 62.5% in group 2. Of the group without intervention, 68.75% reported feeling always overwhelmed by taking care of a child. While in the intervention group, only 11.76% always felt overwhelmed and most, 41.17% of respondents said they did not feel overwhelmed in the care process.

Conclusion: Through the elaboration of the “Surgical care guide for children with craniofacial anomalies” it can be observed that it had an impact on the quality of life and burden of caregivers of patients with Craniofacial Anomalies. This work was supported at least in part by the Smile Train, Inc.

Health Education; Telemedicine; Craniofacial Abnormalities

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9 Reasons to Smile: At Home Psychosocial Support for Cleft Lip and/or Palate Families Around the World

Ms. Grace Peters[1], Ms. Camila Osorio[1], Ms. Pamela Sheeran[1]
[1]*Smile Train, New York, United States*

MO2.1 Task Force Holistic Outcomes, Sidlaw, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Background/Purpose: “9 Reasons to Smile: Family Fun Activity Booklet” was developed when Smile Train international programs suspended all cleft treatment for patients at the height of the COVID-19 pandemic. Recognizing the challenges this posed, Smile Train developed this booklet to raise awareness for psychosocial health as it is not readily accessible or prioritized around the world. The booklet includes art projects on self-love, engaging games to help children explore their emotions, their relationships, and their self-confidence.
Methods/Description: The booklet was developed with support from Fundación Clínica Noel, a Smile Train Partner in Colombia. It was first launched in English, French, and Spanish during the World Health Organization Walk the Talk Virtual Event on May 17, 2020. To further increase awareness for psychosocial health, Smile Train hosted a live, virtual celebration of “9 Reasons to Smile” on July 21st. The event convened representatives from the global health and cleft communities to discuss art, health, clefts, and the importance of maintaining self-esteem and positivity through adversity.
Results: The booklet is now available in 15+ languages and shared through platforms worldwide. The global virtual celebration had over 4,000 views and counting on Facebook and YouTube. Smile Train has received thousands of photos and stories from families and partners sharing their experiences using the booklet and its tremendous impact on their lives.
Conclusions: There is a need for supporting psychosocial services in global cleft care which is particularly evident during the COVID-19 pandemic. Access to these services is not always prioritized in many countries around the world and the enthusiasm for the “9 Reasons to Smile” booklet indicates the positive impact such resources have on mental health. Smile Train is committed to raising awareness on the importance of psychosocial health in global cleft care and will continue to support and scale initiatives for cleft patients and their families globally.
Psychosocial, Quality of Life

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Evaluation of a mentorship programme for Speech & Language Therapists in resource-constrained contexts.

Dr Caitriona (Triona) Sweeney[1], Mr Hugh Brewster[2], Ms Neeti Daftari[2], Dr Pam Enderby[3]
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MO2.2 Task Force Global Cleft Team Network - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 09:30 - 10:30

Introduction: Speech and language therapy (SLT) services are challenging in low and middle income countries (LMIC), where SLT training courses are new, and the profession is embryonic in its development, with limited access to mentorship. Transforming Faces (TF) a cleft care charity and the International Association of Communication Sciences and Disorders (IALP) collaborated to provide mentorship to Speech and Language Therapists in resource-constrained contexts over a 1 year period

Aims: To evaluate an SLT mentorship programme.

Methods: 20 Mentees from 6 LMIC countries were paired with 15 Mentors from 9 high income countries. All were invited to attend a Mentoring Orientation meeting, and to meet virtually on a regular basis with their counterpart. Questionnaires were sent to each group midway through and at the end of the mentoring programme, evaluating impact on: both groups for: professional development, connectivity and access to materials and resources; for mentees: clinical skills, decision making; and for mentors: knowledge of SLT in LMIC contexts, professional experience.

Results: Mid-term results indicated the following: Mentees (n=20) - 85% to 100% reported an increase in clinical confidence and professional development, improvement in decision-making and that clients had benefited. A range of resources and supports were provided. Mentors (n = 9) - 80% to 93% agreed that the mentorship contributed to their professional development; increased their knowledge of SLP in underserved countries and had been a positive professional experience. Connectivity, difficulty scheduling meetings and failure of mentees to attend were reported as challenges. Final results are due in January 2022.

Conclusions: Initial results indicate that this mentorship program had a positive impact on both mentees and mentors and through them their client groups. This also sparked a roll out of mentorship to other IALP groups. Further developments include setting up of a WhatsApp group among mentees and additional mentoring support for mentors.

mentorship, LMIC, evaluation

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Descriptive epidemiological study of 4 828 cleft lip and palate persons from a single centre in South Africa.

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MO2.2 Task Force Global Cleft Team Network - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 09:30 - 10:30

Objective
Report on the descriptive epidemiological data register of 4 828 records of orofacial cleft persons who visited the Facial Cleft Anomalies (FCA) clinic of the Oral Health Centre, Pretoria, South Africa, between 1983 and July 2021. This study aims to examine trend changes of this data register.
Methods
The researchers updated and audited the current FCA clinic register from 1983 to 2021. A standard Excel record sheet was used to produce data suitable for analysis and comparison results. Tabled functions, formulas, and charts represent the data compared to existing literature and research conducted in the South African context.
According to race distribution, the results show a higher incidence in white (56%) than black persons (38%). White females had a higher incidence rate (50%) than black females (43%). White persons had a higher incidence of CLAP (25,4%), CP (19,6%) and CL (4%). Black persons had a higher incidence of CLA (7,1%) and facial clefts (2,8%).

Syndromic association and other anomalies were recorded in 1 058 (22%) of the sample. The most common is Fairbairn-Robin 248 (23.4%), Median Facial dysgenesis 158 (15%) and Tessier 96 (9%). The common genetic abnormalities were heart involvement, ear deformities, and various eye problems. Associated syndromes and other genetic abnormalities occur more commonly in the sPhP group than in the sP group.

Conclusion
White persons have more sP and sPhP clefts. Black persons have more hP clefts. Rare clefts (median, lateral, and transverse) were found more in black Africans. However, lateral and other clefts were more common in white persons. FCA clinic has comprehensive and updated descriptive data for orofacial cleft. But a more comprehensive and efficient surveillance tool is needed to capture the data efficiently, and to include the risk factors is fundamental for intervention and research.

cleft lip/palate, epidemiology, congenital anomalies

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Question: Is Routine Screening for Sleep Disorders in the Cleft & Craniofacial Population Beneficial ?

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MO2.3 ENT/airway, Fintry, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction & Aim: An increased incidence of sleep apnea has been found in the cleft and craniofacial population. The purpose of this study was to 1. identify patients at risk for sleep apnea as a part of the comprehensive cleft craniofacial team evaluations at our center. In addition, our goal was to evaluate identified patients at risk using polysomnography.
Method: A. 22 question parent administered evaluation questionnaire quantified by a major academic pediatric research institution and hospital indicate that an affirmative score on 8 or greater questions indicated a risk for sleep disturbances needing further investigation was used for this study. This questionnaire was administered at 299 consecutive patient visits. The questionnaire was administered as a part of a child's comprehensive cleft or craniofacial team visit. The questionnaire contained questions relative to breathing, sleep, wakefulness, and generalized behaviors
Results: 299 consecutive questionnaires were completed. 43 patients had scores of 8 or above on the questionnaire. 43 patients were referred to the pediatric sleep service for further evaluation. 19 patients had formal polysomnograms. The results of the polysomnograms were as follows: Primary snoring noted in one patient, central apnea in one patient, 9 patients had mild obstructive apnea requiring intervention and 2 patients had severe obstructive apnea requiring intervention and of the 2 patients with severe apnea one had Treacher Collins syndrome and one had achondraplasia
Summary: greater than half of the patients who actually had polysomnography required medical or surgical intervention.
Conclusion: screening for potential sleep apnea in this population of patients on a consistent basis appears to appropriate.

routine apnea screening cleft-craniofacial population

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Reduced upper airway dimensions impair airflow in adults with syndromic craniossynostosis: a 3D computational fluid dynamics study.

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MO2.3 ENT/airway, Fintry, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: The midfacial hypoplasia commonly observed in individuals with syndromic craniosynostosis (SCS) can lead to airway obstruction. Aims: Threedimensionally characterize the upper airways (UAW) of individuals with SCS by means of computed tomography (CT) and simulate airflow using computational fluid dynamics technique (CFD). Methods: Two groups were assessed: 1) SCS: 10 CT scans of adults with SCS, not yet submitted to corretion of skeletal discrepancy (22±5y, BMI=23±3), and, 2) CON: 19 CT scans of unaffected individuals, (25±7y, BMI=24±3). 3D total upper airway volume (TAV), nasal cavity volume (NV), pharyngeal volume (PV) and pharyngeal minimal cross-sectional area (mCSA) were assessed (Mimics Research software). Seven CT scans of individuals from both groups, matched for age and gender, were analized using CFD simulation (ANSYS Software). Airway pressure (AP) and resistance to airflow (AR) were calculated. Cephalometric analysis was performed (Dolphin Imaging software). P≤0,05 were considered significant. Results: Significantly reduced UAW volumes were found in SCS group vs CON group (TAV = 24,5±9,6cm3 and 34,3±6,0cm3; NV=14,1±4,3cm3 and 17,9±3,1cm3, PV=10,4±5,6cm3 and 16,5±4,6cm3, respectively). mCSA for SCS and CON were significantly reduced (28,7±17,1mm2 and 67,3±54,2mm2, respectively). Airflow simulations revealed greater values of pressure and resistance for the SCS vs controls (AP=-107,8±63,1Pa and -45,6±24,3Pa, respectively. AR=-6,9±3,8Pa/(L/min) and -2,7±1,8Pa/(L/min), respectively). Cephalometric findings showed a significant maxillary retrusion (SNA: 76,4°±8,5 vs 82,9°±3,8) and a significant smaller maxillary lenght (Co-A: 67,4±11,3mm vs 84,1±5,8mm) in SCS vs CON, respectively. The 2 groups did not differ by age or BMI. A positive correlation was found between mCSA x PV and maxillary lenght x PV. Conclusions: UAW dimensions are significantly reduced in adults with SCS, probably as a consequence of midfacial hypoplasia. This can explain the greater airway pressure and resistance to airflow observed. These results suggest that individuals with SCS are at risk for obstructive sleep apnea.

METHOD	VARIABLE	SYNDROMIC CRANIOSYNOSTOSIS (n=10) (mean±sd)	CONTROL (n=19) (mean±sd)	P VALUE
ANTROPOMETRICS	AGE (y)	21±4	22±5	P>0,05
	BMI (body mass index)	22,7±3,5	24,1±2,8	P>0,05
3D IMAGING	TAV (cm^3) (total airway volume)	24,5±9,6	34,3±6,0	P<0,05
	NV (cm^3) (nasal cavity volume)	14,1±4,3	17,9±3,1	P<0,05
	PV (cm^3) (pharyngeal volume)	10,4±5,6	16,5±4,6	P<0,05
	mCSA (mm^2) (minimal cross-sectional area)	28,7±17,1	67,3±54,2	P<0,05
CFD (COMPUTATIONAL FLUID DYNAMICS)	AP (Pa) (airway pressure)	-107,8±63,1 (n=7)	-45,6±24,3 (n=7)	P<0,05
	AR (Pa/(L/min) (airway resistance)	-6,9±3,8	-2,7±1,8	P<0,05
CEPHALOMETRICS	SNA (°) (sela-nasio-A point angle) (maxillary position related to the cranial base)	76,4±8,5	82,9±3,8	P<0,05
	Co-A (mm) (Condilium – A point distance)	67,4±11,3	84,1±5,8	P<0,05

Airway obstruction, Acrocephalosyndactylia, Imaging, threedimensional

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Upper airway dysmorphology determines altered airflow dynamics in young adults with isolated Robin sequence: a case series analysis.

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MO2.3 ENT/airway, Fintry, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: In a considerable number of adult individuals with isolated Robin sequence (IRS), maxillomandibular discrepancy and airway obstruction remains upon skeletal maturity. Our hypothesis is that retrognathia leads to altered airflow dynamics and, consequently, to a greater chance of developing obstructive sleep apnea.

Aims: This study aimed at characterizing the upper airway morphology and airflow of a case series of young adults with IRS by means of 3D imaging and computational fluid dynamics (CFD) simulations.

Methods: Upper airways (nasal cavity + pharynx) of six individuals with IRS were reconstructed through 3D active contour segmentation from cone beam computed tomography and used to generate unstructured ≥ four million elements meshes with tetrahedral and wall of prisms. The realizable k-ε model was used to solve flow simulations at 15 l/min through CFD, resulting in the assessment of area-weighted average pressure, velocity magnitude and resistance. Descriptive data and measures of the strength of linear association between variables were provided ($p \leq 0.05$).

Results: Young adults (four females and two males), aged 18.7±5.2 years, were evaluated. The total airway volume (29.3±4.7 cm3) presented a strong negative correlation (−0.899 and −0.899, respectively) with airway resistance (0.12±0.06 Pa.s/ml) and the inlet to outlet pressure drop (31.34±15.83 Pa). The minimal cross-sectional area at the retroglossal level (1.0±0.6 cm2) presented a strong negative correlation (−0.912 and −0.924, respectively) with the area-weighted average velocity magnitude of the airflow (3.47±2.05 m/s).

Conclusions: Reduced volumetric dimensions and retroglossal obstruction observed in the airways of young adults with IRS are associated with altered fluid flow characteristics such as tendency to turbulence and increased pressure and resistance. These preliminary data indicate that the unfavorable morphological variables, commonly observed in IRS population, can changed airflow behavior, augment breathing effort and predispose them to obstructive events and sleep-disordered breathing. A greater sample, including a control group, is under assessment.
Pierre Robin Syndrome, Tomography, airway

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Development and application of PVAS Device (new device) to measure the variation in oronasal breathing pressure , volume and airflow velocity in patients with repaired cleft lip and palate.

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MO2.3 ENT/airway, Fintry, EICC - Streamed, July 11, 2022, 09:30 - 10:30

The respiration is a very important physiological process, which is essential to maintain not only the vital signs but also normal growth and development in growing individuals. It has been proved that the normal respiratory physiological process is affected in patients with cleft lip and palate. Any kind of upper airway obstruction is a significant risk factor for growth retardation in children and other physiological complications in adults. Abnormalities of the upper airway require prompt attention, since these often alter ventilatory patterns and gas exchange, particularly during sleep, when upper airway motor tone and ventilatory drive are diminished. Polysomnography, upper airway endoscopy , Radiological methods such as Lateral cephalogram, CT scans, and MRI are some of the most commonly used tools to assess the upper air way. But these techniques are mostly invasive and also expensive and cannot be used for longitudinal studies.
In this presentation, a cost-effective portable pressure, volume and velocity sensor-based respiratory measure device is designed (PVAS Device) and its application in Cleft lip and palate patients is discussed. This device enables to measure the changes in breathing airway pressure , airflow volume and airflow velocity. The subject has to wear a facial mask with a unidirectional airflow valve attached to a digital manometer. This facial mask will collect the air passing through both mouth and nose to check for oro-nasal respiration. This device can be used to measure the variation in breathing pressure, volume and airflow velocity in patients with cleft lip and palate as compared to normal individuals. Variations in these values can indicate the obstructions in the upper airway which occur due to surgical interventions used cleft lip and palate repair.

Upper-airway assessment in cleft patients.

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Subannular Tubes in Children with Cleft Palate: Experience of a Tertiary Center in the Past 6 Years

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MO2.3 ENT/airway, Fintry, EICC - Streamed, July 11, 2022, 09:30 - 10:30

INTRODUCTION: Chronic middle ear disease management in children with cleft palate (CP) is challenging and Eustachian tube dysfunction may remain even after successful palate reconstruction. Subannular tube (SAT) placement presents an alternative option to repetitive transtympanic tubes (TTT) or hearing aids in this population.

AIMS: To study the long-term outcomes of SAT placement in the management of chronic middle ear pathology in children with CP.

METHODS: Retrospective cohort study of children with CP and chronic middle ear pathology submitted to SAT placement from 2015 to 2021 at a tertiary center. Indications for surgery were chronic otitis media with effusion and/or retraction pockets, in children already submitted to at least one previous set of TTTs. Audiological outcomes, SAT duration and post-operative complications were analyzed.

RESULTS: A total of 25 children with a mean age of 8 years were included. The mean follow-up time was 51 months. A total of 52 SATs were placed, 9 being a second SAT placement due to middle ear disease recurrence after extrusion of the first SAT. After SAT extrusion (25 ears) there were 4 cases of OME recurrence and 8 cases of retraction pockets/tympanic membrane atelectasis. Lumen occlusion by cerumen or secretions occurred in 28.8% cases, and 26.9% had otorrhea at some point in time. SATs remained in place 41 months in average. Regarding audiological outcomes, pre-operative mean Pure Tone Average (PTA) was 37.6 dB, and significantly improved after surgery to a mean PTA of 17.1 dB ($p<0.001$).

CONCLUSIONS: SATs provide long-term middle ear aeration with low complication rates. Despite the need of strict follow-up at the clinic to maintain tube patency, good audiological outcomes and low tympanic membrane sequelae were observed. SAT present a safe alternative in the management of chronic middle ear disease in children with CP.
Eustachian tube dysfunction, surgical technique

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Indi-cleft outcomes III. Otorhinological manifestations in children with Cleft lip and Cleft palate anomaly

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MO2.3 ENT/airway, Fintry, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: With about 35,000 new cleft children are added every year, the cumulative burden of cleft care in India is enormous. The information on standards of care and outcomes is scarce. The Otorhinological manifestations in such patients are common but their prevalence and association with type of anomaly is not well documented.

Aim: To assess the otorhinolaryngological manifestations of cleft lip and palate and to evolve strategies to streamline cleft care and better quality of life in these patients
Methodology: A web-based "IndiCleft-Tool" was developed in collaboration with the National Informatics Centre (NIC) to capture and analyze data of cleft patients from across four high volume cleft centers. Data on of 802 subjects in the age group of 5-14 years with non-syndromic cleft lip and/or palate anomaly on nasal and Otological and audiological evaluation was captured by single ENT specialist. Additionally, audiometry and Tympanometry was conducted to corroborate clinical findings.
Results: Of the 802 cases enrolled (5-14 years), 53.49% were males and 46.5% females. Unilateral cleft lip and palate was the most common type of anomaly (%). Nasal discharge and regurgitation was present in 8% and 27.2% patients, respectively. Ear discharge was seen in 6% (63% unilateral and 37% bilateral) patients. Tympanic membrane was affected in 23.8% of the ears examined (perforated in 17.35% and retracted in 82.64%). Hearing loss was seen in 21.26 % of the patients (unilateral in 18.98% and bilateral in 81%) with conductive hearing loss in 98.73% patients. The side of the ear affected was not related to the side of the cleft anomaly.
Conclusion: The prevalence of Otorhinological manifestations in patients with cleft lip and cleft palate anomaly is high. ENT examination should be an integral part of these children and any anomaly detected during this routine examination should be addressed appropriately.
Cleft-Lip, Cleft-Plate, Anomaly,

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Trends and predictors of late surgery among children with cleft lip and palate in Nigeria: a multicenter retrospective cohort study

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MO2.4 LMIC Theme, Kilsyth, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction
Despite the funding for cleft surgeries by Smile Train, late cleft surgeries appear to persist in Nigeria.

Aim
To report trends in cleft surgeries and identify clinical, demographic and institutional predictors of late primary cleft surgery

Methods
A retrospective cohort study and trend analysis of children managed for clefts from January 2008 to December 2019 at three Smile Train partner tertiary institutions (Enugu, Ibadan and Jos) in Nigeria. Sociodemographic and clinical characteristics were extracted from the institutional Smile Train data base. The Primary outcome measure was late primary surgery. Join point regression model and bivariate analysis were utilized to analyze the annual trends and inter-institutional variations. Kaplan-Meier graphs were used to examine the differences in time to surgery across sociodemographic and clinical variables. Cox proportional hazard regression was conducted to obtain the hazards of late primary cleft surgery.

Results
Of the 1011 total cleft surgeries, 867 (86.4%) had primary surgeries. The proportion of primary surgeries differed significantly across institutions (p<0.001). One institution (Enugu) had a significantly higher median weight and age at surgery (p<0.001). The cleft surgeries increased and subsequently declined at all centers. The rotation -advancement method was the commonest method of lip repair, 483(76.2%) while Von Lagenbeck palatoplasty, 157(59.9%) and intravelar veloplasty, 47 (17.9%), for palatal repair. Late primary repair was significantly higher in children who had cleft lip, 76 (40.2%) or incomplete cleft lip, 100 (49.0%) when compared with those who had cleft lip and palate, 20 (11.9%), p=<0.001. We found a significantly increased risk of late primary cleft repair among babies: in Enugu (HR, 0.70; 95% CL, 0.56-0,88), with Cleft lip and palate (HR, 1.84; 95% CI, 1.43-2.37), or Cleft palate (HR, 1.62; 95%CI, 1.22-2.14).

Conclusion
Late primary cleft surgeries were more likely to occur in children with less severe cleft deformities.
Delay, trends, cleft surgery

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Exploring transportation-related barriers to reaching cleft care in India.

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MO2.4 LMIC Theme, Kilsyth, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction
Orofacial cleft conditions affect 1 per 700 live births, making it one of the most common congenital anomalies globally. The complexity of reaching cleft care disproportionately affects low-and middle-income countries (LMICs) due to the structural, financial, and social barriers that families face. One acknowledged barrier is the availability and the length of transportation to a cleft care facility.

Aims
To describe the transportation barriers that families faced while reaching Operation Smile cleft care centers in India.

Methods
Surveys were conducted with parents of patients with cleft receiving care at cleft centers in Bangalore, Durgapur, Mumbai, and Srinagar India between 2019 and 2022. Descriptive statistics and analysis were used to evaluate perceived difficulty of receiving transportation, transportation type, travel time, and mileage.

Results
A total of 869 families were surveyed from the four cleft centers. Analysis showed that 27.2% (n=236) found it difficult and 11.5% (n=100) found it very difficult to get transportation from their home to the cleft center. Tuktuk (39.7%, n=256), a three-wheeled open-air vehicle, and train (31.2%, n=201) were the most common type of transportation. 85.4% (n= 723) of patients traveled over 2 hours to reach cleft care. Mean time and miles traveled from home to a care center was 9.16 hours (std.=44.6) and 257.5 miles (std=183.2), respectively.

Conclusion
This study assessed the transportation barriers families faced to reach cleft care. Although surgical and transportation costs may be covered by NGOs, the time and convenience “cost” to families should be taken into consideration. Improving the availability of transportation, telemedicine, and local ancillary services is necessary to reduce barriers and lessen the impact of reaching care on families.

Transportation-related, Barriers, India

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Palate examination of every newborn: Impact of the Early Cleft Care project in Bungoma County, Western Kenya

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MO2.4 LMIC Theme, Kilsyth, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: Early diagnosis, provision of feeding assistance, and medical attention are paramount to support the health and safety of infants with a cleft. In Bungoma County, a lack of palate examination at birth hinders timely case management and threatens the lives of children born with a cleft palate. In September 2021, 1,092 nurses providing maternal and newborn care services in 190 health facilities across Bungoma County were educated on the adverse consequences of delayed/lack of cleft palate diagnosis on patients' health and instructed in the correct technique to conduct palate examination of every newborn. They were also asked to refer every cleft case to Dreamland Hospital, the only cleft care provider in the Western Kenya region.
Aim: To assess the impact of nurses' training on case identification and referral.
Methods: A questionnaire was developed and used by nutritionists at Dreamland Hospital to collect information from parents of patients with cleft at first presentation. The information collected helps define the type of case referral and whether the patient's palate was examined and feeding assistance was provided prior to referral. Patients' demographics (age, weight, height, type of cleft) at first presentation and at primary surgery are also captured and compared to records from prior to project start.
Results: Data collection spans between October 2021 and October 2022. Data analysis will be conducted in June 2022 to assess the impact of the training in terms of number of referrals and quality of care provided prior to referral. The median age and the nutritional status of patients at the time of referral and at primary surgery as well as the relative proportion of cleft types among patients referred will be evaluated and compared to pre-training clinical records.
Conclusion: This project should help maximise survival, prevent malnutrition, and support timely surgery for infants born with a cleft in Bungoma County.
Palate examination; nutrition; limited-resource setting

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PATTERN OF OROFACIAL CLEFTS AT A TERTIARY CARE HOSPITAL IN ETHIOPIA

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MO2.4 LMIC Theme, Kilsyth, EICC - Streamed, July 11, 2022, 09:30 - 10:30

ABSTRACT

Background:

Clefts of the lip and/or palate are the most common craniofacial birth defects with a worldwide birth prevalence of approximately 1/700 ranging from 1/2500-1/500 live births. There are varying reports from Africa

OBJECTIVES OF THE STUDY

The main purpose of this study is to investigate the patterns of orofacial clefts at a tertiary care hospital in Addis Ababa.

Methods Design: Descriptive epidemiology.

Setting: Yekatit 12 Hospital Medical College Cleft care center.

Participants/Methods: All patients born with orofacial clefts and operated at the main cleft care center in Ethiopia between January 2007 and April 2020 with the support of Smile Train. We retrieved demographic and clinical data of all operated patients from the Smile Train database and analyzed using Stata version 16.

Results: A total of 1919 patients' data was retrieved, excluding 16 patients' data (.83%). The data of 1903 (99.17%) patients was found to be complete and enrolled in this study. Cleft lip and palate were found in 53.0% of the patients. Cleft lip only was found in 731 (38.4%) and cleft palate only in 166 (8.6%) patients. The most common surgery performed was primary unilateral lip nose repair. Most patients were operated on after the age of five years old.

Conclusions: It was found that many of the patients were operated on after the age of five years old which is not in line with international recommendations. Therefore, there is a need for improvement by establishing more cleft care providing centers and distributing health care information and education.

Orofacial clefts, Patterns, Ethiopia

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Palate examination of every newborn: barriers and opportunities to change in clinical practice and early referral in Bungoma County, Western Kenya

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MO2.4 LMIC Theme, Kilsyth, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: The capacity of a health care system to ensure an early diagnosis and the subsequent provision of feeding assistance and medical attention are paramount to support the health and safety of infants born with a cleft. In Bungoma County, a lack of palate examination at birth hinders timely case management and threatens the lives of children born with an isolated cleft of the palate. In September 2021, 1,092 nurses providing maternal and newborn care services in 190 hospitals, healthcare centres, and dispensaries across Bungoma County were educated on the adverse consequences of delayed/lack of cleft palate diagnosis on patients' health and instructed in the correct technique to conduct palate examination of every newborn.
Aim: To explore nurses' self-reported inclusion of palate examination in newborn checks and views on barriers and opportunities to timely cleft care.
Methods: Fifty-two health facilities across Bungoma County were randomly chosen to be visited between October 2021 and October 2022. At each visit, at least one nurse who underwent the training on palate examination was interviewed using a questionnaire designed to capture qualitative information on practice adoption and barriers to provision of early cleft care.
Results: Nearly 100% of nurses reported examining the palate of every newborn. Nurses' workload and mothers' cooperation were among the most cited barriers to conducting palate examination. Palate examination and early referral were reportedly difficult to implement when deliveries are not facility-based and when mothers are unwilling to travel far away from their community to the only cleft care provider in the County. More community education promoting facility-based deliveries and continuous mentorship of nurses may help support palate examination of every newborn and timely case referral.
Conclusions: Several barriers to early diagnosis and cleft care provision highlighted by nurses need to be accounted for to ensure that no child with cleft is left behind.

palate examination, limited-resource setting, nurses

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Audiological findings in children with unoperated clefts and children with operated clefts: A comparative study in Southern India

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MO2.5 Speech, Moorfoot, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction:

Early palate repair is crucial to maintain hearing thresholds in young children, and subsequently to improve speech and language development.

Aim:

The aim of this study was to compare hearing thresholds in children with unoperated cleft palates, children with operated cleft palates, and children with no cleft between the ages of 3 years and 14 years. Within the operated cleft palate group, the hearing thresholds of children with and without an alveolar palatal fistula (APF) were compared, as well as of children with and without velopharyngeal dysfunction (VPD).

Method:

Bilateral pure tone audiometry (AC and BC thresholds) was administered for the frequencies under quiet testing conditions in a sound-treated room. A total of 300 children participated in the study, of which 100 children had no cleft palate, 100 children had unoperated cleft palates and 100 children had undergone palatoplasty at Basavatarakam Smile Train Center in Hyderabad, India. Children with operated cleft palates were further subdivided into four groups: 25 children with VPD, 25 children without VPD, 25 children with APF, 25 children without APF.

Results:

The findings of this study revealed that the hearing thresholds of children with unoperated cleft palates were significantly higher than children with no cleft and operated cleft palates. Within the operated palates group, the hearing thresholds of children with APF are significantly higher than those without APF, and the hearing thresholds of children with VPD are significantly higher than those without VPD.

Conclusion:
Timely surgical intervention for APF and VPD in children with cleft palates is extremely important in order to reduce the incidence of hearing loss. Further investigations of the prevalence of hearing loss in children with cleft palate should be considered to raise awareness and prevent hearing loss among this population.
Audiological Findings, VeloPharyngealDisorders, AlveolarPalatalFistula

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Crowdsourcing to Assess Speech Quality Associated With Velopharyngeal Dysfunction

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MO2.5 Speech, Moorfoot, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction

The standard for measuring speech outcomes in children with cleft palate is evaluation by a speech language pathologist (SLP) with specialized training in cleft disorders. Such evaluations are time consuming and thus a barrier to completing large-scale outcome studies.

Crowdsourcing involves soliciting information from a large group of individuals to achieve a cumulative result. By collecting a large volume of ratings from blinded, unbiased, lay people, a valid result may be attained. We hypothesize that crowdsourcing is a reliable and convenient method of assessing speech outcomes in children with cleft palate.

Aims

To assess crowdsourced responses in the evaluation of speech outcomes in children with velopharyngeal dysfunction (VPD)

Methods

Fifty de-identified speech samples were compiled. Multiple pairwise comparisons obtained by crowdsourcing were used to produce a rank order of speech quality. Ratings of overall and specific speech characteristics were also collected. Twelve speech language pathologists (SLPs) who specialize in velopharyngeal dysfunction were asked to complete the same tasks. Crowds and experts completed each task on two separate occasions at least one week apart.

Results

We obtained 6331 lay person assessments that met inclusion criteria via crowdsourcing within 8 hours. The crowds provided reproducible Elo rankings of speech quality ($\rho(48)=.89$, $p<.0001$) and consistent ratings of intelligibility and acceptability (ICC=.87 and .92) on repeated assessments. There was a significant correlation of those crowd rankings ($\rho(10)=.86$, $p=.0003$) and ratings (ICC=.75 and .79) with those of SLPs. The correlation of more specific speech characteristics by the crowds and SLPs was moderate to weak (ICC<0.65).

Conclusions

Crowdsourcing shows promise as a rapid way to obtain large numbers of speech assessments. Reliability of repeated assessments was acceptable. Large groups of naïve raters yield comparable evaluations for overall

speech acceptability, intelligibility, and quality, but are not consistent with expert raters for specific characteristics such as resonance and nasal air emission.

VPI, Articulation, Resonance, Speech, Crowdsourcing

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Speech Characteristics in Peruvian Monolingual Spanish-Speaking Children with and without Cleft Palate

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MO2.5 Speech, Moorfoot, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: Although researchers have described the speech skills of children with cleft palate (CP) from different linguistic backgrounds, there are few studies on speech patterns, accuracy, and cleft-related patterns in Spanish-speaking children with and without CP.
Aims: The purpose of this study was to compare Spanish-speaking children with and without CP on a variety of speech measures and to identify specific universal cleft speech patterns in children with CP.
Methods: This study included 40 monolingual Peruvian Spanish-speaking children (23 with repaired CP and 17 without CP) ages three to 10. Children completed a single-word articulation test. Multivariate linear regressions accounting for age and gender were conducted between the two groups of children to compare the size of phonetic inventories, percent of consonants correct (PCC), PCC by manner and place features, and the number of distortions and phonological errors. Finally, active and passive patterns were analyzed in the group of children with CP.
Results: Children with CP had fewer high-pressure sounds in their consonant inventories, lower PCC scores, and more instances of phonological errors. The two groups of children were similar for the number and types of distortion errors. Children with CP produced more errors on high-pressure sounds and fewer errors on low-pressure sounds. Patterns which are typically considered active cleft speech patterns were identified in the children with CP and less frequently in their peers. Passive universal cleft speech patterns only occurred in the children with CP.
Conclusions: This study adds to the literature showing how clefting impacts speech for children with CP regardless of the child's language. It documents universal active and passive error patterns in the speech of the Spanish-speaking children with CP. Finally, this study described dialect features across both groups of children that can be referred to for research or clinical purposes.
Spanish, phonology, universal errors, cross-linguistic

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CLEFT CARE TRAINING PROGRAMME FOR UNDERGRADUATE STUDENTS ON AUDITORY-PERCEPTUAL SPEECH ASSESSMENT IN CLEFT PALATE: PRELIMINARY RESULTS

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MO2.5 Speech, Moorfoot, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: Cleft palate (CP) is a congenital anomaly that may lead to particular speech symptoms even after its surgical repair. Cleft care training programmes (CCTP) addressed to students and professionals are important teaching-learning tools for identifying these speech characteristics and defining appropriate treatments.

Aim: To investigate the preliminary outcomes of a CCTP, addressed to undergraduate students, for auditory-perceptual speech assessment of individuals with CP.

Methods: Five students of an Undergraduate Speech-Language Pathology Course at a Brazilian Public University completed the first stage of a CCTP for auditory-perceptual speech assessment, conducted by two experienced speech-language pathologists (SLP) by means of five theoretical-practical classes of 90 minutes each, aiming at identification of active speech errors (AE) and hypernasality rating. Thirty days after, 20 audio-recorded speech samples from individuals with repaired CP, previously assessed by the SLP, were presented to the students for identification of the AE (glotal stops=1, pharyngeal fricatives=2, posterior nasal fricatives=3, and pharyngeal plosives=4) and to rating of hypernasality (absent=1, mild=2, moderate=3, severe=4). The percentage of correct answers was calculated for each student based on the comparison between their individual assessment results and the SLP assessment results. Inter-rater agreement between each student and the SLP was calculated by Kappa coefficient.

Results: The percentage of correct answers regarding the identification of AE was 100% for 4 students and 87.5% for 1 student, with Kappa coefficients of 1.00 and 0.85 (almost perfect), respectively. The percentage of correct answers for the hypernasality rating was 67% for students 1 and 5, 58% for students 3 and 4, and 75% for student 2, with Kappa coefficients of 0.43, 0.42 (moderate) and 0.67 (substantial), respectively.

Conclusion: The first stage of the CCTP was more effective in identifying AE than in rating hypernasality. Greater emphasis should be provided on training for the rating of hypernasality in subsequent stages of the CCTP.

Training Programme, Speech Assessment, Education

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Internationally adopted children with cleft lip and palate have more persistent speech errors compared to non-adopted peers

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MO2.5 Speech, Moorfoot, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: At the beginning of the 21st century, the number of internationally adopted (IA) children with cleft lip and or palate to Sweden increased dramatically. The cleft teams were posed with new challenges as many of the IA children arrived partially or totally unoperated at an age when palatoplasty typically would have been performed. The literature on treatment and outcome of children with CLP under these extraordinary circumstances was sparse but has steadily increased during the past years. To date, the speech development of IA children compared with NA children has been described up to age seven to eight years of age, but further prognosis is still unknown.
Aims: To investigate speech development between five and ten years of age in children born with cleft lip and palate (CLP) adopted from China and thereby referred for comprehensive CLP treatment later than children born in Sweden.
Methods: Twenty-three children adopted from China (IA children) were included, matched with 23 Swedish-born children (NA children). Blinded speech and language pathologists re-assessed audio recordings from routine check-ups at age five and ten. Percent correct consonants (PCC) were calculated at word and sentence level. Velopharyngeal function (VPF) was assessed on single words with the composite score VPC-Sum. VPF in connected speech, VPC-Rate, was rated on a three-point scale on sentences.
Results: Both groups developed significantly between age five and ten, but the IA children scored lower PCC at word and sentence level at both ages. Regardless of the method used to evaluate VPF, fewer IA children than NA children had competent VPF at both ages.
Conclusions: Cleft speech characteristics were more persistent in IA children than in NA children well into school age, and fewer IA children had a competent velopharyngeal function.

international adoption, velopharyngeal function, articulation

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Compensatory articulation errors in patients with velopharyngeal dysfunction and palatal anomalies

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MO2.5 Speech, Moorfoot, EICC - Streamed, July 11, 2022, 09:30 - 10:30

Introduction: Individuals with velopharyngeal dysfunction (VPD) form a strikingly heterogeneous population from the perspective of palatal anomalies and their likely sequelae in speech and communication.
Aims: To assess the frequency and types of compensatory articulations (CA) in non-syndromic patients with (VPD) and various palatal anomalies and determine the relationship between the frequency of CA, type of palatal anomaly, and phonological errors.
Methods: A total of 783 non-syndromic Hebrew-speaking patients with VPD and various palatal anomalies (cleft lip and palate (CLP), cleft palate (CP), submucous cleft palate (SMCP), occult submucous cleft palate (OSMCP), or non-CP) were studied retrospectively. Perceptual VPD tests, including articulation and phonological assessment, were conducted.
Results: Among them, 225 (28.7%) had CA. Most CA (18.4%) occurred below the level of the velopharyngeal port, followed by CA at the velopharyngeal port (12.0%) and (4.9%) in front of it. No differences were found in the frequency of CA between patients with CP (50.7%) or CLP (52.6%) and between those with non-CP (15.3%) or OSMCP (18.4%). SMCP patients had lower frequency of CA (36.1%) than CP (p=0.003) and CLP patients (p=0.002), but higher frequency than OSMCP (17.1%, p=0.002) and non-CP patients (14.8%, p=0.002) did. Among the 783 patients, 247 (31.5%) had phonological errors. A higher frequency of phonological errors was found in patients with CA (54.7%) compared to those without (22.2%) and in all palatal anomaly groups except CLP (31.4% vs. 23.9%).
Conclusions: CA patterns are influenced by inadequate velar length following palatal repair, as well as by oral structural abnormalities, whereas poor muscle function as a result of OSMCP or/and abnormal size or/and shape of nasopharynx have less influence. Errors in front of the velopharyngeal port are influenced by the structural anomaly of CLP. This information may contribute to general phonetic and phonological theories and genetic investigations about CP anomalies.

velopharyngeal dysfunction, compensatory articulation, phonology

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Tongue Reduction Surgery for Macroglossia in Patients with Beckwith-Wiedemann Syndrome – A Ten Year National Experience in the United Kingdom

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MO2.6 Craniofacial, Tinto, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction
Macroglossia is a hallmark feature of Beckwith-Wiedemann Syndrome, a congenital overgrowth syndrome. This can lead to difficulties with speech, feeding, sleep apnoea, lower face fullness and increased dental spacing. Tongue reduction surgery can address these functional and cosmetic concerns.

Aim
We aim to describe a ten year experience of a single national service and outline our technique, surgical protocol and outcomes.

Methods
We include all patients with Beckwith-Wiedemann Syndrome who underwent tongue reduction surgery between April 2012 – March 2021. Patients were managed by a single national service and treated with the same surgical protocol. Post-operative evaluation was performed at three and eight months. Feeding, speech, and drooling were assessed with a macroglossia specific tool. A Wilcoxon Signed Rank Test was used to determine if there were any statistically significant differences in outcome scores before and after tongue reduction surgery. Changes in facial appearance and parental satisfaction was evaluated by qualitative questionnaire.

Results
181 patients met the inclusion criteria. All had macroglossia related speech errors, oral stage feeding difficulties and 90% had drooling. All parents had concerns regarding the functional difficulties and psychosocial issues caused macroglossia. Surgery resulted in statistically significant ($p=<0.05$) resolution or reduction of functional problems in speech, feeding and drooling domains. All parents reported a high level of satisfaction with the improvement to facial appearance after surgery.

Conclusion
We present a coordinated national experience of tongue reduction surgery for patients with Beckwith-Wiedemann over 10 years. Surgery resulted in significant improvements in speech articulation, feeding and drooling. There was a high degree of parental satisfaction with improvements in lower face fullness and appearance. Our experience represents the most extensive currently in the literature.

Beckwith- Wiedemann Syndrome, Macroglossia,Tongue Reduction

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Bone Tissue Engineering in the Growing Skull: A 3D Printed Bioceramic Scaffold to Reconstruct Critical-Sized Defects in a Skeletally Immature Pig Model

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MO2.6 Craniofacial, Tinto, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Background
3D-printed ceramic scaffolds composed of 100% beta(β)-tricalcium phosphate augmented with the osteogenic agent dipyridamole (3DPCS-D) can regenerate bone across critically sized defects in multiple small animal models. Prior to human application, safe and effective bone formation should be demonstrated in a large translational animal model.

Aims
To evaluate the ability of 3DPCS-D to restore critically sized calvarial defects in a skeletally immature, growing minipig.

Methods
Unilateral calvarial defects (1.4cm) were created in six-week-old Göttingen minipigs (n=12). Four defects were filled with a 3DPCS-D (1000μM Dipyridamole) with a cap (a solid barrier on the ectocortical side of the scaffold to prevent soft tissue infiltration), four defects were filled with the same 3DPCS-D construct but without a cap, and four defects served as negative controls (no scaffold). Animals were euthanized 12-weeks post-operatively. Calvaria were subjected to micro-computed tomography, 3D-reconstruction with volumetric analysis, qualitative histologic analysis, and nanoindentation.

Results
Scaffold-induced bone growth was statistically greater than negative controls ($p \leq 0.001$) and the scaffolds with caps produced significantly more bone generation compared to the scaffolds without caps ($p \leq 0.001$). Histological analysis revealed woven and lamellar bone with the presence of haversian canals throughout the regenerated bone. Additionally, cranial sutures were observed to be patent and there was no evidence of ectopic bone formation or excess inflammatory response. Reduced elastic modulus (Er) and hardness (H) of scaffold-regenerated bone were found to be statistically equivalent to native bone ($p = 0.148$ for Er of scaffolds with and without caps, and $p = 0.228$ and $p = 0.902$, for H of scaffolds with and without caps, respectively).

Conclusion
3DPCS-D bone tissue engineering constructs have the capacity to regenerate bone across critically sized calvarial defects in a skeletally immature translational pig model.

Tissue Engineering, bone, calvaria, skull

1068

Tessier 3 and 4 clefts and choanal atresia: an unusual association?

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MO2.6 Craniofacial, Tinto, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction: Craniofacial clefts are rare congenital anomalies that might involve both soft-tissue and skeletal components. The association of Tessier cleft number 3 and 4 with choanal atresia appears to be unusual and only few clinical cases have been reported in published literature.
Objectives: Report a serie of 13 cases of choanal atresia in patients with Tessier numbers 3 or 4 clefts and the literature review on this topic.
Methods: A literature review was undertaken via PUBMED database before April 2020 addressing association between Tessier numbers 3 or 4 clefts and choanal atresia. Retrospective chart review of patients diagnosed with both comorbidities at a tertiary hospital expertised in craniofacial anomalies.
Results: Literature review yielded 10 studies describing the relationship between choanal atresia and Tessier 3 and 4 facial clefts. We identified 98 patients diagnosed with medial oro-ocular facial clefts (Tessier 3 and 4) and 119 with choanal atresia at our institution over a 20 years time period. Altogether, 13 individuals were diagnosed with both malformations, 3 patients with number 3 cleft and 10 patients with number 4 cleft. It represents 13.26% of the cases.
Conclusion: This study highlights the features of Tessier 3 and 4 facial clefts associated with choanal atresia. Although the publications regarding this association are very scarce, the authors present the largest series of cases of Tessier number 3 and 4 clefts with choanal atresia showing that association between these conditions could be not so unusual.

Table 1 Reported cases of choanal atresia associated with Tessier numbers 3 or 4 clefts

		Sex	Choanal atresia	Tessier number	Ocular involvement	Amniotic band sequence
(Dey,1973)	1	F	Bilateral	4 bilateral	-	-
	2	M	Bilateral	3 left and 4 right	-	-
(Tessier, 1976)	3	M	Left	4 bilateral	-	-
(Thatte *et al.*,1987)	4	F	Right	3 right	-	-
(Ragavan *et al.*, 2012)	5	M	Bilateral	4* right	-	-
(Allam *et al.*, 2014)	6	M	Left	3 and 7 left	Bilateral microphthalmia	-
(Ueda *et al.*, 2015)	7	F	Right	3-11, 5 left and 2-12 right	Right microphthalmia	Present
(Sung *et al.*, 2020)	8	F	Bilateral	3 bilateral	-	-
Present study	9	M	Right	3 left	Left anophthalmia	-
	10	F	Left	3 right	Right anophthalmia	Present
	11	F	Right	4 bilateral	-	-
	12	F	Right	4 bilateral	-	-
	13	F	Bilateral	4 right	-	-
	14	M	Bilateral	4 left	-	-
	15	M	Bilateral	4 right	Right microphthalmia	-
	16	F	Left	4 right	-	-
	17	F	Bilateral	4 bilateral	-	-
	18	M	Bilateral	4 bilateral	Right microphthalmia	-
	19	M	Bilateral	3-11 right and 3 left	Left microphthalmia	Present
	20	F	Bilateral	4 bilateral	-	-
	21	F	Left	4 left	-	-

* Was reclassified based on the image provided by the authors
F: female, M: male

Choanal atresia, Nonsydromic cleft, Nose

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3D Printed Osteogenic Scaffold for Cleft and Craniofacial Defect Reconstruction

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MO2.6 Craniofacial, Tinto, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction: Bone grafting surgery is a common procedure for children with cleft or other craniofacial deformities. The graft can be harvested from a donor site such as the iliac crest or tibia. Although a gold standard, it has been suggested that autogenous bone graft leads to pain, poor ambulation, and increased length of stay in the hospital. To avoid additional surgery and functional disturbances from donor site surgery, 3D printed artificial patient-specific implant can be the solution. However, biocompatible 3D printing materials with adequate strength for surgical purpose are still limited.

Aims: This study aims to develop a 3D printed osteogenic scaffold for patient-specific craniofacial implants with novel CSMA-2 polymer.

Methods: 3D printed scaffolds were designed and produced by digital light processing (DLP) 3D printing of CSMA-2 polymer, with and without hydroxyapatite addition. A compressive test was conducted to evaluate the scaffold's mechanical properties. Scaffold's biocompatibility and ostegenicity were observed by performing 3D cell culture with pre osteoblast MC3T3-E1 cells.

Results: The results showed that an intricate gyroid structure with 400 µm pore size diameter was successfully printed by using CSMA-2 with the DLP 3D printing method. The compressive modulus of the scaffold was 0.4 – 0.5 N/mm2, which was within the range of human cancellous bone compressive modulus. Pre-Osteoblast MC3T3-E1 cells remained viable after 28 days of incubation on the 3D printed scaffold and expressed osteogenic markers as indicated by immunofluorescence staining of RUNX2, OCN, and OPN antibodies. The expression of OCN and OPN particularly were distinct on CSMA-2 with 5% and 10% hydroxyapatite.

Conclusions: CSMA-2 polymer demonstrated 3D printability by producing a complicated gyroid structure. 3D printed CSMA-2 scaffolds showed adequate mechanical properties to withstand surgical manipulation and stability during bone remodeling. It was also highly biocompatible and had osteogenic properties to support osteogenesis in craniofacial defects.

3D printing, bone graft, scaffold

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Long-term Outcomes of Patients with Frontoethmoidal Encephalomeningocele in

Adulthood - A Follow-up Study

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MO2.6 Craniofacial, Tinto, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Background: Frontoethmoidal encephalomeningoceles (FEEMs) are common occurrence in Southeast Asia, particularly in Thailand, with limited information of long-term management and holistic outcomes.
Objective: To report long-term holistic outcomes and comprehensive management at the adulthood period of the patients with FEEM.
Patients and Methods: This present study is a retrospective study. Holistic outcomes were analyzed from 28 patients with FEEM (>18 years of age), treated between 1993 and 2011 at the Tawanchai Center, Srinagarind Hospital, Thailand. The unsatisfied outcomes and bullying experiences were analyzed by the patients' gender, FEEM type, age of primary surgery, surgical approach, number of operations, educational level and Intelligence quotient (IQ).
Results: There were 60.71% female patients. A total of 71.43% of the patients had nasoethmoidal (NE) and combined types. In all, 60.71% were uneducated or completed primary school. There were 96.43% of the patients satisfied with overall treatment. The mean overall aesthetic score was 1.48 and the aesthetic score of nasal shape was 1.59. The mean IQ score was 62.71. Unsatisfied outcomes were found significantly higher in NE and combined types (p-value 0.044) and combined approach (p-value 0.009). In all, 85.71% of the patients had abnormal MRI.
Discussion and Conclusions: Low educational level, low IQ, unsatisfied outcomes of NE, combined types, combined approach and abnormal MRI are main challenges. The children with FEEM have significant higher rates of learning problems and less academic successful. Comprehensive care is needed for provision of better health-related quality of life or functioning patients and better long-term outcomes.

Frontoethmoidal encephalomeningocele, Long-term outcome, Comprehensive

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Cephalometric Characteristics of the 22q 11.2. deletion Syndrome

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MO2.6 Craniofacial, Tinto, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introducction and AIMS : 22q11.2 deletion Syndrome is a rare chromosomal disorder produced in chromosome 22 by a microdeletion at the long arm. The most common craniofacial characteristics include wide nasal root with bulbous lip short filtrum, small mouth with downpointing angles , retrognathia, lowset ears, prominent and overfoldinghelix, narrow palpebral fissures and hypertelorism. Within the literature , only a few publications provides information about the cephalometric characteristics of patients with 22q 11.2 deletion syndrome and most of them includes patients clinically diagnosed without confirmation by flouresence in situ hybridization test (FISH). The aim of this study is to describe cephalometric characteristic of patients with 22q 11.2 deletion Syndrome in comparison with standard values.

Methods: a transversal descriptive analysis of lateral skull radiographs was made of 23 consecutive patients wit 22 q Syndrome confirmed by FISH test. Every patient underwent cephalometric characterization by two operator. Patients with severe mental retardation were excluded. Linear and angular cephalometric analysis was obtained form the Leagan and Burstone cephalometric analysis . The analysis was performed using the statist studied, test T-test compared with a know average for each variable studied. Statitically significant differences

Results: The study demonstrated specific characteristics of the cranial anatomy like an anterior position of maxiila (p= 0,035), a grater skeletal convexity angle (p=0,001) and a grater anterior base angle.(p=0,001)
Conclusions: Patients with 22q Syndrome show cephalometric differences in comparison to standard values , which should be considered in the evaluation and treatment orthodontic planning during the growth and when it ends.

22q11.2 deletion
cephalometric caracteristics

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The Subunit Evaluation: A System devised to evaluate ability of a technique to correct different components of primary cleft lip nose deformity separately.

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MO2.7 Primary Surgery, Carrick, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction
Various methods in use to compare two different techniques of cleft lip nose correction include panel surveys, direct and indirect anthropometry and photogrammetry. While all these methods are good to compare results there is very little information which helps a surgeon evaluate various aspects of technique dealing with separate anatomical components of the nose.
Aims
A cleft lip nose deformity from a surgeon's point of view will have following components which are amenable to surgical correction:
1, Lower lateral cartilage deformity which presents most prominently as nasal tip asymmetry.
2, Location of alar base needs to be evaluated in all three planes. Nasal width symmetry is part of this evaluation.
3, Columella needs to be evaluated for its tilt both in horizontal and vertical planes.
4, Alar Columella web.
5, Nasal perimeter from columellar base to alar base excluding the nasal width tends to be larger on cleft side.
6, Ala nasi width close to alar base and length along the free border.
The aim of this study is to devise and test a system of evaluation which can quantify the extent of deformity involving all these components.

Methods
Established anthropometric land marks were used as basis to devise a system of measurements which will give a quantitative value to each aspect mentioned above. This value is achieved by comparing the cleft side with the non-cleft side and would reflect degree of asymmetry.
Results
Frontal and basal view pictures of twenty cases were analyzed by this technique and then same set of pictures were evaluated by a panel of an orthodontist and a plastic surgeon and results were compared. Statistical analysis demonstrated significant correlation between both systems of evaluation.
Conclusion
A new system of evaluation aimed at helping surgeons evaluate individual aspects of their technique is being proposed.

evaluation cleft lip nose

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3D CHARACTERISATION OF SIMULTANEOUS MAXILLARY ARCHFORM AND FACIAL CHANGES FOLLOWING PRIMARY CLEFT LIP REPAIR IN cUCLP

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MO2.7 Primary Surgery, Carrick, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

INTRODUCTION: Primary cleft lip repair results in 3D changes to the maxillary archform and face shape. This simultaneous change is incompletely characterised in the literature.

AIM:
To use 3D stereophotogrammetry to characterise simultaneous changes in the maxillary archform and face following primary cleft lip repair in cUCLP.

METHODS:
Twenty consecutive facial plaster cast sets of infants with cUCLP were identified from the archive of one Consultant Plastic Surgeon at Cleft.Net.East (Cambridge, U.K.). Each set had casts at pre-lip (3 months) and pre-palate repair (6 months). No presurgical orthopaedics was used. Inclusion criteria included cast quality and a complete set of casts. Ethical approval was not required as these data were collected according to routine audit protocol.

Casts were scanned using 3Shape™ 3d model scanner (Holmens Kanal 7, Denmark) by same operator and .stl files were exported for analysis using Cloud Software (Robin's Triangle Mesh, v3.3.1).

Twenty key landmarks on the nose and maxillary arch were defined (Singh et al., 2005). From these, several variables describing linear and 3-dimensional changes were devised and a repeatability study carried out. For the main study, clinically significant changes for the nose were deemed to be those ≥2mm and for cleft size ≥4mm.

Image superimposition for colour mapping and volume changes were computed to identify significant changes following lip repair.

RESULTS:
The repeatability study described good precision in landmark identification. The main study showed both statistically ($p<0.05$) and clinically significant changes in cleft width volume and nasal linear width after lip repair. Average volume changes in the cleft width was 4.63mm3 ($p<0.01$) and average width reduction of the nose was 3.24mm ($p<0.05$). These simultaneous changes were illustrated in the colour maps.

CONCLUSIONS:
Statistically and clinically significant simultaneous 3-dimensional, linear and volumetric changes to the maxillary archform and face were characterised numerically and visually for this patient sample.

cleft lip, 3D stereophotogrammetry, UCLP,

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A comparative Study of the Aesthetic outcomes of two techniques for bilateral cleft lip and palate repair

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MO2.7 Primary Surgery, Carrick, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction
Facial aesthetics is an important factor in quality of life following cleft lip and palate surgery and the nasolabial region appearance is a key outcome measure for patients and their families. Analysing aesthetics is difficult as it is a subjective measure and encompasses personal evaluation and judgement. One method of subjective assessment for cleft patients is the Asher-McDade aesthetic index which involves assessors rating trapezoid cropped images using a 5 point scale.
Aims
To determine whether subjective assessment can differentiate between aesthetic outcomes in bilateral cleft lip repair by two different surgeons who use two different techniques.
Methods
35 consecutive patients who underwent bilateral cleft lip repair by Surgeon A and Surgeon B were included in the study. Five year post operative frontal photographs (cropped according to the Asher-McDade aesthetic index) were analysed by blinded surgical and lay assesors using a five-point Likert scale. The assessments were repeated after an interval to assess intra-rater reliability.
Results
Surgeon A had higher overall aesthetic ratings than Surgeon B but not statistically significant.
Surgeon A was rated higher by both surgical and lay assessors but not statistically significant.
Excellent inter-rater reliability amongst surgical and lay assessors.
Conclusions
The Asher McDade aesthetic index methodology can be used as an audit tool to assess aesthetic outcomes in bilateral cleft surgery
Agreement between surgical and lay assessors is reassuring as it implies that surgical aesthetic outcomes are in keeping with societal opinions

Results – Inter rater reliability

Calculated using Intraclass correlation coefficient (ICC) – Poor = <0.5, Moderate = 0.5-0.75, Good = 0.75-0.90 Excellent = >0.90

	ICC (intraclass correleation coefficient)	95% Confidence Interval
Surgical Assessors	0.931	0.895-0.951
Lay Assessors	0.841	0.748-0.907
Combined	0.944	0.915-0.967

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3D smartphone scanner for lips quantitative analysis of unilateral cleft lip during Pandemic Covid In Indonesia

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MO2.7 Primary Surgery, Carrick, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

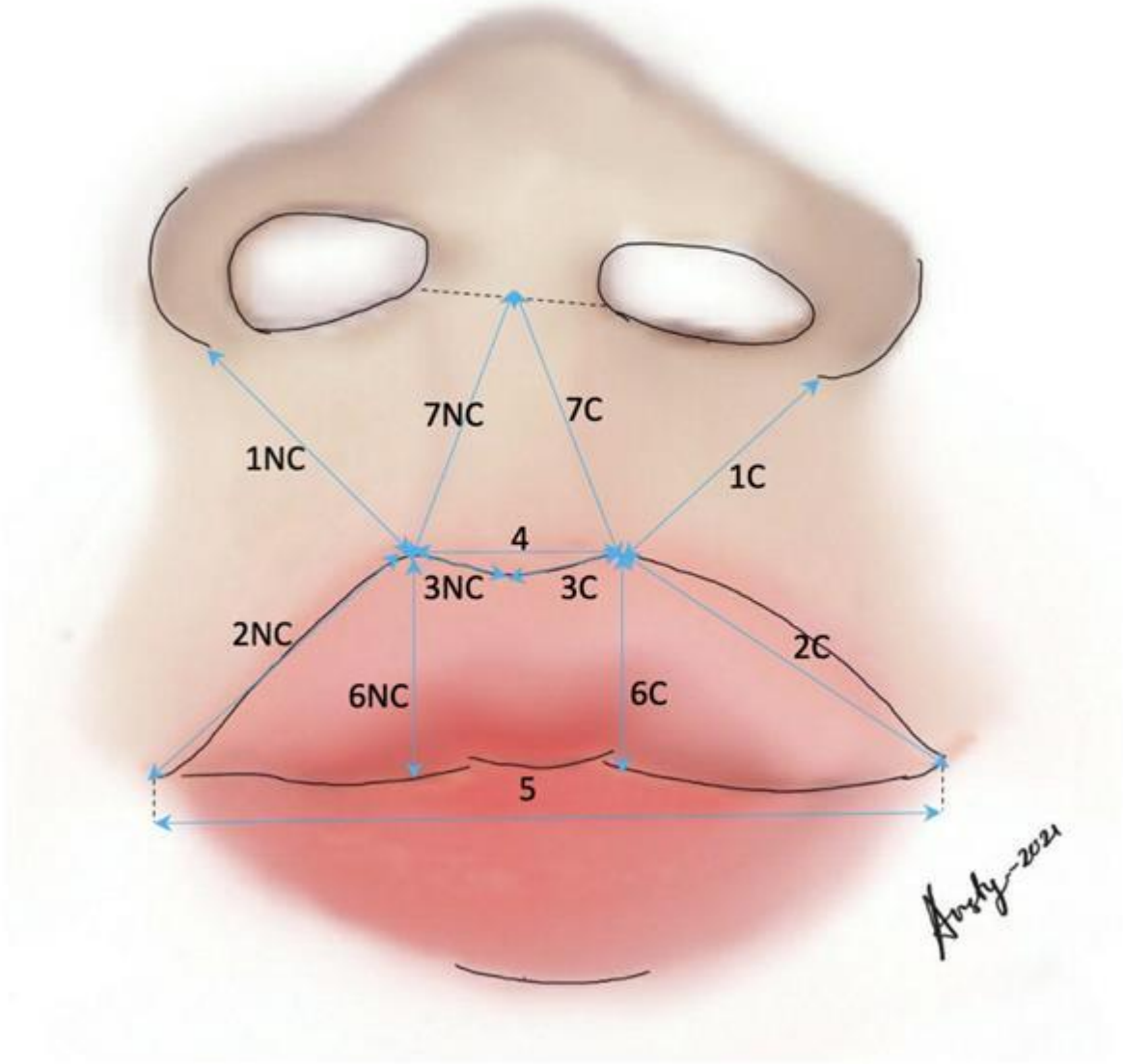
Introduction: Cleft lip and palate are major craniofacial anomalies and mostly come from low socioeconomic status in Indonesia. Direct measurement is still the golden standard, but it has its limitation in pediatrics. Currently, 3D measurement is an expensive technology that needs preparation and fundings. Meanwhile, Smartphone's front camera is 3D structured light scanner basis technology. In Indonesia, we tried to apply a smartphone scanner as a device for data acquisition in measuring cleft lip on unilateral cleft lip patients.

Aims: This study aims to investigate whether a 3D smartphone scanner can be applied to measure unilateral cleft lip patients.

Methods: This study enrolled ten unilateral cleft lip patients. 3D facial images of these patients were acquired using a smartphone scanner and ist application after the surgery. Twelve variables were measured by direct anthropometry and 3D smartphone scanner. In addition, the accuracy and precision of the 3D smartphone scanner were assessed by comparative analysis.

Results: The anthropometric data obtained using 3D smartphone scanner were in agreement with direct measurements. The linear measurement between 2D and 3D was no significant different. ($p > 0,05$) Intraobserver 3D smartphone scanner data of first observer showed high reliability (ICC 0,876 – 0,993, and Croncbach alpha 0,920 – 0,998) and the second observer showed moderate to high reliability (ICC 0,839 – 0,996, and Croncbach alpha 0,940 – 0,996). Interobserver data showed ICC 0,876 – 0,981, and Croncbach alpha 0,960 – 0,997.

Conclusion: 3D smartphone scanner is applicable to measure cleft lip patients. It can be used to replace direct measurement. 3D smartphone scanner are effective, efficient, economic, shorter period and easy to applicable.



smartphone, unilateral cleft lip, 3D

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Implementation of a cleft and craniofacial curriculum in an Advanced Education Program in Pediatric Dentistry

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MO2.8 Dental, Harris, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction

Individuals with a craniofacial condition (CFC) experience significant disparities in the quality of healthcare they receive. To address these disparities, the Department of Pediatric Dentistry of NYU College of Dentistry developed and implemented a craniofacial curriculum in the postgraduate training program in Pediatric Dentistry. Though the PG students had been rotating through the referring Craniofacial Team, the supporting dental care was not consistently provided.

To implement the Craniofacial Curriculum, clinical and didactic components were developed.

AIM
To improve the training of future pediatric dentists through clinical and didactic training. To establish a dental home for patients with CFC, to provide optimal oral health care and streamline care coordination with the referring Craniofacial Teams.

METHODS

In 2014 a monthly clinic day was established to provide specially trained faculty and continuity of care. Due to the growth of the clinical component, the didactic component was augmented in 2018 with a seminar series highlighting all aspects of care required for patients with CFC, including basic science and case presentations. The acquired knowledge of the PGs throughout their 2-year training program was assessed bi- yearly. Patient and family satisfaction was queried yearly.

RESULTS

Without a robust didactic component, PGs were missing some of the knowledge and skills needed to manage the oral health care for patients with CFC in a multidisciplinary approach. Assessment showed that care coordination and comprehensive treatment for the patients has improved. Patient and family satisfaction has also grown annually.

CONCLUSIONS

There is a lack of sufficient training about CFC in pediatric dentistry postgraduate training programs, presenting a challenge for graduates when trying to provide optimal care to these patients. Our program demonstrated that combining a strong didactic curriculum with an extensive clinical experience is crucial to improving the skills of future pediatric dentists and to improving the oral health care of patients with CFC.

pediatric dentistry, education, oral health

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Perception of children with craniofacial malformations and their parents on dental treatment with therapy dogs

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MO2.8 Dental, Harris, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction:
Patients presenting several health issues that requires interdisciplinary treatment, such as cleft lip and palate and craniofacial malformations have higher caries prevalence, both in deciduous and permanent dentition. (Worth et al, 2017). Also behavour issues, lack of collaboration and sensory impairments may interfere in regular dental treatment.
Several techniques have been reported in order to achieve a safe and effective dental treatment, from communicative management to general anesthesia (Castro el al, 2016)
In the past years, animal assisted therapy has been widely reported: it is based on the intentional introduction of an animal, usually dogs or horses, with specific training and certain characteristics of calm and obedience, to facilitate the therapeutic environment in order to achieve goals set by health professionals (Pedrosa, 2017).
Aims:
Describe the perception of children with craniofacial malformations and their parents on dental treatment with therapy dogs.
Methods:
Between 2020-2021, pediatric dental treatment with therapy dogs was performed to 12 children between 5 and 12 years old with craniofacial malformations at Hospital Dr. Exequiel Gonzalez Cortes, Santiago, Chile. A satisfaction questionnaire was applied to parents pre and post dental treatment. Wong Baker Faces Rating Scale was applied to children who received dental treatment with therapy dogs.
Results
83,33% of parents perceived dental treatment with therapy dogs as positive, and that allowed to perform an invasive dental procedure (such as extractions) reducing fear and anxiety.
16,66% of parents perceived that dental treatment with therapy dogs didnt reduce fear or anxiety on children
100% of children had a successful treatment, and perceived the experience as positive, and without pain.
75% of procedures were invasive (extractions).
Conclusions
Children with craneofacial malformations and their parents support dental treatment with therapy dogs as a non pharmacological option, accesible, safe and efficient on reducing anxiety, fear and perception of pain perceived on dental treatment.
Pediatric dentistry, therapy dogs

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A Prospective Study of Teledentistry Management of the Orthodontic Patient

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MO2.8 Dental, Harris, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction:

Mobile device based digital monitoring is novel to teledentistry. Through an innovative application called "Grin," we can regularly check on and engage our patients remotely with direct visualization and personalized contact on their own time and thus monitor their dental hygiene compliance. This approach is particularly helpful to patients with cleft lip and palate.

Aims:
We will present our preliminary experience and introduce our study which aims to evaluate the effectiveness of teledentistry in improving compliance with dental hygiene during orthodontic treatment and increasing patient satisfaction.

Methods:
Following IRB approval (pending), participants will be recruited from age group of 9 to 18 years old and will be subjected to orthodontic treatment. All participants will have their teeth photographed for a baseline index. They will be given instructions on oral care at home and will be told to brush three times daily. Participants will be invited to download Grin app and will be given a device that adapts to their cell phone camera to assist with regularly checking in with our clinic team. Participants will be requested to check in every 4 weeks during the treatment. Hygiene will be graded each time a participant checked in and sends a video. Results will be tabulated in effectiveness to respond as well as the hygiene score itself. In addition, participants will be asked to complete quality of life and patient satisfaction questionnaires.

Results:
Based on preliminary data, we hope to find that the compliance rate of remote monitoring using Grin is high given that kids are willing to engage with teledentistry due to the novelty of a mobile platform. We will also be able to assess if the participants' quality of life and patient satisfaction increased as a result of using Grin.

Teledentistry, Digital Monitoring, Orthodontics, Compliance

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What are parents' dental concerns for their children affected by cleft, and does it change during childhood development? A National Cohort Study

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MO2.8 Dental, Harris, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Introduction
Children born with a cleft lip and/or palate (CL+/-P) often have dental anomalies. Therefore, research investigating parental dental concern may help to improve care for these families affected.

Aims
To examine if parents (or guardians) of children with a CL+/-P are concerned about their child's teeth, to explore what specifically are they concerned about and whether such concerns change over time.

Methods
Data from the Cleft Collective Cohort Studies, a longitudinal study of children with CL+/-P and their families, were analysed. Questionnaires were returned by mothers (n=890; n=764; n=414) and fathers or mother's partners (n=560; n=360; n=228) when their children were aged 18 months, 3 years and 5 years respectively. Descriptive statistics and Cochran Q tests were performed to identify if concerns changed overtime.

Results
52.2% of mothers and 50.4% of fathers reported at least one concern about their child's teeth at 18 months. Position of teeth was of most concern to both mothers (39.1%) and fathers (39.3%). Other concerns included number and colour of teeth. Dental concern did not change over time for mothers (Cochran Q 3.528; P=0.171) or fathers (Cochran Q 0.585; P=0.746). There were strong associations (all: $p<0.001$) between overall parental dental concern with alveolar involvement in the cleft and with cleft phenotype at each timepoint. The highest proportion of concern was in BCLP (77.3%-87.3%), followed by UCLP (66.5%-74.5%), CL (60.2%-68.4%), and CP (16.0%-19.6%).

Conclusions
Over half of parents were concerned about their child's teeth, especially regarding the position of their teeth. Concerns remain constant over time, suggesting dental input earlier and throughout the cleft pathway, with involvement particularly from the cleft dental team would be beneficial. Parental concern is strongly associated with cleft types involving the alveolus and BCLP; consideration may be given to prioritising and/or customising dental input for such families.

Dental, Parental concern, Tooth position

929

Molar incisor hypomineralization and dental caries experience among patients reporting for secondary alveolar bone grafting: An analysis of factors influencing dental treatment outcomes-A report from a tertiary care centre in South India

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MO2.8 Dental, Harris, EICC - Onsite Only, July 11, 2022, 09:30 - 10:30

Aim: The purpose of this study is to evaluate 1) the prevalence and severity of molar incisor hypomineralization (MIH) and dental caries patterns in patients with unilateral and bilateral clefts vs. controls 2) analyze the factors that may influence dental treatment outcomes for patients with MIH in cleft lip and palate.

Materials and methods: The study was approved by an independent ethics committee. Records of patients who reported for alveolar bone grafting between Jan 2018 and December 2021 were retrieved from the Smile Train database. The sample included 88 patients between 8-14 years of age (divided into unilateral and bilateral clefts), matched with a non-cleft control group of 63 patients. For each included subject, all erupted incisors and molars were evaluated using intraoral clinical photographs taken by a single operator. Substandard photographs with incomplete visualization of molars and incisors were excluded. All photographs were examined by a single calibrated examiner. Modified Weerheijm's criteria were used to note the severity of MIH. Caries was evaluated with the Decayed, Missing, and Filled Teeth (DMFT) index. The groups were compared for the presence of MIH, caries, and their patterns using chi-square tests. A probability value of < 0.05 was considered statistically significant. Independent variables affecting caries patterns on the hypomineralized teeth were analyzed.

Results: Bilateral cleft lip palate showed significantly higher MIH scores among all the groups. Incisal hypomineralization was the highest among bilateral clefts, followed by unilateral clefts as compared to controls. No association between dental fluorosis, ankyloglossia, caries and MIH in clefts could be established in our study.

Conclusion: Subjects with bilateral clefts have a higher propensity towards MIH and caries as compared to unilateral clefts and non-cleft controls. Dental care plans have to be tailored towards early prevention of tooth breakdown to ensure success of eventual orthodontic-surgical continuum.

Frequency distribution of the composite scores of molars in cases of bilateral cleft.

Composite scores for Molars		Frequency	Percent(%)
Scores	.00	10	32.3
	1.00	10	32.3
	2.00	7	22.6
	3.00	4	12.9
	Total	31	100.0

Frequency distribution of the composite scores of molars in cases of unilateral cleft.

Composite scores for Molars		Frequency	Percent
Scores	.00	26	49.1
	1.00	16	30.2
	2.00	7	13.2
	3.00	4	7.5
	Total	53	100.0

Frequency distribution of the composite scores of incisors in cases of bilateral cleft.

Composite scores for Incisors		Frequency	Percent
Scores	2.00	23	74.2
	3.00	8	25.8
	Total	31	100.0

Frequency distribution of the composite scores of incisors in cases of unilateral cleft.

Composite scores for Incisors		Frequency	Percent
Scores	.00	10	17.9
	1.00	23	41.1
	2.00	23	41.1
	Total	56	100.0

Molar Incisor Hypomineralization, Dental Caries

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Comparison of Corresponding Scores From the Cleft Hearing Appearance and Speech Questionnaire (CHASQ) and CLEFT-Q in Swedish Patients With Cleft Lip and/or Palate

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Patient-reported outcome measures (PROMs) quantify various domains of health-related quality of life (HRQOL) from the patient perspective. PROMs are central in evaluating results of plastic and reconstructive surgery since many interventions focus on improving patient self-perception and quality of life. Implementing PROMs into standard clinical practice is a step closer to the paradigm and ethical approach of patient centered care. Considering patient opinion on which PROM allows patients to best express themselves about important outcomes
in cleft care is in line with the paradigm shift toward patient-centered care.
Aims: The primary aim of this study was to compare corresponding scores between 2 existing cleft-specific PROMs — Cleft Hearing Appearance and Speech Questionnaire (CHASQ) and CLEFT-Q. The second aim of the study was to investigate patient opinion on the 2 PROMs.
Methods: Thirty-three participants with cleft lip and/or palate, aged 10 to 19 years answered CHASQ and CLEFT-Q either in the hospital or at home.
Results: The CHASQ scores and the corresponding CLEFT-Q scores on appearance correlated significantly. Corresponding scores regarding speech did not correlate significantly. A majority, 15 (58%) participants, answered that they liked CLEFT-Q more than CHASQ, 18 participants (69%) thought CHASQ was easier to complete, and 19 (76%) thought CLEFT-Q would better inform health care professionals.
Conclusions: Both instruments showed strengths and limitations. Clinicians will have to consider each instrument's respective qualities when choosing to implement either PROM.

PROMs, patient satisfaction, appearance, speech

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MEASURING SPEECH-RELATED QUALITY OF LIFE IN THE CLEFT POPULATION: PROFILING OUTCOME MEASURES TO SHAPE CLINICAL SERVICE DELIVERY WITHIN TERTIARY CARE

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
Speech difficulties associated with cleft palate can reduce patient Quality of Life (QoL). Patient/Parent Reported Outcome Measures (PROMs) support Speech and Language Therapists (SLTs) identify patients with lower QoL and deliver personalised intervention, improving outcomes.

Aims
The pilot study was undertaken in collaboration with Great Ormond Street Hospital (GOSH), North Thames Cleft Service, University College London, and the Royal College of Speech and Language Therapists. Aims included: identify and evaluate existing PROMs measuring speech-related QoL using service user feedback; recommend PROMs for clinical use in tertiary cleft care centres.

Methods
A literature review identified the following PROMs, designed for the cleft cohort, for evaluation by service users: Speech and Resonance Quality of Life Measure (Speech Surgery) (SPAR-QL) (Underwood & Fromberg, 2016); CLEFT-Q: Speech Function and Speech Distress (Klassen & Wong-Riff, 2018); Velopharyngeal Insufficiency Effects on Life Outcomes (VELO) (Bruneel et al., 2019; Skirko et al., 2013). SPAR-QL is being trialled at GOSH. CLEFT-Q and VELO are validated and used internationally. Virtual engagement groups and telephone interviews enabled participants to discuss preferred PROMs and what is meaningful to them. Thematic Analysis identified key themes.

Results
Two broad themes were identified: impacts of speech difficulties on service users; feedback on the PROMs' content and format. Participants considered VELO the most accurate, relevant and comprehensive, but SPAR-QL more accessible for younger patients and those with learning difficulties. No participants preferred CLEFT-Q. Patients identified by Perceptual Speech Analysis (PSA) as having mild-moderate difficulties report multiple challenges impacting QoL.

Conclusion
PSA alone does not accurately assess QoL, overlooking needs of patients with mild-moderate difficulties. PROMs would help SLTs identify these patients. From service user feedback, VELO and SPAR-QL (when published) are recommended for clinical use. Further research with larger, more diverse populations (including neurodivergent patients) is needed to support all children in tertiary cleft services achieve their potential.

cleft palate,speech,quality of life,outcome measures

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SPEECH AT FIVE AND TEN YEARS OF AGE IN CHILDREN BORN WITH OROFACIAL CLEFT IN NEW ZEALAND

Associate Professor John Thompson[1], Ms Bryony Forde[2], Ms Nicola Mason[3], Dr Peter Fowler[3,4], Prof Peter Stone[1], Ms Maeve Morrison[5]

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Approximately 100 children a year are born in New Zealand (NZ) with an orofacial cleft, resulting in a significant treatment journey. One of the primary and most important outcomes as a result of surgical repair relates to speech development.

Aims: To assess speech outcomes of children with orofacial cleft in NZ.

Methods: Over the period from October 2014 to September 2017 audio-visual recordings were made by speech-language therapists for children born with orofacial cleft and having primary surgery in NZ. Speech recordings were made at the time of standard clinical appointments, at five and ten years of age and were available for 151 five-year-old, and 163 ten-year-old children. Main outcome measures assessed using the standardised Rhinocleft evaluation for speech were Intelligibility, Acceptability, Velopharyngeal function, Hypernasality, Hyponasality, severity of airflow evaluated by perceptual speech assessment, and overall assessment of requirement for clinical intervention.

Results: A large proportion of five-year-old children had speech that was considered to be not completely intelligible, was not acceptable, and had inadequate velopharyngeal function. The noted deficiencies led to a clinical judgement that further speech and/or surgical intervention was required in 85% with cleft lip and palate, 65% with cleft palate and 26% with cleft lip. The proportion of children with poor speech outcomes in the ten-year-old children was lower, though of clinical importance, with further intervention required for 25% with CLP, 15% with CP and 3% with CL. The number of sound production errors in both age groups followed the same pattern.

Conclusion: A significant proportion of children with orofacial cleft were found to have poor speech outcomes requiring further treatment. The outcomes are poor compared to centres reported from the UK and Scandinavia. NZ requires a review of the current services for individuals born with cleft to improve speech outcomes and interdisciplinary care.

Speech outcomes, Intelligibility, Acceptability, intervention

829

Inter- and intrarater agreement on cross-linguistic perceptual overall rating of velopharyngeal function using the short ordinal scale VPC-rate.

Professor Christina Persson[1,2], Ms Rachael Cooper[3], Ms Elizabeth J Conroy[3], Professor Carrol Gamble[3], Professor Tanya Walsh[4], Professor Kevin Munro[5,6], Professor William Shaw[4], Professor Elisabeth Willadsen[7], TOPS trial speech group

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction:
An adequate velopharyngeal function (VP-function) is a prerequisite for normal speech production and thus one of the aims for palatal surgery in children born with cleft palate. Therefore, assessment of the velopharyngeal function is an important indication of the surgical success. A perceptual overall assessment of the velopharyngeal function is a secondary outcome in the randomised trial Timing of Primary Surgery for Cleft Palate (TOPS) including five different languages. Agreement across listeners is important for the interpretation of data, but knowledge on cross-linguistic agreement is limited.
Aims:
The present study aimed to explore 1) the velopharyngeal function on a three-point ordinal scale (VPC-Rate) in three-year old children born with an isolated cleft palate, 2) inter- and intra-rater agreement, 3) cross-linguistic agreement between the Romance language Brazilian Portuguese (including nasal vowels) and four Germanic languages without nasal vowels (Danish, English, Norwegian and Swedish).
Methods: Two-minute video clips from 453 children were assessed, around 25% were reassessed. Three listeners speaking the same language as the child assessed each recording. All listeners participated in extensive calibration before assessment. Outcome was calculated based on majority decisions. Two sub-samples (n=30) were assessed across language groups.
Results:
Overall 76% of the three-year-olds had a competent, 13% marginal incompetent and 10% incompetent velopharyngeal function. All three listeners agreed on ratings in 80% of the recordings and two agreed on another 19%. In 94% of the recordings listeners agreed between the first and second assessment. Three European and three Brazilian listeners agreed on 90% of the Brazilian recordings and in 87% of the Germanic language recordings.
Conclusions:
Both inter- and intra-rater agreement was high on the VPC-rate. Despite language differences Brazilian Portuguese and Germanic language speaking listeners agreed highly in cross-linguistic assessments. Thus, perceptual overall assessment of velopharyngeal function with the VPC-Rate is considered reliable.

Listener agreement, velopharyngeal function, cross-linguistic

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Identifying determinants of speech outcome for children born with cleft palate +/- lip in England, Wales and Northern Ireland.

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: The Cleft Registry and Audit NEtwork (CRANE) collects registry/outcome data from children born in England, Wales and Northern Ireland with a cleft lip +/- palate. CRANE has begun work towards case mix adjusted outcome reporting for appropriate inter-centre comparison. This study pursues determinants of speech outcome in our population.

Aim: To quantify the percentage of children meeting the three nationally-agreed UK cleft speech outcome standards at five years, stratified by sex, cleft type and presence of Robin Sequence (RS).

Method:
3157 non-syndromic children born between 2006 and 2014, with complete data for all 16 Cleft Audit Protocol for Speech – Augmented (CAPS-A) parameters assessed at age 5. Perceptual speech analysis utilised CAPS-A rating and proportions meeting the 3 UK Speech Standards (Standard 1 - speech within normal range, Standard 2 - speech without difficulties from existing/previous structural anomalies and Standard 3 - speech without significant cleft speech characteristics). Associations between speech outcome and each factor were explored using Chi-Squared analysis. Logistic regression analysis tested independence of variables.

Results: Significantly less boys than girls achieved speech standard 1 (54.9% vs 66.5%, p=<0.001) and 3 (62.7% vs 74.2%, p=<0.001). Children with CP had the most favourable results, while those with BCLP had the least favourable results. Significant differences (P<0.001) were observed for Standard-1 (71.8% vs 53.2% vs 35% for CP, UCLP and BCLP, respectively), Standard-2a (74.8% vs 68.2% vs 63%) and Standard-3 (80.3% vs 61.6% vs 38.5%). Within the CP group, children with RS had poorer speech outcomes than CP peers (Standard 1 63.3% vs 73.5%, Standard 2a 70.1% vs 75.8% and Standard 3 71.5% vs 82.2%).

Conclusions: Significant differences in speech outcome are demonstrated when examining sex, cleft type and RS. Multivariable regression analysis indicates independence of relationships to outcome for all three determinants.

Cleft palate, Speech outcome

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Combining clinical and patient reported outcome measures for standardized speech assessment in cleft patients with the ICHOM Cleft Standard Set: What is the optimal assessment of speech in cleft lip and palate patients?

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Background
Speech problems in patients with a cleft palate are often complex and multifactorial. Finding the optimal way of monitoring these problems is challenging. The ICHOM (International Consortium of Health Outcomes Measurement) developed a set of standardized outcome measures at specific ages for patients with a cleft lip and/or palate, including measures of speech assessment.

Aims
The objective of this study was to evaluate the current standardized speech outcome measures of the ICHOM Standard Set for patients with CP±L.

Methods
An international, multicenter study was set up. Outcomes of clinical measures and Patient Reported Outcome Measures (PROMs) were collected according to the ICHOM set. PROM data from the field test of the CLEFT-Q were collected to examine the value of additional moments of measurement that are used in other cleft initiatives. Analyses were done per cleft type and in different age-groups, and included univariate regression analyses, trend analyses, T-tests, correlations and floor and ceiling effects.

Results
A total of 2443 patients were included. No strong correlations were seen when comparing the PROMs with clinical outcome measures, or between the clinical outcome measures. Two PROM scales correlated strongly with each other. Outcomes between several age-groups differed significantly in all PROMs and the Percent Consonants Correct (PCC). In patients with an isolated cleft palate, a ceiling effect was found in the CLEFT-Q Speech Function.

Conclusion
Recommendations for an optimal speech outcome assessment in cleft patients are made. Measurement moments of different cleft protocols and initiatives are considered in this proposition. No changes in the current time-points are recommended, although the addition of new moments for assessment is beneficial. Concerning the type of measures, adjustment of the current PCC score outcome seems appropriate. For centres with adequate resources and specific interest in research, translation and validation of an upcoming tool, the CAPS-A, is recommended.

PROMs; clinical measures; standardized outcomes

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The Correlation of the Chinese VPI-Related Quality of Life Instrument and Speech in Subjects with Cleft Palate

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: It was hypothesized that the Chinese Velopharyngeal Insufficiency (VPI) Effects on Life Outcomes (VELO) instrument was correlated with the measured speech parameters. This correlation would help healthcare workers understand the patients with VPI.
Aim: To test the association between VELO scores and perceptual and instrumental speech parameters examined by the speech-language pathologists, and further validate the Chinese VELO instrument as well as indicate the VELO score for patients that need corrective surgery.
Methods: All patients and their parents completed the VELO instrument. Speech intelligibility, VPI severity, VP gap, and need for speech therapy of the patients were rated and collected by speech-language pathologists. The correlation between these speech parameters and VELO scores was examined utilizing Spearman correlation coefficients. The reliability of VELO test-retest and parent proxy assessment was estimated utilizing intraclass correlation coefficients (ICC).
Results: Both parent and youth VELO total and domain scores recorded moderate to strong correlations with speech intelligibility, VPI severity, VP gap, and need for speech therapy ($r > -0.40$, $P < 0.001$) except the swallowing domain. Moreover, most of the VELO domain items have shown significant correlations with at least one speech parameter. The ICC reported test-retest correlation >0.73 in all domains, and parent proxy correlation >0.63 in most domains except the emotional and perception domains.
Conclusions: The correlations between VELO scores and measured speech parameters have provided evidence for the test-retest and parental proxy reliability and criterion and construct validity of the Chinese VELO instrument version. Hence, this instrument could serve as a simple tool to help clinicians understand the social, emotional, and physical influences of VPI.
Velopharyngeal insufficiency, quality of life

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Developing a Reliable, Applicable and Validated assessment to assess consonant production in children with cleft lip and/or palate- Spoken Sinhala Language

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction:
Intensive speech and language therapy activities are required after palate repair in children with cleft lip and/ or palate (CL and/or P) as they are more prone to develop cleft type characteristics (CTCs) in their speech, if it is not treated properly postoperatively on time. Therefore, the assessments are required to conduct in their native language to perceive speech errors accurately.
Aims:
Aim was to analyze the nature of speech consonant production in spoken Sinhala language with a reliable, applicable, validated, and age appropriate assessment.
Methods:
Developed assessments consist of sentences, phrases, and single words. Considered the used international guidelines in CLP assessment/ tool development, and linguistic rules that fulfill the requirements to perceive all the CTCs. Mainly targeted the perception of following parameters such as CTCs, nasality, voice, intelligibility, non cleft speech errors, SLT intervention and in addition the cultural aspects, age appropriateness, simple and easy perception in assessment development. The study was conducted at Lady Ridgeway hospital for children (LRHC) in Sri Lanka. Assessments were developed in following stages, (1) Development of the assessment; (2) assessment of face and content validity; and (3) assessment reliability, validity and acceptability of the new assessment. Used reliability test Kappa value according to the formula and calculated separately for the intrarater reliability and interrater reliability.
Results:
The assessments were fulfilled all the requirements to perceive cleft type characteristics for spoken Sinhala language and scored Cronbach's alpha values more than 0.6 and Kappa values for the Interrater and Intrarater reliability in the range or more than Substantial agreement (more than 0.61).
Conclusion:
Developed assessments are reliable, applicable, and validated. Finally, compilation of the assessments development provided a generic and holistic assessment which applicable for both children with CLP and articulation errors without CLP for spoken Sinhala language in Sri Lankan context.

Consonant production, validated ,Assessment,

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MAXILLARY ADVANCEMENT ACCORDING TO MEAZZINI MODIFIED ALT RAMEC TECNIQUE (MART): COMPARISON BETWEEN TRADITIONAL SURGICAL ADVANCEMENT AND LATE MAXILLARY ORTHODONTIC PROTRACTION: PRELIMINARY RESULTS ON THE ADVANTAGES IN TERMS OF QUALITY of SPEECH.

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
In the cleft population maxillary advancement is required on average in 25% of the patients.(Saltaji et al 2012).
The traditional surgical procedure for correcting associated maxillary retrusion is the Lefort I osteotomy. There are well known effects after this kind of treatment (hard and soft tissues changes, skeletal relapse, effects on speech and velopharyngeal function, psychological status, clinical morbidities). Deterioration on velopharyngeal closure occurs in 36% of surgical treated patients (KlouKos et all, 2018);
Depending on the severity of the hypoplasia, in puberal age (mean age 11,7) it's possible to advance the maxillary segment of 5,7mm on average with an orthopedic orthodontic technique MART (Meazzini et all. 2018) with satisfactory orthodontic results. Aims:
The aim is the evaluation of Phono articulatory results
Methods
50 patients were evaluated pre and post MART in order to evaluate phono articulatory outcomes. patients underwent Gosspass modified – OMES – GUDIN reflex – ROSENTHAL test

Results
Over 50 patients, showed satisfactory results in terms of maxillary advancement. All demonstrated the same phono articulatory results as pretreatment evaluation.
Conclusions
MART technique seems an adequate solution for maxillary advancement both from a skeletal point of view and a perceptual speech analysis.
Speech assessment, VPI, Orthodontic Orthopedics

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Indi-cleft outcomes IV. Speech manifestations in children with Cleft lip and Cleft palate anomaly

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: With about 35,000 new cleft children are added every year, the cumulative burden of cleft care in India is enormous. "IndiCleft" project aimed to evolve strategies to streamline cleft care and better quality of life to cleft patients in the context of the diverse social and cultural milieu, economic considerations and existing health care setup. The information on standards of care and outcomes is scarce. The speech disorders are likely to be highly prevalent in Cleft palate cases Significant otological and tympanic membrane afflictions, and consequent hearing loss may additionally affect speech development.

Aim: This study aimed at evaluation of speech outcome from Indicleft cohort.
Methodology: A total of 802 subjects in the age group of 5-14 years with non-syndromic cleft lip and/or palate anomaly were recruited in the study from four tertiary care centres across the country from April 2017 to November 2020. An ENT specialist along with a Speech-Language Pathologist evaluated these patients for known speech defects (Nasalance, articulation, intelligibility and fluency assessment).
Results: Of the 802 cases enrolled, 53.49% were males and 46.5% females. Unilateral cleft lip and palate was the most common type of anomaly. Speech articulation was affected in 66% patients and speech intelligibility was compromised in 51.8% patients. Stammering was seen in 4.66% patients. The speech defects were not related to the type of cleft anomaly.
Conclusion: The prevalence of speech abnormalities is high in patients with cleft lip and/or cleft palate anomaly. Early recognition and timely intervention is required for normal speech development. Therefore, consideration must be given in identification and utilisation of various modalities for correcting the same.

Speech manifestations,
Cleft-lip, Cleft-palate, Anomaly

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Speech characteristics and velar outcome in school age children following early primary cleft palate repair

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
The measurement of speech outcomes following early primary palatoplasty helps to understand the success of the procedure as well as to establish the prevalence of speech disorders despite early surgery.
Aim
The aim of the present study was to investigate the speech outcomes in Kannada speaking school age children following early repaired cleft palate.
Method : A total of 61 children (5-8 years of age) with repaired cleft lip and palate (RCLP) meeting specific inclusion and exclusion criteria were included in the study. The speech skills measured and reported using universal parameters protocol for reporting speech outcome in cleft palate(Henningsson et. al, 2008). Percent consonants correct-Revised was used to measure the accuracy of consonant production. Integrity of velopharyngeal (VP) function was assessed using lateral view videofluroscopy (LVFS) . Speech intelligibility was measured as percent speech intelligibility (PSI) along with speech understandability and acceptability.
Results: The results obtained for 58 children were analyzed . It was found that 64% of children had good articulatory proficiency on PAS, 50% showed normal speech development, and 43% of children did not show any CTC. Integrity of VP function was found to be good in 62% of children based on the VFS parameters. 78% of the children showed normal to mild deviation in nasality and 67% did not show any nasal air emission. 48.5-65.5% of children had normal to mild deviation on SI based on the PSI scores and SU ratings. It was also found that all the speech parameters interact with each other and there is a significant correlation between the speech parameters.
Conclusion: The outcome measured will serve as a baseline to evaluate and compare the outcome of the same center over years. It also helps to ascertain that the protocol for cleft care at the center meets the global standards and helps further refining the protocol.

videofluroscopy, closure ratio, hypernasality, intelligibility

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Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test: Preliminary Study

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MO3.1 Speech, Sidlaw, EICC - Streamed, July 11, 2022, 11:00 - 13:00

introduction: In Myanmar, there is no standardized test for assessing articulation and resonance disorders in people with cleft lip and palate (CLP) .
Objective: To describe the development of the Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test for children with CLP, and evaluation of its validity and reliability.
Methods: This Test was created by three Thai researchers and a Burmese research assistant based on Burmese phonology. The content validity was evaluated by six Burmese language experts. All test items were divided into 3 groups; high pressure oral consonants, low pressure oral consonants and nasal consonants. A pilot study of face validity, all pictures were administered to 10 typical-developing children. The actual testing was assessed by 10 CLP children and the developed Test were analyzed through consultation of the Burmese teachers and interpreters from a speech camp.
Results: All items (58-words and 32- phrases/sentences) gave an excellent level of the expert agreement (I-CVIs = 1.00). The target items were illustrated as color pictures. Each picture was clearly drawn and easy to identify. Testing scores for a total including 3 groups of target items were shown acceptable internal consistency reliability (ranged from 0.79- 0.95).
Conclusion: The Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test is valid in terms of its content and acceptable internal consistency reliability.

articulation, resonation, validity, Burmese, cleft-palate

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Impact of genetic classification of Robin sequence on clinical presentation and outcomes in the United Kingdom and Republic of Ireland

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction
RS can occur in isolation or with additional congenital abnormalities (non-isolated RS). Neurodevelopmental delay (NDD), increased severity of airway obstruction, and higher mortality have been reported with non-isolated RS.

Aims
We aimed to describe genetic classification within a population-based cohort of RS infants in the United Kingdom and Ireland (UK/ROI), and compare outcomes between isolated and non-isolated cases.

Methods
Active surveillance of RS was undertaken throughout UK/ROI via the British Paediatric Surveillance Unit reporting card and regional cleft teams between January 2016 and February 2017. Reporting clinicians completed surveys at the time of notification and after 12 months. Genetic classification was based on clinical information including genetic testing results, clinical geneticist assessment, and other specialist reviews. Gene alterations were considered causative if an association with RS was described in published literature or a genetic database.

Results
From 173 consecutive births, isolated RS was diagnosed in 53% (n=91). 98% with non-isolated RS underwent genetic evaluation compared to 63% with isolated RS ($p<0.001$). Prevailing genetic diagnoses were Stickler syndrome (SS) (n=20, 12%) and chromosomal abnormalities (10%). Non-isolated RS had increased probability of surgical airway ($p=0.048$) and feeding ($p<0.001$) support, NDD ($p<0.001$), and growth faltering ($p=0.004$). All children who died (n=7) had an underlying syndrome. Children with SS had lower probability of surgical airway ($p=0.031$), surgical feeding ($p=0.009$), and NDD ($p=0.002$) compared to others with non-isolated RS.

Conclusions
Non-isolated RS constitutes almost half of RS cases in UK/ROI and may be underestimated due to incomplete genetic evaluation amongst isolated cases. Disease severity is greater in non-isolated RS except for cases associated with SS, which have a similar presentation to isolated RS. As knowledge of RS genetic classification is important when planning management and establishing prognosis, routine genetic testing should be considered. Studies using whole genome sequencing to delineate the spectrum of gene alterations in RS are needed.
Robin sequence, genetics, outcomes

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A National Review of the Early Management and Speech Outcomes in Children with Robin Sequence (UK)

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction
Children with Robin Sequence (RS) and cleft palate are reported to be at a higher risk of speech difficulties compared to children with isolated cleft palate. However, there is little longitudinal data demonstrating the development of speech and language in this group.

Aims
To provide a longitudinal review of speech and language outcomes in children with RS and CP.

Methods
All UK and Irish Cleft Centres were invited to participate. Patients with RS and CP born between 2005-2009 were included. Speech and language outcomes at 18m, 3y, 5y and 10y were collated. Data on syndromic status, early airway/feeding management and hearing loss were considered as co-variables. Where possible data was compared to larger UK cohort data for all cleft types.

Results
There were 250 participants (23% syndromic RS) from 10 UK Cleft Centres. Mean age at initial palatoplasty was 10.6 months (range: 5-24 months).

See Table 1.

Data at 3y showed a language delay in 38.4% participants. This cohort had significantly worse speech when compared to those with CP only at 5y (p=0.02), but not compared to all cleft types (p=0.8). By 10y there was a reduction in CSCs; this was comparable to UK data for all cleft types at 10y. The secondary surgery rate for this cohort by age 10y was 42.6%.

Conclusions
Children with RS and CP have high levels of velopharyngeal insufficiency, articulation difficulties and language problems in the pre-school years. They often require additional surgery to improve palate function and require high levels of speech and language intervention. By age 10 years over 20% still experience some speech difficulties, but this was comparable to a UK cohort of all cleft types at this age.

Assessment Age	Velopharyngeal Insufficiency (%)	Active Cleft Speech Characteristics (%)
18m	37.1	43.5
3y	50.0	59.9
5y	28.8	48.8
10y	19.5	25.5

Robin sequence, speech outcomes

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Perioperative complications in Cleft Palate Repair in Robin Sequence following Tuebingen Palatal Plate treatment

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction:
Cleft palate repair in Robin sequence (RS) is associated with a considerable risk for perioperative complications such as intubation difficulties, respiratory dysfunction, airway obstruction, desaturations or postoperative respiratory distress (PRD). The neonatal airway management, timing of surgery and perioperative management may influence the risk for anaesthetic and postoperative complications.

Aims:
We aimed to evaluate perioperative complications following our institutional pre- and intraoperative management in cleft palate repair with Robin Sequence (RS).

Methods:
We retrospectively analysed RS patients with cleft palate repair done 2000-2020. RS children with complete documentation and whose initial treatment involved the Tuebingen palatal plate (TPP) were included. Clinical records and operative charts were reviewed concerning clinical characteristics as well as the neonatal and perioperative course. Results before and after adjustment of the anaesthesiology protocol in 2014 were compared.

Results:
143 RS (41% male, 59% female) patients were included. Median pre-therapeutic mixed-obstructive apnoea index (MOAI) after birth was 9.4/hour (IQR 20.0). TPP treatment was associated with normalisation of the MOAI and adequate weight gain until surgery. At surgery, median age was 10 months (IQR 3), MOAI 0.1/h (IQR 0.5) and weight 8.7 kg (IQR 1.7). In 93% (n=133), the postoperative course was uneventful. Refinement of the anaesthesiology protocol showed positive effects on the perioperative course and led to a reduction of perioperative events (10.7% vs. 2.9%). No severe perioperative complications occurred.

Conclusions:
We recommend the adoption of TPP treatment in the therapy of RS children. Our favourable results show that early TPP treatment minimises perioperative complications in cleft palate repair by effectively and sustainably correcting upper airway obstruction.
Robin sequence, perioperative complications

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Multimodal Treatment of Robin Sequence Utilizing Mandibular Distraction Osteogenesis and Continuous Positive Airway Pressure

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Objective: Mandibular distraction osteogenesis (MDO) and continuous-positive-airway-pressure (CPAP) may each have a role in effectively treating tongue-based airway obstruction (TBAO) in Robin Sequence (RS). This study describes longitudinal outcomes after treatment of TBAO with CPAP and/or MDO.

Design: Retrospective cohort study

Setting: Tertiary Pediatric Hospital

Patients: 114 patients with RS treated with CPAP and/or MDO from 2009-2019 were reviewed. Subjects receiving baseline and at least one follow-up polysomnogram were included. 55 who underwent MDO±CPAP and 9 who received CPAP-only treatment were included.

Main Outcome Measures: Patient characteristics, feeding, and polysomnographic data were compared and generalized-linear-mixed modeling performed.

Results: Baseline obstructive apnea hypopnea index (OAHI) was greater in the MDO-treated group (median $\tilde{x}$=33.7[Interquartile range (IQR) 26.5-54.5]) than the CPAP-treated group ($\tilde{x}$=20.3[13.3-36.7], p≤0.033). There was significant reduction in OAHI following treatment with CPAP and MDO modalities, p≤0.001. SpO 2 nadir after MDO was lower in syndromic ($\tilde{x}$=85.0[81.0-87.9]) compared to non-syndromic patients ($\tilde{x}$=88.4[86.8-90.5], p≤0.005.) CPAP was utilized following MDO in 2/24 (8.3%) of non-syndromic and 16/31 (51.6%) of syndromic subjects (p≤0.001,) for a median duration of 414 days. Three patients (5%) underwent tracheostomy, all had MDO. Nasogastric tube feeding at hospital discharge was more common following MDO (44, 80%) than CPAP-only (4, 44.4%, p≤0.036), but did not differ at 6-month follow-up (p≥0.376).

Conclusions: CPAP appears to effectively reduce obstructive apnea in patients with RS and moderate TBAO and be a useful adjunct in syndromic patients following MDO with improved but persistent obstruction.
MDO, CPAP, Robin sequence, polysomnogram

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Orofacial clefts and Pierre Robin Syndrome: 30 years of experience of a multidisciplinary group in a tertiary hospital

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

INTRODUCTION
Orofacial clefts (OFC) are common congenital craniofacial malformations. They can occur isolated or in association with multiple syndromes.
Pierre Robin Syndrome (PRS) is characterized by micrognathia, glossoptosis and airway obstruction, and cleft palate is present in most cases.

AIMS
To compare the clinic outcome of patients with and without PRS from a cohort of patients with OFC.

METHODS
Retrospective analysis of the medical records of a cohort of patients who attended the Cleft Lip Palate Multidisciplinary Group at São João University Hospital Center - Porto, during the last 30 years (January 1992 to December 2021).
The OFCs types were listed according to the Spina classification modified by Silva-Filho et al. Family history, prenatal diagnosis, associated syndromes and malformations were collected.

RESULTS
The group included 681 patients with OFC, of which 57.1% were males. The most common recognizable syndrome was PRS, affecting 10% of the population (n=69). The patients from PRS-group were mostly female (59.4%), unlike the non-PRS-group (41%). Prenatal diagnosis was significantly more frequent in the non-PRS-group (33.8% vs. 11.6%). The proportion of known family history was similar in both groups. PRS patients presented significantly more with other syndromes (36.2% vs. 20.8%) and congenital malformations (55.1% vs. 36.3%). From these, ocular, cardiovascular and other cranioencephalic anomalies were more common in the presence of PRS (34.8 vs. 16.3%; 34.8 vs. 15.4%; 33.3 vs. 10.9%), while uro-nephrological malformations were similar in both groups. The most common syndromes associated with PRS were Treacher Collins (n=4) and Stickler (n=4).

CONCLUSIONS
It is important to monitor OFC and associated syndromes. In our study, PRS was more associated with other syndromes and malformations. Therefore, within OFC patients, PRS is a group that needs particular surveillance. A multidisciplinar follow-up is crucial for the management of these patients.
Orofacial clefts, Pierre Robin Syndrome

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Prevalence and risk factors for growth faltering in infants with Robin sequence in the United Kingdom and Republic of Ireland

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction
Infants with RS are recognised to be at risk of growth faltering (GF). Proposed contributory factors include feeding difficulties resulting from abnormal tongue position, oropharyngeal dysfunction and cleft palate, and respiratory distress secondary to upper airway obstruction (UAO).

Aims
We aimed to describe patterns of GF from a cohort of consecutive RS births in the United Kingdom and Ireland (UK/ROI), and explore possible risk factors.

Methods
Active surveillance of RS was carried out throughout UK/ROI for a 13-month period (January 2016 – February 2017) via the British Paediatric Surveillance Unit reporting card and regional cleft teams. Surveys were sent to reporting clinicians at the time of notification and after 12 months to collect clinical data. Growth data were collected at up to four time points across both surveys. GF was defined according to NICE/WHO criteria.

Results
173 cases of RS were identified, of which 53% had isolated RS. 69% required airway intervention, including nasopharyngeal airway (NPA) in 57% and tracheostomy in 11%. 94% received feeding support; nasogastric tube feeds in 84% and surgical tube feeds in 10%. 32% received high-energy or fortified feeds. 94% had weight measurements submitted at ≥2 time points. 60% had GF, which included 46% with early GF at <3 months old. GF was significantly associated with non-isolated RS (OR 2.56 (1.3 – 4.9); p=0.004) and the need for airway interventions (OR 2.47 (1.2 – 4.9); p=0.010). GF was equally common amongst children managed with NPA and tracheostomy (p=0.911).

Conclusions
GF is common in RS, and infants with non-isolated RS and moderate to severe UAO are at highest risk. Surgical airway support does not appear to protect against GF when compared to non-surgical interventions. Close monitoring of weight is needed in RS infants, particularly amongst the identified high-risk groups.

Robin sequence, airway, growth

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Differences in analysis and treatment of Robin sequence care across different countries in Europe: a questionnaire study

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction

Robin sequence (RS) is associated with a high infant mortality rate. Early diagnosis and treatment after birth could greatly improve outcomes for these infants. Many different forms of management for RS exist, and the availability of these diagnostic tools greatly enhance care for these infants.

Aims

The goal of this study was to explore the availability of diagnostic tools and treatments for managing RS infants in lower income countries (i.e. GDP per capita < $40.000) compared to high income countries (i.e. GDP per capita > $40.000) in Europe.

Methods

In August 2021, an online survey was sent to healthcare professionals in Europe that are involved in RS treatment. The survey was designed to determine the availability of diagnostic tools such as arterial blood gas analysis (ABG), pulse-oximetry, CO2-analysis, polysomnography (PSG), and the use of sleep questionnaires, as well as to identify the used treatment options (e.g mandibular distraction, Tuebingen plates, nasopharyngeal tubes).

Results

Eighty-six professionals from thirty-two different countries completed the questionnaire. It was more challenging to provide care for RS infants in the lower income countries (four- versus three out of ten). Furthermore, in the lower income countries there was less access to ABG (78% versus 97%, P=0.02), CO2-analysis (31% versus 68%, P=0.01) and PSG (27% versus 91%, P=<0.01). There were no differences in accessibility concerning pulse-oximetry (93% versus 98%, P = 0.38), the use of sleep questionnaires (27% versus 30%, P = 1.00), home saturation monitoring (53% versus 77%, P=0.07), nasopharyngeal tubes (76% versus 91%, P=0.19), Tuebingen plates (24% versus 43%, P=0.24) and mandibular distraction (65% versus 77%, P=0.34).

Conclusions

This study demonstrates a large difference in available care for RS infants throughout Europe. Lower income countries have less access to analyses and treatments when compared to high income countries.

Pierre Robin, Europe, Healthcare discrepancy

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Minimally invasive approach to management of Robin Sequence

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction: Robin sequence (RS) includes micrognathia, glossoptosis and upper airway obstruction, often with a wide, u-shaped palatal cleft. Emergent management requires airway stabilisation and establishment of feeding.

Aims: To report respiratory and surgical outcomes of our multidisciplinary management of infants with RS between 2010 and 2017.

Methods: A minimally invasive approach in the neonatal period was taken with liberal nasopharyngeal airway (NPA) use guided by sleep studies. No mandibular distraction, tongue/lip adhesion or other surgical adjuncts were used. Parents were instructed in use of the NPA, with infants discharged home when an oral feeding plan was established. The palate was repaired between 6 and 9 months with a modified Malek technique. A retrospective chart review was carried out, recording demographic and clinical details; airway and feeding interventions, respiratory assessments, age at palate repair, length of hospital stay, post-operative complications, further surgery.

Results: Fifty-two patients with a median follow up of 46 months were included. Thirty-one patients were managed with an NPA preoperatively, with 9 patients still requiring a NPA at the time of surgery. Twenty-four patients required non-invasive ventilation pre-operatively. Three patients required a tracheostomy. All patients underwent a modified Malek cleft palate repair at median 7 months of age. Median post-operative length of stay was 5 days. At long-term follow-up, all tracheostomies had been decannulated. Nine patients required palatal fistula repair and 2 went on to have further surgery for speech. Overnight oximetry demonstrated improvement in mean SpO2 following NPA insertion (96.5% vs 97.45%, P=0.005). Lower 4% oxygen desaturation index (ODI4) values were also observed post NPA insertion (26 vs 19.45 P=0.051). A fall in obstructive apnoea hypopnoea index (OAHI) values were observed following cleft palate repair (5.9 vs 2.79, p=ns).

Conclusions: This study supports the use of non-surgical airway strategies in the neonatal period for infants born with RS and cleft palate.

Robin Sequence; Nasopharyngeal airway; Polysomnography

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Speech development in cleft palate with and without Robin Sequence

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction:
Robin sequence (RS) is defined as the triad of micrognathia, glossoptosis and upper airway obstruction. In up to 85%, RS is associated with cleft palate. Many studies reported worse speech development in RS children after cleft palate repair.
Aims:
We aimed to investigate speech development in isolated RS with cleft palate vs. children with cleft palate only (CPO) in a prospective study at the age of 5-6 years.
Methods:
All RS children were treated with the Tübingen palatal plate (TPP) after birth in order to resolve upper airway obstruction. Data were collected using the German version of the Great Ormond Street Speech Assessment (GOS.SP.ASS 98-D). Audio and video recordings were reviewed and analysed separately by two blinded senior phoniatricians based on the German version of the Universal Reporting Parameters for Cleft Palate Speech (URP-D). In addition, an URP-D Score was established to enable comparability of speech outcomes.
Results:
A total of 44 children (22 RS, 22 CPO) were included. RS children were significantly older at surgery (11.8 vs. 7.1 months, $p<0.001$), but younger at study (70.5 vs. 75.2 months, $p=0.035$). RS children also had more severe cleft of the palate ($p=0.006$). All children studied showed good to very good speech development without serious impairment. None of the reported URP-D parameters showed significant group differences. The median total URP-D Score in RS group was 23 (IQR 16.5-27.5) vs. 19 (IQR 17-23) in CPO. Statistical analysis revealed no significant effect of group ($Z=-1.47$, $p=0.14$).
Conclusion: No group differences in speech development were found at age 5-6 years. Isolated RS does not necessarily represent a risk for impaired speech development.

Robin sequence, cleft palate, speech

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Syndromes associated with Robin sequence - a national prospective cohort study

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction: The prevalence of Robin sequence (RS) associated with a syndrome in the UK is unknown. The diagnosis of syndromic RS may have implications for patient management with the potential for more intensive interventions compared to patients with non-syndromic RS and cleft palate only (CPO).
Aim: To explore the prevalence of syndromic RS in the UK, and to determine if this group of patients had an increased need for airway and feeding management compared to non-syndromic RS and CPO controls.
Methods: Secondary data analysis was performed using data from the UK's Cleft Collective cohort studies, a national, multi-centre longitudinal cohort study. The sample comprised 258 participants who fulfilled the diagnosis of RS and for whom syndromic status, and airway and feeding management data were available. This group was compared to 550 participants with CPO.
Results: We report a prevalence of an associated syndrome in 28% of our RS group. The most common syndrome was Stickler syndrome (27%). Syndromic status was higher amongst patients with RS compared to those with CPO ($\chi 2=22.508$; $p<0.001$). Syndromic RS patients have an increased reliance on airway adjuncts compared to the non-syndromic RS patient ($\chi 2=5.656$; $p=0.017$). There was no evidence of a difference in the use of feeding adjuncts between syndromic and non-syndromic RS groups ($p=0.147$).
Conclusions: The presence of a syndrome has implications for the management of patients with RS. Early identification of a syndrome may help prevent the consequences of a missed syndromic diagnosis. Routine ophthalmological and genetic screening for Stickler syndrome, the most commonly occurring syndrome, should be mandatory for all patients with RS.
Robin sequence, syndromes, Cleft Collective

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Retrospective review of airway management for infants with Pierre-Robin Sequence at Queensland Children's Hospital

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MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction: Pierre-Robin sequence (PRS) is a congenital abnormality characterized by micrognathia, glossoptosis and variable severity upper airway obstruction. Clear management algorithms are lacking, particularly the indications for surgical versus non-surgical intervention. We reviewed the management of these children in Queensland.

Methods: All children diagnosed with PRS at the Queensland Children's Hospital from April 2014-October 2019 were identified (n=45) and their charts retrospectively reviewed. Three management patterns emerged: prone/lateral positioning, nasopharyngeal airway (NPA) use, and surgery (tracheostomy or mandibular distraction).

Results: Most children (n=30; 67%) were managed successfully non-surgically with NPA (median age of insertion 0.25 months, median duration 5.0 months). Of these, 12 patients (40%) also required supplemental oxygen. Median age of NPA cessation was 5.5 months, with oxygen therapy ceasing at a median 8.25 months, upon which no further airway support was required. The remaining majority (n=13; 29%) of children were managed without NPA, using a combination of positioning (11/13), supplemental oxygen (2/13), or CPAP (2/13). Only two patients underwent elective surgical intervention. Feeding supplementation via nasogastric tube was necessary in 78% of patients, for a median 4 months. Cleft palate co-existed in all but one patient.

Conclusion: Management of upper airway obstruction in PRS children is variable between units. Over a five-year period, 96% of children with PRS were managed without surgical intervention at the Queensland Children's Hospital. These findings contrast with some other literature and may suggest that more careful consideration of surgical intervention in PRS patients is prudent.

Pierre Robin, cleft palate, airway

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PIERRE ROBIN SEQUENCE AND RESPIRATORY DISTRESS: LONG-TERM EVOLUTION IN PATIENTS SUBMITTED TO THE CONSERVATIVE TREATMENT

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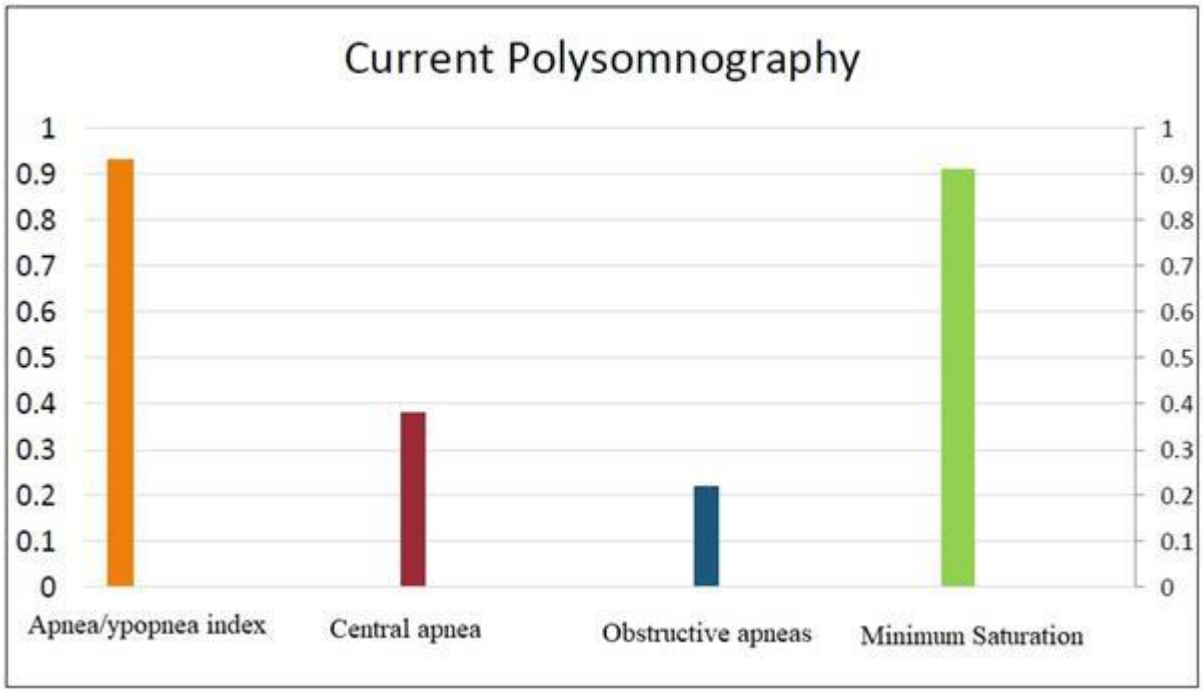
MO3.2 Robin Sequence - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 11, 2022, 11:00 - 13:00

Introduction: PRS is characterized by micrognathia, glossoptosis, cleft palate and airway distress. The aims of initial treatment are the improvement of airway and feeding. There are options to manage these patients, it includes from conservative techniques, as prone positioning treatment, nasopharyngeal tube, mandibular distraction and tracheostomy. In our center, initially conservative treatment is the rule, and many patients have received nasopharyngeal tube to their treatment.
Objective: Analyze of long follow-up of respiratory distress in infants with PRS submitted to non-surgical treatment.
Methods: Retrospective and observational descriptive evaluation was carried out with 56 patients with PRS with focus on clinical situation at birth (presence of cleft palate, respiratory distress, swallowing difficulties) and in the instituted treatment (hospitalization time, previous treatment, adopted treatment, palatoplasty; total time of treatment). From these, 21 were selected to a transversal phase where were analyzed respiratory distress, feeding, weight and aesthetic and orthodontic profiles, skull cephalometric study.
Results: Treatment has started in an average age of 1.5 month and that, from 18 patients, 94.4% had respiratory distress at birth, 88.9% cleft palate, 55.6% glossoptosis and 61.1% some swallowing difficulty. The patients remained in the hospital for an average time of 26.3 days after birth, 72.2% used nasopharyngeal tube, 22.2% the prone positioning treatment, and 5.6% the orotracheal tube. After an average of 81.1 months, 94.4% patients had normal oral feeding via while the polysomnographic exams showed an average apnea index of 0.93, an average number of central apnea/hour of 0.38, an average number of obstructive apnea of 0.22 and an average oxygen saturation of 91%. Sixteen out of 18 patients had Class II occlusion.
Conclusion: The conservative treatment has presented remarkable results in the treatment of respiratory distress in bearers of PRS with a decrease of obstructive sleep events considering the growth of patient and the development of mandibular growth as well.



Pierre Robin Sequence; Conservative Treatment

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Delineating the malformation, deformation and displacement subunits in the osseous cleft anatomy using a virtual 3D point-of-care model

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
The nature of cleft anatomy in UCLP and BCLP is characterized by a mosaic of malformed, deformed and displaced osseous subunits of the craniofacial skeleton.
Accordingly, the nature of cleft therapy comprises combined orthopedic, surgical and regenerative measures to convert the cleft anatomy into normal. Yet a descriptive 3D framework is lacking that assigns the specific deviant nature (malformation, deformation and displacement) to the affected bones of complete clefts.
Aim
Introducing an open access 3D virtual and printable point-of care didactic model of an unilateral and bilateral complete cleft. The models highlight the anatomical area, osseus subunits and their deviant nature, respectively.
Method
The native DICOM files were segmented in Mimics 23.0 software, (Materialise, Leuven, Belgium) which is a commonly used in-house 3D planning software in Maxillofacial Departments. The quality and the accuracy of anatomical structures was checked by an anatomist and two surgeons.
Results
Following a well-defined workflow, accurate virtual models were generated. The. stls models were made available and accessible by using a free modeling software -Meshmixer (Autodesk, San Rafael, CA, USA). In this user-friendly program, the skulls with all their boney components could be visualized and independently analyzed as needed, eliminating the actual need of printing them, thus reducing invested time and costs. The models were assessed by a group of expert surgeons and a group of trainees. Both groups reported a better understanding of the cleft morphopathology, palatal anatomy and the relation of the palatal shelves with the vomer and premaxilla.
Conclusion
The virtual 3D point-of care skull model represents an accessible and useful tool in teaching and cleft care.

virtual model, point-of-care, 3D printing

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Bone anchored maxillary protraction in UCLP: outcomes and stability

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Patients with unilateral complete cleft lip and palate (UCLP) often present with maxillary deficiency as a side effect of primary surgeries, demonstrating esthetic and functional impairment. The treatment protocol for moderate to severe maxillary deficiencies consists of orthognathic surgery with maxillary advancement at the end of the growth period. The disadvantage of the current protocol is that patients with UCLP usually go through childhood and adolescence displaying facial dysmorphology. Bone anchored maxillary protraction (BAMP) was performed in 29 individuals with UCLP and a mean age of 11.7 years at HRCA-USP, Brazil. At least 6 months after secondary alveolar bone grafting, Bollard miniplates were installed in the posterior region of the maxilla and in the anterior region of the mandible. Class III elastics were recommended to be worn for 24 hours/day for a mean time of 18 months. BAMP therapy showed significant maxillary advancement, gonial angle closure, ramus posterior displacement, and restriction of chin protrusion. The overjet correction was 2.35mm (SD=3.07). Patients were followed until the end of growth period using nighttime elastics. Le Fort I surgery for maxillary advancement was not required in 65% of the sample. BAMP is an adequate orthopedic therapy in subjects with UCLP and midface deficiency. Stability of an adequate overjet is expected when Class III elastics are maintained until the end of growth.
Cleft lip, cleft palate, maxilla

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A Digital Solution to Design, Build and Deliver Orthodontic Appliances

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction:
Conventionally, to initiate orthodontic treatment with fixed appliances requires several visits. In the last few years, cloud-based systems have become more attainable for appliance design and delivery. Using optical scanning and digital X-rays we are now able to streamline the processes. Appliances such as expanders can be custom built, while indirect bonding trays may also be built for installing appliances efficiently. Design and fabrication can now be done outside the office, and thus the number of visits be minimized. The question remains, however, does indirect bonding place the brackets accurately as planned?

Aims:
This pilot study evaluates the accuracy of the appliance placement under this newly improved digital workflow.

Methods:
With IRB approval, 10 cases were retrospectively reviewed. They were optically scanned using the 3shape Trios system (3Shape Co. Copenhagen, Denmark). Digital data were utilized to create digital final setups of their predicted occlusion. Indirect bonding trays were created to place braces on the teeth (3M Victory Series low profile 022 slot). Following the bonding of the braces patients had their teeth scanned again. Such images were overlayed against the original setup to evaluate accuracy of placement. The appliance discrepancies between the setup and actual outcome were computed and expressed in terms of translation and rotation (6 degree of freedom) in a Cartesian coordinate system.
Results:
Tabulation of the results indicated that the method of bracket placement was accurate: maximum translation is less than 0.11mm and maximum rotation less than 0.52 degree which are clinically acceptable.

Conclusions:
The appliance placement is accurate following our newly streamlined digital workflow.

Clinical relevance:
The amount of time the patient was in the office is reduced, which was important as patient confidence was low due to the ongoing pandemic.

Orthodontics, Digital Work Flow, Cloud

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SKELETAL MATURITY ASSESSMENT IN CLEFT LIP & PALATE PATIENTS – ARE WE TRAILING?

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Cleft lip & palate patients have been proven to have retarded craniofacial growth, especially maxilla and mandible. Growth modification is an integral component in the management of the skeletal disharmony which is executed just prior to or during the onset of pubertal growth spurt predicted by skeletal maturity indicators. Researchers have been using cervical vertebra for the same which has not been very reliable due to the retarded growth. Aims and objectives: To assess the reliability of the cervical vertebral maturity in determining the skeletal age in non syndromic cleft lip or palate (NSCLP) male patients; To determine whether skeletal maturity in cleft lip and palate patients can be accurately determined with the help of maxillary canine, mandibular second and third molar calcification staging. Methods: All treated and ongoing cleft lip and palate male patients recruited under Transforming Faces (TF) Project at the Cleft Orthodontics Centre, Department of Orthodontics, Sri Ramachandra Dental College, Porur with complete set of diagnostic records. Subjects were divided into two groups based on age (10 – 13 years & 14 – 16 years). Control group had age and gender matched subjects with no cleft lip or palate and skeletal maturity was recorded. Subsequently another study was conducted with two groups; cleft and non – cleft and dental and skeletal ages were determined respectively. The maxillary canine, mandibular second and third molar calcification stages was compared with the CVMI staging in both groups. Results: There was significant retardation in growth in cleft patients belonging to the age group 14-16 years. Conclusion: There was a delay in the attainment of skeletal maturity and onset of pubertal growth spurt in the NSCLP patients when compared to the NCP patients.Calcification staging of mandibular second molar was established as the most reliable tooth to determine skeletal maturity in cleft patients.
cleft, cvmi, teeth calcification, maturity

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AN OVERVIEW OF CLEFT AND CRANIOFACIAL TEAM ORTHODONTIC CARE IN NIGERIA

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Nigeria is Africa's most populous country, with less than 100 specialist orthodontists and only a small percentage of these are involved in cleft care. In the last decade, there has been a significant increase in multidisciplinary cleft care in the country and orthodontics is an integral part of this care.
Aim: To assess the cleft and craniofacial orthodontic care provided by multidisciplinary cleft teams in Nigeria.
Methodology: This was a cross-sectional survey involving the orthodontic team leads of all the centres providing multidisciplinary cleft care in Nigeria. Data collection was via google forms. Informed consent was obtained from study participants.
Results: The response rate was 84.62%, as 11 out of the 13 orthodontic leads completed the survey. Most orthodontists were university/hospital employed (63.6%). Many (63.6%) of the respondents reported that only 0-25% of their orthodontic practice was devoted to cleft care. Presurgical infant orthopedics (PSIO) was offered by all the teams, with lip taping being the commonest (100%) followed by nasoalveolar molding (63.6%) and a majority (72.7%) performed surgical orthodontic procedures.
Conclusion: A wide range of cleft and craniofacial orthodontic procedures are carried out by orthodontists involved in cleft care in Nigeria.

Orthodontic cleft care, Nigeria

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The orthodontic burden of care of patients with cleft lip and palate: a multi-centre study

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
Patients with a cleft lip and/or palate may require multiple episodes of orthodontic treatment during their childhood. These can be to facilitate surgical episodes (pre-surgical orthopaedics, alveolar bone grafting, orthognathic surgery), interceptive treatment of problems occurring during dental development or, for comprehensive orthodontic correction of a malocclusion.

Aims
To assess the orthodontic journey, burden of care and outcome of patients with a cleft lip and/or palate.

Methods
Retrospective multi-centre study combining and comparing data from cleft centres in Great Britain and Ireland. Three centres agreed to participate and use a common data collection tool which was circulated in the Orthodontic Clinical Effectiveness Network.
All patients who had been debonded in 2019 were included. Information was obtained regarding patients' orthodontic journey, duration of treatment, frequency of visit, types of courses of treatment, types of appliances used and Peer Assessment Rating (PAR) scores.

Results
65 patients were included in the study of which 19 patients had a UCLP, 4 with BCLP, 20 with a diagnosis of CP, 10 with a CL and 12 other cleft diagnoses. The median age at the end of orthodontic treatment was 16 years, with a median duration of treatment of 35 months (range 25 months to 41 months between centres). An average of 20 appointments were required to complete treatment. A variety of treatment protocols were used across the centres, with differences in the number of orthodontic interventions, visit frequency, type of appliance used and PAR scores.

Conclusions
The cleft diagnosis affected overall treatment time. There also were variations in types of appliances, interventions and PAR outcomes between centres. The study highlights different aspects of the burden of orthodontic care faced by cleft lip and palate patients.

orthodontics, cleft, burden, outcomes

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Maxillary dental arch changes in the deciduous dentition of children with non-syndromic cleft palate

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: It has been claimed that the degree of maxillary growth restriction in children with cleft, is associated with different factors, including the type of cleft.
Aims: To assess changes in the maxillary dental arch in children with non-syndromic cleft palate between 2.5 and 5 years of age.
Methods: Digital study casts of 24 children, 16 with cleft of the hard and soft palate (SHPC group), and 8 with a soft palate cleft only (SPC group) were included. The control group (CG) consisted of 30 children without cleft and with normal occlusion. The maxillary digital dental casts were obtained at the age of 2.5 and 5 years for the cleft groups and at the age of 5 years for the CG. Transverse distances between the contralateral cusps of canines, the contralateral central pits of second deciduous molars, and transverse distances between the midpoints of the palatal gingival contours of contralateral canines and contralateral second deciduous molars as well as the anterior arch length were measured.
Results: When testing for the effect of age (2.5 to 5 years) and cleft type (SHPC and SPC group) on the maxillary arch dimensions no effects for any of the measurements were observed. However, mean values of arch dimensions among cleft children were smaller at the age of 5 years than those at 2.5 years. The reduction was more pronounced in the SHPC than SPC group. At 5 years of age, the SHPC group exhibited significantly shorter transverse distances between canine cusps, midpoints of the palatal gingival contours of canines, and central pits of second deciduous molars compared to the CG ($p<0.005$). No significant differences were observed between the SPC group and CG.
Conclusions: Children with SHPC showed greater maxillary growth impairment compared to SPC children, especially in the cuspid area.

cleft palate, growth

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Effects of rapid maxillary expansion on hearing loss and otitis media in cleft palate children

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

1.Introduction
Otitis media with efusion (OME), recurrent acute otitis media and conductive hearing loss (CHL) are signifcantly prevalent in children with cleft palate (CP) and cleft lip and palate (CLP). Rapid Maxillary Expansion (RME) appears to have a positive effect also on middle ear disorders in these patients.
2.Aim
The aim of the study is to offer a prospective evaluation of RME effects in a group of patients with CP/CLP in terms of OME and CHL.
3.Methods
A prospective observational study was conducted. Thirty-nine CP, CLP and submucosa cleft patients who received orthodontic indication to RME treatment for OME or conductive hearing loss in a tertiary institutional Care Unit of San Paolo Hospital, Milan (IT), were included. Twenty-two patients matched for age and with analogous inclusion criteria except for indication to RME treatment were enrolled in the control group. Clinical otolaryngological evaluation, pure tone audiometry and tympanogram were performed at the beginning of treatment (T0), at the end of the expansion (T1) and at 6-month follow-up (T2). Air-bone gaps and tympanogram results at each time interval were measured.
4.Results
In the main group, RME allowed a statistically signifcant improvement of air-bone gaps and tympanometry results ($p<0.05$). Improvements were stable during follow-up and were signifcantly better in the main group than in the control group.
5.Conclusions
CHL and middle ear efusion improved signifcantly during RME and after 6 months of follow-up.

Maxillary expansion, Conductive hearing loss

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Tooth-borne Interdental Distraction Osteogenesis Along Arch Curvature for Wide Alveolar Clefts Reduction

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MO3.3 Orthodontic, Fintry, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Restoration of alveolar bone continuity is an integral component in management of cleft lip and palate patients, providing a matrix through which teeth in line of cleft can erupt. Several procedures can be done in order to repair this defect such as gingivoperiosteoplasty, alveolar bone graft, segmental bone transport and segmental osteotomy. For wide alveolar clefts, combined orthodontic and surgical care enhance treatment outcomes. Regarding bone segment transport, orthodontic expansion screw can be used as a distractor device aiding in closure of the cleft.
Aim: Closure of wide alveolar clefts through Interdental Distraction Osteogenesis (IDO) by a tooth-borne device along arch curvature.
Methods: Seven patients with wide alveolar clefts and oronasal fistulae (age range 12-25 years old) were treated with IDO. The distractor device was made from an orthodontic expansion screw, rigid palatal and labial arch wires acting as a rail along which the transport segment moved anteriorly. An “L-shape” osteotomy was performed; vertical interdental and horizontal osteotomies were performed to mobilize the transport segment completely. Cone Beam Computed Tomography (CBCT) was taken for all cases before and after distraction to assess extent of cleft reduction at both oral, nasal sides, to notice amount of dental tipping occurring with tooth-borne devices.
Results: Clinically, there was reduction of the alveolar cleft and oronasal fistula. The CBCT showed that tipping of teeth in transport segment occurred, leading to closure of cleft at oral side, but for the nasal side seal, additional docking site grafting is needed.
Conclusion: Tooth-borne IDO can aid in closure of wide alveolar clefts and oronasal fistula but can’t provide total closure of the whole length of the cleft.

Alveolar cleft, distraction osteogenesis

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Comparison of Immediate Oral Feeding Methods Post-Cheiloplasty in Infants with Cleft Lip

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Cleft lip and/or palate is the most common craniofacial abnormality effecting approximately 2.14 of every 1000 children born of Thailand. Cheiloplasty is the treatment with first surgery when the patient is age 3-6 months. Postoperative nursing care is critical because potential complications, such as wound infection and dehiscence may result in inadequate nutrition, lip asymmetry, impaired wound healing, and may necessitate additional surgery. Currently, different institutions provide varying postoperative care for cheiloplasty, and some discontinue breastfeeding or bottle-feeding for 2-4 weeks post-surgery; instead, diet is delivered via syringe or a spoon to prevent wound dehiscence. However, some study found that early breastfeeding or bottle-feeding after lip repair has no significant of wound dehiscence.

Aims: To compare feeding methods (breastfeeding or bottle-feeding versus feeding via syringe or spoon) immediately following cheiloplasty and evaluate these methods for wound dehiscence and infection.

Methods: This retrospective study enrolled patients with cleft lip who underwent cheiloplasty at Naresuan University Hospital from October 2017-September 2021. Subjects were 3-6 months old and were operated on by the same surgeon using the modified rotational advancement technique developed by Noordhoff. After the procedure, feeding was resumed immediately. The study gathered the patients' demographic information, pre-surgical nasoalveolar molding, and postoperative feeding method. Subjects were divided into two groups: Group 1 – breastfed or bottle-fed; and Group 2 – fed via syringe or spoon. After discharged from the hospital, wound infection and dehiscence were evaluated in both groups.
Results: Forty-three patients were breastfed or bottle-fed, while six were fed via spoon or syringe, post-cheiloplasty. Following discharge, neither group had wound dehiscence, but 2 patients in group 1 developed wound infection.
Conclusions: Immediate breastfeeding or bottle feeding post-cheiloplasty is not associated with wound dehiscence or infection.

cleft lip Post-Cheiloplasty oral-feeding Comparison

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Nutrition care program for cleft babies- can we save lives by early intervention?

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction;
Cleft children in central and eastern parts of India suffer a serious burden of malnutrition. Lack of awareness and information, lack of education, poor hygiene and poverty, all play a role. It also gets complicated because of many complex social, psychological and family issues.

Many cleft children, mainly bilateral clefts of the lip and palate and especially girls, never reach the hospital for treatment. Most arrive in already malnourished condition. A lot of them are operated while still in malnourished condition and consequently, have high incidences of complications. During 2004-2006, we noticed that many patients (parents) contacted us soon after the birth and then disappeared. We wanted to solve this mystery of disappearing cleft patients . A thorough enquiry into this was startling- most of them died of malnutrition!

Methods:
We started an innovative cleft feeding counselling program in 2006. Our trained counsellors monitor each child who is registered with us through our network. They are first counselled on the first personal visit to the hospital or a telemedicine centre, or only by telephone , then subsequent weekly counselling or monitoring is done on phone, interspersed with hospital or telemedicine centre visits or field visits. Nutrition counselling and support was provided to several thousand cleft patients and became most emphasised part of our cleft project.
Any child going below the expected growth is red flagged and especial measures started immediately to rescue her.

Results:
We have been able to rescue many severely malnourished children who would have ,otherwise, died due to malnourishment. We could prevent a lot of children from being malnourished and they could be operated on time in good health.

Conclusions; Cleft nutrition program if started early can prevent deaths and malnutrition of cleft babies and allow them to get operated in time and in good health .

Cleft Nutrition, feeding in cleft,

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Feeding difficulties in infants with unrepaired cleft lip and palate and HIV-exposure

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: There is limited description of the feeding characteristics of infants with unrepaired cleft lip and palate (CLP), exposed to HIV.

Aim: To compare feeding characteristics of infants with unrepaired CLP and HIV-exposure, to infants with unrepaired CLP only.

Method: A two-group prospective comparative design with a validated measure, the Neonatal Feeding Assessment Scale was used. The effectiveness of oral feeding skills between the two groups were measured based on the objective measure of oral feeding skills by Lau and Smith (2011). Twelve participants with unrepaired CLP and HIV-E and 13 with unrepaired CLP (aged < 3months) were matched according to cleft type and use of feeding obturator. There were no differences between the groups for mean age, birth weight and gestation. Participants were between two and 89 days old, bottle fed, and had no syndrome/co-occurring disorder.

Results: Nine (75%) participants in the research group (RG) and only two (15.38%) in the control group presented with the likelihood of oropharyngeal dysphagia. Apart from feeding difficulties as a result of structural impairment, the RG showed symptoms of oropharyngeal dysphagia of neurological origin.

Conclusion: The RG presented with distinctive symptoms of oropharyngeal dysphagia. More studies using different measuring tools, including instrumental assessment are required to strengthen the evidence.
HIV-exposed, unrepaired cleft lip/palate,oropharyngeal dysphagia

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BREASTFEEDING IN PATIENTS WITH CLEFT LIP AND PALATE IN A CLINIC IN CARTAGENA DE INDIAS – COLOMBIA 2022 DURING THE COVID-19 PANDEMIC.

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Patients with cleft lip and palate have significant problems in breastfeeding due to the difficulty in performing suction correctly. In this context, the development of the newborn is usually compromised by low weight gain. The objective of our study was to evaluate the rates of breastfeeding in patients with cleft lip and palate at the Cartagena del Mar clinic during the COVID-19 pandemic.

Methods: The parents of patients with cleft lip and palate treated at our center were interviewed about the diagnosis of oral fissure, the nutrition advice received, and their child's eating habits.

Results: Data were obtained from the parents of 70 patients with oral fissures. 84% of the parents received counseling to feed a child with fissure, and 40% percent of the patients received breast milk for some period of time. When used, breast milk made up the bulk of the diet, of which 75% of parents who received counseling were more likely to give breast milk to their baby.

Conclusion: We present on breastfeeding in the population with cleft palate in the City of Cartagena, Colombia. Although still lower than the population without fissure, breastfeeding with respect to initiation rate, duration and proportion of the total diet is significantly higher than previously reported.

breast milk; oral fissure

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Educational Intervention to Motivate Breastfeeding of Children Born with Cleft Lip and Palate

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Primary lip repair of children born with cleft lip and palate (CLP) at 3 months is desirable to help proper timing of subsequent comprehensive treatment and to minimize parental anxiety. However, many children cannot be treated at this time due to difficulties in feeding and proper growth.
Aims: To test a systematic educational intervention in the early trajectory of growth of children born with CLP.
Methods: Children born with CLP referred for treatment within 30 days of live received the intervention. The intervention consisted of an initial in-person orientation to the mother with her child on breastfeeding and the use of portable breastfeeding milk pump, followed by weekly contacts via texting to the mother. At these contacts, the mother was asked about feeding practices and the current weight of her child. In-person visits were scheduled normally according to the routine already in existence. The main outcome measure was weight at 10 weeks of life.
RESULTS: One hundred and fifty children were followed between 11/1/2020 and 10/31/2021. Fifteen mothers were able to breastfeed her child exclusively and 75 utilized the breastfeeding milk pump to feed their children. All children that received the intervention achieved a weight considered to be satisfactory to undergo primary lip surgery at 10 weeks of life. During the period of the intervention, 302 children arrived for treatment after 30 days of life.
Conclusions: The implementation of care for children born with CLP in the first month of life with weekly contacts with the mother increases the likelihood that children will achieve the desirable weight for primary lip surgery at 10 weeks of life. A substantial number of families experienced barriers to start their care within days of birth, and future work should focus on identifying these barriers and designing strategies to eliminate them.
Support was provided by Smile Train, Inc.
Breastfeeding, Cleft Lip, Nutrition, Intervention

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Early observation of feeding in children with clefts

Differences in parent-child interaction in children with a cleft lip and/or palate

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Abstract

Objective Feeding is one of the earliest parent-child interactions. Feeding difficulties can lead to stress, dysregulation and strain on the parent-child interaction. The main purpose of this study was to gain more insight in the parent-child interaction in very young children with CL/P in relation to feeding and possible feeding difficulties.

Design A cross sectional observational study was performed focusing on parent-child interaction during bottle feeding at the age of four weeks. During home visits a video recording was made during one feeding moment and parents filled out a questionnaire. We included 49 consecutive children with CL/P who visited the cleft team*. Analysis was done of gparent-child interaction and feeding problems, as well as subjective feeding problems. Parent-child interaction was scored with the "OOKI tool".

Results The occurrence of feeding difficulties, facial expression, and birth order of the child, correlated with specific components of the interaction between parent and child during feeding. OOKI total score and the OOKI mean per item showed significant negative correlations with means a more positive interaction with the occurrence of feeding difficulties (Pearson = -.337, p = .018 and Pearson = -.328, p = .021).

Conclusion More positive interaction was established when the child had more feeding difficulties and if the child was the first- or second born child in the family. No differences in interaction are found between different types of clefts. Professional guidance can optimize feeding moments and help in early signaling of difficulties.

*in the affiliated hospital (anonymized)

Cleft lip/palate;parent-child interaction; feeding problems

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Feeding Methods of Filipino Mothers of Children with Cleft Lip and Palate

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

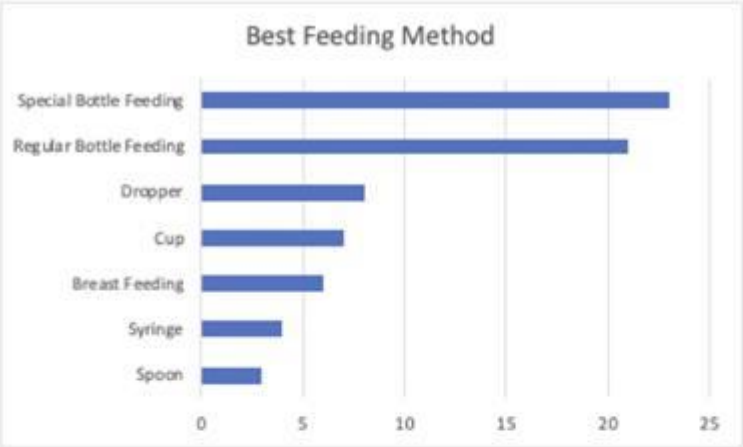
INTRODUCTION
One of the initial problems that children born with cleft lip and palate encounter is their difficulty in feeding. This affects the child's nutritional needs and the timing of the surgical intervention. Information on the appropriate feeding methods for children with cleft lip and palate will enable mothers to feed their babies properly and provide them with the proper nutrition needed. The study provides baseline data on the feeding methods used by Filipino mothers of children with cleft lip and palate. Likewise, it will generate useful information about appropriate feeding practices that will benefit Filipino mothers of children with cleft lip and palate.

AIMS
The study seeks to determine what feeding methods are used by parents of children with cleft lip and palate. Which methods they found efficient and considered helpful. With this information, interventionists may make appropriate recommendations later on about nutrition and parenting education.

METHODS
Online surveys and interviews were conducted to identify parental responses to their child's feeding problems. 49 mothers were recruited from a parent support group for parents of children with cleft lip and palate in the Philippines.

RESULTS
Results showed nasal regurgitation (41.86%) is the most common feeding issue, sucking (39.53%) and nipple latching (34.88%). 20 Mothers used regular feeding bottles, 19 used special feeding bottles, and 17 used dropper feeding. Mothers identified special feeding bottles as the most effective feeding method (44.2%), regular feeding bottles (40.4 %), and dropper feeding (15.4%). 26 parents were satisfied with the use of special feeding bottles, 11 for feeding bottles, and 7 for dropper feeding.

CONCLUSION
Most participants found the use of specialized feeding bottles made it easier to feed their children. Specialty bottles were not typically the initial method used by most mothers (44.2%). This could be the result of a lack of information or the unavailability of these bottles.



Preferred Feeding Methods of Filipino Mothers of Children with Cleft Lip and Palate N=41

Cleft, Feeding, Filipino, Mothers, Method

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A Webinar on Specialized Breastfeeding Counseling for Infants With Clefts Made Practical

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MO3.4 Feeding, Kilsyth, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction & Aims:
Mothers of babies with clefts receive little to no guidance on the importance of breastfeeding and how to breastfeed their babies. With the technical support of Kalusugan Ng Mag-Ina (Health of the Mother and Child), Smile Train organized a webinar designed to empower local partner hospitals to provide proper nutrition guidance to these mothers.

Methods:
Technical experts within a network of trained mother support groups served as resource speakers. Topics included Early Essential Newborn Care emphasizing non-separation, positioning, attachment, breast problems, alternative methods for feeding and re-lactation. Hosted in the Philippines using Zoom™, presentations were delivered in English. Participants were assessed on their knowledge before and after the webinar using multiple choice questions.

Results:
386 participants from eleven countries registered for the webinar. 86% were local attendees. 206 participants joined on Day 1, while 121 joined on Day 2 of the webinar. Day 2 attendance dropped due to Category 4 Storm Rai cutting internet connections in Central and Southern Philippines.
Nurses represented 17%, while pediatricians represented (10%) of participants. Remaining participants were midwives, dentists, nutritionists, and other professionals involved in patient care. Webinar recordings were made available to partners unable to attend the live sessions.
There was an increase of correct responses for 8 of 10 questions provided (n=179, pre-webinar; n=115, post-webinar).
In the post-webinar evaluation (n=107) using a 4-point Likert scale, 97 respondents agreed/strongly agreed to recommend the webinar to regional colleagues.

Conclusions:
Gaps in providing feeding counseling and nutrition information for mothers whose babies have clefts remain. By providing accurate and timely information, we hope to improve the health conditions of these babies to facilitate safe, quality, and timely cleft surgeries. We recommend that the informal network of breastfeeding mother support groups engaged by Smile Train be further capacitated to provide this crucial support.
breastfeeding counseling

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Millard's modified technique in the reconstruction of bilateral cleft lip: Objective and subjective assessment

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

1.Introduction : At Necker-Enfants Malades, the surgical team performed a one-stage modified Millard strategy with primary rhinoplasty in patients with bilateral cleft lip from 3 months to 6 months of age for many years.
2. Aims : The objective of the present study was to evaluate the long-term results of this technique in homogeneous groups of patients before any secondary surgery and to assess two methods of evaluation: indirect anthropometric objective measures and subjective assessment.
3. Methods : Photographs of 69 patients between 2001 and 2015 were analysed. Iterative measurements on the nose and mouth of each child's photographs were performed by two surgeons and then analysed for symmetry and compared to charts. A survey was also given to a panel for subjective evaluation.
4. Results : Our comparative objective anthropometric analysis showed no intra- or inter observer variability. Symmetry was always achieved in the lip and the philtrum. The shape of the philtrum was similar to that of children without clefts. The surveys showed that the panel found the postoperative results satisfactory for cleft lips and average for cleft palates.
5. Conclusions : Millard's modified technique used for 15 years has shown satisfactory surgical results, achieving symmetry on the lip and philtrum. Indirect anthropometric measurements are reproducible in the evaluation of bilateral clefts.

Bilateral, Labioalveolar, Indirect anthropometric assessment

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Primary premaxillary osteotomy with gingivoperiosteoplasty for bilateral cleft lip and palate patients with protrusion and/or torsion of the premaxillae

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
In complete bilateral cleft lip and palate (cBCLP) patients with protrusion and/or torsion of the premaxillae, it is difficult to achieve a good outcome. We have developed synchronous premaxillary osteotomy (PO) and gingivoperiosteoplasty (GPP) with primary cheiloplasty for cBCLP patients who did not respond well to pre-surgical orthodontics (PSO). However, it required difficult techniques and had a risk of losing premaxilla because of the defective circulation. Therefore, we took procedures of PO and GPP only, without cheiloplasty.
Aims
The purpose was to establish procedures for cBCLP patients with protrusion and/or torsion of the premaxillae.
Methods
A total of 34 cBCLP patients with protrusion and/or torsion of the premaxillae underwent PSO from 2016 to 2020. For cBCLP patients in whom the protruded premaxillae could not be returned to a good position by PSO, PO with GPP were performed before cheiloplasty. Subsequently, Furlow palatoplasty was performed.
Results
At 6 to 12 months of age, PO with GPP were performed to ten cBCLP patients out of 34 (29.4%) in whom the protruded premaxillae could not be placed in a proper position.
After PO, there were two cases in which GPP sutures were torn loose though there were no major complications, such as necrosis of the premaxillae or a fistula. However, proper positioning of the premaxillae was achieved in all of the ten patients and their premaxillae were retreated. Then all of their facial structures improved after the cheiloplasty.
Conclusion
Primary premaxillary osteotomy and GPP before primary cheiloplasty were appropriate without the risk of the necrosis of the premaxilla when the premaxilla could not be pulled back by PSO or when PSO could not be performed for cBCLP patients.

BCLP, Primary premaxillary osteotomy, Gingivoperiosteoplasty,

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What's in a name? A scoping review of published cleft lip surgical techniques and protocols.

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

ntroduction:

Cleft lip surgery has evolved over the last three centuries, yet there is variable consensus regarding the optimal surgical technique or timing of primary surgery. Variations are often regional and develop as surgeons modify their mentors' techniques.

Aim:

To quantify the number of 1) cleft lip surgical techniques, including variations; 2) cleft surgical protocols (technique and timing) published.

Methods:

A scoping review was conducted according to PRISMA-ScR guidelines on two databases from 1948 to 2022. A detailed protocol was registered on Open Science Framework. Search terms used were "cleft lip" AND "primary" AND "surgery" AND "technique", AND "protocol", AND "timing". Inclusion criteria were full-text, original scientific articles, review articles, or case reports on cleft lip surgical techniques and timing.

Results:

1,482 articles were retrieved from the databases, of which 88 met criteria for inclusion. Thirty-two techniques were described with different names, 21 of which were modified based on techniques described by previous surgeons. All papers described at least one of the following principles of cleft lip repair to achieve cleft closure with best aesthetic outcome: 1) skin design and incision, 2) use of flaps (two-flap, triangular, or quadrilateral). Since 1990, the Millard, Mohler, and Fisher techniques have been the most commonly described in the literature. Twenty-one unique protocols were published that referred to technique and timing, of which 9 articles were published by Scandcleft, two by Americleft, 11 by Oslo Cleft Team.

Conclusion:

Numerous cleft lip surgical techniques and protocols have been described in the literature, of which many are modifications of previously described techniques. While no universal consensus regarding timing exists, many of the techniques utilize the same principles of repair. Simplifying names could encourage standardization of techniques and facilitate teaching of principles.

cleft lip surgery, techniques, variations

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Teaching the rotation advancement repair using natural landmarks

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
The rotation advancement repair for unilateral cleft lip is the commonest repair for unilateral lip worldwide and the sole technique used by the author. Teaching trainees has often been challenging because of the markings and measurements. In the course of practice and teaching the lip/nose colour interfaces and anatomy of the patient had been noted to have landmarks which when used without cumbersome measurements resulted in easier comprehension yet consistent adherence to the rotation advancement technique for unilateral cleft lip repair
Aims
To share our technique of teaching the rotation advancement repair and elicit discussion
Methods
A small ridge above the white roll after the cupid bow trough is used as the key point for the rotation, c, and mucosal flaps. A curved line unto the middle of the collumela and subsequent cut to the root of the philtral ridge on the non cleft side marks the rotation flap. The colour interfase from lip to nasal septum marks the boundary of the c flap whilst that of wet and dry vermillon the M flap. A slit is made along the red line to the tubercle to admit the Noordpf flap.
The Noordopf point is selected conventionall and a line from it just above the white roll is followed into the nose , continuing with the colour difference up the alar . The triangular Noodopf flap has its apex at the red line
The repairs so done from January 2011 to December 2021 were analysed retrospectively
Results
There were 221 unilateral repairs done in the period. Male 132, female 137. All conformed to the principles of the rotation advancement repair. Trainees found it easier to grasp and learn making skill transfer quicker. Their early repairs were promising
Conclusion
Using the lip/nose colour interface and landmarks is an adjunct in the mentor's toolkit for skill transfer

Rotation advancement repair skill transfer

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Long-term effect of robotic assisted cleft palate repair on middle ear function

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Aim: an observational cohort study is presented that compares two patient groups after soft palate closure with a modified Furlow Double-opposing Z-palatoplasty technique. The identification and dissection of palatal musculature is carried out using the Da Vinci robot in one group and surgical loupes with 2.8 magnification in the other. Outcome parameters were the number of visits with otitis media (OME), tympanostomy tubes inserted and hearing loss during a two-year follow-up period, consisting of four 6-month interval periods.

Results: Six months after soft palate closure, 74.2% of children in the manual surgery group and 48.3% in the robot group went through an OME-episode. Two years post-repair these numbers were lowered to only 22.6% and 15.8% of children in the manual and robot group respectively. The reduction in OME-episodes over time was statistically significant in both groups. A significant difference was observed between both groups, as children in the robot group had fewer need for VT's post-operatively ($p = 0.038$). Regarding hearing loss, there was a significant difference between both groups with lower degree of hearing loss in the robot group ($p < 0.001$).

Conclusion: By using a modified Furlow double-opposing Z-palatoplasty the number of OME-episodes, ventilation tubes and hearing loss were largely reduced, to the extent of the general pediatric population. A supplemental effect of transoral robotic surgery was recorded, with lower need for VT's and lower degree of hearing loss. These results suggest that the surgical technique on itself is associated with excellent recovery of the ET functioning, with an even faster and more complete recovery if muscle identification and dissection is performed using the Da Vinci robot.

cleft palate, otitis media, robotic

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Surgical outcomes of two-flap palatoplasty with or without buccinator musculomucosal flap to repair cleft palate in Japanese patients.

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Two-flap palatoplasty (T method) provides tension-free and multilayer repair. However, postoperative occurrence rate of oronasal fistula (FR) and additional follow-up palate surgery (SR) are higher in Japanese than in other studies. Accordingly, we have adapted the two-flap palatoplasty with buccinator musculomucosal flap (BMMF) (B method) to improve surgical outcomes.
Aims: Evaluate whether the B method provides superior clinical outcomes over the T method in Japanese patients.
Methods: This retrospective cohort study assessed non-syndromic patients with cleft palate treated using the T method or B method between April 2012 and August 2017. In the B method, after suturing the nasal mucosa of the soft palate following two-flap palatoplasty, a horizontal incision was made to release tension, and the BMMF was inserted into the defect. The analyzed outcomes were FR, SR, and related Japanese speech. No COIs.
Results: Twenty-two and 39 patients received the T and B method, respectively. There were no significant differences in median operation age and cleft size between the groups. FR was significantly higher for the T method (13.6% vs. 0% (T vs. B), $p<0.05$), while SR was comparable (9.1% vs. 5.1%). The respective rate of competence or borderline competence of velopharyngeal function was 68% and 85% for the T and B method, and the rate of none or mild hypernasality was 86% and 93%.
Conclusions: The B method improved surgical outcomes over the T method. FR was improved since nasal mucosa tension was reduced by the incision and the BMMF was well-vascularized. The BMMF allowed for soft palate extension and posterior muscle sling migration. The soft palate could be elevated close to the level of the palatal plane, and therefore more easily contact the posterior wall of the pharynx, leading to improved speech outcome. Further study is needed on the position of the muscle sling.

	Two-flap palatoplasty	Two-flap palatoplasty Buccinator musculomucosal flap
No.	22	39
The occurrence rate of oronasal fistula*	3 / 22 (13.6%)	0 / 39 (0%)
The need for additional follow-up palate surgery rate	2 / 22 (9.1%)	2 / 39 (5.1%)
The rate of competence or borderline competence of velopharyngeal function	15 / 22 (68%)	33 / 39 (85%)
The rate of none or mild hypernasality	19 / 22 (86%)	36 / 39 (93%)

* $p<0.05$

two-flap palatoplasty, buccinator musculomucosal flap

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Buccal flaps in primary palatal repair My experiences with the MannFurlow repair

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

INTRODUCTION
Wardill Kilner and Bardach flaps give good oral closure with reasonable speech and acceptable fistula rates but late maxillary growth results are suboptimal or in some cases disastrous. We have advocated no incisions over the alveolar margins, closing the hard palate by vomer flaps and soft palate by Mann Furlow method
AIM
The Mann Furlow repair has become the gold standard for palatal repair with good speech, fistula rates and maxillary growth, but it needs a third surgery to divide the oral buccal flap. We have attempted to do the palate first. During the lip surgery we divide the buccal flap pedicle and use the pedicle to close any junctional fistulas if present thus avoiding the third surgery
METHODS
Inclusion criteria were ASA1&2,Complete clefts, minimum age 9 months.118 children enlisted.77 complete unilateral and 41 bilateral. We operate the palate first, Hard palate by double breasted vomer flaps and soft palate by Mannfurlowplasty with the nasal incisions going upto the lateral phalangeal wall. Levator palati specifically identified as described by Sommerlad and sutured together. Any defects in the oral and nasal layer supplemented by buccal flaps. Buccal flaps are very wide and no attempt is made to close the donor sites. During the lip repair the buccal pedicle is divided and used to close the oral layer of the junctional fistulae if present
RESULTS
All the 118 cases have been evaluated for fistulas only. there were 13 junctional fistulae (greater than 5 mm). During the lip repair the fistulae were repaired. Closure was possible in 11 cases , 2 fistulae persisted. The bilateral cases had 7 anterior fistulas which will be addressed at a later date

CONCLUSIONS
Doing the palate first in the Mann Furlow repair helps us to reduce 1 surgery and also address any junctional fistulae if present

MannFurlow, palate first, junctional fistula

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Results of comprehensive care in children with bilateral cleft lip and palate with protruding premaxilla.

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Objectives. Bilateral clefts constitute about 12-25 % of all clefts. Patients with severely protruding or rotating premaxilla are the most complex. Some authors noted that presurgical orthopedic treatment is not essential for proper occlusion, normal midfacial growth and facial symmetry. Evaluation of the results of comprehensive care is important to plan subsequent therapy.
Aims: Evaluation of the results of complex surgical and orthodontic treatment of bilateral cleft lip and palate with protruding premaxilla without early presurgical orthopedic and ostectomy in infants.
Methods: Analyses were based on 12 patients with bilateral cleft lip and palate. The average value of protrusion of premaxilla was 11 mm. Primary bilateral lip nose repair was performed with the main elements of the Millard technique at 3-10 months, 2-stage soft and hard palate repair was performed before 3-4 years, gingivoperiosteoplasty with osteoplastic material - at 8-9 years. The Smile Train Safety and Quality protocol was used. Efficacy of treatment was assessed in children aged 3-4years before and in children aged 9-10 years after orthodontic treatment. Clinical, anthropometric, photometric, biometric methods were used.
Results: After primary cleft lip repair partial normalization of the position of the fragments was achieved. A good and satisfactory aesthetic and functional outcome of the operation (96%) was achieved without early orthopedic treatment and ostectomy. Orthodontic treatment, starting from 3–4 years of age, showed a positive effect after 12 months, which was confirmed by the formation of functional occlusion in 63 %.
Conclusions: Clinical experience has proved that surgical technique and comprehensive orthodontic care for bilateral clefts with protruding premaxilla can contribute to good aesthetic result and proper alignment of the maxillary segments without any aggressive methods.

bilateral cleft, comprehensive care,children

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15 year Bilateral Cleft Lip and Palate Results, a unique approach

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction
Surgeons learn and modify their cleft technique and approach, rarely knowing the results at full growth. Publications typically show results relatively short term compared to full growth.

Aim
One approach and technique that is unique has been used for 30 years in a major academic center for Bilateral Cleft Lip and Palate (BCLCP) patients. Results at full growth will be presented.

Methods
The technique/approach includes presurgical orthopedics, single stage cleft lip repair, a V to Y tip rhinoplasty at time of palate repair, secondary speech surgery at 4-6 years of age, phase 1 orthodontics followed by a two stage alveolar bone graft prior to canine tooth eruption, phase 2 orthodontics and definitive septorhinoplasty at full growth. Appropriate patients are offered a lip switch or orthognathic surgery at full growth.

Results
Specific details of the surgical technique and rationale for a V to Y tip rhinoplasty at time of palate repair will be presented utilizing a case presentation technique. Detailed photographic results though out the course of treatment and at full growth will be presented to see the long term results of a consistent treatment approach.

Conclusion
Choosing a unified technique/approach one maintains throughout their career requires good training, a keen eye early in their career and some luck. In this case the results have been good to excellent and have not justified modification. These results can aid other surgeons improve their treatment/approach to children with bilateral cleft lip and palate.

Cleft lip, VtoY, rhinoplasty, septorhinoplasty

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Synchronous Premaxillary Setback With Posterior Vomerine Ostectomy and Complete Bilateral Cleft Lip Repair: Outcomes of Single-Stage Repair of Complete Bilateral Cleft Lip With a Severely Protruding Premaxilla

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: A prominent protruding premaxilla may be found in children with complete bilateral cleft lip (BCL), increasingly complicating their surgical management. Several techniques have been put forth to address wide BCLs, either as staged procedures or repair under tension, resulting in various complications and controversial outcomes.
Aim: Premaxillary setback with posterior vomerine ostectomy is a one-stage surgical procedure that aims for retro-positioning of the premaxilla into the maxillary arch, resulting in alignment of the premaxilla with the secondary palatine shelves.
Methods: To describe repair of projected premaxilla with BCL utilizing premaxillary setback technique, including posterior vomerine ostectomy, bilateral gingivoperiosteoplasties, complete bilateral cleft lip repair, and concurrent rhinoplasty. Perioperative considerations, postoperative complications, and aesthetic outcomes are discussed.
Results: This technique results in adequate retro-positioning and alignment of the premaxilla along the maxillary arch, thus enabling tension-free BCL and nasal repair. Aesthetic outcomes are desirable, and no major complications are noted following repair, including premaxillary necrosis.
Discussion: Single-stage complete BCL repair utilizing premaxillary setback with posterior vomerine ostectomy is safe and yields good results. Further follow-up studies are underway to evaluate long-term outcomes and effects of repair on facial growth.

Premaxillary Setback
Bilateral Cleft Lip

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A review of 30-day postoperative outcomes in primary cleft surgery

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MO3.5 Primary Surgery, Moorfoot, EICC - Streamed, July 11, 2022, 11:00 - 13:00

Introduction: Emphasis on long term outcomes of primary cleft surgery, such as speech, facial growth and fistula rate, has meant that early complications tend to be less widely reported.

Aims: To describe the incidence of 30-day postoperative complications following primary cleft surgery at a single cleft centre over a six year period.

Methods: A retrospective review of 334 consecutive patients undergoing 483 primary cleft surgeries between January 2015 and December 2020 was carried out. The surgical protocol includes staged vomer flap with lip repair or adhesion in UCLP and BCLP cases respectively, followed by modified Malek palate repair. The following variables were recorded from a prospectively maintained database: demographics; cleft type; surgical procedure; postoperative airway compromise, bleeding, return to theatre, unplanned ICU admission or readmission to hospital.

Results: An early postoperative complication was recorded in 26 out of 334 of patients (7.8%). Postoperative bleeding occurred in 14 patients (4.2%) and an airway complication was recorded in 3 (0.9%). Postoperative wound infection was observed in 3 patients (0.9%) and 4 patients (1.2%) developed a systemic infection. Seven patients required return to the operating theatre (2.0%). There was 1 unscheduled ICU admission (0.3%) and 19 unplanned readmissions to hospital (5.6%).

Conclusions: An acceptable rate of early postoperative complications was observed. Our findings are particularly relevant for the preoperative counselling of families in advance of primary cleft surgery. These findings may also be used to inform the development of an enhanced recovery pathway for primary cleft surgery.

Cleft palate repair; 30-day complications;

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A qualitative study of parent/caregiver experiences of multidisciplinary cleft care in the United Kingdom during the COVID-19 pandemic for children born with cleft lip and palate.

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction
Services providing cleft care have been disrupted by the COVID-19 pandemic. Understanding parent/caregiver views on changes to service provision during this period and the impact of these changes on them is important to inform future service planning.
Aims
To explore parent/caregiver experiences of multi-disciplinary cleft care for children with a cleft lip and/or palate during the early stages of the pandemic.
Method
A questionnaire was distributed online to 4,340 parent/caregiver participants in The Cleft Collective Birth Cohort Study (http://www.bristol.ac.uk/cleft-collective) and completed between July and October 2020. The questionnaire asked about access to cleft care from surgery, speech and language therapy, dentistry, orthodontics, psychology, and audiology. Respondents completed check box questions with optional free text boxes for additional comments. These comments were used as the data source for this study and were analysed using conventional qualitative content analysis.
Results
Of the 1,527 full survey responses received, 371 contained qualitative data, with participant representation from all geographical regions in the UK covered by specialist cleft centres. Codes identified within the text indicated that parents understood the reasons for cancellations and delays but were concerned about behavioural changes they were witnessing in their child, as well as reporting personal anxieties about their child not receiving treatments planned for key transitional ages. Across specialities, parents were frustrated by the lack of ability to contact services, and where services had gone online, significant concerns were raised about digital access.
Conclusions
The findings give important insight into how parents/caregivers experienced care related to their child's cleft in the early months of the pandemic. Responses reflect experiences relating to services provided by both cleft centres and other service providers involved in cleft related care. Services can use this evidence to inform how they approach future care with families whose treatment was impacted by the pandemic.

parent/caregiver experiences, multidisciplinary care, COVID-19

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The Impact of the Covid-19 Pandemic on Cleft Care for New Families in the United Kingdom: Parent and Health Professional Perspectives

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Standardised, multidisciplinary treatment is well-established as the optimal approach to care delivery for infants born with cleft lip and/or palate (CL/P). In 2020, this treatment pathway was significantly disrupted by the emergence of the Covid-19 pandemic.
Aims: The aim of this study was to examine the impact of the pandemic on CL/P care in the United Kingdom (UK) from the perspective of new families and specialist health professionals.
Methods: Individual interviews were completed remotely with 14 parents of infants born with CL/P prior to or during the first 'wave' of the pandemic (January-June 2020). In addition, 8 Clinical Nurse Specialists and 15 Consultant Cleft Surgeons were interviewed, representing 10/12 CL/P networks in the UK and Republic of Ireland. Four members of staff at the Cleft Lip and Palate Association also participated. Interview transcripts were analysed using thematic analysis.
Results: Parents reported a number of changes to care compared to the treatment pathway they had anticipated. These included restrictions to perinatal care, remote contact with CL/P teams, and indefinite delays to primary surgery. Parents described a significant impact on their mental health and ability to access support during this time. Health professionals and CLAPA staff outlined the ways in which Covid-19 had disrupted protocols and affected staff wellbeing and morale.
Conclusions: The Covid-19 pandemic negatively impacted staff and parent wellbeing, and highlighted regional inequities in service delivery. Yet, the data also demonstrate the resiliency of the CL/P community and highlight alternative ways of working which may have unexpected long-term benefits. The findings offer key learning points for the future of CL/P services worldwide.

COVID-19, cleft, qualitative, service, wellbeing

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Development of COVID-19 Surgical Patient Checklist

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction

The COVID-19 pandemic has had profound effects on surgical care delivery. It has strained surgical systems worldwide and placed healthcare providers at risk in their workplace. To address some of the safety concerns for surgical care providers imposed by the pandemic, perioperative care providers mobilized to provide guidance on operating room conduct.

Methods

In the early weeks of the pandemic, COVID-19 Surgical Patient Checklist (C19-SPC) was developed by Lifebox, in collaboration with WFSA, Jhpiego and Smile Train. A team of 14 clinicians (anesthesiologists and surgeons) and program managers from partner organizations developed the C19-SPC through a consultative process that included review of available best practice evidence, recommendations by partner organizations and perioperative consensus. The tool with its accompanying training materials were translated into 9 languages. Beginning in May 2020, the C19-SPC was disseminated through partner and social media networks and made freely available online.

Results

In the 10 months following development and dissemination, 8 training-of-trainer sessions were conducted in 8 countries in Sub-Saharan Africa, Asia, and Latin America via Zoom. The trained trainers delivered an additional 7 workshops locally. Feedback from workshop participants on the utility of the C19-SPC, the training materials, and the workshop helped guide C10-SPC revisions including updates based on emerging evidence. The updated C19-SPC was then disseminated widely and remains freely available online.

Conclusion

Through a collaborative partnership we rapidly converted general guidance and evolving information about COVID-19 into a practical and actionable checklist that was well accepted by providers and could be implemented in a variety of settings. The development and implementation of the C19-SPC can serve as a model for how to convert complicated guidance into simple tools to improve practice.

Limitations

Although our dissemination seems "wide" we are yet to evaluate the impact as well as increase "in person" training.

COVID-19-SPC, Training, Feedback, Partnership, Pandemic

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The impact of COVID-19 on Cleft Services in Great Britain & Northern Ireland

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction

Cleft lip and/or palate is the most common craniofacial anomaly and occurs in 1 in 700 live births in the United Kingdom.

The COVID-19 response has caused a delay in carrying out procedures. The severity of this delay depends on the R-value within that region. As the country goes through multiple waves, the impact could be long lasting, and we aimed to quantify it so the data could be used to guide service prioritisation in the NHS and help future workforce planning.

Methods

An online survey was designed based on the cleft quality dashboard indicators and circulated nationally to all nine cleft regions in the U.K. The survey was divided into three main headings:

- Duration of suspended cleft services
- Quantification of the impact on delayed in surgery/services
- Changes needed to restart surgery/services

Results

We obtained a 60% response rate. All regions reported that they suspended their cleft services in March 2020 around the time of the first wave and the first national lockdown.

There has been an impact on delayed surgical and clinical interventions for cleft patients. Regions were affected differently with some on an exponential waiting list growth projection, whilst other teams are on track to recovery.

There has been an impact on the allied health professionals' services within the cleft multidisciplinary team. Patient-facing services such as audiology and dentistry were significantly disrupted and continue to experience delays due to reduced capacity.

Conclusions:

Various regions have seen a varied impact from COVID-19 on their services, from all cleft regions there seems to be an impact on achieving surgery within the national target age. The adverse effect of the COVID-

19 impact is unlikely to be known for a few years to come; however, the data is a useful guide when supporting the allocation of resources within the healthcare setting.

Cleft Service/Team	Quality Dashboard indicators[3]	Addenbrooke's Hospital	Royal Victoria Infirmary	The Spires Cleft Centre	Morriston Hospital	Royal Belfast Hospital for Sick Children
Number of primary cleft lip repair cases delayed during COVID-19	CLP03	2 (1)	13 (0)	12	9 (0)	3 (0)
Number of primary cleft palate repair cases delayed during COVID-19	CLP04	12 (5)	2 (0)	17	9 (0)	3 (0)
Number of Speech Surgery cases delayed during COVID-19 (Pharyngoplasty, intravelar veloplasty, Buccal flap, fistula repair)	CLP07	2	0	7	23	7
Number of orthognathic procedures delayed during COVID-19	CLP13	9	0	-	2	0
Number of ABG cases delayed during COVID-19	CLP11	4	8	6	7	0
Number of delayed (face-to-face) central cleft clinics during March – August	-	4	52	26	20	20
Number of delayed (face-to-face) spoke cleft clinics (if applicable) during March – August	-	6	22	3	4	-
Total number of current cases pending on the waiting list (All cleft cases)	-	89	100	98	60	39
10 year average (2010-2019) of new cases per year[3]		74.9	62.2	45.3	39.6	40.9

Covid, Cleft, MDT, Lockdown

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Running a safe and effective Cleft Network Service in response to the COVID-19 Pandemic

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction

UK network cleft teams look after large geographical areas since the CSAG process of the late 1990s. Pre-COVID, this regularly involved multidisciplinary face-to-face clinics at multiple hospitals and community based interventions ranging from speech therapy to dental services.

Since the first wave of the pandemic all patients are discussed in a clinician only multidisciplinary team setting. This allows effective review of the case notes, clinical discussion and an agreement of a provisional plan. Patients can be seen via secure video calls, and if needed, patients are brought for face-to-face clinics.

Pre-operatively, a two week self-isolation protocol, and COVID-19 antigen test at 72 h pre-admission is conducted. Cleft specialist nurses review the patients at home pre-operatively, and also review at one and six weeks post-operatively.

Methods

Patients that had direct contact with the service were surveyed. 35 consecutive patient families were surveyed using a secure website, with a 49% response rate.

Results

100% of respondents were able to access their appointment easily and 94% of appointments were on time. 91% of respondents felt they understood the proposed treatment plan for their child. No respondents had any concerns regarding confidentiality. 83% were happy for their next appointment to be remote. 91% rated their consultation experience as good or very good.

100% of those respondents attending hospital felt that all appropriate precautions had been made to limit exposure to coronavirus, with clear guidance on PPE and hand washing on the ward. All respondents were able to isolate for the 2 week period prior to admission.

Conclusions

Running a network multidisciplinary service prompts different challenges to a local one, specifically the numbers of clinical and non-clinical team members and travel challenges for clinicians and patients alike. This survey demonstrates the changes are perceived as safe and effective by our patients.

COVID, MDT

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Establishing a comprehensive multi-disciplinary cleft and craniofacial centre in Bangladesh

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction
Until recently, there has been no multidisciplinary cleft centre in Bangladesh. Primary surgery has been performed by many surgeons, often relatively untrained and usually supported by NGOs. Long-term follow-up and management has been rare. There have been no specialist cleft speech and language therapists or orthodontists and no team-working. With the help of the charity CLEFT, a comprehensive multi-disciplinary cleft and craniofacial centre was established in Dhaka Medical College Hospital in 2015.
Aims
We plan to present how we set about establishing a comprehensive cleft centre in Dhaka, the difficulties faced, the mistakes made and the lessons learned. We also talk about setting up research projects and our plans for the future.
Methods
Cleft team members will describe the nature of their work, the challenges they have faced and their successes and failures.
Results
In a low-resource country where cleft care could be seen as a relatively low priority for health care and most cleft surgery has been funded by NGOs, it has been possible to establish a comprehensive cleft centre in a government teaching hospital. Challenges remain.
Conclusions
Cleft care in relatively low-resource countries has to break away from dependence on international NGOs.

Comprehensive cleft centre, Bangladesh

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The GRRR Code: A Cleft Lip and Palate Surgical Treatment Coding System based on the LAHSAL Cleft ClassificationV

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

INTRODUCTION:
Numerous cleft lip and palate classification systems have been developed over many years. Among the many functions of a classification system is the ability to inform the nature of an individual's primary cleft surgery. However, there is a need for teams to also be able to easily record the changing surgical needs of individuals over time, including the need for secondary surgery, to optimise the provision and timing of ongoing surgical care and to inform resource allocation estimates.

AIMS:
The aim of this presentation is to describe the development, implementation, clinical utility and experience of using a simple individualised cleft lip and palate surgical treatment code (GRRR) based on the structure of the LAHSAL cleft classification system, as an adjunct to a team's standardised cleft classification system.

METHODS
This presentation will describe the development and structure of the 8-character GRRR code, which allows team members to document the changing surgical needs of patients (both definite and likely) for procedures to the lips, alveolus, hard palate, soft palate, nose and jaw. We will describe the implementation of the system in a tertiary referral hospital's cleft palate clinic. The utility of the GRRR code will be demonstrated including the ability to estimate longitudinal surgical resource requirements based on the patient's date of birth and the clinic's specific clinical care protocols. A computerized training programme for use of the GRRR code will also be demonstrated.

CONCLUSION:
The use of the GRRR code in combination with a cleft classification system such as LAHSAL provides an improved mechanism for planning and monitoring a patients cleft treatment journey. It also generates rich datasets of information about future resource requirements that may assist in efforts to attract increased resource allocation for cleft care.

LAHSAL, Surgical treatment code, resources

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CONTIGO SONREÍMOS: An Integral Clinic for Cleft Lip and Palate in Mexico

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction
In Mexico, no health centers provided multidisciplinary treatment to children with cleft lip and palate. Because of this, most children with cleft in our country have had multiple operations by different surgical campaigns, leaving severe sequelae and preventing them from adequate social development. So, we started CONTIGO SONREÍMOS, a comprehensive cleft clinic in Mexico, thanks to the support of volunteer specialists, Smile Train, and individual donors.

Methods
We started activities in October 2018, operating on patients with limited resources who required surgery. In May 2019, we began multidisciplinary care with some difficulty due to limited economic resources for transportation assistance to get patients to the multiple discipline centers. In 2020, when activities were stopped due to the pandemic, we had 91 patients we followed up with on dental hygiene, maxillary orthopedics through taping, nutrition, early stimulation, and speech therapy. This allowed us to have a personal approach with patients, accompany them during the time of isolation and exponentially increase attendance at early stimulation and speech therapy services.

Results
Today, our center serves 197 families and provides multidisciplinary treatment for children with cleft lip and palate. When the pandemic began, we had provided 49 speech therapy sessions, and there were 384 in 2021. For early stimulation, there were 24 sessions in 2019, and there were 508 in 2021. We still use online communication to provide treatments that begin face-to-face and continue virtually for nutrition, psychology, speech therapy and early stimulation.

Conclusions
Good attitude and intention have allowed us to form a multidisciplinary clinic for all patients with cleft lip and palate in need. We have been afraid of not being able to fulfill the commitment we have made with our families due to economic deficiencies, but time, opportunities and the support of Smile Train have demonstrated that we can continue this path.

multidisciplinary, cleft, lip, palate, orthopedics

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Developing a protocol to identify and manage children born with cleft lip and palate children missing multi-disciplinary appointments across South, West and mid-Wales.

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Background
The Welsh Centre for Cleft Lip and Palate supports and treats children and adults across South, West and mid-Wales. This specialist multi-disciplinary team works across a variety of hospital and non-hospital settings. Identifying and managing children who have missed appointments is challenging. Our service had an existing policy however it was not sufficiently robust when managing children seeing multiple clinicians on different sites, within different Health Boards and often information sharing was limited. Children were missing important medical, dental and therapy appointments with different team members in varying locations and as a result not receiving care in an appropriate timeframe.
In 2019, to ensure that all children receive appropriate care and have their health needs met, the cleft team introduced a Was Not Brought Protocol. This involved:

- Developing and maintaining a secure database, covering all specialties across all sites and Health Boards.
- Simplified standard letters sent from the Hub site. Families receive one letter rather than several, designed to encourage families to engage with their child's care but with the advice that if a child's care is being affected by non-attendance, a referral to Children's services will be made.
- Bi-monthly multi-disciplinary team meetings are held to discuss individual children. Staff on different sites work in partnership with health visitors, teachers, therapists, school nurses and social workers and information is shared to ensure appropriate team members are kept up to date with a child's attendance.
- Extra multi-disciplinary appointments are arranged to ensure a child attends once to see all individuals they have previously failed to attend with. Families are offered support directly from the cleft team to remove any barriers in attending.

Conclusion
Creating a WNB protocol ensures the child's needs are fully addressed and has resulted in those children most at risk from non-attendance being identified early.

Protocol, multidisciplinary, safeguarding

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Smile House project. A national multidisciplinary approach to cleft surgery

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Smile House is a center with a comprehensive care approach to evaluate and treat patients with a wide variety of craniofacial deformities. A team of specialists work together to identify child's needs,providing the right treatment. Team members assist the patient and his/her family since the born to the end of the care. The center's multidisciplinary team comprises specialists in the following fields:Surgeons, Anesthesiologists, Pediatricians, Dentists, Psychologists, Nurses, Speech Therapists, Otolaryngologists.
Since 2011, we have established an agreement between the national health system and the Operation Smile Italia foundation for the establishment of a regional center for the multidisciplinary management and treatment of cleft lip from prenatal diagnosis to the end of development.
AIMS: We would like to offer to the patients and their families prenatal diagnosis and newborns' assistance, surgical evaluations and treatments, speech consultation, dental & orthodontic evaluations and treatments, psycological assistance. We also built a family netowrk who can support each other and help new families and new patients. We provide free training courses to medical doctor, and in the same time we would like to become a European Istitute of Medical Research about CLP.
Results: Since 2011, 5 Italian Smile Houses have been established, which successfully provided 62,000 multidisciplinary visits, with 3218 patients treated.
Conclusion: We believe that the model used by the Smile House is reproducible on a large scale, maintaining high quality standards, and using safety therapeutic protocols.

Cleft, Maxillary, Mandibular, SmileHouse,Interdisciplinary

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From single surgeon to multidisciplinary cleft care in Sri Lanka, twenty years road map

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MO3.6 Cleft Services/Covid, Tinto, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction
Up to late 1990,cleft lip and palate was managed in Sri Lanka by few individual surgeons, orthodontist and one speech therapist.
Aim
Aim of this presentation is to describe chronological development of cleft care in Sri Lanka
Materials and methods
In year 1999 concept of multidisciplinary cleft care was introduced to us by visiting cleft team from Great Ormond Street Hospital London UK. They trained members of our cleft team locally as well as in GOS London. Further ,They established first Speech and Langue Therapy diploma course (now upgrade to degree program)in Sri Lanka. Funds was Sri Lanka cleft training project was obtained from CLPA UK and British government. Twenty years later we were able to established three full-fledged cleft centers in the country, where we offer cleft care training to international and National cleft care workers free of charge.
Results
Our miles stones, achievements and cleft statistics will be presented in detail during the presentation.
Conclusion
Sri Lanka set an example in developing cleft care from the beginning. This can be used by other countries To develop cleft care in their countries.

multidisciplinary cleft care

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Identifying patient preferred outcomes for young people aged 15-20 years born with cleft lip and palate.

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

1. Introduction
Routine audit in the United Kingdom (UK) provides a process for monitoring outcomes for children born with cleft lip and/or palate (CLP). There is variability however in what outcome data are collected when young people approach transition to adult care and start to take responsibility for their ongoing health needs. Collection of consistent data relating to patient preferred outcomes at this stage in the care pathway is vital to identify opportunities for improved care. The first step in this process is to determine what young people born with a cleft consider to be the important outcomes.
2. Aim
To determine what clinical and patient reported outcomes should be captured for young people between 15 and 20 years born with CLP.
3. Method
Virtual focus groups were undertaken with young people born with CLP. Nominal Group Technique was used to establish the important outcomes for this age group.
4. Results
Findings from ten young people born with CLP aged 16 to 20 years, show the most important categories to be discussed at this age are general well-being/mental health; appearance; speech; hearing and potential treatments available to assist with these. The most important issue for the young people was how to access Cleft Teams.
5. Conclusion
The findings indicate that several domains are important to this age group and that young people need to know how to access the cleft team themselves. This information can be used by cleft teams to inform their services for this age group. These findings, together with additional data from focus groups with cleft clinicians, will be used to inform the development of a proposed core outcome set. The aim is to collect a consistent set of outcome data for young people with CLP in research and service monitoring in order to understand and improve outcomes for this population.

Outcomes, young people, adolescence, CLP

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“Growing up and taking control”: Young adults’ experiences of the transition from child-to-adult cleft lip and palate care.

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction:
Children born with cleft lip and/or palate (CL/P) often continue treatment into adulthood. As they grow older, young people become more involved in medical decisions. The National Institute for Clinical Excellence (NICE) has published guidelines for health professionals on how transitions of responsibility should be managed in health services.
Aims:
The aims of the current study were to examine the extent to which the NICE guidelines are currently being implemented in UK CL/P services according to young adults’ first-hand accounts, and to explore young people’s personal narratives of becoming responsible for their own care.
Methods:
Semi-structured interviews were carried out with 15 young adults with CL/P aged 16-25. Interview questions were designed to map onto the NICE guidelines. Data were analysed using both content and thematic analysis.
Results:
No participants identified with the term ‘transition’ and many were not consciously aware the process had happened. Overall, findings indicate that guidelines related to preparation for transition had not been implemented. Participants reported feeling ‘left out’ of important decisions and believed they did not have enough information about what support was available to them. Participants spoke extensively about the importance of their parents in the move from child to adult care and perceived varying levels of support from their cleft teams.
Conclusions:
Young people born with CL/P require significant support in the lead-up to and after they become responsible for their own medical decisions. The current study suggests that young adults may benefit from a dedicated transition pathway, starting earlier than age 16, to equip them with the knowledge and confidence to make these choices when they reach the point of legal consent. In particular, the introduction of an assigned ‘transition worker’ to guide adolescents through this process in collaboration with their CL/P team and parents is recommended, in line with practices across other health specialties.
Adolescent, transition, psychosocial, NICE guidelines

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Research priorities for the United Kingdom Clinical Psychology Cleft Clinical Excellence Network

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction
The United Kingdom (UK) Clinical Psychology Clinical Excellence Network (CEN) has a long-established Cleft Lip/Palate (CL/P) Research Sub-Group, representing an on-going research collaboration between clinical and research psychologists. To date, much international psychology research has focused on the psychosocial outcomes of children born with CL/P. While such research remains integral to understanding and supporting the wellbeing of children born with a cleft, the Research Sub-Group believes that it is important identify further priorities for future research.

Aims
To combine current research knowledge with our understanding of where clinical practice is at, in order to identify priorities for future CL/P psychology research.

Methods
The Research Sub-Group considered current research literature and carried out a consultation process with Clinical Psychology colleagues working in cleft centres across the UK and academic psychologists. Contributors shared their perceptions of what the existing gaps and barriers are in research and how advancing research can impact on practice in a clinically meaningful way.

Results
Four key themes emerged as priorities for future research projects: 1) ‘How effective and acceptable are psychological interventions aimed to improve the psychosocial wellbeing of children born with a cleft lip and/or palate (and their families)?’; 2) ‘What is the impact of being born with cleft lip and/or palate on parent and family functioning’; 3) ‘How do people born with a cleft lip and/or palate (and their families) experience cleft-related care?’ and 4) ‘Which factors predict psychosocial adjustment in children born with a cleft lip and/or palate, and their families?’

Conclusions
These themes highlight the breadth of topics of interest to Clinical Psychologists working in cleft care and present a framework for the planning of future research projects. An update on national and local projects, and their relevance to these different themes, will be provided, along with suggestions for the next steps in cleft psychology research.
Cleft, psychology

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Participants' perceptions of Young Person's Face IT – an online psychosocial intervention for adolescents with a visible difference

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Adolescents with a condition affecting their appearance, e.g. a craniofacial condition, may experience elevated levels of psychosocial distress. Relevant psychosocial interventions for these adolescents are generally lacking and/or can be difficult to access. Young Person's Face IT (YPF), a novel self-guided online intervention incorporating techniques from cognitive behavioural therapy (CBT) and social skills training (SST), has demonstrated potential in reducing social anxiety in adolescents living with a visible difference. Still, little is known about adolescents' own views of the program – a crucial aspect of intervention evaluations. Aims: To qualitatively explore adolescents' perceptions of the YPF intervention. Methods: The study was conducted at Oslo University Hospital as part of a larger project evaluating YPF in Norway. Twenty-two adolescents (64% girls; Mage = 14.0, SD = 1.6) were semi-structurally interviewed after completing YPF. A majority (64%) had a craniofacial condition. Results: Using thematic analysis, three main themes were formulated: (1) I am not the only one - Validation of lived experience; (2) I have more courage to do things - Coping and mastery, (3) Some things were more useful than others - Use of YPF. In sum, most participants found YPF relatable and helpful, e.g. describing that YPF had changed how they regarded themselves and their appearance. However, some did not find YPF relevant (e.g. due to low levels of appearance-related concerns), several described the intervention as too extensive (e.g. too much to read), and few seemed to have tried out new strategies in real life situations. Conclusions: There is a need for an intervention like YPF and YPF is generally perceived as comprehensive and relevant. However, YPF does not seem to suit all young persons with lower-level concerns, and the program needs to be sufficiently updated to stay relevant for adolescents.
visible difference, psychosocial intervention, adolescents

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Improving psychosocial functioning in adolescents with a visible difference: Findings from a randomised control trial (RCT) exploring the online Young Person's Face IT intervention

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Adolescents with appearance-altering conditions (e.g. Crouzon syndrome or cleft lip and palate, resulting in a noticeable visible difference) may experience psychosocial distress and appearance-related difficulties. However, specialised psychosocial support is generally lacking and/or can be difficult to access. Young Person's Face IT (YPF), a seven session self-guided online intervention that combines social skills training and cognitive behavioural therapy, has demonstrated potential in reducing psychosocial distress in adolescents with a visible difference. Still, more knowledge is needed regarding the effectiveness of YPF in this group.

Aims: To quantitatively explore the effectiveness of YPF in reducing psychosocial distress and appearance-related difficulties in adolescents with a visible difference in Norway.

Methods: This RCT study was conducted at Oslo University Hospital, comparing the intervention group (access to YPF) with a wait-list control group. Participants were 102 adolescents (57% girls; Mage = 13.9, SD = 1.71; 66% with a craniofacial condition; 34% with other congenital or acquired conditions) who were asked to complete outcome measures of body esteem and social anxiety at baseline and three months after completion of YPF.

Results: Compared with the control group, participants with access to YPF showed reductions in social anxiety symptoms (intervention group: d=.48; intervention group and wait-list control group: d = .26). No changes in body esteem were found. Backward multiple regression analyses indicated higher intervention effects for boys, adolescents who reported higher levels of psychosocial distress at baseline, and/or who spent sufficient time on YPF (β=.19-.27;p< .009; R2adj = .14). Approximately half of those with a craniofacial condition experienced reductions in social anxiety and more positive body esteem after the intervention.

Conclusions: Future studies are needed to confirm the effectiveness of YPF for adolescents with a craniofacial condition and to identify which adolescents would benefit most from YPF.

eHealth, visible difference, social anxiety

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An exploration of the association between speech outcomes and psychosocial difficulties among children with a cleft palate at five-years-old.

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Title: An exploration of the association between speech outcomes and psychosocial difficulties, among children with a cleft palate at five-years-old.

Introduction: This pilot study aimed to examine differences in the psychosocial outcomes (measured by the total Strengths and Difficulties Questionnaire (SDQ) score) of five-year-olds with a cleft palate, in a UK cleft service, depending on their Cleft Audit Protocol for Speech (CAPS-A) total score for structural speech sound and articulation. This study hoped to explore speech difficulty as a potential risk factor for psychosocial difficulties, with a view to implementing preventative psychological input if necessary.

Method: 126 participants were allocated to one of two categories, green = good/very good speech, or red = moderate/poor speech, according to their CAPS-A total scores for structural speech sound and articulation. An independent-samples t-test was used to determine whether there was a significant effect of CAPS-A category on total SDQ score.

Results: On average, participants whose structural speech sound was categorised as good/very good had a marginally lower total SDQ score (M = 9.9, SE = 0.61), than participants with speech categorised as moderate/poor (M = 10.71, SE = 1.31). This difference was not significant t (124) = - 0.56, p = .574.

Participants whose articulation was categorised as good/very good had a slightly higher total SDQ score (M = 10.2, SE = 0.74), than participants whose articulation was categorised as moderate/poor (M = 9.7, SE = 0.75). This difference was not significant t (124) = 0.44, p = .664.

Conclusion: Within this cleft service, the results indicate a limited impact of having cleft-related speech difficulties on children's psychosocial wellbeing at five-years-old. Further research is essential to understand these complex interactions. Studies could include the use of subjective measures of speech difficulty or satisfaction, or explore the longitudinal association between early speech difficulty and psychosocial wellbeing amongst young people.

Speech difficulty, psychosocial outcomes, five-year-audit

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Presenting concerns and psychological wellbeing of adults returning for cleft treatment in the UK

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction

UK cleft teams provide standard input until ages 15-20. Beyond this, adults may return for additional care.

Aims

To determine who returns for adult cleft care in the UK, what they return for, and their psychological wellbeing.

Methods

Data on demographics and concerns/treatment sought was collected for 92 individuals aged 15 or over with a cleft lip and/or palate, local to the Scottish (66 patients) or South Thames (26 patients) cleft teams, who returned for elective care between January 2018 and March 2020.

Data was collected by clinical psychologists in an initial appointment (as per routine pathways) to discuss current issues and/or care wanted. Those in Scotland completed additional standardised and non-standardised questionnaires on cleft related concerns and psychological wellbeing.

Results

Patients were aged 15-67 years (median 27), and 59.78% were female. Cleft types were 47.13% UCLP, 21.84% BCLP, 17.24% UCL, 11.49% CP, 1.15% SMCP and 1.15% non-cleft VPI.

38.20% of patients wanted support for both aesthetic and functional issues, whilst 33.71% of patients wanted input for aesthetic issues only, and 28.09% for functional issues only.

Surgery was the speciality patients most frequently went on to see (79.35% of patients), followed by SLT (38.04%), Orthodontists (33.70%), Clinical Psychologists (32.61%), Restorative Dentists (26.09%), Geneticists (14.13%) and Audiologists (2.17%). Four (4.35%) patients were deemed psychologically unsuitable for further treatment (i.e. surgery) at this time.

A significant proportion of the 61 patients who completed psychological wellbeing questionnaires demonstrated clinically significant levels of anxiety (57.38%) and/or depression (31.15%).

Thirty (32.61%) patients were offered an appointment with Clinical Psychology to discuss psychological issues related to cleft, with the commonest issue being appearance/speech related social anxiety.

Conclusions

Adults return to cleft care for both aesthetic and functional concerns, most frequently wanting surgery. Some have significant psychological needs in addition to physical issues, suggesting the importance of psychological screening and support.

Psychology, Adults, depression, anxiety

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Understanding the long-term educational, vocational and social impacts of cleft-related speech differences in New Zealand adults

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Despite increased recognition of cleft as a lifelong condition, the long-term impact of cleft-related speech differences on individuals' social, vocational and educational experiences remains largely unexplored.

Aims: Using a cohort of New Zealand adults, this study sought to establish the prevalence of ongoing speech differences in adulthood and patients' self-perceptions and attitudes towards their speech differences. Furthermore, the study investigated how these had impacted on participants' relationships with others, and their social, vocational and educational opportunities and decision making to identify areas of unmet need and develop clinical and policy recommendations for adults with a history of cleft.

Methods: Qualitative interviews were conducted via a combination of face-to-face and Zoom call interviews using a questionnaire designed at the University of Canterbury with support from the Centre for Appearance Research. The interview data was analysed using thematic analysis. A supplementary form containing standardised measures of speech intelligibility and acceptability, social competence and job competence was also completed by each participant to offer comparison to normative general population, and international cleft population data. A total of 17 interviews were conducted from August-November 2020.

Results: The standardised measures indicated concern in relation to speech acceptability and speech intelligibility, in addition to lower perceived sociability than their non-cleft-affected peers. Thematic analysis identified substantial variance in participants' self-perception of their speech differences, in addition to access to speech language therapy (SLT) services, with many participants reporting that their SLT needs had not been met growing up. Many participants self-reported ongoing speech differences, which had a wide array of impact on holistic wellbeing including mental health, education and employment choices and opportunities and interpersonal experiences.

Conclusions: The findings highlight the need for routine psychological and SLT from an early age and for access to continue into adulthood. A number of clinical and health policy recommendations are made.
adults
psychology
speech language therapy

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Bullying, quality of life and coping strategies among children and adolescents born with an orofacial cleft

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction
School bullying in childhood and adolescence is known to affect five to 10% of the population. This exposure can have negative consequences on quality of life and well-being.
Aims
The three main goals of the study were to assess the harassment in children born with a cleft lip and palate and in children born without a cleft; to measure the impact of harassment on well-being and to identify the role of protective factors such as "coping" and social network.
Methods
Questionnaires investigating social demographic position (Mc Arthur, advere life Event), exposure to harassment (Olweus Bully/Victim), factors of protection (Sarason, CERQ questionnaires) and Outcomes (kid-screen, body self-Esteem) were first created. They were given to young children (eight to 16 years old) born with a complete unilateral facial cleft and to young children (eight to 16 years old) of the same school age (group control). Informed consent and ethical aprovement were mandatory. Statistical analysis were realized with a Mann Whitney test.
Results
Results of the questionnaires concern 50 children/adolescents born with a facial cleft compared to the results of 50 children of the same age born without a cleft. The prevalence of school bullying is high in children of school age (29%) and in children born with a cleft (32%). Concerning the protective factors, there is a high incidence of self-blame, rumination, dramatization in both groups with the feeling of less social support in the cleft group, although the quality of life and self-esteem is better in the cleft group.
Conclusions
Children with a facial cleft are statistically no more involved in harassment than other children, in our study. Children victims of bullying with or without a cleft have a bad quality of life, low self-esteem, less capacity of emotional regulation and more psychopathologic difficulties.

Harassment; cleft; Child

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The CLAPA Adult Services Project: Using Evidence-Based Practice to Design and Deliver New Interventions

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: There are approximately 72,000 adults living in the UK who were born with a cleft lip and/or palate (CL/P). Previous research has demonstrated that multidisciplinary concerns can extend into adulthood. Consequently, there is increasing recognition of CL/P as a lifelong condition, for which care and support should be available throughout all stages of life.

Aims: In response, the Cleft Lip and Palate Association (CLAPA) developed their Adult Services Programme to identify areas of unmet need and develop effective community-based interventions.

Methods: An online, mixed methods survey focussing on all aspects of adults' lives was designed by CLAPA and the Centre for Appearance Research. A total of 207 eligible responses were received between July-October 2018.

Results: Survey results demonstrated ongoing challenges in relation to adults' emotional wellbeing, interpersonal relationships, physical health, and treatment decision making. These findings highlighted the need for interventions aimed at young adults about to be discharged from routine care, as well as older adults who left the CL/P service many years ago.

Conclusions: To address gaps in service provision, CLAPA established an annual Adults Conference, and panel discussions on key topics broadcast via online videos and a podcast. Additionally, a Leaver's Pack of information regarding future access to healthcare and community services for distribution at the final routine CL/P appointment was designed. This presentation provides an overview of findings from the 2018 survey alongside evaluation of the interventions subsequently developed. The presentation will also consider the implications of the findings in the context of the international cleft community.
adults
psychology
quality of life

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The impact of parents' cleft related experiences on their children's psychosocial functioning

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

This study aims to understand the impact of parents' cleft related experiences on their children's psychosocial functioning. At first, CEN-Q questionnaire developed by American Cleft Palate- Craniofacial Association which aims to measure the experience of children who have Cleft lip/palate condition and the experience of their parents, translated to Turkish language in terms of current study. Demographic form, life orientation form and strength and difficulties questionnaire added
after the translation of CEN-Q and data collected from patients' caregivers whose children treated at Orthodontic Clinics of Yeditepe University and Ege University. Sex of the participants, their education level, when their children diagnosed with cleft lip/cleft palate (at birth or during pregnancy), does their children have other diagnoses than cleft lip/cleft palate, do they think that they are able to access necessary treatment or not and does treatment create financial burden on their shoulders were asked in the demographic form. CEN-Q evaluates the general impacts of cleft lip/cleft palate on family/parents. Life orientation form measures participant's optimism and pessimism levels. On the other hand, strength and difficulties questionnaire filled out by parents to state their children's psychosocial problems. 169 mother, 120 father and 20 other family members; in total 309 individual participated to current study. Regression and hierarchical regression analyses were carried out. Results showed that increases in Life Orientation score predicted decreases in Strength and Difficulties Questionnaire score. Also, increases in CEN-Q score predicted increases in Strength and Difficulties Questionnaire score. The effect of financial burden and increases in CEN-Q score predicted increases in Strength and Difficulties Questionnaire score. In the light of these results, optimism of the parents should be worked on, interventions should be made to shift parent's perspective, interventions should be made to decrease the effect of cleft lip/ cleft palate on families and state policies should be developed to decrease financial burden.

psychosocial functioning, CEN-Q, parents, children

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DIGITAL CULTURE AND MOBILE ACCESSIBILITY: DEVELOPMENT OF A HEALTH PROMOTION APPLICATION A PATIENTS WITH CRANIOFACIAL ABNORMALITIES

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MO3.7 Psychology, Carrick, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: The insertion of the virtual environment and the use of mobile devices is a worldwide reality and has no restrictions or limitations. In the current epidemiological situation, dialogue about the use and accessibility of applications becomes increasingly necessary, reaching an increasing number of patients and families regarding the attention and care in the rehabilitation of patients with Craniofacial Anomalies.

Objective: To make a mobile application aimed at mediating accessibility, promotion and health intervention for patients with Craniofacial Anomalies.

Methodology: This research is an exploratory study of technological development, with a hybrid approach (quanti-qualitative). The development of this study occurs from steps, organized sequentially, in which one step is the basis for another. This research complies with CNS resolutions nº 46848415.0.0000.5201/2019 of the Professor Fernando Figueira Institute of Integral Medicine, Brazil.

Results: As it is a study in production. Therefore, a bibliographic survey was carried out with scientific materials related to the theme of mobile applications in the mediation of accessibility, promotion and health intervention of patients with Craniofacial Anomalies. Data analysis was carried out through exploratory (univariate) analysis and description of the characteristics of the apprentice population.

Conclusion: Applications have played the role of mediating instruments of learning processes, and because they are accessible, they can be used as a knowledge display tool, exposing knowledge, encouraging and empowering speech therapists in the construction of knowledge, in the performance and rehabilitation of patients with Craniofacial anomalies and their families.

Craniofacial Abnormalities; Telemedicine; Health Education

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Tessier's cleft number 6 revisited: a series of 26 new cases and literature review of 44.

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

In the Tessier's groundbreaking classification of rare cleft there was a grey zone around the cleft number 6. Due to the low number of cases and the lack of high-quality medical imaging a confusion was introduced with Treacher-Collins syndrome which is nowadays known as a specific entity. We analyze in this paper a series of 26 original cases and a series of 44 cases reported in the literature. Most of them were misdiagnosed. We describe the full spectrum of cleft 6 as an autonomous entity which could present itself in three subtypes: 6a is the most proximal and could be associated with cleft 8. The subtype 6b is medial toward the zygomatic arch and frequently associated with a bone and teeth appendage (frequently described as a "maxillary duplication"). The subtype 6C goes toward the external ear between the helix crus and the auditory meatus.

	#	sex	side	macrostomia	cheek	sideburn	palate	malar cleft	cutaneous appendage	super. Append	subtype	associated cleft	other anomalies
Lille series	1	F	bilat.	mild	mild	yes	no	yes	yes	yes	6b		
	2	F	bilat.	severe	severe	yes	yes	yes	no	no	6a	cleft 8 bilateral	
	3	F	right	mild	minor	yes	yes	yes	no	no	6a	cleft 4 left	
	4	F	bilat.	mild	mild	yes	no	yes	no	no	6a	cleft 8 bilateral	
	5	F	Right	mild	mild		Yes	yes	no	no	6a	cleft5&8 right; 4 left	right microphtalmia, left severe ocular malformation
	6	F	left	minor	minor	no	no	yes	no	yes	6ab	left cleft 8	combine both the caracteristics of a and b
Sao Paulo series	*1*	*M*	*bilat.*	*severe*	*severe*		*yes*	*yes*	*yes*	*yes*	*6b*		*bilateral assymetric, left>right*
	2	*F*	*bilat.*	*severe*	*severe*		*yes*	*yes*	*no*	*yes*	*6b*		
	3	*M*	*bilat.*	*severe*	*severe*		*yes*		*no*		*6a*	*8 bilat*	
	4	*F*	*unilat.*	*severe*	*severe*						*6a*	*8 bilat.; 5&2 right; 4left*	*ABS*
	5	*F*	*left*	*severe*	*severe*						*6c*		*coronoid process,condyle, pterygoid process hypoplasic*
	6	*M*	*right*	*severe*	*severe*		*yes*	*yes*	*no*		*6c*	*7 right*	*aplasia right ascending ramus*
	7	*F*	*right*	*severe*	*severe*		*yes*				*6a*	*8 &5right; 4left*	*left anophtalmia*
	8	*F*	*left*	*severe*	*severe*	*yes*					*6a*	*10 bilat; 4&2 right*	*right anophtalmia*
	9	*F*	*right*	*severe*	*severe*	*yes*	*yes*				*6a*	*2 bilat.; 8 Right; 4 left*	
	10	*M*	*left*	*minor*	*minor*		*yes*				*6a*		*The cleft is mainly pterygo-palatal*
	11	*F*	*right*	*severe*	*severe*			*yes*	*yes*		*6c*	*7right*	*left hemifacial microsomia*
	12	*F*	*right*	*mild*	*mild*		*yes*				*6c*		*interesting since it is a partial cleft in all of its aspects*
	13	*F*	*right*	*severe*	*mild*			*yes*	*yes*	*yes*	*6b*		
	14	*F*	*left*	*severe*	*mild*		*yes*	*yes*	*no*	*yes*	*6b*	*cleft 4 right*	
	15	*M*	*right*	*mild*	*mild*			*yes*		*yes*	*6c*		*facial palsy, coronoid and pterygoid process hypoplastic*
	16	*M*	*right*	*severe*	*severe*		*yes*	*yes*	*no*	*yes*	*6c*	*cleft 2 right*	*coronoid and pterygoid process hypoplastic*
	17	*M*	*left*	*minor*	*mild*					*yes*	*6b*	*cleft 4 right*	
	18	*F*	*left*	*minor*	*minor*		*yes*	*yes*		*yes*	*6c*		*pure osseous appengage (no tooth bud)*
	19	*M*	*left*	*minor*	*minor*			*yes*		*yes*	*6b*	*cleft 4 right*	
	20	*M*	*right*	*severe*	*mild*			*yes*		*yes*	*6b*	*cleft 4 left*	

Table 1: our clinical series of 26 cleft 6 cases data.

Craniofacial, Cleft, Morphology, Anatomy, Dysmorphology.

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Circum-maxillary sutures in patients with Apert, Crouzon and Pfeiffer Syndromes compared to non-syndromic children: growth implications

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Maxillary hypoplasia in children with Apert, Crouzon and Pfeiffer Syndromes is commonly associated with early cranial base or calvarial ossification.
Aims: The objective of this case-control study is to evaluate patency of circum-maxillary sutures and their possible primary influence on maxillary hypoplasia in craniofacial synostoses.
Methods: 51 CT scans of patients affected by syndromic craniofacial synostosis (17 patients with Apert syndrome, 26 patients with Crouzon syndrome and 8 patients with Pfeiffer syndrome), average age 5±3.6years, range 1.9 to 13 years, were compared to age and sex matched control CTs of 50 non-syndromic children. Midpalatal suture, zygomatico-maxillary sutures and pterigo-maxillary sutures were evaluated and scored. CT scans of the study group had to be performed prior to any midfacial surgery.
Results: The syndromic group showed a significant earlier ossification of all sutures compared to the non-syndromic group. Significant differences were already present in early childhood and continued through adolescence.
Conclusions: Based on the differences in terms of maxillary sutural ossification identified, midfacial hypoplasia does not seem to be only secondary to premature cranial or cranial base ossification, but also to primary synostosis of facial sutures, thus providing new insights into the pathogenesis of midface deficiency in children with craniofacial synostoses.
Craniofacial growth, Craniofaciosynostosis, Circum-maxillary sutures

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Comparison of craniofacial changes after bimaxillary orthognathic surgery in class III individuals with unilateral cleft lip and palate and isolated cleft palate

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

The parameters and references used for orthodontic-surgical correction of individuals with cleft lip and palate are the same as those used for individuals without cleft, the results, however, are different mainly from the point of view of facial aesthetics.The aim of this study was to radiographically assess the characteristics and craniofacial changes of patients with unilateral cleft lip and palate undergoing orthognathic surgery for class III correction and to compare the findings with a control group of patients with isolated cleft palate also undergoing orthognathic surgery for Class III correction. The study sample was lateral x-ray radiographs of 45 patients selected retrospectively and randomly, divided into 2 groups: (1) experimental group: 30 adult patients with unilateral cleft lip and palate undergoing bimaxillary orthognathic surgery for correction of class III and (2) control group: 15 adult patients with isolated cleft palate undergoing bimaxillary orthognathic surgery for class III correction. Craniofacial and soft tissue thickness measurements were performed on lateral norm radiographs, preoperatively and 6 months after surgery. The data obtained through cephalometric analysis were compared statistically using the ANOVA test and Pearson's correlation coefficient. The individuals in the experimental group showed a greater vertical increase in the maxilla, less sagittal projection of the subnasal point, a poorer relationship between the lips, greater protrusion, thickness and eversion of the lower lip, in addition to greater thickness of soft tissue in the chin region compared to the control group, at T1 and T2. Even with the corrective effect for occlusion and for the relationship of hard tissues, bimaxillary orthognathic surgery did not allow the same results on soft tissues, which showed a less harmonic conformation in the experimental group.

This work was supported by Smile Train,Inc

Orthognathic Surgery, Cleft lip palate

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Orthognathic surgery in growing patients with UCLP using postsurgical bone-anchored retention

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Orthognathic surgery is usually performed after growth completion in order to avoid postsurgical relapse. However, delaying surgery is associated with functional, esthetic and psychosocial problems during adolescence.
Aim: The objective was to evaluate Le Fort I osteotomy with maxillary advancement in growing patients with UCLP retained with Class III elastics anchored on Bollard miniplates.
Methods: The experimental group comprised 9 patients with unilateral complete CLP and moderate to severe maxillary deficiency treated with early orthognathic surgery (mean age 14 years; 7 males; 2 females). The comparison group included 9 patients with unilateral complete CLP and similar skeletal pattern treated with conventional maxillary advancement at skeletal maturity. Bollard miniplates were installed in the experimental group during orthognathic surgery. Miniplates anchored Class III elastics were used nighttime starting 60 days after surgery. Cone-beam computed tomography scans were taken before surgery (T1) and 12 months after surgery (T3). Digital lateral cephalograms were taken at 2 months postoperative (T2). Dentoskeletal and soft tissue changes were evaluated using Dolphin Imaging 11.95 software by 2 examiners. Mixed ANOVA was used for the analysis of dentoskeletal and soft tissue changes ($p<0,05$).
Results: In the experimental group, SNA angle was 76.1º, 81.4º and 80.6º and the overjet was -4.9mm, 2.6mm and 2.5mm at T1, T2 and T3, respectively. Statistically significant changes for SNA and overjet were observed only for T1-T2 and T1-T3 periods. There was no intergroup difference for SNA and overjet at the three time points.
Conclusion: Le Fort I osteotomy for maxillary advancement in growing patients showed adequate short-term stability when Class III elastics anchored on miniplates were used as retention.

Orthognathic Surgery, Orthopedic Treatment, Nonsyndromic-Clefting

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Effects of Kinesio Taping on postoperative edema after orthognathic surgery in patients with cleft lip and palate

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction: Orthognathic surgery is one of the last procedures to be performed in treatment of patients with cleft lip and palate. Edema is one of the main postoperative complaints of patients undergoing this surgery. Thus, Kinesio Taping (KT) is a possibility in postoperative facial edema management. Aim: to assess the effects of KT on edema and facial pain in postoperative period of orthognathic surgery in patients with repaired cleft lip and palate. Methods: This double-blind, randomized clinical trial included 30 patients who underwent bimaxillary orthognathic. These patients were divided into two groups with 15 members each. One group received routine treatment and KT and the other one received routine treatment and placebo. Assessments were carried out through photo analysis by a previously calibrated evaluator who classified the edema and its evolution as: mild, moderate and severe; Visual Analog Scale (VAS) to quantify patient's perception for pain and edema. Also, two evaluators previously calibrated carried out facial measurements on every postoperative (PO) day until the 5th PO day. Thus, the measurements of each postoperative day were compared to the minimum edema (immediate postoperative period). Results: The amount of maximum edema was similar between the two groups (p=0.925). Treatment group showed greater decrease in edema compared to the placebo group in PO4 (p=0.039) and PO5 (p=0.001). Photographic analysis found greater resolution of facial edema at PO5 in the treatment group (P = 0.035). Regarding pain and edema perceptions by research participants, a statistically significant difference was found (P = <0.001) but only for time factor. Conclusion: KT proved to be effective in reducing facial edema in postoperative period of orthognathic surgery in patients with cleft lip and palate, but it was not effective in limiting edema or in decreasing pain. This work was supported by Smile Train,Inc.

orthognathic , edema, knesio taping

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Orthognathic surgery in cleft patients.

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

To analyse Le Fort I osteotomy surgeries in cleft vs non cleft patients.

Methods
A retrospective analysis of patients followed in the Cleft & Palate Dept. between 2002 and 2015 with date of birth between 1983 and 1999 (n=613). We matched those patients with a listing of alveoloplasty, advancement of maxilla with anchorage, bone distraction or orthognathic surgery in the OMFS Dept in same age patients during the same period (n surg=1405; uncleft 1200, cleft 205).

Results
Amongst 147 cleft patients, 205 surgeries were performed : 141 alveoloplasty (68%), 12 distractions (6%), 7 orthopedic treatment with orthodontic anchorage (3%) and 31 Le Fort I or maxilla-mandibular osteotomy (15%). 23 patients had an isolated Le fort I or maxilla-mandibular osteotomy, 2 preceded by a distraction and 3 cases needed revision surgery.
Those cleft patients were matched with uncleft patients of the same maxilla-mandibular discrepancy and operated the same year with the same surgical procedure. Cleft patients were slightly younger (18,5±0,8 vs 20±3,2 y. old).
There was no difference regarding length of anaesthesia preparation (47±14 vs 41±8 min) nor of surgery (210±58 vs 211±78 min).
When comparing on cephalometric radiographies obtained to planned maxillary advancements the average difference was 1,8±1 mm in cleft patient vs 1,5±0,9 mm. There was no difference in overcorrected patients (1,7 vs 1,67mm). Cleft patients were more undercorrected (2 vs 1,06 mm).
Rate of complications is work in progress

Conclusions
Despite use of maxillary orthopedic treatment or distraction when needed, we observed more undercorrection of maxillary advancement in cleft patient treated with orthognathic surgery. Our results are in adequation with literature.

Le Fort I osteotomy, cleft

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Novel Custom Maxillary Disimpaction Splint

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction:
LeFort I, II, and III osteotomies are commonly used in complex craniofacial reconstruction. Patients requiring these procedures typically have a cleft, other congenital craniofacial deformities, or suffered severe facial trauma. Both the cleft palate and traumatized palate have poor bony support, which leads to decreased stability of the lower disimpaction forceps blades commonly used during the disimpaction of the maxilla. Potential complications that arise during disimpaction include trauma of the palatal, oral, and nasal mucosa, formation of an oronasal fistula, trauma to adjacent teeth, and fracture of the palate and alveolar bone.

Aim:
To reduce the potential complications during the maxillary disimpaction, we developed a protective custom splint that allows a more stable purchase of the disimpaction forceps and protection of the cleft/traumatized palate and surrounding structures during downfracture.

Description:
The custom disimpaction splint is made pre-operatively from a presurgical mold, taken 1-2 weeks before surgery. The splint is designed to cover the palate and occlusal surfaces to increase retention and minimize movement of the splint during the surgical procedure. The base is fabricated from a 2mm clear splint Biocryl material (Great Lakes Dental Technologies). The palatal area is built up with soft-cushion rebase material (Dura Base, Reliance) until the occlusal surface to allow a stable grip of the disimpaction forceps blades and provide protective coverage of the cleft, traumatized palate, or alveolar bone graft site during the downfracture.

Results:
The custom maxillary disimpaction splint has been successfully used in our clinic from September 2019 to the present for LeFort osteotomies in patients with a compromised primary palate. A considerable reduction in surgical complications, including alveolar bone graft fractures, palatal trauma, and formation of oronasal fistulas, was noted.

Conclusion:
This novel custom maxillary disimpaction splint can result in improved outcomes and decreased complications of LeFort osteotomy procedures of patients with cleft and traumatized palate.
disimpaction, LeFort, cleft, complication, splint

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Use of Bone-anchored Maxillary Protraction Systems for Treatment of Maxillary Retrusion in Unilateral Cleft Lip and Palate Patients

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Background
Patients who undergo surgical correction of unilateral cleft lip and palate (UCLP) deformities frequently exhibit maxillary retrusion as their facial skeleton develops. Definitive correction with orthognathic surgery is often delayed until skeletal maturity; however, bone-anchored maxillary protraction (BAMP), also termed Bollard Miniplates, are an option for treating maxillary retrusion in skeletally immature patients.

Aims
In this study we seek to quantify cephalometric changes in four patients with UCLP deformities who were treated with BAMP for a minimum of 12 months.

Methods
Under general anesthesia, lidocaine with epinephrine was injected along the lateral buttress of the upper gingivobuccal sulcus on both the left and right maxilla and between the canine and lateral incisor in the mandible. Straight-line incisions were made, and sliding gingival dissections were carried down to the lateral maxillary buttress on the left and right sides. The Miniplates were placed and exited through the attached gingiva. The procedure was repeated on the mandible, irrigated copiously, and closed with 4-0 Vicryl sutures. Patients underwent an elastic band loading protocol, from 100g to 200g. Elastic bands were removed only for eating and brushing of the teeth. Cephalometric analysis was performed using Dolphin (Patterson Dental Supply Inc, Chastworth, California).

Results
Four patients with a mean age was 11.6 years were included for analysis. The median length of treatment was 17.5 months. Three patients had a reduction in the degree of malocclusion. One patient experienced no change in the ANB angle; however, there was improved molar positioning (Table 1).

Conclusion
Our findings suggest that BAMP promotes maxillary growth prior to skeletal maturity. Even when ANB was not increased, BAMP prevented any relative worsening of maxillary retrusion during skeletal growth. This emerging therapy has promising results for patients with UCLP; however, further studies are needed to determine if BAMP can reduce the need for orthognathic surgery.

Table 1. Cephalometric values before and during BAMP therapy

Variables	Pre-Treatment (n = 4) Value	Post-Treatment (n = 4) Value
Mean SNA (degrees)	70.8	73.78
Mean SNB (degrees)	75.98	76.58
Mean ANB (degrees)	-5.1	-2.83
Mean Wits (mm)	-8.13	-4.83

Craniofacial, Cleft, Orthognathic

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Soft Tissue Nasolabial Response Following LeFort I Advancement in Patients with Cleft Lip and Palate

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Soft tissue changes following orthognathic surgery are generally unpredictable, especially in patients with clefts. Scar tissues from prior surgeries can play an important role in altering soft tissue responses.

This study aims to measure the amount of soft tissue changes and compare to skeletal and dental movement following LeFort I advancement in adult patients with non-syndromic complete cleft lip and palate (NS-CLP).

Twenty-six patients with NS-CLP who met inclusion criteria were those who received Le Fort I advancement between 2013 and 2019. Lateral cephalograms or CBCT at pre-surgical(T1), immediately post-surgical(T2), and one-year follow-up(T3) were obtained. Patients were excluded if nose/lip revision surgery was performed prior to T3. Four hard-tissue and five soft-tissue landmarks were selected, and the changes were measured. Skeletal and dental landmarks include ANS, A-point, upper incisor most labial (U1-most), upper incisor edge (U1-tip). Soft-tissue landmarks include tip of nose (Prn), subnasale (Sn), superior labial sulcus (SLS), upper lip anterior (LS), and stomion superius (SIMS). Five outcome measures (Prn/ANS, Sn/A-point, SLS/A-point, LS/U1-most,and SIMS/U1-tip) were analyzed and associations between hard-and-soft tissue counterparts were evaluated.

Sixteen patients were included in the analyses. Significant advancement in UCLP(n=16) and BCLP(n=10) groups at ANS (4.4±3,4.7±4 mm) and A-point (6.6±3,8.8±3 mm) were observed. Horizontal changes of soft tissue counterparts, Prn, were 2.7±2,4.6±4 mm, Sn, were 3.9±1.9,6.2±2.4 mm, and SLS, were 5.2±2.5,7.4±2.8 mm. The mean advancement at U1-most were 7.2±2.7,8.4±2.4 mm and U1-tip were 7.5±2.9,8.4±2.7 mm. The mean horizontal changes of the overlying soft tissue, LS, were 5.6±2.9, 7.9± 3.7 mm, and SIMS were 6.0±3.2, 7.3±2.7 mm. The ratio and correlation analyses revealed Prn/ANS were 0.48(r=0.40) and (r=0.0), Sn/A-point were 0.58(r=0.79) and 0.70(r=0.77), SLS/A-point were 0.79(r=0.82) and 0.85(r=0.80), LS/U1-most were 0.74(r=0.92) and 0.96(r=0.74), and SIMS/U1-tip were 0.78(r=0.75) and 0.82(r=0.67), respectively.

This study identified a linear relationship between soft-and hard-tissue changes following LeFort I advancement in patients with CLP.
LeFort I,soft tissue,clefts,orthognathic surgery,CLP

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Evaluation of soft tissue profile changes following orthognathic surgery

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Purpose: To evaluate soft tissue profile changes and correlate them with underlying hard tissue changes following orthognathic surgery in skeletal Class II and Class III patients.
Materials and methods: This retrospective study consisted of a sample of 69 patients (35 males and 34 females) with mean age 22.93±5.26 years, divided into three Groups; Group 1(Bijaw surgery), Group 2 (mandibular advancement surgery), Group 3 (mandibular setback surgery). The lateral Cephalograms were assessed at pre-treatment (T0), pre-surgery (T1) and post-treatment (T3). The mean changes and change ratio of the soft tissue to hard tissue were compared . The repeated measures ANOVA, Pearson's correlation co-efficient and the Regression analysis were used.
Results: In the skeletal Class III patients with Bijaw surgery, the maxillary soft tissues moved in a ratio of 0.88-1.53:1 with the underlying hard tissues. The mandibular soft tissues to hard tissue change ratio at point B, was 0.91:1 at labraleinferioris, 1.00:1 at mento-labial fold and 1.23:1 at soft tissue pogonion. In skeletal Class II patients with mandibular advancement, labraleinferioris change was 1.07:1 to hard tissue B point change and 0.92:1 with hard tissue pogonion change, the soft tissue chin change was in a ratio of 1.22:1 with hard tissue pogonion. In Skeletal Class III patients with mandibular setback, soft tissues moved in a ratio of 0.82:1 at labraleinferioris, 1.12:1 at mento-labial fold and 1.33:1 at soft tissue pogonion.
Conclusion: Based on the results, the soft tissue and the hard tissue changes are correlated to each other.

Skeletal II
III
orthognathic surgery

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Cephalometric analysis at 19 years of age after three different one-stage palatal repairs; a longitudinal study of patients born with unilateral cleft lip and palate (UCLP)

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction
Mid-facial growth after treatment of unilateral cleft lip and palate (UCLP) is often assessed with cephalometric analysis of lateral cephalograms, which should be performed until the end of skeletal maturation. The influence of the type and timing of primary treatment, in particular palatal repair, can thus be investigated and methods with a negative impact on growth avoided.
Aims
To evaluate cephalometric long-term outcomes in patients born with UCLP and treated with three different one-stage surgical protocols for palatal repair, to compare growth longitudinally in these patients and with individuals born without a cleft.
Methods
Lateral cephalograms of 115 non-syndromic Caucasian children born between 1975 and 2004, operated with Veau-Wardill-Kilner (VWK) technique 1975-1986 (n=27), minimal incision technique (MIT) from 1987-1997 (n=59) or according to MIT with muscle reconstruction (MITmr) 1998-2004 (n=29) were examined. Cephalometric analysis at 3-5 (n=66), 6-8 (n=57), 10 (n=65), 13-16 (n=62), and 18-21 (n=70) years of age was performed and 15 to 29 variables evaluated.
Results
Differences in several of the cephalometric variables between the three surgical techniques as well as between those of treated patients and individuals born without a cleft were found. On group-level, a decrease of SNA was seen between 5 and 19 years of age and the individuals with a higher SNA at 5 years of age also had a higher value at age 19. At the age of 19, 21 % of the patients operated with VWK had received orthognathic surgery with osteotomy to correct the maxillary retrusion, compared to 4.5 % of those operated with MIT (p=0.026).
Conclusions
The VWK palatal repair resulted in a more negative mid-facial long-term growth compared to the less invasive palatoplasty techniques. It seems that some variables of cephalometric analysis at 5 years of age, on group-level, might predict the outcome at 19 years of age.

Long-term follow-up, UCLP, Cephalometric analysis

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Virtual Reality Presurgical Planning and Intraoperative Navigation – A New Workflow for Facial Trauma

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MO3.8 CRANIOMAXILLOFACIAL, Harris, EICC - Onsite Only, July 11, 2022, 11:00 - 13:00

Introduction

Virtual presurgical planning is accepted as gold standard for many elective craniomaxillofacial procedures. Transferring presurgical plans to the OR via custom plates or cutting/drilling guides requires significant lead times, making this workflow less useful for trauma. Virtual-Reality (VR) planning software can provide immediate access to digital planning, and plans can be rapidly exported e.g. to intraoperative navigation software, potentially negating the need for 3D-printed surgical guides.

Aims

The purpose of this study is to validate accuracy of a new workflow for craniofacial trauma involving the combination of same-day VR planning and intraoperative navigation.

Methods

Initial testing was performed on human cadaver heads, simulating 6 orbital floor fractures and 2 ZMC fractures. Subsequent accuracy validation was performed in a controlled environment using simulated fractures on 3D-printed skull models (n=16). Specimens were CT-scanned and imported into the VR-software, where fractures were virtually reduced or an orbital plate was placed. The resultant 3D-model was exported to Stryker Nav3i and overlaid onto the original scan. Registration was via skull post, and an nGenius tracker probe was attached to the fracture segment or orbital floor plate via a custom 3D printed adapter to allow navigation guidance of the fracture reduction or plate placement. Repeat CT was performed, and compared to the 3D-VR plan using a series of landmarks.

Results

Presurgical planning and navigation overlay was completed in 20minutes. The workflow was successfully completed in all cadavers, but showed inconsistent accuracy. Using 3D printed models, we were able to troubleshoot these inconsistencies, resulting in average displacement values of 1.08±0.59mm (axial), 0.85±0.55mm (sagittal), and 0.48±0.38mm (coronal), in line with published accuracy of navigation alone.

Conclusions

This study establishes VR-surgical planning and intraoperative navigation as an effective workflow, and validates combined use of these technologies. We anticipate continued evolution of this workflow, expanding applications to increasingly complex trauma and craniomaxillofacial surgery.

Planning, Virtual Reality, Navigation, Trauma

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BILATERAL CLEFT LIP RAPAIR WITH PRIMARY RHINOPLASTY IN CASES OF SEVERELY PROTRUDED PRE-MAXILLA BY PREMAXILARY SET BACK

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction:
Bilateral cleft lip with severe protruding pre-maxillary segment has always been a challenge for reconstructive surgery. Unilateral and bilateral lip adhesions have been always remained initial treatment for such cases to push pre-maxillary segment backwards and to attain lip expansion before definitive repair. Pre-maxillary set back has never been favored in younger children due to risk of maxillary hypoplasia.
Aim:
To achieve aesthetically good results of bilateral cleft lip repair with primary Rhinoplasty by pre-maxillary set back technique in cases of severely protruding pre-maxilla
Method:
From 2018 to 2021, twenty five cases underwent bilateral cleft lip repair with primary rhinoplasty with primary premaxillay setback. A wedge of vomerine bone was remove posterior to pre-maxilla / vomerine suture and whole segment was push back. Bone graft harvested from excision was used and placed along the fracture line. Follow up was done at9 months and 16 months of age.
Results: All patients who underwent premaxillary setback remained free of complications with stable premaxillary segment and achieved aesthetically good post operative results.
Conclusion:
Pre-maxillary setback gives an opportunity to repair bilateral lip and nose with protruded pre-maxilla in a single stage without need of lip adhesions.

Pre-maxillary setback

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The fate of our first six consecutive operated bilateral clefts followed over a period of 23 years

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Title : The fate of our first six consecutive operated bilateral clefts followed over a period of 23 years
Aims and Objectives: to document the evolution of a consecutive set of six operated bilateral cleft patients since the infancy to adulthood their trials and the tribulations
Method :The first six consecutive patients of Bilateral complete cleft lip and +- palate operated by modified Mulliken technique by a single surgeon in the mid-nineties followed over a period of twenty three years or more have been studied.
Results : Their evolution and problems faced during their growth, the additional surgeries required their psychological upheavals the burden of care for the parents and their eventual acceptance of their cleft has been evaluated. This study demonstrates that though these children were born with a severe form of facial cleft they accept the fact that they were born with it and also can be accepted by their peers and can match them academically as well as socially. Of the six patients, patient no 2 was lost to follow up at the age of 10 yrs(Died of Dengue) and patient no 3 was lost to follow up at the age of 14(despite all attempts to trace him) all the other four were last followed up in August /September 2019. The work is still unfinished as at least a couple have consented for a Rhinoplasty after their completion of the graduation /education
Conclusion: Presentation of a long term follow up 23 yrs and more of a consecutive series of Bilateral Clefts Operated By a single surgeon
Bilateral Cleft lip Follow up

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One- and two-step approach in the surgery of patients born with complete bilateral cleft lip and palate

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: The one-step approach to the repair of BCLP is more surgically demanding but has got the obvious advantages, such as: significant reduction of the number of surgical interventions, hence lower overall perioperative morbidity risk; early integration of all intraoral structures provide better environment for speech therapy at early stage of speech development; completely reconstructed upper lip with vestibulum covering entire surface premaxilla provides control of premaxilla growth which in turn contributes to more harmonious alveolar development. In patient with strongly protruding premaxilla, a preparatory lip-adhesion procedure at 3month, facilitates the conditions of the following one-step procedure at 8-10month. At the time of complete repair the lip-adhesion tissue is completely excised.
Aim: The aim of the study was to present our one-stage method of primary repair in the treatment of the patients born with BCLP, and to show its preliminary results.
Methods: This retrospective study based on the evaluation of medical record of patients born with complete BCLP and operated according to one-stage approach. The presented protocol regarding surgical treatment of BCLP patients in our center has been used since 2005.
Results: There were 45 one-stage repairs of BCLP performed between 2005 and 2009. The study included 28 patients (38.6% males and 61.4% females) around the 10th year of life. The observation period in the group was 9.6 years on average. All of these patients were operated according to the same method regardless the initial extend of BCLP defect. The material included 16.4% of syndromic cases.
Conclusions: The positive results that we can observe in our everyday clinical practice and the obvious advantages of this method of treatment encourage us to develop the presented surgical approach. Nevertheless, the study should be treated as preliminary before obtaining comprehensive assessment of reliable number of adult patients treated this way.

BCLP, one-step approach, surgical method

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Primary open tip rhinoplasty along with bilateral cleft lip repair in bilateral complete cleft of primary/ and secondary palate : Analysis of results in 400 cases.

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction:

It's often difficult to obtain an aesthetically pleasing result in complete B/L cleft lip, along with an elongated columella and a good nasal airway.This even more difficult if there is severely projecting and deviated premaxilla and no pre-surgical NAM has been done. In last 5 years we did primary extended open tip rhinoplasty in 400 cases of B/L cleft lip and palate along with the lip repair.

Material and Methods:
400 cases of bilateral complete cleft of primary and secondary palate were managed with the new technique of primary open tip rhinoplasty along with the repair of the cleft of the lip.. To gain access to the lower lateral cartilages, the prolabial flap was raised along with the columella. Further access to the nasal dorsum was facilitated by infra-cartilage rim incisions. Dissections were done up to the root of the nose superiorly and to the lateral ends of the lower lateral cartilages. While the lip skin and vermilion were repaired as per existing techniques, nasal tip projection was increased with interdomal suturing. Medial crura of the alar cartilages were sutured to each other to strengthen the columellar support .
Results:
There was optimal appearance of the lip with an improved nasal tip projection in most cases. There was no incidence of prolabial or vomer necrosis. In 15 patients there was venous congestion of the prolabium in first 48 hours that settled over the next 3 days.There was mild inflammation and redness in 9 patients nasal asymmetry in 14 patients, notch in ala in 7 patients, pinched up nose in 4 patients .
Conclusion:
Simultaneous correction of nasal deformity along with the lip repair facilitated by the primary extended open rhinoplasty approach is a safe procedure and it provided pleasing nasal symmetry and shape and elongated columella and no breathing problems in the post-operative period

Bilateral lip repair, Rhinoplasty, Cleft

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Bilateral orofacial clefts: one surgeon, one primary technique

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction
Orofacial clefts are common congenital malformations.
Aims
This study reviews the results 18 years later of our surgery and follow-up of children born in our hospital with bilateral cleft lip and palate (BCLP).
Methods
We analyzed files of children born with BCLP from 1982 to 2002 and operated by the same surgeon following the inverse Malek procedure. The evaluation was based on the results of the primary surgery, ENT procedures, maxillo-facial surgery and final phonatory results. Syndromic children were excluded.
Results
Thirty-four bilateral cleft patients were taken into consideration. Among these 34 patients, 64.7% were operated in three stages following the inverse Malek procedure, 35,3% were operated in two stages. Sixty-eight percent (67.6%) had an oronasal fistula after the primary surgery. Fifty-six percent (55.9%) had grommets. Eighty-five percent (85.3%) had an alveolar graft at a median age of 10 (9 – 10) years old and 47.2% underwent a Lefort osteotomy. Thirty-eight percent (38.2%) were operated for a pharyngeal flap with good late phonatory results. A median of 5.7 multidisciplinary consultations were realized. Median number of general anesthesia all surgical fields concerned was 6 (5 – 7).
Conclusions
This retrospective study considers the long-term results of one primary surgical technique by one surgeon for BCLP. It shows that the Malek procedure (in three inverted stages) is related to a high risk of fistula but good long-term phonatory results. Orthodontic treatment should be scheduled for a short period. The Le Fort procedure should be clearly explained to parents in early consultations as being part of the treatment so they know what to expect from this very efficient procedure. The number of operations needed for these children is high and this information should be transmitted to the parents from the beginning of care.

Cleft; Bilateral; Follow-up; Results

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Form follows function? The advantages of repairing the palate and alveolus before the lip and nose, using an “inside-out” sequence

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction

Several sequences in cleft lip and palate repair are well established. Usually, as a first step, lip repair is undertaken, sometimes combined with hard or soft palate repair. The alveolus is usually repaired at a later stage. An alternative approach proposes, as a first step, the repair of all inner structures of the malformation and, subsequently, the lip and nose. The technique was developed between the 1960s to the 1990s by Prof Koch based on the experience of Prof Rosenthal. It is now practised for more than 20 years.

Aims
The technique creates a stable foundation from the inside to the outside to address first, the functional aspects and the inner anatomy, including the alveolus before lip and nose repair. This sequence eliminates all pathologic connections between the nose and mouth. Creation of a periosteal “envelope” leads to bone formation between the alveolar segments.

Methods
All children undergoing primary repair of complete unilateral or bilateral cleft lip and palate between November 2001 to December 2021 carried out by a single surgeon (H.K.) were analysed. Fistula occurrence, Five-year-speech results, midfacial growth (five-year-index) and requirement for further surgery were recorded.

Results
A total of 421 children, 280 with complete unilateral cleft lip and palate (UCLP) and 141 with complete bilateral cleft lip and palate (BCLP) were included. A fistula rate from 0.7% was achieved. Stable bone formation between the alveolar segments emerged in all cases. Secondary alveolar bone graft was required in 18% in UCLP and 23% in BCLP. In UCLP favourable facial growth was achieved in 54%. Poor facial growth was recorded in 20.3%.

Conclusions
Safe and almost fistula-free repair is reliably possible. Sequencing the alveolar repair before lip repair allows to access and repair the malformation comprehensively. Bone formation stabilises the alveolar segments and creates a foundation for lip repair and the oral vestibule.
fistula-free, periosteal envelope, inside first

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FISTULA RATES AFTER 2-STAGE PALATE REPAIR FOR UNILATERAL CLEFT LIP AND PALATE: A PRELIMINARY REPORT

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction:
Cleft lip and palate repair aims to improve the individual's quality of life, reconstructing the affected anatomical region and restoring its appearance and function. Palatal fistula is an undesirable and the most frequent complication following palatoplasty. This study presents a preliminary report of the institutional experience after adopting the vomer flap for early closure of hard palate associated with lip and nose repair, as the first stage of primary surgeries for unilateral cleft lip and palate.
Objective:
The aim of this study was to determine the incidence of fistula development after 2-stage palate repair.
Methods:
This retrospective analysis included 139 non-syndromic patients with unilateral cleft lip and palate who underwent primary surgical repair in a Brazilian cleft center. The occurrence of primary palatal fistula was assessed during the postoperative multidisciplinary follow-up and registered by the team in the medical chart and photographic records. Nasolabial aesthetics were also rated with the Asher-McDade Aesthetic Index.
Results:
The mean age at the primary lip repair and simultaneous vomer flap was 4.3 ± 11,7 months (range, 2-12 months) and 18 ± 10,52 months for the second stage, posterior palatal closure. The incidence of palatal fistula was 21,74% and the most frequent location was the hard palate (Pittsburgh type IV), in 36,67%. Adequate palatal function was present in 79% (n=109/138) and 21% had speech impairment reported during speech and language face-to-face assessment.
CONCLUSIONS:
Two-stage palatoplasty could be an optional surgical protocol for patients with unilateral cleft lip and palate. Although our preliminary follow-up results show that the palatal fistulas rates were relatively high, functional impairment can be considered fairly reliable, corroborating previous studies and showing good outcomes with the vomer flap for early closure of hard palate.

nonsyndromic clefting, palatoplasty, surgical technique

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Histology of the velopharyngeal muscles and their relationship to speech results after primary palatoplasty

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Velopharyngeal dysfunction in cleft palate has an incidence of 10-30% after palatoplasty (Carvajal, 2012), reflected in hypernasality of speech. Factors that can influence speech development are age, type of cleft, and surgical technique used (Moreau, 2021; Robin, 2012). Currently, there are no studies that describe the histological characteristics of the velopharyngeal muscle in cleft palate or the velopharyngeal functionality after primary palatoplasty (Abdollahi, 2018).
Objective: To describe the histopathology of the velopharyngeal muscle in patients with cleft palate and the evolution of the nasalance of speech after the primary palatoplasty.
Materials and method: Prospective study including non-syndromic cleft palate patients who underwent primary palatoplasty by the same surgical team between 2020-2021. A muscle tissue sample was extracted from the soft palate and histopathologically analyzed by a single pathologist who determined normotypic or atrophic tissue. All patients underwent preoperative and 3-month postoperative nasalance measurements by the same operator, comparing the variations between both periods.
Results: We included 8 patients operated on at 11.5 months of average age. The average global pre-operative nasalance was 25% (range 11-35%) and the post-operative one was 18% (range 9-24%). The histopathological result of the muscle samples showed 75% atrophy and 25% normotypic. The reduction in nasalance in patients with normotypic muscle fibers was an average of 12.5%, while in those with atrophic fibers it was an average of 10.3%. Some patients with atrophic fibers slightly increased their post-palatoplasty nasalance. However, they had previous low levels of nasalance.
Conclusion: From the preliminary results, it is established that nasalancia decreases after primary palatoplasty in all cases. Although those with histopathology compatible with muscle atrophy have a lower decrease in postoperative nasalancia than those with normal muscles, the values are not statistically significant. A larger sample size is required to draw conclusions

nasalance, palatoplasty, histology

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The Surgical NAM: A rational treatment for bilateral cleft lip nose deformity and systematic review

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Background
The purpose of this study was to evaluate the surgical outcome after using primary surgery to address bilateral cleft lip nose and palate deformities. In addition, the authors performed a systematic review to evaluate the effects of the nasoalveolar molding on non-syndromic bilateral cleft lip and palate.

Methods and materials
A prospective cohort study of one surgeon's outcome of 25 consecutive performed primary bilateral cleft lip nasal deformity repair and systematic review of the literature for studies published until December 2019 to evaluate the effect of presurgical NAM on nasolabial aesthetics and maxillary archform.

Results
Since 2014, 25 consecutive patients with complete bilateral cleft have undergone primary anatomical repair of the cleft nasal deformity using primary cheilorhinoplasty. The average columella length was 4.3 ± 1.3 mm. The average ratio of the columella height to nasal height was 0.48 ± 0.02 mm postoperatively. Statistical significant differences have been observed between the pre and postoperative alveolar and palatal gaps after using primary cheiloplasty or bilateral lip adhesion.
After systematic literature searching, 14 identified studies were qualified for the final analysis, which included 604 patients.
The overall study quality according to Oxford CEBM and GRADE scale was low.

Conclusion.
The results of this study suggest that proposed primary cheilorhinoplasty is a good alternative to improve nose appearance and maxillary arch in patients with primary bilateral cleft lip nose and palate deformity. Based on available scientific evidence, definitive conclusions about the effectiveness of presurgical Naso Alveolar Molding on nasolabial aesthetics cannot be drawn.

Table 2. Postoperative nasal profiles comparison between operated and control group at one and five years old. (n:25).

Measurements (mm)	One year follow up (n: 25) Mean (SD)	Five years follow up (n: 25) Mean (SD)	p*	Control group (n:28) Mean (SD)	p**
Columella height	4.30 (1.01)	5.80 (1.02)	0.428	4.80 (1.01)	0.134
Alar base width	32.2 (1.48)	35.40 (0.85)	0.090	25.60 (1.32)	0.001
Ratio of columella height to nasal height	0.48 (0.68)	0.52 (1.17)	0.317	0.51 (0.76)	0.328
Ratio of columella height to alar base width	0.25 (0.83)	0.30 (1.13)	0.240	0.33 (0.94)	0.002

Mann-Whitney U test; CI Confident level 95 %

p* Comparison between postoperative follow-up at 1 year and 5 years old.
P** Comparison between postoperative follow-up at 5 years and control group.

Bilateral Cleft lip, Primary rhinoplasty

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Coevolution of primary surgery in a three-stage treatment protocol of children with unilateral cleft lip and palate

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

[Background] Primary surgical interventions, which are used in the treatment of children with unilateral cleft lip and palate (CLP), are basic for creating conditions for further development of the upper jaw.
[Methods] Measurements of photograms, scanned models of the upper jaw, MRI of velopharyngeal complex (VPC) of 30 children with CLP before cheilorhinoplasty, before veloplasty, before and after complete palatoplasty were performed.
[Results] After cheilorhinoplasty the greatest changes were: philtrum columns - 1.03±0.09 (N=1.0±0.16), the distance from the corner of the mouth to the height of the arch Cupid - 1.08±0.35 (N=1.0±0.12), length and width of the nostril - 1.4±0.11 (N=1.44±0.11). Transverse dimensions of the upper jaw at the level of the projection of the canines were 31.1±2.9 (N=28.0±0.4), the width of the defect in the area of alveolar process - 0.7±3.1 mm, and on the border of hard and soft palate - 11.09±1.4 mm. There was a decrease in transverse size in the projection of 54.64 teeth (QQ) - 23.3±3.2 mm (N=29.2±0.7 mm). Direct correlations between the above indicators of the nasolabial and the upper jaw at $p < 0.01$. After veloplasty QQ - 19.7±4.1 mm (N=34.3±0.3 mm), DT - 5.47±3.01 mm. Length of the soft palate (LV) was 24.9±5.7 mm (N=25.7±5.0 mm), the distance to the posterior wall of the pharynx (VPR) - 9.2±4.2 mm (N=6.8±1.1 mm) and mesopharyngeal width (PhW) 18.2±5.3 mm (N=16.1±2.2 mm). After the elimination of lip and palate defects QQ improved to 29.9±3.3 mm (N=35.2±0.7 mm), other indicators were within normal limits. LV stayed at 24.9±4.2 mm (N=27.6±1.2 mm); reduction of VPR - 5.5±1.3 mm (N=8.6±1.6 mm) and PhW 20.6±6.4 mm (N=17.7±1.7 mm).
[Conclusions] Restoration of anatomical and functional conditions for the nasolabial and velopharyngeal complex according to the three-stage protocol promotes the physiological development of the upper jaw and the harmonization of occlusion.
unilateral cleft, maxilla, treatment protocol

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Long-term follow-up of bilateral cleft lip and palate: incidence of speech-correcting surgeries and fistula formation.

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction
While bilateral cleft lip and palate (BCLP) constitutes a clinical challenge for the whole cleft team, the ideal surgical protocol remains obscure.
Aims
This study presents the long-term burden of care in terms of secondary surgeries, defined as fistula repair and speech-correcting surgeries (SCS), in a single center. Outcomes of two surgical protocols utilized over the years were also compared.
Material and Methods
A retrospective single-center analysis of 81 non-syndromic children with complete BCLP born between 1990 and 2010. Two surgical protocols comprising single-stage (n = 59) and two-stage (early soft palate repair with delayed hard palate repair, n = 22) procedures were compared. Outcome was analyzed at the time of alveolar bone grafting (ABG) and post-ABG.
Results
Altogether 54 children (66.7%) underwent secondary surgery by the time of bilateral ABG, at a mean age of 9.9 years (9.4-10.8 years). At this point, 38.3% (n = 31) of the patients underwent SCS and 49.4% (n = 40) had undergone fistula repair. The corresponding incidences at the end of follow-up, at a mean age of 17.7 years (range 14.2-20.8 years), were 46.9% (n = 38) and 53.1% (n = 43). No significant difference emerged in SCS incidence between the two protocols; however, prior to ABG the single-stage protocol had a significantly lower need for fistula repair. Regarding the location of fistulas, the single-stage procedure was associated with more anterior fistulas.
Conclusion
BCLP has a high surgical burden of care in terms of secondary surgeries, defined as SCS and fistula repair. In our experience, the single-stage protocol, particularly the two-flap technique, offers better results in management of BCLP than the two-stage approach with a short delay in hard palate closure.

Incidence for speech-correcting surgeries and fistula repair at ABG and post ABG in BCLP.

Protocol	No. of patients (%)	SCS No. of patients (%)				Fistula No. of patients (%)					
		ABG	*P*	Post-ABG	*P*	Pre-ABG	*P*	ABG	*P*	Post-ABG	*P*
Single-stage	**59**	**19 (32.2)**	.066[a]	**24 (40.7)**	.066[a]	**12 (20.3)**	.003[a]	**27 (45.8)**	.286[a]	**28 (47.5)**	.195[a]
Two-flap	30	9 (30.0)	.730[b]	11 (36.7)	.433[b]	5 (16.7)	.347[b]	14 (46.7)	.543[b]	14 (46.7)	.292[b]
Langenbeck	13	6 (46.2)		6 (46.2)		5 (38.5)		6 (46.2)		6 (46.2)	
Minimal incision	8	2 (25.0)		5 (62.5)		N/A		2 (25.0)		2 (25.0)	
V-W-K	8	2 (25.5)		2 (25.0)		1 (12.5)		5 (62.5)		6 (75.0)	
Two stage	**22**	**12 (54.5)**		**14 (63.6)**		**12 (54.5)**		**13 (59.1)**		**15 (68.2)**	
Total	81	31 (38.3)		38 (46.9)		24 (29.6)		40 (49.4)		43 (53.1)	

Categorical data presented as n (%). ABG indicates alveolar bone grafting; Pre ABG, fistula repair performed before ABG; Post ABG, SCS and fistula repair at total follow-up (data collection); SCS, speech-correcting surgery; Minimal incision, Mendoza's technique; Two-flap, Bardach's technique, and V-W-K, Veau-Wardill-Kilner technique.
[a] comparison of the two surgical protocols, [b] comparison of the single-stage techniques.

Palatoplasty, surgical technique, pharyngoplasty, fistula

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Extended supra-adenoid closure of soft palate: A simple technique to decrease velopharyngeal gap during primary unilateral cleft palate repair.

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TU3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 11:00 - 13:00

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Introduction

A good primary palate repair aims at restoring function of velopharyngeal sphincter. Most commonly used techniques involve muscle repairs (Furlow's repair, intravelar veloplasty) and soft palate lengthening procedures (z-plasty ,buccal flap). Velopharyngeal dysfunction has been treated by procedures aimed at decreasing velopharyngeal space (pharyngeal flap and sphincter pharyngoplasty) these techniques narrowed velopharyngeal space posterior and inferior to its normal closure. If one has to base his surgical technique on normal anatomy then levator palati muscle sling should be located at the level of eustachian tube opening. A decrease in gap at this level should further facilitate velopharyngeal closure.

Aims

This procedure aims at improving vellopharyngeal function by locating levator palati sling close to the posterior pharyngeal wall in line with eustachian tube openings at the time of primary palate repair . The aim of this study is to establish it's feasibility and study short term complications associated with it.

Methods

This technique involves dissection along the posterior free border of vomer (vomerine crest) extending to an area just above the adenoids. Soft palate closure extends along both sides of posterior border of vomerine crest in such a fashion that the anterior most part of nasal mucosa where muscle attachment begins is sutured to the posterior most part of incision. This effectively locates the levator palati sling close to the adenoids in line with the eustachian tube openings.

Results

Twenty cases were operated using this technique and followed for a period of six months to one year. It was found that the procedure is safe and no major complication was noticed. There was no incidence of severe nasal obstruction or sleep apnoea.

Conclusion

Extended supra-adenoid closure of soft palate is a simple and safe technique, long term studies are required to evaluate velopharyngeal function in these cases.

vellopharyngeal dysfunction, vellopharyngeal incompetence.

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NAM versus no-NAM in the treatment of unilateral cleft lip and palate: Nasal appearance at 5 years of age

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

INTRODUCTION:

Although many cleft teams have adopted nasoalveolar molding (NAM) to improve nasal form, evidence for its benefit have been contradictory. While there is an abundance of literature that focuses on NAM, few include control or comparative groups and have adequate follow-up. Given that treatment involves considerable burden an assessment of long-term benefits is critical.

AIMS:

To compare objective and subjective outcomes of treatment with NAM and no-NAM at 5 years of age.

METHODS: All patients with complete unilateral cleft lip and palate who underwent primary cheiloplasty by a single surgeon over a 7-year period were reviewed. Patients were grouped into NAM or no-NAM. Cleft severity and aesthetic outcomes were assessed by panels of raters who independently ranked nasal appearance of subject images at presentation, post-NAM/pre-operative, and at 5-year follow-up. Objective symmetry was measured using standard anthropometric analysis on 3D images. Rank scores and anthropometric measures were compared between groups using t-test.

RESULTS: Amongst 41 patients included, 16 successfully completed NAM. Inter-rater reliability assessed by ICC was 0.76 ($p < 0.05$) and intra-rater reliability assessed by Spearman's correlation coefficient was 0.93 ($p < 0.05$). Both groups were similar at presentation, however, the NAM group had better appearance following molding ($p<0.05$). At 5 years of age, the NAM group had better rank scores for overall appearance ($p<0.05$) and cleft nostril height and cleft medial lip height ($p<0.05$). Regression analysis revealed that NAM treatment was the most significant predictor of overall nasal appearance at 5 years. Treatment team experience and initial severity were also significant predictors ($p<0.05$). Systematic audit of cases revealed favorable and unfavorable changes from NAM.

CONCLUSIONS:

NAM was associated with better outcomes in children with complete unilateral cleft lip and palate at 5 years of age. Audit help to better define the specific objectives of pre-surgical molding.

Table 3. Linear Regression Analysis

	Effect Estimate	Standard Error	*p*
Intercept	39.15	14.54	0.012
Rank score at T0 (presentation)	0.61	0.18	0.002
NAM	−8.07	3.42	0.025
Age at surgery (mo)	−0.08	1.11	0.940
Experience (yr of surgery)	−2.77	1.34	0.049
Postoperative age at T2 (follow-up)	−3.77	2.34	0.118
Ethnicity*			
Asian	−2.01	3.79	0.601
Other	−1.40	3.47	0.690

NAM, nasoalveolar molding; T0, time 0 (at initial presentation); T2, time 2 (at approximately 5 yr of age; ages 3–7 accepted).
*White was used as the baseline, and ethnicity variable was grouped into three values: white, Asian, and other.

nasoalveolar molding, cleft lip

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Neurocognitive development in cleft palate with and without Robin Sequence

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction:
Due to the associated upper airway obstruction (UAO), Robin Sequence (RS) is a potentially life-threatening condition. Developmental delay and failure to thrive may result from recurrent hypoxemia and feeding problems.

Aims:
We aimed to determine the neurocognitive development of cleft palate patients with and without Robin Sequence.

Methods:
Children with isolated RS with cleft palate and children with cleft palate only (CPO) were contacted at the age of 5-6 years. All RS children had undergone initial polygraphic sleep study (PG) with a mixed-obstructive apnoea index (MOAI) of ≥3/hour and were consequently treated with the Tübingen palatal plate. A standardized clinical examination as well as a neuropediatric and neuropsychological examination included the Wechsler Pre-school and Primary Scale of Intelligence (WPPSI-III), Kaufman Assessment Battery for Children (K-ABC) and an assessment of developmental milestones.

Results:
In total 44 children (22 RS, 22 CPO) were included. RS children were younger at study (70.5±7.3 and 75.2±7.5 months; P=.035). Both groups achieved the evaluated milestones within the normed time frame. WPPSI-III and K-ABC results showed no group differences. Mean values for Verbal IQ (101.8±11.1 vs. 97.1±15.7), Performance IQ (102.9±12.1 vs. 99.6±14.5), Processing Speed Quotient (98.9±15.6 vs. 94.5±15.7), Full Scale IQ (103.2±12.1 vs. 98.4±15.3) and Sequential Processing Scale (102.1±13.1 vs. 94.2±17.3) were within the reference range (IQ 85-115) for RS and CPO children respectively, indicating average performance of both groups.

Conclusion:
No neurocognitive, physical or mental impairments were detected, suggesting that RS children having UAO treated early and effectively may use their potential for an age-appropriate neurocognitive development.
Robin sequence, neurocognitive development,

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Perceptions of Surgery in Nicaragua: Key Insights for Community Engagement to Surgical Service Utilization

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction:
Government-run hospitals often serve as the final point of care for surgical services in LMICs. Additional levels of care, such as health posts, farther upstream may offer valuable insights into how the public interacts with and perceives surgical services within the health system. Operation Smile, an international nonprofit organization engaging in surgical cleft lip and/or palate (CLP) care, is conducting research to assess factors that may prevent individuals or specific patient populations, such as patients with CLP, from seeking definitive surgical treatment.

Aims:

-Assess qualitative and quantitative information regarding demographic, structural and behavioral barriers to surgical care

-Assess the perception of surgery across 3 municipalities in a single region of Nicaragua

Methods:
Operation Smile team members distributed and performed 1,132 surveys and interviews within the Siuna (382), Bonanza (372), and Rosita (378) municipalities of the Las Minas region of Nicaragua. Survey data was analyzed to determine how associations between level of first interaction (e.g., health post, hospital) may affect an individual's perception of surgery.

Results:
The 3 municipalities significantly differed by age distribution, geographical distribution (urban vs. rural), and education level ($p < 0.05$). Individuals who reported previously presenting to a health post were significantly more likely to report a positive perception of surgery compared to those who had not visited a health post (OR=1.4, p=0.02). This finding remained significant after adjustment for education, age, geographical distribution, and municipality. In comparison, having previously visited a hospital had no significant effect on perception of surgery.

Conclusion:
This is the first documented, large-scale analysis of how the first level of healthcare exposure may significantly impact an individual's perception of surgery. This data can and has provided insight for targeted community level engagement at lower levels of the health system for the purpose of increasing community awareness and confidence in surgical services available for patients with CLP.
Healthcare Exposure, Community Engagement, Perceptions

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Using Design Thinking to Develop a Comprehensive Cleft Care Strategy in Malawi

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction
Design thinking is an analytic, creative, and iterative problem-solving process that seeks to understand the end-users, challenge assumptions, redefine problems and create innovative solutions to prototype and test. Operation Smile Malawi has been providing cleft services for 10 years, primarily through short-term surgical programs.

Aims
The OS Malawi foundation used design thinking to develop an equitable and sustainable five-year comprehensive cleft care plan for Malawi.

Methods
The team conducted a situational assessment to study the strengths and gaps of cleft care in Malawi, followed by an inclusive priority-setting workshop during which local and international stakeholders were convened. The workshop used a design thinking framework that included journey mapping, mind mapping, concept development, assumption testing, rapid prototyping, end-user co-creation, to determine the goals, priorities, and activities of the foundation's strategic plan. The findings were curated to inform opportunities for investments in the coming five years. In addition, a 27-question e-survey was used to assess the participants' understanding and perception of the design process.

Results
The process took 3 days and included 11 local staff members, 2 clinicians, and 4 international stakeholders. Participants were from programmatic, medical, partnerships, and administrative backgrounds. A complete strategy was agreed upon by all participants. All participants reported having a good or excellent experience with the process. 87% of respondents rated their team's engagement as above average during the workshop.

Conclusion
OS Malawi effectively utilized design thinking to improve strategic planning within a low-income country. The process led to the development of a locally-driven and contextually appropriate five-year strategy. This experience can serve as a framework to empower local teams in non-governmental organizations to enact context-appropriate strategic plans in low- and middle-income countries to improve the quality of care and services provided.
Cleft Care Country Strategy

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Optimizing hearing assessment in patients with a cleft palate: comparison with a large normative sample, and evaluation of current cleft protocols.

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction:
Optimal type and timing of hearing assessment in patients with a cleft palate (CP±L) has not been determined so far. Various cleft initiatives seek to standardize cleft care, but different protocols are still used. The lack of insights concerning cleft-specific hearing problems further impedes the establishment of standardization. The International Consortium of Health Outcome Measurement (ICHOM) developed a set of standardized measures in 2015 and contains outcomes for hearing assessment.

Aims:
To optimize type and timing of hearing assessment in patients with CP±L.

Methods:
To examine what hearing problems are cleft-specific, hearing outcomes of patients with CP±L were compared with a normative, age-related cohort (Generation R) using independent t-tests. Moreover, the current hearing outcomes of the ICHOM set, together with additional hearing data at various age-groups were examined using ANOVA.

Results:
The comparison study contained a cohort of 119 patients with CP±L and a normative population of 4287 peers aged 11 to 13 years. Conductive hearing loss was found in 28.6% (95% CI, 20.7 to 37.6%) vs 2.4% (95% CI, 2.0 to 2.9%) and sensineuronal hearing loss in 10.9% (95% CI, 5.9 to 18.0%) vs 2.3% (95% CI, 1.9 to 2.8%) respectively.
To evaluate the ICHOM set for hearing assessment, data of 342 patients with CP±L were collected. Hearing thresholds were higher at 4000 Hz and 8000 Hz, compared to 500 Hz, 1000 Hz and 2000 Hz. 1741 tympanograms were performed with 1444 being abnormal. Moreover, hearing problems largely were not dissolved when patients reached adolescence.

Conclusion
To improve international understanding, standardization, and outcome measures for hearing loss in patients with CP±L, audiometry at 4000 Hz and 8000 Hz, tympanometry and two additional assessment moments should be concerned for cleft centers that seek optimal hearing assessment in their patients. Additionally, hearing function in patients with CP±L should be followed up into adulthood.

audiology; standardised outcomes; international care

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Obstructive sleep apnea following surgical correction of velopharyngeal insufficiency in children with non-syndromic cleft palate; a systematic review

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

1. Background: Obstructive sleep apnea (OSA) is a common complication following velopharyngeal surgery in patients with cleft suffering from velopharyngeal insufficiency (VPI). Various surgical techniques have been established but the optimal treatment remains debatable.
2. Aims: This review provides an overview of the prevalence of airway obstructive outcomes (short-and long-term) related to different surgical modalities to gain more insight in the optimal treatment strategies to minimize the occurrence of postoperative OSA.
3. Methods: A systematic search (following the PRISMA guidelines) was performed in Embase, Medline Ovid Cochrane library, Google scholar and Web of Science. Studies that included information on the occurrence of OSA following velopharyngeal surgery to improve speech in children with a repaired non-syndromic cleft palate were included. Primary outcomes were prevalence of signs of OSA and diagnosis of OSA at short-term (<1 month) and long-term (>1 month). Speech-outcomes on resonance were considered as secondary outcomes.
4. Results: A total of 28 articles met the inclusion criteria. Only nine studies reported long-term data using routine polysomnography. The pharyngeal flap procedure (PF), sphincter pharyngoplasty (SP) and palatal muscle repositioning (PMR) were the most common procedures amongst the surgical modalities. Prevalence of signs of OSA were lowest after PMR at short-and long-term follow-up (table 1). The postoperative OSA rate after PMR, SP and PF at long-term follow-up were respectively 3%; 24%; 23%. PF resulted in most favorable speech outcomes compared to PMR and SP (normal resonance 82%, 72%, 67%).
5. Conclusions: Pharyngeal flap procedure appears to result in the best speech outcome, but it also carries a higher risk of developing short- and long-term obstructive sleep apnea. PMR seems to cause fewer postoperative complication in terms of OSA and results in a fair reduction of of hypernasal speech. Pre-operative naso-endoscopic evaluation and individualized OSA risk assessment is key for selecting the best surgical technique.

Table 1
Prevalence of signs of OSA and diagnosis of OSA at short-and long-term follow-up

		PMR	SP	PF
Signs of OSA				
	Short-term (<1 mos.)	2%	17%	38%
	Long-term (>1 mos.)	3%	36%	33%
Diagnosis of OSA				
	Short-term (<1 mos.)	3%	6%	29%
	Long-term (>1 mos.)	3%	24%	23%

OSA: obstructive sleep apnea
PMR: palatal muscle repositioning
SP: sphincter pharyngoplasty
PF: pharyngeal flap
mos.: months

Cleft palate, Pharyngoplasty, VPI, OSA

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Comparative evaluation of three maxillary protraction modalities in growing patients with unilateral cleft lip and palate (UCLP): A single-centre multi-arm prospective randomized clinical trial

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction: Cleft lip and palate (CLP) is one of the common craniofacial malformation affecting the normal growth of the maxilla. The face mask therapy has been extensively used for the correction of maxillary retrusion in non-cleft individuals as well as cleft individuals. Different contraption with face mask has been utilized, which involved different method of activation (Alt-RAMEC), tooth borne splint or utilizing skeletal anchorage.
Objective: To evaluate the effect of facemask therapy with three different maxillary protraction modalities (Alt-RAMEC, Tooth borne and skeletal anchorage) on skeletal, dental and pharyngeal airway parameters in growing patients with unilateral cleft lip and palate (UCLP).
Materials And Methods: 25 patients (aged 9-13 years) with Unilateral Cleft Lip and Palate (UCLP) having a GOSLON score 3 were selected for this prospective clinical study. The patients were allocated into three groups using computer generated random number table. Group I (facemask therapy with Alt-RAMEC protocol), Group II (facemask therapy along with two I shaped miniplates placed lateral to the aperture piriformis and infra-zygomatic crest, FM +MP) and Group III (facemask mask along with tooth-anchored appliance -FM)
Results: Skeletal parameters in the Group II showed greater change compared to those with Group I and Group III. Significant proclination of maxillary incisors was observed in the Group III as compared to Group I and II. All the groups had a statistically significant increase in pharyngeal airway volume ($p<0.05$)
Conclusion: While all the three therapies are effective in protracting the maxilla in patients with UCLP, the FB+MP allows for a greater skeletal correction while minimizing the dental proclination seen with the FM therapy alone; Alt-RAMEC provides a balancing effect with improvement in both skeletal and dental parameters

Maxillary protraction; Alt-RAMEC; Miniplates; UCLP

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TITLE: IS EARLY SECONDARY MAXILLARY BONE GRAFTING REDUCING THE RISK OF MAXILLARY CANINE IMPACTION IN CLEFT LIP AND PALATE PATIENTS?

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Aim: the objective was to compare the risk of maxillary canine impaction in two cleft lip and palate groups characterized by an early or late timing of secondary maxillary bone grafting.
Material and methods: this multicentric retrospective study was based on panoramic X-rays of patients followed by cleft lip and palate teams of the hospitals of Strasbourg, Paris and Lausanne. Patients presenting an unilateral cleft who underwent either an early or a late secondary maxillary bone graft and a panoramic exam at age 11 ± 1 year, were included. This work was reviewed and approved by the IRB of the University of Strasbourg. Several clinical variables such as type of bone grafting material, resort or not to maxillary expansion, information about the homolateral upper lateral incisors (missing, peg-shaped) were recorded. The following radiographic measurements were taken: sector and α angle of the maxillary canine according to Ericson and Kurol, vertical positioning of the maxillary canine tip according to Hereman et al. Canines were considered at risk of impaction above certain values of these radiographic measurements.
Results: sample was made of 113 individuals (70.8% of males, mean age 11.1 years). 60 patients underwent an early secondary maxillary bone graft at a mean age of 6.1 years whereas 53 patients went through a late bone graft at a mean age of 9.3 years. 74.4% went through some maxillary expansion before surgery. Risk of maxillary canine impaction was observed in 51.8% of the early secondary bone grafting cases compared to 75.5% in the late group. The odd ratio of developing a maxillary impaction was 2.9 in the late group compared to 1.1 in the early group.The fact of not expanding the maxillary arch came with an increased odd-ratio of 3.8.
Conclusions: The risk of developing a maxillary impaction was higher in case of late secondary maxillary bone grafting.

CLP, alveolar bone graft

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A prospective study of the prevalence of feeding difficulties, birth weight and growth in infants with clefts

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Abstract
Objectives: To assess birth weight and growth expressed as weight-for-age (WFA) and height-for-age (HFA) in infants with cleft lip and/or palate (CL/P) aged 0-6 months compared to healthy infants; and to investigate the prevalence of feeding difficulties (FD) and the relation to growth in infants with CL/P aged 0-6 months.
Methods: We performed an one-arm prospective trial including 64 patients with CL/P directed to the cleft-team in the Wilhelmina Children's Hospital, University Medical Center Utrecht, The Netherlands, at the age of 0-4 weeks. Weight and height were measured and a questionnaire was conducted at the ages of 1, 3 and 6 months.
Outcomes: Birth weight, weight, height and FD (poor growth, decreased intake, prolonged feeding time, insufficient quality of swallowing and/or feeding difficulties experienced by parents))
Results: A percentage of 14.3% of infants were small for gestational age. Birth weight was lower in premature infants (p=.012). Respectively, 27.6%, 13.8% and 10.3% of infants had WFA<-2 at 1, 3 and 6 months, while this was 10.3%, 6.9% and 10.3% for infants with HFA<-2. Weight was significantly influenced by the extent of the cleft (p=.048). Overall prevalence of FD was 96.6%, 65.5% and 79.3% at 1, 3 and 6 months. Neither presence of overall FD, nor the individual components of FD significantly influenced weight or height.
Conclusions: More children with clefts are SGA and/or experience impaired growth compared to their healthy peers. Severity of cleft palate was found to be a risk factor for weight impairment. Feeding difficulties amongst children with clefts are common, but they do not seem to influence growth. No risk factors for FD could be identified.
Oral clefts, cleft lip/palate,feeding difficulties

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Impact of Preoperative Nutritional Status on Surgical Outcomes in Pediatric Reconstructive Surgery: A Literature Review

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction: The correlation between preoperative malnutrition and poor surgical outcomes has been well-documented in adults undergoing general, cardiac, colorectal, and trauma surgery. However, this relationship is not as well validated for pediatric reconstructive surgery despite the fact that anthropometric z-scores are often used to screen children for surgical eligibility in elective cases.

Aims: To synthesize current literature regarding the relationship between preoperative anthropometric z-scores and surgical outcomes for pediatric reconstructive surgeries.

Methods: Four databases (PubMed, SCOPUS, Web of Science, EMBASE) were searched for original studies comparing pediatric reconstructive surgical outcomes relative to anthropometric z-scores (i.e., weight-for-age [WAZ], length-for-age [LAZ], and weight-for-length [WLZ] z-scores). Studies evaluating patients with comorbidities including gastrointestinal, metabolic, neoplastic, and neurological conditions were excluded. Editorials, reviews, theses, and letters were not included.

Results: Two out of 2,853 screened articles met inclusion criteria. One study from India retrospectively assessed surgical outcomes of cleft lip and palate repair relative to WAZ, LAZ, and WLZ showing no significant correlation between preoperative z-scores and incidence of dehiscence or infection. The study from Uganda prospectively tracked cleft palate repairs to determine palatal fistula rates relative to WAZ and WLZ. This cohort showed a significant increase in palatal fistulization with decreasing WAZ and WLZ, calculated both at initial screening and at time of surgery.

Conclusion: Literature assessing the predictive capacity of preoperative nutritionally-oriented anthropometric z-scores on pediatric reconstructive surgery outcomes is scant. Only two applicable studies exist, yet they provide contrasting conclusions about this relationship. Studies utilizing anthropometric z-scores, which have great utility for identifying patients with malnutrition in resource-limited settings, only exist for cleft lip and palate but not other forms of pediatric reconstruction. As a result, we strongly advocate for additional prospective studies examining the relationship between nutritionally-oriented z-scores and surgical outcomes in these populations to improve risk stratification and eligibility screening.
nutrition, anthropometric, reconstructive, surgery, outcome

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Clinical Predictors of Orthognathic Surgery in Cleft Lip and Palate Patients

Mr. Justin Beiriger[1], Ms. Zhazira Irgebay[1], Dr. Cleo Yi[1], Ms. Allison Mak[1], Ms. Lena Vodovotz[1], Mrs. Madeleine Bruce[1], Dr. Lindsay Schuster[1], Dr. Jesse Goldstein[1], Mr Joseph Mocharnuk
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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction
Patients with cleft lip and palate undergo surgical lip and palate repairs during the first few years of life. Patients who have undergone these repairs are associated with maxillary hypoplasia and relative mandibular prognathism observed between 8 and 15 years of age. This midface deficiency may indicate the patient for distraction osteogenesis or orthognathic surgery (OGS) after the pubertal growth spurt. This study aims to identify additional clinical predictors for patients with UCLP, BCLP, and isolated cleft palate (ICP).

Methods
This is a retrospective case-control study. Patients born in 2006 or earlier with ICP, UCLP, or BCLP and history of palate repair and OGS were compared with those that did not have OGS at skeletal maturity. Patients were frequency-matched based on cleft type. Bivariate comparative statistics and multiple logistic regression were used to assess predictor significance.

Results
236 patients were included: 118 patients who underwent OGS and 118 who did not (18 ICP, 57 UCLP, 43 BCLP in each group). Patients underwent OGS at an average age of 17.2 ± 2.7 years. Among patients with UCLP, primary pharyngoplasty ($p=0.03$) was associated with OGS. For patients with UCLP and BCLP, primary lip repair ($p<0.001$) and the number of lip revisions ($p=0.001$) were significantly associated with OGS. Primary alveolar bone graft (ABG) ($p<0.001$), primary pharyngoplasty ($p<0.001$), and the number of pharyngoplasty revisions ($p=0.008$), were significant for patients with UCLP, BCLP, and ICP.

Conclusion
An increased number of cleft surgeries and revisions throughout childhood in patients with cleft lip and palate are associated with increased likelihood of OGS at skeletal maturity.
Orthognathic surgery, cleft, pharyngoplasty

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Damaging mutations in Afadin identified through next-generation sequencing analysis contribute to risk of nsCL±P.

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TU3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 12, 2022, 11:00 - 13:00

Introduction: Novel or Rare variants with damaging effect on the translated proteins have been well reported in the risk of birth defects. Not surprising that damaging mutations in a few proteins have been implicated in the etiopathogenesis of the most common craniofacial birth defect: nonsyndromic cleft lip with or without cleft palate (nsCL±P).

Aim: Thus, we investigated the human genome for high impact pathogenic genetic variants that contribute to the risk of nsCL±P in our cohorts.

Methods: Following ethical approvals from participating centers in sub-Saharan Africa, we recruited our cohorts using a case-parent trio approach (affected child with nsCL±P and unaffected parents). We obtained informed consent from the participating families and sequenced the entire genome to investigate pathogenic variants that contribute to the risk of clefts. In order to examine the reproducibility of our discovery, we conducted similar analysis in a separate cohort from Brazil. Subsequently, we used bioinformatic tools and thermodynamic analysis to compute the pathogenicity of these variants.

Results: In addition to the de novo variants discovered, we discovered damaging variants in AFDN, a cell adhesion molecule (CAMs) that plays a critical role in craniofacial development. These damaging protein-altering variants include p.Met1164Ile, p.Thr453Asn, p.Pro1638Ala, p.Arg669Gln, p.Ala1717Val and p.Arg1596His. We also discovered a novel splicing p.Leu1588Leu variant in this protein. Thermodynamic analysis revealed the pathogenicity of these amino acid changes. AFDN encodes Afadin, an important CAM that forms calcium-independent complexes with nectins 1 and 4 (encoded by the cleft genes PVRL1 and PVRL4). Conditional Knockout of Afdn(Afdnfl/fl) in mice resulted in a highly penetrant cleft palate.

Conclusion: This is the first report stating the contributions of Afadin to the risk of nsCL±P in humans. Our discovery showed the power of next-generation sequencing (NGS) analysis using a case-parent approach in the discovery of pathogenic variants that contribute to the risk of birth defects.

Next-generation-sequencing
Pathogenic

thermodynamics
Cell-adhesion-molecules
Case-parents

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Customized Nasal Clip Protocol Utilization for Bilateral Cleft Lip and Palate Pre-Surgical Infant Orthopedics: A Pilot Study

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: The Grayson method (GM) of nasoalveolar molding has shown some of the most convincing results surrounding non-surgical columellar lengthening with bilateral cleft lip and palate patients. We examine a site-specific, uniquely innovative alternative that is less invasive, yet provides similar results.
Aims: Describe and compare the results of utilizing the established Customized Nasal Clip Protocol (CNCP) in infants with bilateral cleft lip +/- palate. The results will be compared with the published results of the GM nasoalveolar molding protocol.
Methods: Five bilateral-cleft affected patients were evaluated for this pilot study. Four infants had bilateral cleft lip and palate, while one did not have palatal involvement. Standardized photographs and clinical measurements were utilized to garner columellar length measurements and nostril height comparisons. The photographs used were the worm's-eye-view and frontal aspect. The results from the initial, pre-surgical, and post-surgical photographs were statistically compared. Telehealth technology was also implemented for the Customized Nasal Clip Protocol.
Results: The resulting columellar length and nostril height increases of the CNCP group was comparable to the published results of infants that have undergone GM nasoalveolar molding. The CNCP group also had fewer clinic visits, shorter visit durations, no complications that required removal of the clips, and comprehensive treatment that was initiated at their first presentation to clinic; in comparison to infants that undergo the Grayson method.
Conclusion: The increase of columellar length and the nostril height that resulted in utilizing the Customized Nasal Clip Protocol in bilateral cleft patients met the treatment goals of pre-surgical infant orthopedics. This novel Customized Nasal Clip Protocol provided columellar lengthening on par with the published results of the Grayson method. These results, paired with the reduction in patient, family, and provider-burden; further supports its continued use and development in appropriate patient populations.
Presurgical-orthopeadics, NAM, columella, orthodontics

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Characteristics and predicting factors of complications following passive nasoalveolar molding device in patients with cleft lip and palate

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Cleft lip and palate are the most common craniofacial congenital malformations that must be treated by an interdisciplinary team. Nasoalveolar molding devices (NAM), including extra-oral strapping, were used to arrange maxillary alveolar segments, decrease the alveolar bone gap, and nasal deformity before performing lip surgery. Complications that may occur during NAM therapy could affect final treatment outcomes.
Aims: To evaluate the prevalence, characteristics, and predict factors of complications during NAM therapy.
Methods: The data were collected retrospectively from the medical records of patients with cleft lip and palate at Naresuan University dental hospital from 2014 to 2019. To determine the cumulative case prevalence and complication characteristics, patient demographic data were analyzed and described. These were evaluated using stepwise multiple logistic regression analysis to determine the relationships between variables. All statistical tests were significant at the p-value 0.05 level.
Results: Forty-three patients (age 27.60 ± 20.99 days) were included. The cumulative prevalence was 20 patients (46.5%) who had complications after inserting NAM. Skin-irritated complications on the cheeks from extraoral strapping occurred in 13 patients (30.2%) and ulceration on the alveolar ridge/gingiva in 4 patients (9.3%). In a logistic regression analysis, the risk of complications increased 9.771-fold in patients who had siblings (odds ratio = 9.771; 95% CI 2.23–4.28, P = 0.000), increased 4.388-fold in maternal family history with oral cleft (odds ratio = 4.388; 95% CI 1.38–1.40, P = 0.000) and a greater chance of complication presence 2.491-fold in public transport users from home to hospital (odds ratio = 2.492; 95% CI 5.69–109.03, P = 0.000).
Conclusions: The skin irritation on the cheek was the major complication. The number of siblings, the maternal family history with oral cleft, and the public transport users from home to hospital were all important factors to consider in order to avoid complications.

Nasoalveolar molding, complications, cleft

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Aesthetic Outcomes of Patients With Unilateral Cleft Lip and Palate Following NasoAlveolar Molding Therapy in an Outreach Setting

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction:

Global Smile Foundation (GSF) is a non profit foundation whose founders and volunteers have provided cleft care to underserved communities around the world for 35 years. In 2012, GSF added pre-surgical NasoAlveolar Molding (NAM) for their patients in Guayaquil, Ecuador.

AIM:
We present an evaluation of nasolabial aesthetic outcomes and scarring in patients treated with NAM.

Methods/Description:
The Cleft Aesthetic Rating Scale (CARS) used frontal photographs to assess the nose: tip, nostrils (symmetry, size, flaring) and upper lip (vermillion symmetry, continuity, length of the philtrum), ranging from 1 (very good) to 5 (very poor). Photos were standardized. Each NAM time point was matched to control time point: age at primary CL repair (max of 3 months) and time post-op primary CL repair (max of 6 months). All patients had UCLP and non-syndromic.

Twelve independent raters (three surgeons, three orthodontist, three pediatric dentists and three medical students) rated the photographs. Scar quality was also assessed utilizing a modified scar tool.

Results:
Of the 192 patients treated with NAM in Guayaquil since 2012, 96 patients had long term follow up, and 27 patients with 34 photographic time points qualified for inclusion, matched to their controls.
The average rating of Nasal aesthetics was significantly lower in patients who had received NAM compared to nasal controls (2.60 ± 1.05 vs 2.82 ± 1.12 ($p < 0.01$).The average rating for lip aesthetics showed similar differences between patients who had received NAM and matched controls (2.23 ± 0.96 vs 2.56 ± 1.07, ($p < 0.01$). Similarly, the average rating of scar quality was significantly lower among patients who had received NAM (1.82 ± 0.93 vs 2.03 ± 0.89), ($p < 0.01$).

Conclusion:
Using the CARS and a modified scar rating scale, patients who had received NAM were found to have superior nose and lip aesthetic outcomes in comparison to non-NAM controls.

NAM, International outreach, Global Care

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Reducing the burden of care for children with clefts: Evaluating the effectiveness of Nasoalveolar Moulding in complete unilateral non-syndromic cleft patients (NAMUC Study)- A study protocol.

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Background:
The first year of life of Cleft Lip and Palate patients' is particularly difficult for both children and their parents, as they have to overcome their concerns, guilt and sadness in addition to the lip and palate surgeries they undergo. They see multiple specialists and are often overwhelmed with information. The Nasoalveolar moulding (NAM) treatment could add to already significant burden of care due to the frequent medical and hospital appointments and the daily maintenance of appliance that are required as a part of routine care for this treatment. The benefits from the appliance should overcome the increased burden to justify this treatment for patients.
Aim: The aim of this research is to determine the effectiveness of nasoalveolar moulding presugical treatment for facial aesthetics in infants with complete unilateral cleft lip and palate.

Method. This 1:1 parallel group, single blinded, multicentric RCT will include 266 non syndromic unilateral cleft lip and palate children under seven weeks, corrected for gestational age. The study will be carried out in nine centres across India. The primary outcome will be facial aesthetic score and secondary outcomes include (i) dentofacial outcomes (ii) speech (iii) hearing (iv) quality of life assessed using questionnaires (v) qualitative assessment through parent interviews and (vi) Health economics (cost effectiveness and cost utility assessments and cost benefit analysis). Participants will be randomised by a centralized computer system to either NAM treatment or no NAM group. Patients will be followed up until five years of age. Data analysis will be conducted at the end of the study. All analysis will be described in a prespecified statistical plan.
This presentation will include detailed plan of the proposed project and the progress so far.

NAsoalveolar moulding, NAM, presurgical orthopaedics.

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Getting the message right on intraoral scans from newborns to preschoolers with cleft lip and palate: A two center‘s experience of 100 consecutive cases

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

1. Introduction: Documentation of cleft morphology has a long tradition and is considered standard prior to surgery for patients with cleft lip and palate. Impressions are needed in cases of presurgical orthodontic treatment. Conventional impressions are widely performed despite its inherent risk involved for the infants and the optical impressions becoming more common for adults in dentistry.

2. Aims: We aim to investigate the implementation and risks of the technology for the youngest patients with cleft lip and palate at medium to large case number centers.

3. Methods: We report a retrospective cohort study of infants and children up to 6 years old who were treated at two cleft centers in Europe for cleft lip and palate. In center A we investigated the implementation and risks of a scanner to replace conventional impressions for presurgical orthopaedics and for preoperative documentation, while in center B for preoperative documentation in a high case load environment in the operating theater.

4. Results: We included 100 cleft patients (38% female, 62%male). The mean age at intraoral scan was 25 months ranging from first day of birth (for presurgical orthopaedics) to six years of life (early alveolar bone grafting). Mean scan time was 72 seconds (SD 33 seconds). Further 3D scan of lip and nose required additional 56 seconds (mean, SD 24 seconds). Intraoral scanners have replaced conventional impression taking in center A after the first three impressions for newborns. No complications were observed at either center.

5. Conclusions: Intraoral scanners can be safely used in children with cleft lip and palate from newborns to preschooler. The learning curve for the new technology among practitioners has been steep. When initial costs are incurred and interfaces to electronic patient records and 3D printing are established, this technology can be successfully implemented in cleft centers with mid to high case numbers.

craniofacial morphology, intraoral scanner, cleft

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PRE-SURGICAL ORTHOPEDIC IN CLEFT REPAIR, A SRI LANKAN EXPERIENCE

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Aim
The aim of this study was to study the effectiveness of presurgical orthopedic in cleft repair.
Background
Unlike unilateral cleft lip repair management of bilateral Cleft lip and palate is still a challenge for the cleft surgeon. It has been well documented that presurgical molding of the protruded premaxilla will greatly facilitate the primary lip surgery. The type of presurgical orthopaedics used, timing and surgical technique has shown to have great influence on success of Bilateral cleft lip repair.
Methods
This study was carried out from 2009-2019 in Smile Train Cleft centre Faculty of Dental Science ,University of Peradeniya Sri Lanka. The study group consists of 120 patients (64male, 56 female). Patients with other medical problems, incomplete or well aligned bilateral cleft lips were excluded from the study .The average age at the surgery preformed was 4.7 months. All the surgeries were performed the first author and whenever possible both sides were repaired simultaneously. Only elastic traction and other types of presurgical molding was used before 2011 (Group A) and nasoalveolar molding was added after 2011(GroupB) thus dividing study group in to two sub groups.
Results
At the commencement of surgery Both groups showed good alignment of premaxilla. However, premaxilla was mobilized downward and inward in group A where only elastic traction was used. This resulted in severe retroclination of premaxillary teeth which is very difficult to correct orthodontically. Four patients developed allergic reaction to elasto-plaster where we have to use alternative methods. Parents of four babies underwent nasoalveolar molding showed poor compliance an discontinued from the study. Post-surgical suture break down was seen in four patients.
Conclusion
Pre surgical orthopedics shows a great influence in the success of repairing the bilateral cleft lip. Nasoalveolar molding shows better results than elastic traction combined with premaxillary molding palate.

presurgical orthopedic, bilateral cleft lip

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EFFECTIVE CAPACITY OF PREMAXIILA-VOMER-PLATE FOR PATIENTS WITH BILATERAL CLEFT LIP AND PALATE

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction:
The goal of presurgical orthopedics is to enable the surgeon to repair the cleft under best possible conditions for functional and aesthetic reasons. The retrusion of a protruded premaxilla with extraoral forces however bears the risk of vomer deviation, which prevents the surgical construction of two symmetrical nasal floors.
In 2018 in Utrecht, we introduced the Premaxilla-Vomer-Plate (PMVP), a removable intraoral appliance for presurgical alignment of bilateral cleft segments under special consideration of the vomer, which is an integral part of cleft palate repair. The PMVP functions with natural tongue pressure and without application of extraoral forces.
AIM:
To demonstrate the successful application of PMVP, especially in cases with twisted premaxilla and deviated vomer.
Methods:
We treated 31 patients with extreme bilateral cleft lip and palate. 27 of them presented twisted premaxilla and deviated vomer, in 6 patients the premaxilla was protruded up to 21,9mm, in three patients premaxilla and vomer were standing paramedian, resulting in asymmetrical wide and narrow nasal cavities.
Fabrication and working mechanism of the PMVP were published in 2020 in Cleft Palate Craniofacial J.
Results:
The erection of Premaxilla and straightening of the vomer were always successful. Retrusion of the premaxilla of up to 15mm was possible. In 2 cases the vomer could not be positioned in the midline. In the remaining cases it was possible to create a satisfying surgical situation. Broad premaxilla required a certain collapse of lateral segments to achieve symmetry and tension free closure. As there is a risk of relapse, the cleft should be closed immediately after the alignment is finished or a retainer is needed.
Conclusion:
The PMVP is recommended for the horizontal and vertical alignment of the premaxilla, as well as independent capturing and guiding of the vomer.

Vomer Deviation, Twisted Premaxilla

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Comparative evaluation of two methods (Modified Grayson vs Aligner NAM) for Presurgical infant Orthopaedics (PSIO) in patients with complete unilateral cleft lip and palate anomaly

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Presurgical infant orthopedics (PSIO) has been optimal standard of care to approximate the major and minor cleft segments before performing the surgical repair resulting in improved Nasolabial esthetics and more esthetic post-surgical scar. Clear aligners provide an alternative way to bring about PSIO.
Objective: To assess the differences between two methods of presurgical infant orthopaedics i.e. the modified Grayson's technique and a
new technique using clear aligners in complete unilateral cleft lip and
palate patients.
Setting: Prospective comparative cohort study
Materials & Methods: 30 patients were divided into two groups i.e. Group
A (Modified Grayson technique) and Group B (Clear aligner traysCompass 3D; Belo Horizonte, Brazil) consisting of fifteen patients each.
Scanned cast measurements were taken before and after treatment and assessed using a laser scanning machine and 3-dimensional software (C500 SOLUTIONIX and GOM INSPECT respectively). This was supplemented with standardized anterior posterior, worms-eye view and profile photographs. Furthermore, the number of visits for each patient group were also tabulated and assessed. The differences were compared using independent 't' test and Mann-Whitney U test for the respective parameters.
Results: Both Group A and Group B showed similar post treatment changes, with no overt significant differences. However, there was a statistically significant difference in the number of visits ($p<0.05$) with Group B having much lower visits to the centre as compared to Group A. The post-treatment values matched previously established growth reference values. The analysis of photographic measurements showed improved nasal asymmetry in both groups without any significant difference.
Conclusion: Since there was no difference in the treatment results between the two methods along with a reduction in the number of required patient visits, PSIO via clear aligners could pave the way for a more patient efficient approach in this regard.

PSIO, Aligner, NAM, Grayson

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Alternative Approach for Presurgical Infant Orthopedics.

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Background: The focus of this study is to address the use of a nasal elevator plus lip taping as an alternative for presurgical infant orthopedics (PSIO).
Methods: 115 patients with unilateral cleft lip with or without cleft palate (CL+P) and 46 patients with bilateral CL+P, were consecutively treated from 2014 to 2019. Anthropometric measures from pre- and post-PSIO were compared in the treatment group. Postsurgical nasal morphology was compared to non-pre-surgically treated patients. Dental arch relationship for both was assessed using the 5-year-olds' index.
Results: The nostril width ratio and the columellar angle of unilateral deformities, as well as the ratio of nostril height and width and the ratio of nasal tip height and nasal width of bilateral ones, were significantly improved after PSIO ($p<0,001$). Post surgically, 18% of the treatment group but 52% of the control group ended up with some sort of nasal asymmetry ($p<0,001$). Dental arch relationship analysis of 78 patients with unilateral CL+P and 20 patients with bilateral CL+P, revealed no differences among groups that were or not pre-surgically treated ($p=0,271$, $p=0,545$).
Conclusions: Nasal elevator plus lip taping is an effective, reliable, and simple way of providing PSIO. It is less invasive, easy for parents to manage, almost inexpensive, and follow-up can be done every month by the surgeon. Hence, it may provide teams who do not have access to the NAM procedure an effective alternative.
Acknowledgment: This work was financially supported in part by Smile Train, Inc.

presurgical orthopedics

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Educational intervention and standardization for a pre&post- surgical orthopedic device directed to healthcare providers treating patients with cleft lip and palate.

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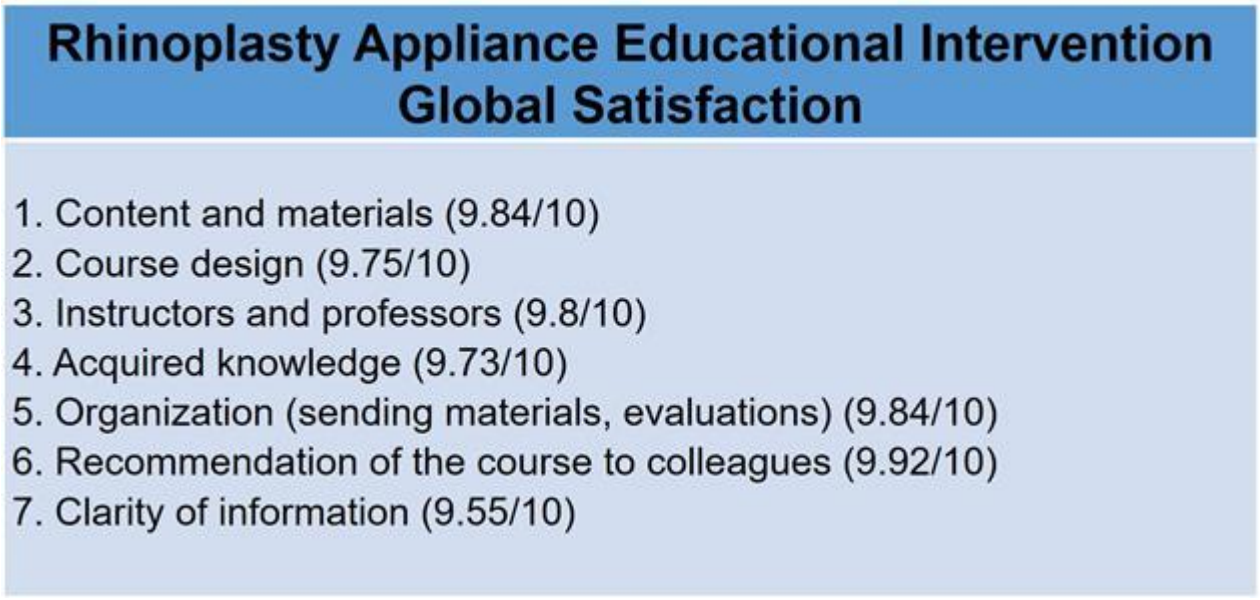
TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Regarding the treatment of cleft lip and palate (CLP) there is a worldwide tendency for interdisciplinary approach, consisting of an initial stage with presurgical orthopedic management and a post-surgical nasal molding. There are more than 120 reports of pre-surgical treatments, but little scientific evidence, the lack of a validated measurement instrument to demonstrate the effectiveness as well as clinical trial design, decreases the level of evidence in clinical recommendations.

Aims: To describe the process involved in creating an education and standardization system for use of the pre-post surgical Rhinoplastic Appliance by healthcare professionals.

Methods: Smile Train organized a course b-Learning for education and standardization in 6 partner centers in Mexico. The educational materials designed was: an instructive manual, brochure, educational video creation, synchronous personalized tutoring on educational platform (LMS), personalized visit for refinements. The curriculum was based on the Thomas & Kern educational model with the key points: anatomy, biomechanics of the device, clinical protocol and standardization of a preoperative measurement instrument validated in Mexico. Ethics and Research Committee (2021/18264).

Results: Six partners in Mexico participated, the professional profile was surgeon and orthodontists in each center. The educational intervention was effective in 97% of participants, (Before: x=63.67 (45–89)], after: x= 84.60 (65-95)], ($p<0.001$)). The global satisfaction was very high (9.78/10.0) The reproducibility of the instrument about effectiveness of preoperative orthopedics was r = 0.89 and postoperative nasal symmetry (r = 0.908 (Intra-observer (0.91), interobserver correlation coefficient (0.89)).
Conclusion: Investing in education and development of orthopedic devices is useful in centers around the world. Advances in telehealth and eLearning break down barriers of time, space with lower costs, helping to guide treatment in low-resource settings. This work lays the initiation of clinical trials in Mexico, Central America and the Caribbean.



Educational intervention, Rhinoplastic Apliance

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A revolutionary concept of 3D-printed individualized Digital NasoAlveolar Molding (iDNAM) for patients with complete unilateral cleft lip and palate

Dr. Hathaichanok Parakarn[1], Dr. Kengkart Winaikosol[2], Dr. Poonsak Pisek[1], Dr. Buddhathida Wangsrimongkol[1]

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction

NasoAlveolar Molding (NAM) is a known adjunctive therapy to primary cheiloplasty in patients with complete unilateral cleft lip and palate (UCLP). The conventional technique can be time-consuming, costly, and require experienced clinicians. Over the past decade, CAD/CAM technology has been used to facilitate NAM therapy and has shown promising results.

Aims

To describe a full digital workflow of individualized Digital NAM (iDNAM), a new concept of NAM fabrication using CAD/CAM technology, in patients with complete UCLP and to evaluate treatment outcomes after using iDNAMs.

Methods

An intraoral scan (IOS) and 3D photogrammetry (3DP) were performed. Blender 3D software was used for alveolar ridge segmentation, treatment simulation, and plate design. A nasal extension was digitally incorporated into the plate and the position was confirmed by utilizing IOS and 3DP. A series of iDNAMs were planned for staged movements and prepared for rapid prototyping. The changes of alveolar and nasal morphology were compared between initial (T1) and pre-surgical (T2) timepoints.

Results

Two infants with complete UCLP were treated with iDNAM. A total of 3 iDNAM plates, 2 active and 1 retention plate, were 3D printed and delivered to each patient. Clinically significant alveolar and nasal changes were observed. In both cases, the initial alveolar gaps of 12 mm were reduced to 3 and 2 mm following 4 and 3 months of iDNAM therapy, respectively. Columella length and nostril height increased by 4 and 2 mm. Nasal tip projection improved by 3 and 2 mm, while alar base deviation decreased by 1 and 2 mm, respectively.

Conclusions

iDNAM successfully improved alveolar cleft gap and nasal morphology in patients with UCLP. Using an affordable software, user-friendly interface, and a minimum number of plates, iDNAM technique serves as an efficient and cost-effective alternative NAM therapy.

Nasoalveolar modeling,NAM,Digital,3D printing,Presurgical infant orthopedics

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Experiences of
parents taking care of their children through NAM treatment: A Longitudinal Qualitative Analysis

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TU3.3 PSIO/NAM, Fintry, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Aim: This study aims to explore the experiences of parents during the first months after birth until after they receive this first surgery, as they are receiving their NAM treatment.
Method: For the purposes of this qualitative study, 20 Turkish parents (10 mothers and 10 fathers) of 12 children born with cleft lip palate and receiving NAM (naseo-alveolar molding) treatment at Yeditepe University's Faculty of Dentistry, Department of Orthodontics in İstanbul were interviewed. Throughout the process of NAM treatment, parents were interviewed 4 times; first, when they came for their first appointment to start the NAM treatment, second, a month after they started the NAM treatment, third, before their child's lip surgery and fourth a month after the lip surgery. Some parents were not able to complete all the interviews; overall, 56 interviews took place.
Findings: During this process, parents discussed their experiences during the NAM treatment as well as their experiences during the diagnosis, birth and first surgery with regards to challenges and coping mechanisms, their reactions, impact of this process on their couple relationships and social lives. The longitudinal qualitative analysis yielded 6 themes; changing view of the child, process of adaptation: denial to acceptance, changing couples' relationship, coping & resiliency, changes in family's social life and continuous sources of support.
NAM treatment, cleft, parents, qualitative,

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Understanding the Patient- Centered Barriers to NGO Based Cleft Surgical Care through the Integrated Health Behavior Model

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Background: Orofacial clefts are one of the most common congenital anomalies globally, however substantial barriers exist to seeking, reaching, and receiving care. Although barriers to surgical care have been previously described, past studies did not assess barriers across cultural and geographic lines.
Aims: In the current analysis, we evaluated behavioral constructs across five countries to understand barriers to care with the aim of improving service delivery.
Methods: We conducted a cross-sectional study of children with cleft in Vietnam, Honduras, Madagascar, Mexico and Nicaragua from 2014- 2018. Interviews were conducted with the primary caregiver of patients covering demographic, clinical, socioeconomic, geographic, and treatment characteristics. The Integrated Health Behavior Model (IBM) was used to conceptualize behavior. Descriptive statistics and confirmatory factor analysis were used to assess relationships between constructs and timeliness of care.
Results: A total of 901 patients and their families were surveyed from the five countries. Five latent constructs were included in the final framework (personal agency- structure, personal agency- financial, perceived norm, environmental constraints, and knowledge and skills to perform the behavior) all of which were minimally correlated ($R < .3$). Of the patients seeking care for the first-time, cleft phenotype, opinion of the family, perceived quality of available treatment, mother's employment type, and father's employment were all significantly related to reaching timely care before and after adjusting for country.
Conclusions: This study maps cultural, financial, and structural barriers experienced by patients and their families to model care-seeking behavior across five diverse countries. All constructs played significant roles in the cumulative model and should be addressed to promote care seeking behavior. As public health continues to increase investment into global surgery initiatives, it is necessary to understand these relationships and how they may differ by country to create effective and comprehensive programs that mitigate these barriers and enable patients to reach timely care.
barriers, LMICs, health behavior

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EVOLUTION OF RESULTS BETWEEN TWO CLEFT LIP AND PALATE AWARENESS AND ENROLMENT CAMPAIGNS IN THE NORTHERN PART OF BENIN REPUBLIC IN 2020

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

ABSTRACT

Introduction: Cleft lip and palate (CLP) are the most common congenital malformations of the orofacial region. The causes are the subject of various beliefs in rural Africa. Lack of awareness and knowledge can lead to stigma, psychosocial issues and infanticide. Emphasis should be placed on effective awareness raising.

Objective: To Present the differences in results between two awareness and enrollment campaigns of cases of Cleft Lip and Palate using the same strategy in the Northern part of Benin Republic.

Methods: This was a cross-sectional, descriptive study with prospective data collection, done in the towns of Ndali, Nikki, Kalale and Perere from November 1, 2019 to February 5, 2020. Strategy employed included market tours, radio announcements, distribution of flyers and active case search. The data collected was processed with Epi Data 3.1 and analyzed with Epi-Info 7.

Results: A total of 52 patients were seen during the campaign, 30 from the first campaign and 22 from the second. The number of identified patients decreased from 30 to 22, the sex ratio changed from 1 to 0.69. Their extreme ages have moved further away. Among the 30 patients identified at the end of the first campaign, 11 came from the town targeted by the awareness campaign versus 18 out of 22 at the second. Also, the proportion of patients seen in consultation rose from 25 out of 30 to 20 out of 22. On both occasions, half of the patients identified were immediately eligible for surgery.

Conclusion: The effectiveness of cleft awareness may vary from setting to setting and depending on the circumstances. Awareness strategy should be adjusted according to the population and the period. Adequate awareness campaign can improve attitude to surgical care of patients with cleft lip and palate.

Keywords: Cleft lip and palate, Awareness, North of Benin republic.

Cleft lip and palate, Awareness.

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Family Centered Care in Cleft Lip and Palate, Taipei Medical University Hospital Model

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction
An increasing number of medical centers are realizing the importance of family centered care. This concept was shown to improve patient satisfaction and adherence to treatment, lower treatment costs and achieve better outcomes. A description of practical ways to build a family centered craniofacial center is lacking.

Methods
In Taipei Medical University Hospital Craniofacial Center, we deliver family centered care through five important concepts: accurate prenatal diagnosis and counseling, offering a multidisciplinary team, establishing multidisciplinary clinics in strategic areas lacking craniofacial medical support, improving patient-physician communication using social media and instant messaging, and recruiting financial resources used as a complimentary to the National Health Insurance to offer the best care possible.

Consclusions
The importance of family centered care is well established, especially in craniofacial centers which offer long term treatment and care to patient populations starting from prenatal counseling, going on to infancy and early childhood, and extending to late teens and adults. It is our belief that family centered care should be practiced as much as possible in the field of craniofacial surgery. By sharing our model of care, we aspire to help other centers implement this concept.
Family centered care, craniofacial center.

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Burden of Oro-Facial cleft: Experience from a Tertiary Care Hospital in a low Income state in India

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction

Oro-facial clefts constitute a heterogeneous group of non fatal birth defects, commonly occurring in the craniofacial region. A child with this congenital anomaly requires several serial interventions at different point of time. Keeping in mind the long term management of children coming from a lower socioeconomic class, burden of care becomes extremely relevant.

Aims

The aim of this paper is to highlight the challenges faced by a tertiary care hospital in a low income state in India and attempts to quantify the burden of this anomaly.

Methods

The hospital and Smile Train express data were used to gather information regarding the cleft patients. 6525 patients who received cleft treatment between 2007 to 2021 were enrolled in this study. Cleft prevalence, surgical workforce, socio-demographic index, income status were retrieved. The burden of oro-facial clefting was estimated using the Burden of Disease Methodology.

Results

Most of our patients belong to the low economic class. The mean age of surgical intervention has been progressively decreasing since 2007, currently matching up to the global standards. The surgeon to patient ratio is extremely low. With adequate training and exposure, the number of revision and secondary surgeries has reduced. The cost of mobilizing patients from rural areas to the treatment centre remains high.

Conclusion

The increased burden of cleft care in a low income state in India has been largely averted through Smile Train NGO. There is an important and neglected role surgical programs can play in reducing the burden of oro-facial cleft in low income countries. We believe that strengthening the surgical workforce and outreach programs will help alleviate this burden.
Burden of care, cleft, LMIC

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Media as a catalyst in improving access to quality cleft care through awareness creation and community engagement

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Background: Smile Train has been supporting cleft care in Nigeria for the last 20 years through the provision of free, safe, timely and quality comprehensive cleft care. However, stories about cleft and Smile Train were often misrepresentative lacking accuracy and depth of context. As a result, the population did not have adequate understanding of clefts and availability of care. This is a report of an innovative deployment of the media in Nigeria to facilitate community awareness and understanding of clefts and cleft care in the country.

Method: Smile Train organized media workshops at 3 locations in Nigeria over a 1-month period in 2021. Sixty-five journalists were trained in cleft recognition, cleft awareness and advocacy, cleft reporting, and the role of cleft care in national surgical plans. A Cleft Awareness Media Award (CAMA) was introduced as an incentive to keep the media engaged and appreciate journalists who used their platforms to share quality human interest stories and turned the spotlight on those affected by cleft in their community.
Results: Pre- and post-training test scores were 50% and 75% for Lagos, 53% and 77% for Abuja and 53% and 77% for Enugu respectively. Seventeen entries from eight journalists were received for consideration for the CAMA. The impact of the training on cleft awareness was a 40% rise in inquiries and engagement with the Cleft helpline from 2 of the regions where the training was done. There was also an increase in the number of Smile Train and cleft related stories.
Conclusion: Training and engagement with the media is effective in increasing community awareness about cleft and helps to address myths and misconceptions surrounding this condition. Such media training and engagement is recommended for deployment on a larger scale in this and similar settings.
Media, Awareness, Stigma, Advocacy, Training

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A quantitative assessment of societal knowledge, perception and attitude on Cleft lip and palate among adults in Colombo District; A Sri Lankan Perspective

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Cleft lip and/or Palate (CLP) is the commonest congenital deformity affecting the head and neck region (1:500-750 live births). Today with adequate knowledge of human genetics, embryology and morphogenesis the exact aetiology has been established. But has this understanding penetrated into communities? Are the unfortunate babies born with facial clefting with no fault of theirs devoid of stigmatization?

Aims: This study was carried out to evaluate the knowledge, perception and attitude of Sri Lankan adults in Colombo District towards people born with CLP. Also, to identify optimal ways of raising awareness of health education.

Methods: A cross-sectional descriptive study was carried out using a convenient sample of 400. A validated self-administered questionnaire was utilized. The knowledge related questions were dichotomized to allocate a score where the correct answers carried 1 point. A cumulative score of less than 51% was deemed to have inadequate knowledge. One sample 't' test was used to evaluate the null hypothesis with a 5% statistical significance.

Results: The mean age of the subjects was 34.5 ± 6.97 years (Range 18-65). 74.5% of the sample was aware of CLP. However, 71.5% of the population lacked adequate knowledge regarding CLP. The null hypothesis of adequate societal knowledge on CLP was rejected with a 'p' value of 0.0007 (<0.05). 94.1% of the population believed that more public awareness is required. 39.2% and 30.3% believed inclusion into the school curriculum and social media campaigns to be the best options respectively.

Conclusion: Owing to the lack of knowledge on the topic, there is a critical necessity for improving the community knowledge on facial clefting to prevent stigmatization of the affected individuals. As CLP treatments are very effective nowadays, adequate knowledge and awareness will help to debunk the myths and negative beliefs and also treatment default can be countered through a centralized, multidisciplinary team approach.
cleft lip palate knowledge awareness

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Harnessing the potential of cleft support groups to improve outcomes in cleft care

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Background

Families turn to support groups for practical and emotional support. The provision of practical support – for instance giving out feeding bottles – is often well organised and effective. However, support groups often lack skills in providing emotional support. Recognising the key role played by parents in shaping children's experiences of cleft and optimising outcomes in cleft care, the European Cleft Organisation (ECO) has developed a training course designed to offer parent groups additional skills and tools in key areas.

Methods

Working with experts who have more than 25 years of cleft group and psychosocial support experience, ECO has compiled a four-module training programme comprising the following elements: training parents to support new parents; promoting the development of psychological resilience during the school years; building resilience in parents of a child with a cleft; mobilising the support group. Unique to modules two and three is the concept of optimising psychological resilience and the development of effective coping strategies which research has highlighted as key in achieving positive adjustment to cleft. The final module focuses on how the group can work in tandem with the cleft team, and in the community, to provide overall optimum care.

Results

The course was successfully run online for members of the Slovenian cleft parent group Društvo Shize in the summer of 2021. Feedback was excellent with high scores from parents for each module. The course is versatile and can be run online in four one-and-a-half hour sessions or delivered face to face in a 1 to 2 day structured programme. With Smile Train support, ECO will run the course in Spain and Bulgaria early in 2022.

Conclusions

Parents and parent groups never lack motivation. By equipping them with appropriate resources knowledge and skills, their potential to play a key important role in overall care outcomes will be enhanced

parent, support, resilience, training, emotional

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Recruitment of families to an orofacial cleft Quality of Care study, New Zealand

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Aim: To investigate the experience of the journey from diagnosis of a cleft through to completion of primary surgery in New Zealand.
Design: Outcomes of patient satisfaction were measured using quantitative and qualitative questions specifically related to cleft care.
Method: Participants were recruited over a three year period from November 2014 to October 2017. Where a diagnosis of orofacial cleft was made at the anatomy scan (circa 20 weeks), recruitment was attempted during the antenatal period. Where a cleft was discovered after baby's arrival, recruitment was attempted in the early postnatal period. Referrals were made by the five teams performing primary surgery in New Zealand.
Results: 230 Women were approached to participate in this study. The number of women who fully participated was 87 (72 completed the whole interview). 85 (37%) were excluded by the referrers and a further 58 (25%) declined to participate. In addition to the exclusions above, despite having collaborations in place and locality approval at each site approximately 70 women with a baby affected by cleft were not identified to the research team over the three years with no reason given.
Conclusion: Recruitment of participants for is key in a study of this nature to give a complete picture of the variety of cicumstances and journeys followed. The 72 completed interviews give a snapshot of key areas for improvement in the delivery of cleft care in the perinatal period. Exclusions and declines reflected a number of serious social and anxiety issues in the perinatal period, 32% had no contact details, 3% were under state supervision. Additionally, 12% of the babies excluded were born with other complex medical issues. The lack of data from our most vulnerable cleft affected families is troublesome; a national cleft database would increase information about this population, capturing contact information & the transient population

satisfaction, exclusion, recruitment, vulnerable, database

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Understanding far-flung rural communities' beliefs, perception, social, cultural and experience of cleft services in populations of Sub-Saharan Africa

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Cleft lip and/or palate deformity is often seen in sub-Saharan African countries like Nigeria. There is a high incidence of unoperated CL±P in the country. Previous studies have noted that the family caregivers especially parents play critical role in getting early care for these children with CL±P.
Aims:The study aimed to explore the care givers' perceptions, social attitudes and experiences in accessing cleft services in remote northwest Nigeria.
Methods: In this study, an exploratory qualitative methodology was employed from 2016-2021 that provided clear understanding of the perceptions by caregivers of children with CL±P on the aetiology of cleft, family reactions and their experience in accessing cleft services at two major cleft hospitals in north-western Nigeria. Data analysis was done following verbatim transcription using thematic analysis.
Results: The study participants consisted of 21 caregivers and one adult cleft patient (Key informant). Half of the participants were mothers trailed by five fathers without any previous family history of cleft lip and palate (n=18). Six themes explored included history of cleft deformity in the family, beliefs about the aetiology of cleft, reaction to the occurrence of a cleft by the caregivers, extended family and society; and treatment expectations
The study found that there were lack of knowledge and awareness about the causes, risk factors and treatment of CL±P deformity. The result of the study showed misinformation from primary health care workers about cleft and the great distance needed to travel to access surgical care.
However, complaints about the long waiting time for surgery, poor sanitation and food, and unrestricted visiting hours were observed.
Conclusions: Recommendations include the effective use of radio to increase awareness about the availability of free cleft treatment, training of staff at primary health centre, involvement of traditional rulers and traditional birth attendants; sanitation/catering services improvement and restricting visiting time.

Cleft, rural, perception, experience, qualitative

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Geospatial and Socioeconomic Disparities in Cleft Lip and Palate Surgery: A Single Institution Study of 740 Patients

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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction

Socioeconomic and geographic disparities are thought to impede access to and quality of care for orofacial clefts.

Aim

To assess interaction of geospatial and socioeconomic factors influencing cleft lip and palate surgery access and outcomes at a large, urban, tertiary care center.

Methods

Patients undergoing primary cleft lip or cleft palate surgery from 2010 to 2019 at a tertiary children's hospital were studied retrospectively. Median income by zip code was determined from the American Community Survey 2010 to 2015. Distance from the care center was determined by calculating Euclidean distance between patient address coordinates and care center coordinates. Data were analyzed with univariate and multivariate linear and logistic regression models.

Results

Seven hundred and forty (418 male, 322 female) patients undergoing primary cleft lip or palate repair were included in this study. The average patient household distance from the care center was 31 ± 30 miles and the average median income by zip code was $77,525 ± 31,025 USD. Lower median income by zip code predicted later age at cleft lip repair surgery (β = -71.56, SE = 23.10, p = 0.002) and cleft palate repair surgery (β = -45.57; SE = 17.85; p = 0.011). Lower median income by zip code predicted lower weight-for-age z-scores at 4 weeks (p = 0.007), 6 weeks (p = 0.002), 8 weeks (p < 0.001), 10 weeks (p = 0.003), and 12 weeks (p = 0.047). Median income by zip code and distance from the care center interacted to predict prenatal evaluation by plastic surgery (β = 0.006, SE = 0.003, p = 0.044).

Conclusions

Increased distance from care center and lower median income by patient zip code were associated with inferior access to care surrounding surgery to correct orofacial clefts in this cohort of patients. Future work will assess possible interventions to mitigate these disparities.

disparities, geospatial, cleft, outcomes, access

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Implementing Health Literacy in Provider Practices to Improve Patient and Family Comprehension and Compliance

Mrs Ruth Trivelpiece[1], Dr. Jennifer Rhodes[1]
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TU3.4 PATIENT ENGAGEMENT, Kilsyth, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Background and Purpose

Health literacy refers to the ability of an individual to find, understand, and use health information to make informed decisions about healthcare. Families of children with craniofacial diagnoses deal with a myriad of specialists with varying communication styles and are often overwhelmed with medical information. Low reading levels, racial, ethnic and cultural factors, learning disabilities, low socioeconomic status and stress reduce health literacy and result in reduced compliance and management of chronic health conditions, longer hospitalizations, and increased health costs (Schillinger, 2002). The purpose of this presentation is to demonstrate how both families and health care providers can use health literacy skills to improve patient care.

Methods

This presentation will highlight the findings and concepts from health literacy initiatives including the Agency for Healthcare Research (AHRQ), Centers for Disease Control and Preventions (CDC), the Institute of Medicine (IOM), and Healthy People 2030. Practitioners will learn to create a positive learning environment within their office or institutional setting, and how to critically evaluate materials obtained from local, national and international sites for appropriateness. Specific strategies to improve written and online content will focus on concepts of organization, design and layout. Verbal strategies including Teach-Back and Ask Me 3 will enable providers to meet the health literacy needs of their patients and families' comprehension of and compliance with treatment goals and recommendations.

Conclusions

Craniofacial health care providers will recognize their responsibility to promote health literacy to patients and families and need to incorporate within their own practices. Recognition of personal and organizational health literacy through use of clear communication across all modalities will build trust and improve comprehension and compliance needed for the coordinated and integrated needs of patients with craniofacial diagnoses.

Health literacy, communication, compliance

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Evaluating the Reliability of Telehealth in the Perceptual Assessment of Resonance, Nasal Airflow and Speech Characteristics Associated with Cleft Palate

Ms Helen Morris[1], Mrs Kate Bolton[1]
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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Perceptual assessment of speech production is integral to the routine clinical care for children with cleft conditions. These assessments have been historically conducted in-person due to the requirement for high quality audio signals and capacity to video speech samples to support more detailed evaluation. These assessments have been previously considered outside the scope of telehealth. The impacts of the COVID-19 pandemic on capacity for in-person review, have meant that speech pathologists have increasingly utilised telehealth platforms to conduct perceptual assessments. There is limited evidence to support the reliability of speech, resonance and nasal airflow assessment in children with cleft lip and/or palate via telehealth platforms.
Aims: The project will examine which assessment parameters reach statistical significance for agreement between experienced speech pathologists across direct in-person, telehealth and asynchronous video review assessment conditions and therefore confirm which, if any parameters can be considered to meet reliability requirements for perceptual assessment via telehealth.
Methods: Analysis of the agreement of the perceptual evaluations completed by experienced speech pathologists of the speech of children with repaired cleft lip and/or palate aged 5 to 18 years across three different assessment conditions: 1. Live Condition: direct in-person assessment (considered current best practice) 2. Telehealth Condition: assessment will be performed in synchrony with direct assessment 3. Video Condition : asynchronous viewing of a video recording of the direct assessment. Parameters include: speech intelligibility, speech acceptability, hypernasality, hyponasality, nasal emission, nasal turbulence, cleft type speech errors. Evaluations will be completed using both an ordinal scale from the Cleft Audit Protocol- Augmented (CAPS-A) and a Visual Analog Scale (VAS)
Results: Preliminary results of the initial 20 subjects will be presented. The aim is to recruit 56 participants for adequate power. The presentation of the initial preliminary cohort was considered relevant in the context of the ongoing restrictions to direct assessment being experienced currently.

telemedicine, speech assessment, reliability

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PERCEPTUAL SPEECH EVALUATION OF INDIVIDUALS WITH CLEFT LIP AND PALATE SUBMITTED TO PALATOPLASTY

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Speech is one of the indicators of the results of primary palatoplasty in cleft lip and palate (CLP). The auditory-perceptual assessment is considered the gold standard to assess speech and velopharyngeal function, and as it involves a subjective judgment by the speech and language therapist (SLT), it can lead to disagreements between peers with little experience and between trained and untrained listeners in speech assessment of patients with CLP. Despite the subjectivity, the results of the perceptual assessment of speech are proposed worldwide as one of the main indicators of the results of CLP management. Objective: to compare the auditory-perceptual judgment of the presence or absence of glottal stop and pharyngeal fricative between SLT from Pernambuco and São Paulo, under conditions with and without access to reference samples. Method: Six experienced SLT of the management of communication disorders in CLP that works in CADEFI-PE (3) in the state of São Paulo-SP(3), speakers of Brazilian Portuguese. The auditory-perceptual judgment of the samples according to the correct articulation point, presence of the glottal stop or pharyngeal fricative, online through a form via "GOOGLE FORMS". The SLTs judged the experimental samples (n=113) twice, first without access to references and, after one month, with access to reference speech sample. Statistical analysis was performed Kappa agreement and chi-square comparisons. Results: Preliminary data on the auditory perceptual judgments of speech therapists, from the states of PE and SP, in the conditions without and with access to references were statistically significant, for Av1PE ($k = 0.897$), $p<0.01$, Av2PE ($k = 0.771$), $p<0.01$, Av3 PE ($K = 0.786$), $p<0.001$, Av1SP ($k=0.912$), $p<0.01$, Av2SP ($k=0.700$), $p<0.01$ and Av3SP ($k=0.787$), p<0, 01. Conclusion: Preliminary results suggest that the use of reference speech samples is important and may favor the reduction of the evaluator's subjectivity in the auditory-perceptual judgment

listener agreement, cleft palate, speech

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Reliability of Speech Data in the Norwegian Registry of Cleft Lip and Palate

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction

Children born with a cleft lip and palate (CLP) are since 2011 invited to participate in the Norwegian Registry of CLP (www.lkg-registeret.no). The aim of the registry is to ensure good-quality treatment, allow comparison of treatment and results, and facilitate research. To achieve this, the data must be valid and reliable.

Speech data are registered at 4, 6, 10 and 16 years of age. The speech data are assessed by a speech and language therapist (SLT) using the articulation and nasality test SVANTE-N. Data on velopharyngeal function, intelligibility, hypernasality, hyponasality, nasal emission, weak pressure consonants, and number of correct oral and non-oral consonants are registered.

Aims

The aim was to evaluate the reliability of the speech data among 6-year-olds in the Norwegian Registry of CLP.

Methods

150 children born with cleft palate with or without cleft lip in 2011 and 2012 were registered with speech data in the national registry. Four experienced SLT's in the two Norwegian CLP teams conducted perceptual reevaluations of all 150 anonymized and randomized audio recordings. 20% of the recordings were duplicated to evaluate intra-rater reliability. Inter- and intra-rater reliability will be evaluated by calculating Cohen's kappa, weighted kappa, or the intraclass correlations coefficient.

Results

Approximately 50% of the children were registered with a cleft palate only (CPO), the remaining with additional unilateral or bilateral cleft lip. Based on data in the registry, 75% of the 6-year-olds had a minimum of 85% correct oral consonants, whereas 90% had a maximum of 5% non-oral consonants errors. A complete or marginal velopharyngeal closure was registered in 85% of the 6-year-olds. Comparisons of data in the registry and perceptual reevaluations will be presented.

Conclusions

Results will be used to evaluate speech outcome measures to be used as quality indicators in the Norwegian Registry of CLP.

Speech, quality indicators, reliability.

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Speech sound production during verbalizations in children with repaired cleft lip and palate

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: There has been an increased interest in tracing the prelinguistic and early linguistic development in children with CLP. The patterns of early speech and language development vary in children with cleft because of the physical factors and other social factors such as impaired/poor parent child interaction. Children with cleft tend to have delayed language development, especially in terms of expression.
Aims: This study aimed to analyse the inventory of speech sounds used by children with repaired cleft lip and palate in the early stages of verbal language development using a longitudinal study design.
Method: Fourteen children with non-syndromic, complete CLP, and seven typically developing children completed this study. Children were in the age range of 08 to 12 months when they were recruited and followed up monthly till 30 months. All children with cleft were operated by a single, experienced surgeon at or before 12 months of age using two stage palatoplasty. Recording of parent-child interaction during routine play at home for a maximum of 45 minutes was obtained every month. The utterances of children from each recording were transcribed and analysed using Systematic Analysis of Language Transcripts - Research Version 9 (Miller & Iglesias, 2006). The mean percentage of occurrence of speech sounds was calculated for each child.
Results: Children with cleft started verbalising (using meaningful words) at 17 months of age, while typically developing children started at 13 months of age. Significant differences both in terms of vowel and consonant usage were observed in children with cleft. There was no significant difference in the size of consonant inventory, but a statistically significant reduction in the size of true consonant inventory.
Conclusions: Patterns of speech sound production are altered in children with cleft even after surgical repair. The implications in terms of early intervention for children with cleft has been discussed.
Speech sound inventory, verbalizations

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Investigating the Impact of Speech Samples and Rating Methods on Listener Reliability in the assessment of 3-year-old children with Cleft Palate ± Cleft Lip.

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction
In order to identify children with cleft palate ± cleft lip (CP±L.) who are at risk of poor speech outcomes age 5-years, early assessment and intervention must precede this. At present there are no published, valid, and reliable assessment protocols for the assessment of speech at age-3-years +/- cleft lip (CP±L) in English.

Aim
To investigate the impact of different speech samples and rating methods on listener reliability when assessing speech outcomes in 3-year-old children with CP±L.

Methods
Twenty-five 3-year-olds participated: 20 with CP±L, and five without CP±L. Two speech samples were used (Sample A: spontaneous speech and picture naming; Sample B: short phrase repetition). Seven SLTs from five UK cleft units analysed video recordings of the speech samples. Cleft speech characteristics (CSCs), phonology, resonance, nasal airflow characteristics (NAC) and overall ratings of velopharyngeal function (VP function) for speech were determined.

Results
In the CP±L group, for Sample A, Intra Class Correlation Coefficient (ICC) scores were >.81 for overall VP function, hypernasality, and agreement for structurally related speech difficulties. This indicates 'very good' reliability compared to 'moderate' reliability for these parameters on Sample B. The same 10 CSCs had ICC scores greater than >.61 indicating 'good' or 'very good' reliability, for both samples. Ratings of phonology outcomes were poor for both samples. Children without a cleft were not rated as having speech difficulties associated with CP±L.

Conclusions
It is possible to reliably assess speech in 3-year olds with CP±L. Sample A shows superior reliability for ratings of resonance and NAC, but both samples were broadly comparable for CSCs. An overall measure of VP function for speech had particularly high reliability for Sample A; this could be used as an efficient measure of surgical outcomes relating to speech at age 3-years.

speech assessment, reliability, assessment methods

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Reliability of data on percent correct consonants in the Swedish Cleft Lip and Palate Registry

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Introduction: Data in national health care quality registries must be valid and reliable in order to enable open comparisons of results.
Aims: To assess the reliability of data on percent correct consonants (PCC) and its associated quality indicator ≥86% correct consonants in the Swedish quality registry for patients born with cleft lip and palate (CLP registry).
Methods: Six independent speech–language pathologists re-assessed the audio recordings of 96 5-year-olds with PCC data in the CLP registry. Target consonants of a single word naming test were phonetically transcribed, and PCC was calculated. The reliability of PCC data was assessed with the intraclass correlation coefficient (ICC). The reliability of the quality indicator ≥86% correct consonants was assessed with point-by-point percentage agreement and Cohen's kappa.
Results: Intra and inter judge agreement for PCC was excellent with ICCs above 0.9, and so was the agreement of data from the CLP registry and the six judges' re-assessments. The percentage agreement for the quality indicator ≥86% correct consonants including all judges and the CLP registry at the same time was poor (67 %). In 88 % of the cases, results from four judges and the CLP registry agreed, corresponding to good agreement. The mean of all kappa values was 0.72, which corresponds to good agreement.
Conclusions: The results indicate the PCC data in the CLP registry and the quality indicator ≥86% correct consonants to be reliable. When discovering differences between treatment centres, the raw data collected should always be re-examined before drawing definitive conclusions about treatment results.

percent consonants correct, reliability, registry

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Exploring the association between intelligibility and language skills in 3-year-old children born with a cleft palate +/- lip

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction

It is widely accepted that children born with a cleft palate +/- lip (CP+/-L) are at risk of speech difficulties and reduced intelligibility. It is less clear whether there is also an impact on their language skills with some studies suggesting language is unimpaired and other studies providing evidence to suggest a difference compared to age-matched controls. However, the relationship between intelligibility and language has not been considered in this population despite comorbidity between speech and language difficulties in other populations.

Aims

To investigate the association between intelligibility and language skills in 3-year-old children born with CP+/-L.

Methods

Mothers of 3-year-old child participants in The Cleft Collective Birth Cohort Study, a national cohort study of families affected by cleft in the United Kingdom (http://www.bristol.ac.uk/cleft-collective), completed the Intelligibility in Context Scale (ICS) and Ages and Stages Questionnaire (ASQ). The ICS provides an average score which reflects intelligibility with different communication partners, with 5 representing 'always' intelligible. The ASQ Communication domain asks parents to report on their child's language skills. Scores are used to assign children to one of the following categories: 'on schedule', 'monitoring', 'further assessment'. Kruskal-Wallis tests were used to assess the association between ICS and ASQ.

Results

Using a sample of 543 children, the median average ICS scores were 4.00 for children within the 'on schedule' ASQ category, 3.14 within 'monitoring' and 2.77 within 'further assessment'. There was strong evidence to suggest a difference in median average ICS scores between each of the ASQ categories ($p<0.001$).

Conclusions
Lower intelligibility was seen within the lower language categories suggesting that language skills should be considered in children born with CP+/-L who have reduced intelligibility. Further research can explore whether early identification and intervention for language difficulties may support overall intelligibility.

cleft palate, CP+/-L, intelligibility, language,

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Do early communication behaviours of infants born with cleft palate vary by cleft subtypes?

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Introduction: Evidence from data published by The Cleft Registry Audit Network (CRANE) 2015-2020 highlight differences in the number of children with 'acceptable speech' at age 5 by cleft subtype. Children with more extensive cleft types such as Bilateral cleft Lip and Palate (BCLP) achieve what is considered 'acceptable speech' less frequently.
It is unclear however, whether these differences can also be observed at earlier stages of speech development. This would assist in the identification of children who would benefit from early intervention.
Aims: To investigate parent reported communication skills at 13 months in children born with cleft palate to determine if differences between cleft subtypes can be identified.
Methods: Data from the Cleft Collective Speech and Language Study, (N=256) was used, specifically parent questionnaire responses and scores from recordings of the affected child collected at 13 months using the Language ENvironment Analysis (LENA) system. Parent report of early communication behaviours and Automatic Vocalisation Score from the recordings were considered alongside and compared by cleft subtype, cleft of the soft palate only (S), cleft of the hard and soft palate (HS), unilateral cleft lip and palate (UCLP) and bilateral cleft lip and palate (BCLP).
Results: We found no evidence of a difference in parental report of variegated canonical babble according to the Developmental Snapshot Assessment between cleft types (Kruskal Wallis test P-Value 0.3012). Similarly we found no evidence of a difference in parental reported outcomes in Developmental Snapshot questions related to social communication between cleft types (Kruskal Wallis test P-Value 0.1044).
Conclusions: Differences in parent reported communication skills at 13 months in children with cleft palate according to cleft subtype were not identified in this study. Further investigation is indicated, future research might consider whether the findings are replicated within a larger sample, or when considered in comparison with transcription from audio samples and clinical assessment.

Speech, cleft, subtype, babble, communication

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Stop Consonant Production in Children with Cleft Palate After Palatoplasty

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Aims

Previous research has demonstrated that while some babies may produce oral stops prior to primary palate repair (Chapman et al., 2003; Hardin-Jones and Chapman, 2018), it can take 6-12 months for stops to emerge following surgery for others (Hardin-Jones and Chapman, 2018; Zajac et al., 2020). The current study examined stop consonant production in children with cleft lip and/or palate (CP+L) 2-6 months following palatal surgery.

Methods

Participants included 118 English-speaking toddlers with repaired CP+L (mean age = 16 months) who were participating in the multicenter CORNET study. Parents of participants were asked to record approximately two hours of their child's vocalizations/speech at home using a Language ENvironmental Analysis (LENA) DLP audio-recorder. Four ten-minute audio-recorded samples of vocalizations were extracted from the original recording for each participant and analyzed for presence of stop consonants. A minimum of 150 vocalizations were required for analysis.

Results

Preliminary findings indicate that at least one oral stop was evident in the consonant inventory for 92 of the 118 children (78%) at the time of their post-surgery 16-month recording, and 76 of these children (64%) were producing two or more different stops. Fifty-one of the children (43%) produced the three voiced stops, and eight of the children (7%) were producing all six stop consonants. Children were more likely to produce voiced than voiceless stops; /b/, /d/, and /g/ were produced by approximately 60% of the children. For voiceless sounds, the velar stop /k/ occurred in the children's inventories more frequently (28%) compared to /p & t/ (produced by 14% of children).

Conclusions

The findings of this study suggest that the majority of children with repaired CP+L are producing oral stops within six months following palate repair. The clinical implications of these findings will be discussed.

oral stop development

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Expressive Vocabulary in Preschool-Aged Children with Cleft Palate

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Aims: This study compared the vocabulary development in children with repaired cleft palate (CP) to children with otitis media with effusion (OME) and typically developing (TD) children at 3 and 4 years of age and determined if vocabulary size at 18 and 24 months of age predicted expressive vocabulary at these ages, adjusting for gender and maternal education level.

Methods:
Participants included 81 children with CP (35), OME (23), and TD (23) who were enrolled in a longitudinal study of the development of stop consonants from 12 to 48 months of age. Vocabulary size at 24 months was measured using parent report on the MacArthur-Bates Communicative Development Inventory (CDI-II; Fenson et al., 2007). One-word expressive vocabulary was measured using the Expressive Vocabulary Test, second edition (EVT2) (Williams, 2007) at 3 and 4 years.

Results:
Vocabulary size increased six-fold for TD children from 18 to 24 months of age compared to 4.8 and 4.7 fold for CP and OME children, respectively. In the unadjusted models for children at 3 and 4 years old, estimates of the mean standard score of EVT were significantly lower for CP children compared to TD children ($p<0.05$), but in covariate-adjusted models the difference was not significant. Both unadjusted and adjusted models showed a significantly lower mean EVT score for OME compared to TD at 4 years. Total words on CDI at the age of 24 months was a significant predictor of EVT score with more words positively associated with higher score.

Conclusions: At 4 years of age, children with OME have significantly lower expressive vocabulary than their TD peers, whereas CP and TD children did not significantly differ. Total words on the CDI at 24 months was a strong predictor of expressive vocabulary.

cleft palate, expressive vocabulary

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Assessing speech in 3-year-old children with Cleft Palate ± Cleft Lip: comparing ratings of listener reliability and listener acceptability.

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction
There are no published, valid and reliable assessment protocols for the assessment of speech at age-3-years +/- cleft lip (CP±L) in English. For an assessment protocol to be adopted for use with 3-year-olds, it needs to be reliable and acceptable to speech and language therapists (SLTs) using it.

Aim
To investigate the relationship between speech samples, rating methods, scales and listener reliability when assessing the speech of 3-year-olds with CP±L, and how this relates to the acceptability of these assessment methods to SLTs.

Methods
Seven SLTs from five UK Cleft Centres rated speech samples produced by twenty 3-year-olds with CP±L. Two speech samples were used (Sample A: spontaneous speech, picture naming; Sample B: short phrase repetition). Outcomes included: overall measure of velopharyngeal function for speech (VP function), resonance, nasal airflow, and Cleft Speech Characteristics. VP function and hypernasality were scored on both ordinal and Visual Analogue Scales (VAS). 6/7 SLTs completed questionnaires about the acceptability of the assessment methods.

Results
Sample A had 'very good' reliability for VP function, hypernasality, and agreement for structurally related speech difficulties, compared to 'moderate' for Sample B. However, SLTs found Sample B easier (n=4 66.7%) and more time efficient to analyse. The usefulness of the overall VP function split opinion. VAS had poorer reliability scores compared to ordinal scales across both samples (most notable for Sample A). SLTs preferred the ordinal scale over VAS alone (n=3, 50%). All SLTs highly supported the need for a reliable assessment framework at age-3.

Conclusions
The SLTs rated the need for a reliable assessment of speech outcomes at age-3 highly. Whilst Sample A has an advantage on reliability ratings, the SLTs mainly favoured Sample B. This study supports the continued use of ordinal scales. The clinical usefulness of an overall VP function rating needs further exploration.
speech assessment, preschool, reliability, acceptability

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Predictors of speech outcomes at 36 months in children born with non-syndromic cleft palate with or without cleft lip

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TU3.5 SPEECH, Moorfoot, EICC - Streamed, July 12, 2022, 11:00 - 13:00

Introduction: Emerging evidence suggests an association between early speech behaviours and later speech development in young children with non-syndromic cleft palate with or without cleft lip (CP±CL). Yet the current evidence base is limited, being: focused on pre-school and school-aged children; small and cross-sectional study design; and lacking consideration of variables that can differentially impact speech development, such as hearing status, cleft type, and timing of surgical intervention.
Aims: To examine whether consonant inventory at 18-24 months predicts speech outcomes, including resonance and cleft speech characteristics (CSCs) at 36 months, in children with non-syndromic CP±CL.
Methods: Data were collected as part of the Cleft Collective Speech and Language Study; a national United Kingdom-based cohort study of children born with CP±CL. 381 children with CP±CL were recruited. Speech assessments were performed at 18-24 months and 36 months. Demographic details were obtained via parental questionnaires. Data on cleft type, surgical procedure, and hearing status, were also collected and adjusted for in the analysis.
Results: Binary logistic regression indicated that a greater percentage of English nasals produced at 18-24 months was a significant predictor of hypernasality and nasal emission at 36 months. Additionally, lower percentages of alveolars, and increased percentages of palatals and velars at 18-24 months significantly predicted backing at 36 months. Total percentage of non-English consonants produced at 18-24 months was positively associated with backing to velar at 36 months. A greater proportion of non-English velars at 18-24 months significantly predicted active nasal fricatives at 36 months.
Conclusions: The consonant inventory of children with CP±CL at 18-24 months is a useful predictor of speech outcomes at 36 months, helping to inform better targeted and more timely intervention from an earlier age.

Cleft palate, speech, resonance, predictor

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The unilateral cleft lip nasal deformity (uCLND) revisited: uncovering fundamental misconceptions using 3D image analysis

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TU3.6 ORAL HEALTH/ORTHODONTICS, Tinto, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

1. Introduction

Misperceptions and unproven dogma can lead to erroneous treatment goals.

2. Aims

To develop a model of the uCLND based upon objective 3D analysis of infants with unrepaired cleft lip.

3. Methods

We assessed landmark displacements, anthropometric dimensions, and shape-base measures on 100 infants with uCL+/-P whose images were captured at 6 months of age using 3D stereophotogrammetry.

Lateral displacement of subnasale demonstrated the greatest magnitude aberration of any measure and was therefore used as the independent variable in a linear regression analysis model. Significant changes were assessed by ANOVA.

4. Results

For each 1 mm lateral displacement of subnasale, we found that ($p<0.05$):

The non-cleft alar base moves 0.8 mm lateral, the cleft alar base moves 0.6 mm posterior, and the columella tilts 4.2°. The nasal dorsum follows subnasale deviation swinging 1.8° towards the non-cleft side. The cleft nostril widens 1.1 mm and the non-cleft nostril narrows 0.2 mm. All of these changes are associated with collapse of the cleft side dome and elevation of the non-cleft hemi-tip as measured by progressive changes in the nose-tip-volume-ratio (+0.15) and alar-cheek-angle-ratio (+2.09).

In addition to these changes in the nasal deformity, we found that for each 1 mm lateral displacement of subnasale the cleft medial lip height shortens 0.2 mm, the non-cleft medial lip height lengthens 0.2 mm and the inter-endocanthal distance widens 0.4 mm.

5. Conclusions

Contrary to historical dogma, objective assessment of the uCLND using 3D stereophotogrammetry demonstrates that the non-cleft alar base deviates lateral; the cleft alar base is posterior but normal in medial-lateral position; and the nasal dorsum deviates away from the cleft. Based on these findings, objectives of primary uCLND treatment should involve centralization of the columella and philtrum and rebalancing the nose by untwisting the orthogonal displacement of the alar bases.

Table 2 Progressive alterations with increasing severity.

Midline shifts:	Columella	Base shifts from midline, away from cleft
	Dorsum	Deviates from midline, away from cleft
Opposing changes:	Alar base	Non-cleft side displaced lateral; Cleft side displaced posterior
	Sill	Non-cleft side constriction; Cleft side widening
	Dome	Non-cleft side elevated/"boxy"; Cleft side collapsed/"slumped"
	Nostril	Non-cleft side vertically oblong; Cleft side horizontal and widened
	Alar-cheek junction	Non-cleft side acute; Cleft side obtuse

cleft nasal deformity, 3D morphology

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The Americleft project: 3D objective measures for grading the primary unilateral cleft lip nasal deformity

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TU3.6 ORAL HEALTH/ORTHODONTICS, Tinto, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

1. Introduction

Evidence-based treatment of the unilateral cleft lip nasal deformity continues to be hampered by limitations in methods to objectively assess morphology.
We have previously found that initial cleft severity predicts post-operative outcome and have explored the use of traditional anthropometric measures as objective means to grade severity. Application of contemporary approaches and the use of computer vision techniques, to leverage the rich surface data of 3D images, has generated additional objective measures for evaluation.

2. Aims

The purpose of this study was to utilize a consensus standard of nasal appearance and 3D stereophotogrammetry to determine whether objective measures could be used to characterize severity.

3. Methods

3D images of 45 infants with unrepaired cleft lip and 5 age-matched controls were assembled for assessment by 7 cleft surgeons (Americleft Surgeon Subgroup), who independently sorted images into increasing severity of nasal deformity on 2 separate occasions. Internal agreement was assessed. Correlations between objective measures (landmark positions, anthropometric dimension, and shape-based metrics) and the subjective panel rankings were determined using uni-variate and multi-variate linear regression models.

4. Results

Inter- and intra- rater reliability were excellent (intra-class correlation 0.93). Amongst the objective measures assessed, the lateral deviation of subnasale from the inter-endocanthial midline had the highest correlation (0.85, $p<0.001$) with the surgeon ranked severity standard. Other measures with high correlation coefficient included dorsum deviation (0.78), nostril width ratio (0.77), lateral lip height ratio (0.71), tip alar volume ratio (0.66), and columellar angle (0.64).

5. Conclusions

Lateral deviation of subnasale (sn_x), the surface landmark for the anterior nasal spine, is the best objective measure of surgical severity for the initial cleft nasal deformity, as determined by subjective assessment. Use of sn_x to stratify severity is consistent with our current understanding of embryology and pathogenesis of the deformity.

	Uni-variate Linear Regression			Multi-variate Linear Regression	
Measurement	**Correlation Coefficient**	**R^2**	**p-value**	**R^2**	**p-value**
Landmark Positions					
Subnasale (lateral)	**0.85**	**0.71**	**< 0.001**		**0.001**
Cleft Cupid's Bow Peak (lateral)	0.69	0.47	< 0.001		0.39
Non-Cleft Cupid's Bow Peak (lateral)	0.65	0.40	< 0.001	0.77	0.62
Cleft Subalare (anteroposterior)	0.60	0.35	< 0.001		0.19
Non-Cleft Subalare (lateral)	0.60	0.34	< 0.001		0.86
Anthropometry					
Subnasale (lateral)	**0.85**	**0.71**	**< 0.001**		**< 0.001**
Nostril Width Ratio	-0.77	0.58	< 0.001		0.001
Lateral Lip Height Ratio	0.71	0.49	< 0.001	0.84	0.52
Columellar Angle	-0.64	0.39	< 0.001		0.35
Medial Lip Height Ratio	0.58	0.32	< 0.001		0.28
Morphometry					
Subnasale (lateral)	**0.85**	**0.71**	**< 0.001**		**< 0.001**
Tip Alar Volume Ratio	-0.66	0.78	< 0.001		0.02
Dorsum Deviation	-0.78	0.60	< 0.001	0.81	0.60
Columellar Angle	-0.45	0.18	0.002		0.08
Alar Cheek Definition	-0.41	0.15	0.005		0.08

cleft severity, 3D morphometrics, nose

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Comparison of dental disease and dental anomalies of children in the primary dentition with Pierre Robin Sequence and Cleft Palate versus Isolated Cleft Palate.

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TU3.6 ORAL HEALTH/ORTHODONTICS, Tinto, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

1. Introduction
Pierre Robin Sequence (PRS) can be defined as a triad of micrognathia, glossoptosis and Cleft Palate (CP). Although differences between patients with PRS and those with isolated CP have been identified in the literature, none directly compare dental disease outcomes between the two groups.

2. Aims
To compare dental disease and dental anomalies between patients diagnosed with PRS versus patients with isolated CP in the primary dentition.

3. Methods
This was a retrospective study based at the Evelina London Cleft Service. Patients born between 2011 and 2017 aged 4-5 years with PRS and isolated CP were included. Data collected from clinical records was analysed focusing on dental disease, dental outcome and dental anomalies in both groups.

4. Results
A total of 49 patients were included in the study. 19 were in group 1 (PRS) and 30 in group 2 (CP). 36.8% of group 1 had other syndromes and co-morbidities compared to 16.0% in group 2. The average number of carious teeth was 3.2 in group 1 compared to 0.9 in group 2. The prevalence of dental sepsis was higher in group 1 (15.8%) compared to group 2 (3.3%). A higher percentage of group 1 required oral rehabilitation under general anaesthesia (21.1%) compared to group 2 (6.6%). Interestingly, the prevalence of developmental defects of enamel (DDE) was lower in group 1 (5.3%) compared to group 2 (33.3%). Prevalence of hypomineralisation was lower in group 1 compared to group 2 (30.0% and 33.3% respectively).

5. Conclusions
This study highlights that patients with PRS are more likely to present with co-morbidities and have a higher prevalence of dental caries and sepsis compared to patients with isolated CP. This emphasises the importance of targeted and enhanced dental preventive advice and optimised dental care in this cohort of patients.

	PRS with CP (n = 19)	Isolated CP (n = 30)
Male	52.6%	46.7%
Female	47.4%	53.3%
Average DFMT score	2.6	4.2
Average no. of decayed teeth	3.6	0.9
Average no. of filled teeth	0.8	1.6
Average no. of missing teeth	0.1	0.6
Hypomineralisation	30.0%	33.3%
Dental Sepsis	15.8%	3.3%
Registered with GDP	57.9%	87.6%
Other syndromes/co-morbidities	36.8%	16.0%
DDE	5.3%	23.3%
Oral Rehabilitation under GA	21.05%	6.6%
Chairside treatment	57.9%	23.3%
Routine Care with GDP	15.8%	70.0%

Table 1: Summary of Findings

PRS
Cleft Palate
Caries
DDE

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Audit assessing access to dental care for children with cleft lip and palate during the Covid-19 pandemic

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TU3.6 ORAL HEALTH/ORTHODONTICS, Tinto, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Introduction

The provision of routine dental services has been severely affected by Covid-19. Sudden imposed closure of general dental practices at the height of the pandemic resulted in a rapid decline in the number of patients accessing routine care. Upon re-opening, a reduction in clinical capacity and face-to-face activity further hindered the provision of routine dental care.

Children with cleft lip and palate are at high risk of dental caries. Poor oral health may exacerbate pre-existing medical conditions and can compromise orthodontic treatment or surgical outcomes. Regular dental recalls and rigorous caries prevention is therefore essential. Care is often shared between the cleft specialist paediatric dentist and local dental care providers.

Aims

- To determine provision and access to routine dental services for cleft lip and palate patients during the Covid-19 pandemic
- To identify potential barriers in accessing routine dental services for cleft lip and palate patients

Methods

A questionnaire was distributed to 11 cleft centres in the United Kingdom. Each centre asked 30 patients or parents to complete a questionnaire for patients aged 0-16 attending face-to-face CLP multi-disciplinary team appointments.

Results

A total of 176 questionnaires were returned from 6 centres. The results revealed that most patients saw a dentist at regular intervals (84.7%), with the most common recall interval being 6-12 months (43.2%), followed by 3-6 months (29.5%). 31.2% of patients had attended to see a dentist in the last 3 months. Many parents (46.6%) reported barriers to accessing dental care, with many feeling that Covid-19 had impacted on their child’s dental health (43.2%).

Conclusions

The majority of patients were registered with a general dentist and attended for regular dental check-ups. Many parents reported barriers to accessing dental care and felt that this had been further hindered by Covid-19.

Access

Dentistry
Prevention
Covid-19
Pandemic

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Periodontal status, oral hygiene and protease activity in cleft children prior to secondary alveolar bone grafting

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Introduction: Children with cleft lip and palate have an increased risk of gingival and periodontal diseases, especially in the alveolar cleft area. The alveolar cleft is repaired, and the oronasal communication closed with a secondary bone graft operation between ages 9 and 12. Periodontal health, gingivitis, inflammation and dental plaque are associated with the success of the bone graft.
Aims: To evaluate the preoperative periodontal status, oral hygiene and protease activity in cleft children prior to secondary alveolar bone grafting.
Methods: Sixteen children with clefts (three CLA, nine UCLP and four BCLP) were examined by a pediatrician prior to alveolar bone grafting at the mean age of 10 years (range 8 - 15 years). Oral health was assessed by the presence of dental plaque, gingivitis, pocket depth and clinical attachment levels. In addition, a non-invasive oral fluid test measuring matrix metalloproteinase -8 activity and the risk of periodontal disease (PeriosafeTM) was performed. All children had orthodontic treatment with upper fixed appliances.
Results: The average of Visible plaque index (VPI) was 47% and the average of bleeding on probing (BoP) was 34%. Six children had periodontal pockets from 4 to 7 mm in the alveolar cleft area. The PeriosafeTM test was positive in eleven children (65%). Six children found it difficult to brush their teeth in the cleft area and seven children have not received any special guidance how to brush the cleft area.
Conclusion: Cleft children have increased risk of deteriorated oral health. The results underscore the importance of preoperative pediatricians' examination and improvement of oral health in cleft children undergoing secondary bone grafting.

Periodontal, cleft, protease, PeriosafeTM, graft

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ORAL MICROBIOTA IN CHILDREN WITH CLEFT LIP AND PALATE WITH AND WITHOUT RESIDUAL FISTULAS

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TU3.6 ORAL HEALTH/ORTHODONTICS, Tinto, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

The presence of residual fistulas may affect the oral microbiota and treatment outcomes in patients with Cleft Lip and Palate (CLP). Aim: To compare the oral microflora in saliva and palatal mucosa/residual fistula samples in children with CLP and a control group without cleft. Methods: Prior ethical approval and informed consent-assent, 75 patients (7-15 years; 44%-female/56% male) were evaluated, divided into 3 groups: 1) CLP with fistula-(CLP-F; n=25); 2) CLP without fistula (CLP-WF n=25) and 3) without CLP (n=25). The samples were taken from the palate, fundus of the vestibule and from the fistulas in CLP-F. The samples were processed with standardized laboratory procedures to identify anaerobic/aerobic microorganisms and Candida albicans, findings confirmed by biochemical/enzymatic tests. The colony-forming units (CFU) of each microorganism were compared between the groups with the Kruskal-Wallis and U Mann Whitney tests and the frequencies with Chi square ($p<0.05$). Results: Statistically significant differences are observed for the total CFU count in saliva between controls and CLP-F ($p=0.01$). Streptococcus viridans and Actinomyces spp were significantly decreased in the saliva of the CLP-F group ($p=0.001$) compared to the control group and CLP-WF. In the samples from the palate and/or fistula, Candida albicans was significantly increased in the CLP groups compared to the control group ($p=0.02$) with a significant reduction of Actinomyces spp* and streptococcus viridans in the CLP-F group. Conclusion: The CLP groups show a decrease in the count of commensal microorganisms and an increase in Candida albicans, observing a more significant change in oral ecology in the presence of residual fistula, attributable to a displacement of the normal oral flora. Genomic sequencing studies are required to establish nonculturable microorganisms that may be associated with the ecological changes found in CLP patients.

Fistula, microbiology, cleft palate, microbiota.

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Intraoral scanning in newborn patients with cleft.

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I. INTRODUCTION:

Under current clinical standards, diagnosis, treatment planning and appliance manufacturing concomitant to cleft presurgical orthopaedics require cast models of the patient's palate and nasolabial structures, as well as highly experienced professionals.

Impressions for producing these cast models are obtained by a burdensome and hazardous procedure, employing custom-made acrylic trays, loaded with alginate or PVS material.

Recently, digital technologies have been incorporated into treatment protocols for presurgical orthopaedics patients with cleft.The 3-dimensional digital model of the anatomical structures necessary to enter the threshold of these new technological possibilities, is usually obtained from digital scanning of a previously obtained cast model. Using DIRECT intraoral digital scanners, undesirable conventional impression procedures are avoided, reducing risk and discomfort for the infant, and reduces costly laboratory procedures. With the resulting digital model of the patient's palatal and naso-labial structures, high precision, cost effective, diagnostic treatment planning and appliance manufacturing processes can be developed. Additionally, due to their digital nature, these processes can be standardized to the highest levels of excellence, with reduced dependency on scarce highly skilled human resources.

II. LEARNING OUTCOMES: After completion of the workshop, assistants will be able to:

A. Understand the fundamental concepts behind the acquisition of 3D images and their use in CAD-CAM applications.
B. Recognize the essential characteristics for a successful scan of the infant palate.
C. Placement of human and material resources required for the scanning process.
D. Enumerate and execute the steps involved in the scanning process.
E. Store/send the digital file containing the acquired scan.

III. CONTENT:

A. Basic concepts of 3D image acquisition.
B. Characteristics of an ideal infant palatal scan
C. Scanning team and tools
E. Scanning protocol
F. Digital scan file storage/sharing
F. Common errors during scanning process
G. Practical demonstration
H. Q&A

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Design and 3D Printing of Nasal Hooks for Bilateral Cleft Lip

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TU3.6 ORAL HEALTH/ORTHODONTICS, Tinto, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Introduction

Aside from the question of primary nasal repair, many surgeons would welcome the ability to lengthen the columnella in the infant with bilateral cleft lip and palate (BCLP) prior to lip reconstruction. As has been demonstrated, spanning the cleft with an elastic tape to narrow the alveolar gap, also holds the prolabium down. If this is combined with a hook taped to the forehead to elevate the nares in bilateral clefts, these forces can lengthen the columella. However, there are no commercially available hooks to elevate both nares. The solution of using two DynaCleft Nasal Elevators for BCLP is unnecessarily complicated for some parents to manage. Therefore, we developed a 3D printed hook that elevates both nare simultaneously.

Method

Our idea, for a bilateral nasal hook, utilizes the latest digital design and 3D printing technology. Our basic design features two arms to accommodate both nares. A number of designs were developed varying the gap between arms and hook angles, providing options that clinicians could select from, to fulfill patients' needs. The bilateral nasal hooks were then printed using a digital light processing 3D printer in a biocompatible resin. Post-processing included washing, curing, grinding, and polishing. These hooks were examined and evaluated for strength, stiffness, and surface smoothness before clinical use.

Results

A newly designed, 3D printed nasal hook for bilateral cleft lip is produced with the needed strength, stiffness, and surface smoothness for use in columellar lengthening.

Conclusions

A prototype of newly designed and 3D printed nasal hook for children with BCLP is presented.

Collumela, Bilateral Nasal Hook, 3DP

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A 40 Year Review: Comprehensive Care for Parry-Romberg Syndrome

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TU3.6 ORAL HEALTH/ORTHODONTICS, Tinto, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Purpose: Parry-Romberg Syndrome is a rare disorder causing unilateral, progressive wasting of the face, including the skin, soft tissue, muscle, cartilage, and bone. This condition is managed surgically by many facial plastic or oromaxillofacial surgeons; however, understanding the inflammatory and relapsing nature of the disease is important for tailoring multidisciplinary care.

Methods: This is a retrospective review of patients with Parry-Romberg Syndrome seen at our institution from 1980-2020. Variables collected included: age at onset, duration of wasting, incidence of relapse, and treatment strategies implemented.

Results: One hundred six patients were identified. 65.1% of patients were women (n=69) and 34.9% were men (n=37). Atrophy began at a median age of 6.5 years old (IQR = 7.88 years), and lasted for a median length of 18 months (IQR=30 months) before stabilizing. 72.6% of patients (n=77) received medication in response to their initial flare, most commonly a steroid pulse regime supplemented by methotrexate. 29.2% of patients (n=31) reported secondary flares a median 2 years (IQR= 3.42 years) after their initial flare was deemed stable. 5.6% of patients (n=6) reported tertiary flares a median 2.3 years (IQR=3.46 years) after secondary stabilization. 29.1% of all patients (n=25) underwent reconstructive procedures, 56% of whom (n=14) did not receive other medical treatment.

Conclusions: Understanding the relapsing nature of this inflammatory condition is important for surgical planning. Reconstructive surgeons should be aware of the medical management options and prognosis for Parry-Romberg Syndrome.

Hemifacial Atrophy, Parry-Romberg Syndrome

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Understanding the Plastic and Reconstructive Surgery Provider Landscape in Malawi

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TU3.7 COMPREHENSIVE CARE, Carrick, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Introduction:
Surgery is perceived as a luxury and a complex field in medicine in many LMICs. Malawi has a critically low physician surgeon population density and a lower number of plastic and reconstructive surgeons available to provide cleft surgery. The availability of comprehensive cleft care, as well as the pathway for patients to receive care, has not been established due to low workforce numbers.

Aims:
This study sought to understand how the Malawi health workers navigate the health system to ensure patients receive cleft surgery.

Methods:
Questionnaire-guided interviews were conducted with physician surgeons, non-physician surgeons, midwives, and community health workers that encounter patients with cleft conditions. 19 participants were identified. Participants were from a district hospital or a tertiary level facility under the Ministry of Health. The study took place in the following districts: Nkhatabay, Lilongwe, Salima, Mangochi, and Blantyre.

Findings:
57% of participants did not know of any specific referral pathways for cleft conditions, and participants estimated that a plastic surgeon can only perform approximately 5% of referred cases. 90% reported difficulty in accessing any plastic surgery services with 84% expressing cleft care services were unavailable.

Conclusion:
The plastic and reconstructive surgical landscape in Malawi is minimally understood and leads to confusion among providers at all levels. The Malawi health system has no specific pathway for managing cleft conditions due to the availability of surgeons that can perform cleft surgery. There are only 3 known plastic and reconstructive surgeons in Malawi, and one is a pediatric surgeon that performs cleft surgery. Task sharing with general and pediatric surgeons can improve access to and quality of care and will be critical in low-resource settings like those faced by patients in Malawi.

Plastic and reconstructive surgery services

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Comprehensive Cleft Care in Low and Middle Income Countries - Our Journey from Surgery Centric Model to CCC Model

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TU3.7 COMPREHENSIVE CARE, Carrick, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

1.Introduction: Orofacial clefts represent the most common congenital craniofacial anomaly worldwide. This condition is best managed by an interdisciplinary team of specialists, often with gratifying results for both the patient and the care providers. Despite recent advances in the management, it remains a challenge today to provide cleft care in low- and middle-income countries (LMIC) due to many reasons which may include Non availability of a good health care settings, Absence of specialists , Funds required, Local Government policies etc.
Method:In our Experience of 17 years a paradigm shift of cleft care approach has happened from a surgery centric model to a comprehensive cleft care model.
Conclusion: Cleft care community is now in position to increase surgical capacity and promote development of sustainable local cleft care centers that are capable of providing comprehensive, longitudinal care to the indigenous population .With the shift in global cleft care delivery, many organizations have started to incorporate efforts to expand local facility, increase human capital, and foster interdisciplinary quality health care by local providers .As we move toward the future of accessible, sustainable cleft care in LMIC, it will continue to rely on concerted efforts from both international aid groups and local governments to invest in the local health care system.

Comprehensive Cleft Care LMIC

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Direct costing model for medical services of cleft lip a palate (CLP) patients in a third level hospital of the National Health System

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Introduction: Public and private health systems of the emerging economies are financed by governments though taxes collection from the economically active population, however there is a large amount of informal commerce that does not contribute with taxes but demand public medical services.
Specialized hospitals called National Institutes of Health (NIH), have large buildings with iconic architectures that represent each medical specialty.
These mega-infrastructures generate long access processes for medical care and very high indirect costs.
The decrease of indirect costs means more resources for the purchase of supplies, equipment and training of health professionals, among other important things.
Financial deprivation is common in emerging economies, affecting the quality of health services.
A graphic costing system is useful for decision making. Mapping the access care process help us to simplify it and improve the resources distribution.
Objectives: Present direct costing model, flexible and adaptable to the characteristics of each health institution, focused on CLP
Material & Methods: Mapping the access process for medical care in a NIH
Results: The costs of the care process in public institutions is significantly higher than same process in private institutions
Significance of the findings: A detailed processes map, helps us to simplify access to medical care with more acceptable operating costs.
CLP, cost model, health systems

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Barriers to Cleft Care in Egypt

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TU3.7 COMPREHENSIVE CARE, Carrick, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Introduction

Operation Smile is a non-government organisation (NGO) providing cleft surgery in Low and middle-income countries (LMICs) globally. Historically, identifying patient barriers to cleft care required distribution of patient/family surveys. A newly developed Operation Smile Patient Health Record (PHR) enables access to such data during patient screening.

Aims

To use a new standardised PHR to identify potential barriers to accessing cleft care in Egypt.

Methods

In this cross-sectional study, patient demographic and socioeconomic data was obtained from the new Operation Smile PHR during a cleft program in Egypt. The primary outcome of interest was accessing cleft care (initial presentation or first surgery) before 18 months of age.

Results

Among 84 patients with cleft conditions, 71 (85%) accessed cleft care prior to 18 months of age, 11 (13%) doing so at this Egypt program. Those who received prior cleft surgery (n=67) received it from a local hospital (n=35) or NGO (n=21). Most patients presenting at the Egypt program underwent revision surgery (45/60, 75%, mean age [7 years]), and 15 (25%, mean age [4.5 years]) received primary surgery.
Late initial access to cleft care was not associated with any of the following: travel time from patients' homes to the cleft program site or nearest hospital providing surgical care, health insurance status, school attendance, staying home to avoid questions about the cleft, having a family member with a cleft, or parents' education levels.

Conclusions

Most patients in this Egyptian cohort were able to access cleft care prior to 18 months of age, suggesting that a combination of public, private and NGO support is currently providing cleft care on a reasonable timeline. Further patient data collection globally will help identify barriers faced by those unable to access timely cleft care, thereby informing program design to help alleviate these barriers in future.

barriers to care, cleft, Egypt

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Comprehensive Cleft Care Delivery in Developing Countries: Impact of Geographic and Demographic Factors

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TU3.7 COMPREHENSIVE CARE, Carrick, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Introduction

The delivery of comprehensive cleft care in different areas of the world is heterogeneous in nature due to variable demographic and economic factors. Global Smile Foundation (GSF) held two simulation-based Comprehensive Cleft Care Workshop (CCCW) assembling cleft practitioners from various fields, originating from different countries. Both participants and faculty members answered surveys regarding barriers and interventions to multidisciplinary cleft care delivery, and the responses analyzed based on demographic and geographic factors.

Methods

Following each of the two simulation-based CCCWs organized by GSF, in Beirut 2018 and Lima 2019, surveys comprising demographic and geographic data were distributed to participants and faculty members. The survey also examined the most relevant barriers to the delivery of comprehensive cleft care in outreach settings, in addition to potential interventions to overcome these obstacles.

Results

The total response rate was 57.8%. The greatest barrier to comprehensive cleft care reported by respondents was financial, but when stratified by age, gender and geographical area, no statistical significance was reached. However, lack of multidisciplinary teams was found as the most important barrier in respondents with less than 5 years of experience (p=0.03). Upon investigating interventions to deliver multidisciplinary cleft care, respondents reported assembling multidisciplinary teams as the most relevant. Stratification by gender, years in practice, specialty and geographical area showed no statistically significant difference for the most relevant intervention. However, increased training was reported as the main intervention to cleft care for those aged less than 30 years old (p=0.04).

Aims and Conclusion

The purpose of this study is to identify perceived barriers to multidisciplinary cleft care delivery, and interventions that may help improve the distribution of care. Stratification by demographic and geographic factors will help us determine the best approach to improving cleft care delivery in specific communities and delineate community-specific roadmaps to refine cleft care services.

Cleft care, Barriers, Interventions, Outreach

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The Impact of Scaling up Palate Surgery and Speech Care Across Ethiopia: A Cost-Effectiveness Analysis using Dynamic Microsimulation Resource Allocation Models

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TU3.7 COMPREHENSIVE CARE, Carrick, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Aims

Timely access to essential palate surgery and speech-language pathology (SLP) services is limited in low-and-middle-income countries (LMICs). Expanding care within existing resource constraints necessitates prioritization of cost-effective strategies to maximize population health. We developed dynamic microsimulation resource allocation models to evaluate the cost-effectiveness of different strategies scaling up cleft care in Ethiopia.

Methods

We evaluated different combinations of the following three interventions: prioritizing cleft palate surgeries for infants less than 18 months, increasing the number of surgeries, and increasing SLP care. We also assessed whether it was more cost-effective to increase capacity at high volume centers (HVCs) or across all currently funded centers in Ethiopia. The model was informed by Ethiopian utilities and hospital-specific costs; calibrated to nationally representative surgical estimates; and incorporated downstream revision surgeries and SLP therapy. Our primary outcomes were costs (international 2021 US$), quality-adjusted life-years (QALYs), life years (LYs), and the incremental cost per QALY for each strategy compared to the status quo.

Results

We simulated 12 iterations of 82,095 infants born with cleft lip and palate for a period of 65 years for a total of 985,140 infants. For 66% of these iterations, increasing the number of cleft palate surgeries that prioritize infants less than 18 months in HVCs was dominant. For the remaining iterations, the previous strategy in combination with increasing speech care capacity at HVCs was dominant. Both interventions gained over 850,000 LYs and 550,000 QALYs at less than $10/QALY. Targeting HVCs was more cost-effective than increasing capacity across all funded centers (Table 1).

Conclusions

Targeting HVCs and scaling up palate surgery for infants less than 18 months are recommended prior to, or in combination with, increasing speech care capacity. Future analyses targeting the rate of scale up for clinical and cost projections are also needed for practical implementation considerations.

Table 1.

Strategy	Cost/QALY (2021 US$)	Increase in QALYs (N, %)	Increase in Life Years (N, %)
Status Quo	Reference	Reference	Reference
Add Surgeries, Prioritize <18 months, Add Speech Care, All Centers	8.58	342,426, 72%	516,344, 59%
Add Surgeries, Prioritize <18 months, Add Speech Care at High Volume Centers	5.5	576,746, 21 %	876,423, 100%
Add Surgeries, Prioritize <18 months at High Volume Centers	4.72	613,816, 129%	945,976, 108%

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Enhanced Recovery After Cleft Lip Repair: Protocol Development and Implementation in Outreach Settings

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Introduction:
Clefts of the lip are the most common congenital craniofacial anomalies. Adequate cleft care can sometimes require more than one surgery from birth to adulthood. Enhanced Recovery after Surgery (ERAS) is an evidence-based multidisciplinary protocol applied for perioperative care. ERAS is associated with improved symptomatic control after surgery as well as reduction in postoperative complications, length of hospital stay, hospital readmission, and mortality. Development and implementation of an ERAS protocol among patients undergoing cleft lip repair during surgical outreach may decrease postoperative complications, result in earlier hospital discharge, and reduce the use of opioids perioperatively.
Aims:
The aim of this abstract is to describe the ERAS protocol developed and implemented by Global Smile Foundation (GSF) for patients undergoing cleft lip repair during surgical outreach trips.
Methods:
The main components of the protocol include: 1) preoperative patient education, 2) nutrition screening, 3) smoking cessation when applicable, 4) use of topical anesthetic adjuncts, 5) facial nerve blocks, 4) postoperative analgesia 7) preferential use of short-acting narcotics, 8) antibiotic administration, 9) use of elbow restraints 10) early postoperative oral feeding and hydration and 11) discharge planning.
Results:
Between April 2019 and March 2020, GSF operated on 126 patients with cleft lip. Three patients (2.4%) had delayed wound healing and one (0.8%) had postoperative bleeding. Patients were discharged home on the first day after surgery, there were no cases of mortality, and patients were able to tolerate fluids intake at discharge.
Conclusion:
Implementation of an ERAS protocol among patients undergoing cleft lip repair has shown to be efficient in reducing postoperative discomfort while minimizing opioids use, promoting early discharge from the hospital, and leading to early oral feeding resumption. The ERAS principles carry increased relevance in the context of the ongoing COVID-19 pandemic and opioid crisis and can be safely executed in resource-limited settings.
Enhanced Recovery After Surgery
Outreach

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How We Handle Social Service of Cleft Lip and Palate Around The Country (A 10 years experience)

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Abstract

How We Handle Social Service of Cleft Lip and Palate Around The Country _(A 10 years experience)_

Indonesia is a country composed of over 17,000 islands connected by land, water, and air. On doing the social service of cleft lip and palate, each region has its own challenges depending on their infrastructure, human resource, and education of the local community. In Indonesia, the incident rate of cleft lip and palate is about 8 million. This article is intended
to provide an overview of our experience on doing a social service of cleft lip and palate around various regions in Indonesia with a priority on patient safety procedure for over 10 years.
During 10 years of my service, I partnered up with Smile Train along with the help of other social workers. As a result, the information and education can be effectively distributed to the community. Each region has their own uniqueness and peculiarities related to the social service activities. There were some regions that already had all the supporting necessities, however, some regions do not. The solution is by preparing a team to help in these regions, especially for patient safety. There are around 2100 patients who have been treated during 2011 to 2021.
In conclusion, when a social service is to be held in any region, a survey must be conducted first regarding the infrastructure, human resource, and education of the local community in order to make the preparation of the team that we will bring to the region more effective and efficient.
Cleft Lip, Social service, experience

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Expanding the Clinical and Surgical Capacity to Address the Needs of Neglected Primary and Secondary Cleft Lip and Palate Patients in the State of Oaxaca-Mexico (Part III): The Use of a State-of-the-Art Mobile Hospital Facility to Provide Safe, Quality and Cost-Efficient Humanitarian Care.

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Introduction

Oaxaca-México, as in most LMIC´s; access to timely, safe, quality and comprehensive surgical and clinical care is impossible for most CLP patients. Different health barriers including lack of; infrastructure, medical supplies, and/or trained human resources in combination with complex geographical, cultural and educational contexts, prevent patients and families to access adequate care leading to disability, social exclusion and major financial stress. Recently, the COVID-19 pandemic has made access to care even more limited.

Aims

To introduce a new model of Humanitarian cleft care. To describe the evolution of the Mobile Surgery International (MSI) initiative as an effective and cost-efficient model, to rapidly expand the surgical and clinical capacity of a region, using a State-of-the-Art Mobile Medical Infrastructure.

Methods

The fast deployment and activation of a State-of-the-art Mobile Hospital is the result of coordinated efforts of humanitarian, public and private parties. Strategic planning and execution was based on the 5-S´s approach.

Results

Since October 2020, MSI has been able to provide interdisciplinary, comprehensive, ongoing, timely, safe, quality, accountable, and cost-efficient surgical and CCC to over 500 primary and secondary CLP patients and families.

Significant reductions of operational costs were achieved by developing a low-cost supply chain based in alliances and collaborations with local and international partners to obtain donations of high-quality surgical supplies and associated logistics. Financial resources were redirected to develop CCC services. Hiring and training a motivated team of local specialists provided quality, stability and accountability of care delivery. Safety can be assured by integrating the HR into a State-of-the-Art Medical infrastructure where the medical instruments and biomed equipment is kept under continuous preventive and corrective maintenance program.

Conclusions

A rapid and cost-efficient expansion of the clinical and surgical capacity to address the needs of neglected primary and secondary CLP patients in LMICs is feasible using a state-of-the-art mobile medical infrastructure.

Global-cleft-care; Neglected-surgical-conditions; Comprehensive-cleft-care; Mobile-Hospital

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Clinical and Economic Impact of the Global Smile Foundation Outreach Surgical Program

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1. Introduction

Congenital clefts of the lip and/or palate (CLP) affect 1 in 500-700 newborns worldwide each year. Psychologically, aesthetically, and economically, CLP have detrimental effects on patients. Global Smile Foundation (GSF) is an NGO committed to ensuring comprehensive cleft care for individuals in need by providing access to education and clinical care in Low- and Middle-Income Countries (LMICs) through surgical outreach programs.

2. Aim

To analyze clinical and economic impacts of GSF's outreach programs worldwide.

3. Method

We reviewed all primary cleft lip (PCL) and primary cleft palate (PCP) repair cases performed during our outreach trips in the last decade. A total of 1509 patients were reviewed, 951 with PCL repair, and 558 with PCP repair. Mean age for included cases was 3.3±4.3 year (3.0 ± 5.3 for PCL, 3.7±2.5 for PCP). Averted Disability-Adjusted Life Years (DALYs) were calculated. The residual disability weight was estimated at 0.016 postoperatively, in comparison to 0.098 preoperatively for PCL patients, and 0.015 postoperatively, in comparison to 0.231 preoperatively for PCP patients. Life expectancy was derived from the World Health Organization databases. The averted DALYs were then multiplied by the gross national income per capita to calculate their economic value. These calculations were based on data from the World Bank, utilizing both Atlas and Purchasing Power Parity methods, depending on country and year.

4. Results

In total, GSF has averted 12,922 DALYs for PCL and PCP patients. Approximately a US$64,651,261 to US$124,001,435 financial gain was estimated from these interventions, with an average financial benefit of US$42,844 to US$82,175 per patient.

5. Conclusion

Through our surgical outreach programs, GSF has made a significant impact on the lives of patients in LMICs. We hope that future efforts will increase access to resources, enabling GSF to provide comprehensive cleft care to a larger number of patients.

Outreach, Economic-impact, DALY, Cleft, NGO

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The Macroeconomic Impact of Cleft Surgical Complications: A Call to Develop Strategies to Reduce Cleft Surgery Complications

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Introduction

Surgery for cleft lip and palate is cost-effective from a quality-of-life standpoint. However, cleft surgery is associated with complications such as lip scarring post repair, midface hypoplasia (MFH) and velopharyngeal insufficiency (VPI) in up to 40% of cases, resulting in substantial morbidity and mortality. Revision surgeries for these complications can be costly.

Aims:

To estimate the economic losses attributed to midface hypoplasia (MFH) and velopharyngeal insufficiency (VPI) and the economic loss associated with disability owing to these complications.

Methods:

The value of lost welfare (VLW) approach (Alkire et al., 2015), which accounts for morbidity, was used to ascribe an economic value to Disability Adjusted Life-Years (DALYs) for lip scars, MFH and VPI. Zero-mortality was assumed. DALYs were calculated using disability weights from Global Burden of Disease (GBD) 2010 “disfigurement level 1”, “disfigurement level 2”, and “speech problems” as proxies for lip scar, MFH, and VPI, respectively. Value of statistical life-years were calculated for each country.

Results:

175 countries in the GBD were assessed with an orofacial cleft prevalence estimated at 4.2 million in 2010. Economic losses for lip scarring were estimated to be $4.8 billion USD; for MFH were $4.6 billion USD, and for VPI were $1.6 billion USD. Collectively, lip scarring, MFH, and VPI were estimated to account for 0.94% of

global GDP. There was no statistically significant difference between high-income and low- and middle-income countries (p=0.377).

Conclusion:

The economic impact of cleft surgical complications can contribute to nearly $10 billion USD and nearly one percent of 2010 global GDP. This is substantial considering that, mortality was assumed to be zero and collectively, five of the most common surgical conditions can result in 17% of global GDP due to disability. Strategies to mitigate and reduce complications and standardize protocols should be prioritized on the global cleft care agenda.

cleft surgery complications, economic impact

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Coping Strategies Used by Parents of Children with Cleft Lip and Palate in El Salvador

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Aims: The aim of this study was to describe coping strategies used by parents of children with cleft lip and palate during the early development of their children in El Salvador.
Design: Qualitative interviews were completed with 16 parents of children born with cleft lip and palate who were 6 months to 6 years old. Parents were questioned about their emotions and coping during eight time periods: prenatal, birth, social interaction before the first surgery, the beginning of surgeries, social interaction after the first surgery, early childhood education (ECE), speech–language therapy, and formal education. Thematic analysis (TA) was used to identify coping strategies as conceptualized by Lazarus and Folkman (1984).
Results: Four major themes emerged: (a) experienced emotions related to diagnosis, (b) interpretations related to the birth of a child with a cleft, (c) seeking and experiencing cleft treatment, and (d) social interaction of the children. During prenatal and birth stages, parents used emotion-focused strategies. A few hours to a week after birth, they used problem-focused strategies, which led them in search of treatment. Some parents used avoidance strategies during periods of social interaction before surgery, ECE, and formal education. Socioeconomic challenges impacted access to speech-language therapy. Sociocultural factors, such as discrimination, religion, and folk beliefs, appeared to influence some of the coping strategies used by parents.
Conclusions: Problem-focused strategies appear to be helpful in seeking surgical treatments. The emotion-focused strategy of avoidance seemed to have adverse effects in minimizing opportunities for social interaction prior to surgery and early education.
coping, strategies, infancy, cleft, lip.

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Translation of the CLEFT- Q for use in french-speaking countries

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1. Introduction
In France, the incidence of unilateral cleft lip and palate (CL/P) is about 1 in 2500 births. The stakes in this pathology are multiple, both aesthetic and functional, with the need to restore effective phonation, breathing and feeding. Before the creation of CLEFT-Q, a PRO instrument developed to measure outcomes of treatment in patients 8 to 29 years of age with CL/P, only few questionnaires or scales assessing simultaneously quality of life related to appearance or to functional and social aspects were internationally recognized.

2. Aims
The first aim of this study was to translate the CLEFT-Q into French so that it can be used in France and other french-speaking countries. The second aim was to evaluate the aesthetic, functional and psychosocial impact of four secondary surgical treatments (secondary lip revision, septorhinoplasty, late bone graft, orthognathic surgery) on an adult population with cleft lip and palate sequelae.

3. Methods
The CLEFT-Q was translated from English to French, then validated by the questionnaire design team through 4 steps. To pursue the validation, a retrospective monocentric study was conducted comparing pre- and post-operative satisfaction with aesthetic, functional and psychosocial aspects in a cohort of 42 patients with CL/P who had undergone one to four secondary surgical treatments.

4. Results
Patients reported an improvement in the appearance of their nose, self-image, self-confidence and sense of integration with greater satisfaction after undergoing a secondary lip revision or a septorhinoplasty, with particular attention paid to the nose. They also noticed that alveolar bone grafting improved their smile and their speech. Orthognatic surgery improved their facial appearance and selft-image.

5. Conclusion
This study validated the French translation of the CLEFT-Q questionnaire, allowing an extension of its use in clinical practice among french-speaking patients as well as an international comparison of the results with international studies.

CLEFT-Q
French translation
Secondary treatment

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Most efficient and meaningful patient reported appearance assessment in different cleft types and age groups with Cleft-Q

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INTRODUCTION
The CLEFT-Q, a questionnaire developed and validated specifically for cleft patients, contains 7 'appearance' scales. The ICHOM (International Consortium of Health Outcomes Measurement) has incorporated only some Cleft-Q 'appearance' scales in the Standard Set to minimize burden. This study evaluates which 'appearance' scales provide the most meaningful information in the different cleft types at specific ages, for the most efficient cleft appearance outcome assessment.

AIMS
The aim of the current study was to examine how patient-reported appearance of patients with CL/P can be assessed most meaningfully and efficiently

METHODS
Within this international multicentre study, outcomes of the 7 appearance scales were collected, either as part of the ICHOM Standard Set, or as part of the field test study performed to validate the CLEFT-Q. Analyses were done in separate age-groups and cleft types, and involved univariate regression analyses, trend analyses, T-tests, correlations, and floor and ceiling effects.

RESULTS
A total of 3116 patients were included. Scores for most appearance scales showed a downward trend by age-groups, with the exception of the Teeth and Jaw scales. In all cleft types, several scales correlated strongly with each other. No floor effects were observed, but ceiling effects were found in several scales in different age-groups, most often in the CLEFT-Q Jaw.

CONCLUSION
A proposition for the most meaningful and efficient appearance outcome assessment in cleft patients is made. It was composed so that recommendations are of value for different cleft protocols and initiatives. Suggestions for the use of scales in the ICHOM Standard Set at different ages are given, also from a clinical perspective. Use of the CLEFT-Q Scar, Lips, and Nose, will provide additional relevant information.
PROMs; children; facial aesthetics

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Educational attainment among children with non-syndromic clefts: a longitudinal study

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Introduction
A previous study using national data found that children aged 5 years, born with non-syndromic cleft lip and/or cleft palate in England, had lower academic achievement than the general population. It is not known whether the population attainment gap changes with age, or how individual educational outcomes change over the course of primary education.

Aims
1) To explore differences in educational attainment between children born with non-syndromic cleft and the general population at ages 5, 7 and 11 years, 2) To describe longitudinal changes in educational attainment among children with cleft during primary school.

Methods
Data: Cleft Registry and Audit NEtwork linked to national educational outcomes data at ages 5, 7 and 11 years. Study population: 832 children born with non-syndromic cleft, aged 5 (2006-2008). Analysis: Differences in teacher-assessed attainment between children with cleft and the general population at each age were summarised using Z-scores, and compared to describe changes in the size of the attainment gap with age. Longitudinal changes in attainment were summarised as the percentage of children with low attainment at age 5 (in the bottom decile of the general population for any subject) who had low attainment at age 11.

Results
Children with a cleft had lower attainment than the general population in all subject areas [Z-score range: -0.29 (95%CI -0.36 to -0.22) to -0.22 (-0.29 to -0.14)]. This difference remained consistent in size at all three ages. Of 216 children identified as having low attainment in any subject at age 5, 54.1% had low attainment in at least one subject at age 11.

Conclusions
The population educational attainment gap observed for children with non-syndromic clefts at age 5 is still evident at ages 7 and 11. For individuals with low attainment at age 5, progress is possible with 46% achieving normal attainment in all subject areas at age 11.
Educational attainment, non-syndromic cleft

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“Like Trying to Drink Water from a Fire Hose”: Caregivers’ Experiences of Early Intervention and Healthcare for Craniofacial Microsomia in the Pre-School Years

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Introduction:
Craniofacial microsomia (CFM) refers to a spectrum of features, including microtia and anomalies in the growth of the jaw(s), facial nerves, facial soft tissue, and orbits. CFM can have multisystem involvement with functional impairments. Studies report that navigating multidisciplinary care can be demanding for caregivers, yet detailed accounts of early healthcare experiences and support needs are limited.

Aim:
This study explored early intervention and healthcare experiences of caregivers of children with CFM following diagnosis until starting school as part of the larger Craniofacial microsomia: Accelerating Research and Education (CARE) program.

Methods:
Interviews (mean time = 81 minutes; range 30-182 minutes) followed a narrative format with ‘chapters’ created by participants based on experiences they identified as meaningful. Participants included 22 mothers and 1 father of 23 children with CFM ages 4-17 (mean age = 10.1 years) living in the US. Primary coding of care in early childhood was completed by two authors using inductive thematic analysis in an iterative process with final themes developed through consensus among four authors.

Results:
Three general themes with subthemes were identified: Accessing Services (encountering barriers, caregiver stress, initiating and coordinating care across specialties, and development of advocacy skills); Early Intervention (multiple developmental services, child and family learning, and support for caregivers); and Early Healthcare (managing CFM-related needs with associated providers, emotional and cognitive demands of medical care, and appreciation of knowledgeable and supportive providers).

Conclusion:
Initiating children’s CFM care pathway can be challenging for caregivers, involving steep learning curves in familiarity with CFM, care coordination, and advocacy. Early intervention services were collectively experienced as beneficial and supportive. Early healthcare was generally described as overwhelming, with management of multiple CFM health needs and specialists. Caregivers identified patterns that illustrated

contrasts between negative and positive provider interactions. Themes suggest areas for improvement in CFM care on both structural and provider levels.
craniofacial microsomia, qualitative, early healthcare

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An International Research Programme Focused on Craniofacial Microsomia: CARE

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Introduction: Little is known about the holistic outcomes and psychological needs of individuals with craniofacial microsomia (CFM) and their families. The National Institutes of Health funded the Craniofacial microsomia: Accelerating Research and Education (CARE) research programme to address these gaps.
Aim: This presentation describes the development of the CARE programme and opportunities for international participation.
Methods: The CARE study team and programme includes international partners from a range of craniofacial disciplines, researchers, family representatives and advocates. The CARE governance structure includes an interdisciplinary Advisory Council and discipline-specific subcommittees. CARE study aims focus on validating a conceptual framework based on multiple perspectives beginning with 160 narrative interviews with individuals and caregivers across ages and with a variety of medical needs associated with CFM. We will then conduct an international survey of 800 individuals and caregivers using standardised measures to identify predictors of psychological distress. Additionally, 60 semi-structured interviews with healthcare providers and advocates will examine how current healthcare practices address identified needs. Finally, CARE is establishing an international registry to address patient-oriented research questions.
Results: The CARE Advisory Council formulated a wide-reaching study mission that guides the programme. Over sixty of the narrative interviews (mean = 81 minutes; range 30-182 minutes) have been completed and initial analysis is underway. A CARE website serves as a recruitment tool, CFM information resource, and platform to share programme activity and study findings with the CFM community. The registry is in the development and testing phase, with a separate CARE registry website. The international survey will launch in 2022.
Conclusion: The CARE programme is assessing the psychological health and healthcare experiences of individuals with CFM and their caregivers. We encourage additional international collaboration and participation. The resulting data and conceptual model will guide effective research, advocacy, screening, and interventions to optimise outcomes in this population.
craniofacial microsomia, research program, psychology

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The effects of being born with a cleft lip and/or palate on mealtime behaviours.

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Introduction
Feeding problems in childhood result from a combination of biological, social and behavioural factors. Babies born with a cleft palate often experience early feeding difficulties and palate surgery in the first years of life. Additionally, some have argued that infants may develop a conditioned aversion to swallowing initially after palate repair, which may disrupt feeding initially after surgery. Many medical conditions are associated with an increased prevalence of problematic childhood feeding behaviours, and it is important to identify whether the above factors are associated with increased problematic mealtime behaviours later on in childhood, as well as greater unhelpful compensatory parental mealtime feeding behaviours.

Aim
We carried out an investigation whether being born with a cleft palate (or cleft lip and palate) leads to a greater occurrence of negative mealtime behaviours and unhelpful parental feeding behaviours, compared to children born with a cleft lip only.

Method
Parents of children born with a cleft lip and/or palate aged 18-24 months, 5 years and 10 years were invited to complete the Behavioural Paediatric Feeding Assessment Scale and a 20-item demographic questionnaire, capturing information on the child's early life, family and medical interventions.

Results
Data collection is due to be completed in spring 2022. Intended analysis includes multiple regression to identify whether child age, cleft type, parenting feeding behaviour, or any other relevant predictive demographic variables significantly predict child feeding behaviour. A multiple regression approach will also be used to identify the variables that predict parent feeding behaviour. Cleft sample data will also be compared to normative sample data.

Discussion
Results will be discussed in relation to existing theory regarding childhood feeding and clinical implications will be discussed regarding how multidisciplinary cleft teams can best support parents in relation to their child's feeding behaviour.
Cleft, psychology, feeding

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Early Developmental Screening and Psychosocial Factors in the Electronic Medical Record for Facial Anomalies (EMRFA)

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In our Electronic Medical Record (EMRFA), we have integrated the psychosocial self-report measures such as CHASQ, CLEFT-Q and the Early Developmental Screening assessments. These psychosocial aspects contribute to the overall treatment and the final outcomes.
Aims
Our aim is to present criteria that enable us to classify a patient in a 'risk group' and/or 'out of sight group' from a psychosocial and developmental point of view.
Methods
We will demonstrate the upgraded psychological section in the Electronic Medical Record with all of its newest features and their execution.
Results
Incorporating the psychosocial and early developmental screening in the EMRFA has enabled the team to engage more successfully with the families. It has also resulted in a more formative follow-up process about psychosocial developmental aspects.
Conclusion
The incorporation of the psychosocial and developmental aspects in the EMRFA has ensured that the team addresses this competently, which contributes to the overall comprehensive provision of care. In addition, it has resulted in better engagement and communication with the families, which the team values highly.

Cleft, Care, Psychosocial, Developmental, Measures

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Exploring the need for psychological support for children born with a cleft lip/palate prior to transitioning to secondary school

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Introduction: The need to support children born with CL/P during transition to secondary school is recognized as being important by cleft psychology services in the UK. Due to the pandemic, sources of support have been deleteriously affected.
Aims: To identify the concerns of the parents of children born with CL/P who are moving to secondary school, provide support as required and explore interest in future attendance at peer support events.
Method: Parents were contacted by telephone and using a semi-structured interview schedule, the well-being of the children and their support needs were discussed including the parents' and children's feelings about transition, confidence , support needs from other specialties, interest in being sent the 'Moving Up' transition pack and in attending future peer support events
Results: Data from 50 parents was analyzed. The majority of families requested the 'Moving Up' pack and would like to attend peer support events. A total of 40% required follow-up by psychology or other members of the cleft team. Several themes in relation to concerns emerged from the analysis of the quantitative and qualitative data namely: Establishing friendships, school factors and whether siblings or friends were attending the same secondary school, attitude towards difference, previous experience and anticipation of the reactions of others, speech differences and cleft-related appearance-anxiety.
Conclusions: The project provided families with an opportunity to discuss concerns about transition to secondary school. Although the majority of families did not require regular appointments, most requested preventative input via information in the 'Moving Up' pack and attendance at future peer support events, with nearly half the sample requesting further support from members of the cleft team. This study illustrates the need to support cleft patients at this time, particularly since the pandemic has reduced routine contact between families and the cleft team.

psychology , transition , support

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A national UK study looking at psychological outcome and process audit measure at ages 5y, 10y and 15y

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TU3.8 PSYCHOLOGY, Harris, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

INTRODUCTION

A core role for psychologists in UK cleft centres is to undertake regular psychosocial screens with children and young people (CYP) and their families, and to offer psychological assessment and intervention as required. Accordingly, psychologists routinely collect psychological outcome and process measures at age 5y, 10y and 15y using the Strengths and Difficulties Questionnaire (SDQ) and the Tiers of Involvement Measure (TIM).

AIM
To gain a national understanding of:
- Type of psychological input provided to CYP and families at different ages
- UK cleft population compared to population norms on a standardised emotional and behavioural questionnaire (SDQ) at different ages
- Differences between parent and CYP SDQ scores
- Longitudinal SDQ scores

METHOD
All UK cleft teams were invited to participate. Scores on the SDQ and TIM (developed by the UK Cleft Psychology CEN to measure the level of psychological input received in, or as a result of, the multi-disciplinary cleft clinic) were collected and analysed. SDQ scores included parent report at age 5, 10 and 15y and CYP report at age 10 and 15y. TIM scores were collected at 5, 10 and 15y.

RESULTS
Data was analysed from 7 regional cleft centres (3907 patients and families). 50 to 60% of CYP and families require or receive psychological input in, or as a result of, the clinic across the ages. 29-39% in response to a concern. Preventative psychological input was provided less frequently at 15y (15% compared to 25/28%). SDQ scores were higher in the cleft population than the population norms at all ages. There were significant differences between parent and CYP SDQ scores at age 10 and 15y. SDQ scores correlate across time but with notable outliers.

CONCUSIONS
Results highlight the importance of regular psychosocial screening, psychological interventions as required and the importance of considering parent and CYP views separately in adolescence.

psychological, intervention, national, audit, outcomes

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Social Experiences of Turkish Parents Raising a Child With Apert Syndrome

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TU3.8 PSYCHOLOGY, Harris, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Objective: Apert syndrome is a rare and understudied craniofacial condition with regard to its psychosocial impact on children and their parents. Due to the lack of studies focusing solely on the social experiences of children and families with Apert syndrome, it is difficult to develop interventions and strategies to support well-being and positive adjustment for this particular population. This study addressed this gap by assessing the unique social experiences of parents who are raising their children with Apert syndrome including difficulties they face and strategies they use to cope with challenges.
Design: Descriptive qualitative study using thematic analysis.
Participants: Participants included 21 parents of 12 children (aged 1-12 years) with Apert syndrome (9 couples, 2 fathers, and 1
mother) who were recruited from a pediatric neurosurgery unit in Turkey.
Results: The qualitative analysis yielded four main themes describing the experiences of parents including (1) social challenges; (2) coping with negative reactions; (3) promoting socialization and independence; and (4) sources of strength.
Conclusions: Parents reported several challenges, including social stigmatization, and utilized a range of strategies to support both their own and their child's positive adaptation and resiliency, including the use of religion and reliance on their spouses for support. Results offer clinically relevant insights about the strengths and challenges of families coping with Apert syndrome.

apert syndrome, craniofacial, families

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Validation of Japanese version of CLEFT-Q: cleft-specific patient-reported outcome questionnaire.

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[1]National Center for Child Health and Development, Setagaya, Japan, [2]Kanagawa Children's Medical Center, Yokohama, Japan, [3]Tokyo Metropolitan Children's Medical Center, Fuchu, Japan, [4]Nagano Children's Hospital, Azumino, Japan, [5]Shinshu University School of Medicine, Matsumoto, Tokyo, [6]National Institute of Population and Social Security Research, Chiyoda, Japan

TU3.8 PSYCHOLOGY, Harris, EICC - Onsite Only, July 12, 2022, 11:00 - 13:00

Introduction: Patients with cleft lip and palate experience various symptoms such as aesthetic, speech, occlusal and psychosocial problems. Most of conventional outcomes are based on clinicians' point of view. CLEFT-Q is a cleft-specific patient-reported outcome measures which cover entire symptoms of cleft patients. It is a questionnaire answered by patients and generate scores to evaluate symptoms, quality of life and satisfaction seen from patients themselves. It is translated and validated in multiple languages and becoming a part of standard set of outcomes in cleft care. In Japan, there are few tools that enable evaluation of patients-reported outcomes of cleft patients.
Aims: To evaluate the validity and responsiveness of Japanese version of CLEFT-Q.
Methods: In validation study, responses from 100 patients are collected to evaluate content validity, criterion-based validity and internal consistency of Japanese version of CLEFT-Q. Utility score, which is a part of patient-reported outcomes and used in health economics evaluation, are simultaneously collected with CHU-9D questionnaire. In coming years, responsiveness validation is planned in a prospective study involving 60 patients.
Results: Validation study is currently underway, and findings to date are presented in the present paper.
Conclusions: This study is unique in three-fold. Firstly, it is a first study to validate cleft-specific patient-outcome measures in Japan. Secondly, utility scores are collected from cleft patients with validated questionnaire, which enable understandings of influence of cleft symptoms on general health and impact of cleft care on health-economics basis. Finally, it evaluates criterion-based validity and responsiveness of CLEFT-Q questionnaire. Incorporation of patient-reported outcomes will enable understandings of patients' point of view and integration of patients' voice in decision making, thus help implementation of patient-centered care.

Validation of Japanese version of CLEFT-Q

Outcomes	Patient-Reported Outcomes		Clinician-Reported Outcomes
	Questionnaires	Patients' view	Conventional Outcomes
Aesthetics	CLEFT-Q Aesthetic categories	desire for additional treatment	Need for revision surgery judged by surgeon
Speech	CLEFT-Q Speech categories	desire for additional treatment	Velopharyngeal function evaluated by speech therapist
Occlusion	CLEFT-Q Occlusion & jaw categories	desire for additional treatment	Anterior cross-bite
Psychosocial	CLEFT-Q Psychosocial categories	desire for additional treatment	NA
General	CHU-9D (utility score)		NA

Content validity: CLEFT-Q vs Patients' desire for additional treatment

Criterion-based validity: CLEFT-Q vs Conventional outcomes / CHU-9D

Internal Consistency: Inter-categorical evaluation within CLEFT-Q

patient-reported outcomes, qulatiy of life

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Association of perioperative antibiotics with the prevention of postoperative fistula following cleft palate repair - a national cohort study

Mr Alex Davies[1,3], Mr Barry Main[2], Miss Amy Davies[3], Dr Yvonne Wren[3], Mr Scott Deacon[1], Mr Alistair Cobb[1], Mr Neil McLean[4], Prof David David[4], Mr Shaheel Chummun[1]

[1]South West Cleft Service, Bristol, United Kingdom, [2]Oral and Maxillofacial Surgery, Bristol Dental Hospital, Bristol, United Kingdom, [3]The Cleft Collective, Bristol Dental School, University of Bristol, Bristol, United Kingdom, [4]Craniofacial Australia, Adelaide, Australia

TU4.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction: There is significant debate amongst cleft surgeons regarding antibiotic use as a means of preventing postoperative fistulae following palatoplasty. Prescribing should be evidence based as antibiotic stewardship is integral to reducing antibiotic resistance.
Aim: To determine whether differing perioperative antibiotic regimens affect the prevalence of postoperative fistulae in patients with cleft palate.
Methods: Data from a national multi-centre cohort study, the Cleft Collective cohort studies, was used. A sample of 752 participants who had undergone primary palatoplasty between 2012 and 2021 was reviewed. Antibiotic exposure was determined from the regimen prescribed at the time of palatoplasty: on induction of anaesthesia, up to 24 hours postoperatively, and up to 5-7 days postoperatively. The primary outcome was the presence of palatal fistula up to 24 months following palate repair.
Results: Fistula data was available for 159 participants when exploring antibiotic regimen and 153 when exploring antibiotic agent. When exploring the data as an ordinal variable (given on induction only / as an inpatient / up to 5-7 days postoperatively) there was no evidence to suggest a difference in fistula rate between the groups ($\chi2=4.34$, $P=0.114$). The most common antibiotic used was co-amoxiclav. There was no evidence to suggest a difference in fistula rate between those who received co-amoxiclav and those who received an alternative antibiotic ($\chi2=0.68$, $P=0.410$). There was strong evidence to suggest that the prevalence of postoperative fistulae increased with the extent of the cleft ($\chi2=22.41$, $P<0.001$); further subgroup analysis of cleft type demonstrated no evidence of an association in any group (CPO $\chi2=2.98$, $P=0.225$; UCLP $\chi2=3.72$, $P=0.156$; BCLP $\chi2=2.48$ $P=0.290$).
Conclusions: Our study suggests that choice of antibiotic and dosing regimen does not influence the formation of postoperative fistulae. These results should be supported by an interventional trial.
Palatoplasty, Antibiotic, Fistula, Cleft Collective

1098

Restricting the Development of Oronasal Fistulas: The Effect of Post-Operative Restraints on Outcomes Following Palatoplasty

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TU4.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction:
Post-operative restrictions following palatoplasty such as arm restraints (AR) and suction-less feeding are methods often used to decrease complications such as oronasal fistulas. We hypothesize that the use of arm restraints and suction-less feeding methods do not impact the rate of oronasal fistula development following palatoplasty.

Aim:
To examine the relationship of restrictions and oral fistula development following palatoplasty.

Methods:
Retrospective chart review identified demographic, socioeconomic, and clinical data for patients undergoing primary palatoplasty at two medical centers from 2009 to 2020. Post-operatively, highly restricted (HR) patients under went suction-less feeding methods and arm restraints; patients in the limited restrictions (LR) group underwent bottle feeds and did not have arm restraints. Primary outcomes include the rate of reoperations, post-operative length of stay (LOS), and the rate of oronasal fistula development. Two patients from the HR cohort were excluded from the LOS calculation due to extended intensive care unit stays resulting in LOSs greater than 30 days.

Results:
107 patients met inclusion criteria during the study period. Patient characteristics are listed in table 1. Cleft width and Veau type were similar between groups ($p > 0.05$). 9.6% (5/52) and 5.5% (3/55) ($p > 0.05$) of patients underwent reoperations between the LR and HR cohorts, respectively. There was no difference in LOS between groups (LR: 1.94 vs. HR: 2.04, days) ($p > 0.05$). 9.6% (5/52) of LR and 9.1% (5/55) of HR patients developed a post-operative oronasal fistula ($p > 0.05$).

Conclusions:
Our preliminary data suggests that restrictions do not impact rates of oronasal fistula development in patients undergoing primary palatoplasty. Our findings also indicate that restrictions do not impact the rate of reoperation or LOS.

Table 1: Patient Characteristics			
Surgical Center	Patients	**Sex**	N (%)
CUMC	50 (47%)	Female	51 (48%)
WCM	57 (53%)	Male	56 (52%)
Total	107		
Cleft Lip/Palate		**Race**	N (%)
Cleft Palate	69 (64%)	White	52 (49%)
Cleft L/P	38 (36%)	AA	11 (8%)
		AAPI	13 (12%)
		Other	13 (13%)
		Declined	18 (17%)
Ethnicity			
Hispanic	27 (25%)	**Insurance status**	
Non-Hispanic	59 (55%)	Private	57 (47%)
Declined	21 (20%)	Public	50 (53%)
Restrictions		**Syndromic vs. Non-Syndromic**	
Highly Restricted (Arm Restraints/Suction-less Feeds)	55 (51%)	Syndromic	17 (16%)
Limited Restrictions (No Arm Restraints/Bottle Feeds)	52 (49%)	Non-Syndromic	90 (84%)
CUIMC, Columbia University Irving Medical Center, WCM, Weill Cornell Medicine AA, African American, AAPI, Asian American and Pacific Islander			

Cleft-Palate, Oronasal-Fistula, Arm-Restraints, Restrictions

398

Better sleep for the surgeon: the palatal dressing plate – a simple tool to reduce the dead space and support healing after cleft palate repair

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TU4.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction

Unipedicled flaps have been advocated for cleft palate repair by Victor Veau. A problem often remains to refix the oral mucosa onto the hard palate bone. Dead space formation and a fragile anterior postoperative situation may cause wound breakdown and fistula formation.
The team at the Thallwitz Cleft Centre in Eastern Germany founded by Prof Wolfgang Rosenthal in 1943 developed a technique for intraoperative manufacturing of an individual dressing plate following palate repair.

Aims
This relatively simple technique to manufacture an individual dressing plate at the end of cleft palate repair facilitates the splinting of the oral mucosal flaps onto the bone. Dead space is reduced and the lateral releasing incisions are covered, providing protection from contact (fingers, food, dummy). The removal of plate requires a short general anesthesia or sedation.

Methods
The dressing plate was used in all cases of primary and revision palatal surgery. A stitched jelonet wound gauze is covered by Paladur. All primary cases involving cleft palate repair between November 2001 to December 2021 carried out by a single surgeon (H.K.) were included. Fistula occurrence and emergency return to theatre were recorded.

Results
A total of 758 children undergoing primary palate repair were included. Of these, 257 children presented with isolated cleft palate, 280 with complete unilateral cleft lip and palate, 141with bilateral cleft lip and palate and 80 with submucous cleft palate. A fistula rate from 0.4% was achieved. No emergency return to theatre due to bleeding was required in more than twenty years.

Conclusions
The dressing plate is a simple adjunct to support healing and reducing dead space following cleft palate repair. No emergency return to theatre was required over a 20-year period. However, removal of the dressing plate requires a short sedation or general anesthesia.

dressing plate
unipedicled flaps
fistula-free

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THE LIMA SURGICAL PROTOCOL FOR CLEFT PALATE REPAIR: A COMPARATIVE STUDY TO EVALUATE SURGICAL OUTCOMES DURING MIXED DENTITION PERIOD

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TU4.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Background:
A cleft team experience addressing non-syndromic cleft palate and cleft lip and palate is presented. The purpose of the present study is to compare surgical outcomes using two different protocols for cleft palate repair provided by a cleft team in Lima, Perú.
Methods:
This is a comparative study between two groups of patients with non-syndromic cleft palate who were operated using different surgical protocols from 1999 to 2014. One
hundred and twenty-four children with non-syndromic isolated cleft palate and cleft lip and palate treated from 2007 to 2014 using a surgical protocol developed by our cleft team in Lima, Perú were compared with one hundred and forty-five children with cleft palate and cleft lip and palate treated by the same team using different protocol from 1999 to 2007. Data collection was accomplished by evaluation of symptomatic oronasal fistulas, presence of velopharyngeal insufficiency and postoperative complications during mixed dentition period.
Results:
Statistical significant differences were observed between the two groups regarding the development of flap necrosis in favor of the Lima protocol. No significant difference in palatal fistula and velopharyngeal insufficiency rate between the two protocols was
found.
Conclusions:
The Lima Surgical Protocol for cleft palate repair is an alternative strategy which uses the strengths of different surgical techniques based on the severity of the cleft. We observed better surgical outcomes using the Lima protocol with regards to
postoperative complications in patients with non-syndromic cleft palate.

Table 3. Comparisons of two protocols of primary cleft palate repair according to the studied surgical outcomes.

OUTCOME	Protocol A (n:145)	Protocol B (n:184)	p
Fistula	13 (9 %)	16 (8.7 %)	0,932*
Velopharyngeal Insufficiency	16 (11 %)	13 (7.1 %)	0,217*
Flap necrosis	5 (3.44 %)	0	0,045**
Bleeding	8 (5.5 %)	4 (2.2 %)	0,141**

* Z test of proportions.
** Fisher exact test.

Cleft palate, primary surgical protocol

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THE LIMA SURGICAL PROTOCOL FOR CLEFT PALATE REPAIR: A COMPARATIVE STUDY TO EVALUATE SURGICAL OUTCOMES

MD PhD FACS Percy Rossell-Perry[1,2], Speech therapist Margot Luque-Tipula[1]
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TU4.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Background:
A cleft team experience addressing non-syndromic cleft palate and cleft lip and palate is presented.

Aim:
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Methods:
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One hundred and twenty-four children with non-syndromic isolated cleft palate and cleft lip and palate treated from 2007 to 2014 using a surgical protocol developed by our cleft team in Lima, Perú were compared with one hundred and forty-five children with cleft palate and cleft lip and palate treated by the same team using different protocol from 1999 to 2007.
Data collection was accomplished by evaluation of symptomatic oronasal fistulas, presence of velopharyngeal insufficiency and postoperative complications.

Results:
Statistical significant differences were observed between the two groups regarding the development of flap necrosis in favor of the Lima protocol.
No significant difference in palatal fistula and velopharyngeal insufficiency rate between the two protocols was found.

Conclusions:
The Lima Surgical Protocol for cleft palate repair is an alternative strategy which uses the strengths of different surgical techniques based on the severity of the cleft.
We observed better surgical outcomes using the Lima protocol with regards to postoperative complications in patients with non-syndromic cleft palate.

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* Z test of proportions.
** Fisher exact test.

Cleft palate. Palatal fistulas.

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The Human Touch: How Error Prone are Cleft Lip and Palate Documentation Practices?

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TU4.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction
Orofacial clefts such as cleft lip and palate (CLP) are among the most common congenital malformations in the world, often requiring multidisciplinary care and multiple surgical repairs. Comprehensive cleft care for CLP patients depends on accurate and consistent documentation in order to maintain the continuity of care. On a grander scale, accurate documentation practices help enable robust epidemiological and clinical research.

Aims
To identify error prone areas within CLP documentation using a large cleft charity's surgery database.

Methods
Smile Train Express (STX), an online comprehensive electronic health record (EHR) system developed by Smile Train, was interrogated for CLP diagnoses, interventions, and surgery types. Cleft diagnoses were recorded as cleft lip, cleft alveolus, cleft hard palate, and cleft soft palate for left and right side and graded as complete, incomplete, or submucous. Documented diagnoses were converted into LAHSHAL notation using automated Microsoft Excel macros. Diagnostic data were collected, analysed, and categorised as “none”, “minor”, or “major” data entry error.

Results
Initial LAHSHAL conversion of the >1.5 million entries produced over 500 recurring combinations in diagnostic code. “Minor” error included examples such as submucous cleft hard palate only on one side and other documentation errors deemed as having obvious correct diagnosis intent. “Major” errors were generally the anatomically impossible diagnoses. In a large sample from the most active CLP repair countries, 89.5% of the entries contained no apparent error, 10.3% had minor error, and 0.2% had major error.

Conclusions
Our analysis revealed that documentation errors happened in over 10.5% of interventions – many being arguably preventable. LAHSHAL notation is a robust and highly detailed approach to document CLP containing unique logic checks for error prevention. We call on the importance of consistency and standardisation within documentation, training and agreement in the use of LAHSHAL notation, and changes to EHR systems to minimize human error.
electronic health record, documentation, LAHSHAL

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Parent/caregiver perspectives and experiences of speech and language therapy (SLT) provision for children born with cleft palate in the United Kingdom during the COVID-19 pandemic.

Dr Lucy Southby[1,2], Dr Sam Harding[2], Ms Amy Davies[3], Dr Matthew Fell[2], Ms Hannah Lane[4], Ms Hannah Chandler[1], Dr Yvonne Wren[2,3], . The Cleft Collective team[3]

[1]Cleft.NET.East, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom, [2]Bristol Speech and Language Therapy Research Unit, North Bristol NHS Trust, Bristol, United Kingdom, [3]The Cleft Collective, Bristol Dental School, University of Bristol, Bristol, United Kingdom, [4]Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust, Doncaster, United Kingdom

TU4.3 SPEECH, Fintry, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction

Speech and Language Therapy (SLT) provision for children with cleft palate has been impacted by the COVID-19 pandemic. Parents/caregivers play an integral role in SLT management, but we do not know their perspectives and experiences of changes to services.

Aims

To explore parent/caregiver perspectives and experiences of SLT services received for children with a cleft palate during the early months of the COVID-19 pandemic.

Method

A questionnaire was distributed to 4340 participants in The Cleft Collective, a national birth cohort study of families affected by cleft. Parents/caregivers of children with cleft palate, receiving SLT intervention before the first UK national lockdown in March 2020 were asked if their child continued to receive intervention and whether Telemedicine was used. Descriptive statistics, non-parametric tests and qualitative content analysis were used to describe geographical variation of provision and parent/caregiver views of Telemedicine. Additional analyses explored potential associations between age, cleft subtype and socio-economic status (SES) with delayed SLT provision and perceived effectiveness of Telemedicine.

Results

Responses were received from 1527 families. Of these, 404 responded to say whether their child continued to receive SLT during the lockdown. No association was observed between delayed SLT and SES but older children were more likely to have experienced delays (p=0.004). Geographical variation in provision was also apparent. Of the respondents whose children received SLT via Telemedicine, 196/212 (92.4%) reported this method was at least 'somewhat' effective with no association found between any covariate. A code of 'better than nothing' was identified across free-text responses regarding Telemedicine but respondents reported concerns about technological challenges including sound quality and internet connection, and their child's engagement in sessions.

Conclusions

It is vital we identify children most impacted by delayed SLT intervention to mitigate any long-term negative impacts. Further work is needed to identify who will benefit from SLT delivered via Telemedicine.

parent/caregiver perspectives, SLT provision, COVID-19

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A Needs Assessment for a Training Program for Parents and/or Caregivers of Children with Repaired Cleft Palate with or without Cleft Lip in the Philippines

Ms Veronica S. Yu[1]
[1]*University Of Santo Tomas, Metro Manila, Philippines*

TU4.3 SPEECH, Fintry, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Purpose
The purpose of this study is to assess the needs of parents or caregivers of children with Repaired Cleft Palate with or without Cleft Lip (RCP±L) in the Philippines in order to improve service delivery and to serve as a basis of future researchers for the creation of a Parent Training Program (PTP) designed to improve the speech of the target population's children.

Method
A qualitative phenomenological approach will be utilized for this study to gather experiences, perceptions, and needs of the participants. Trained Speech-Language Pathology (SLP) interns will moderate the Focus Group Discussions (FGD) to be conducted using ZoomTM. The FGDs will be facilitated until the point of data saturation is reached. Each group will be made up of 8 parents or caregivers of children (at least 4 years of age) who have RCP±L. The qualitative data will then be synthesized and analyzed using NVivo™ software which is widely used in health science journals.

Results
Currently, the study is undergoing Ethics Approval from the University of Santo Tomas - College of Rehabilitation Sciences Ethics Review Committee and has yet to be implemented. However, based on the review of related literature, the researchers expect to gather data regarding the unmet needs (e.g., availability of services, SLP to patient ratio, financial impact, awareness and access to comprehensive long-term care, etc.) of parents or caregivers of children with RCP±L.

Conclusion
There is a need to create a PTP to address the concerns of parents of children with RCP±L in the Philippines. This may include the provision of PTP that will teach parents or caregivers necessary knowledge and skills to improve their children's speech intelligibility through parent education.

parent training program, parent education

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Early speech and language intervention for children with repaired cleft of lip and palate (RCLP): An e-survey of clinical practice from India

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[1]Sri Ramachandra Institute of Higher Education & Research (Deemed to be University), Chennai, India, [2]SRM Medical College Hospital and Research Centre, Chennai, India

TU4.3 SPEECH, Fintry, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction: There has been an increasing emphasis on early intervention for young children with CP±L to focus on integrating early language, speech and vocabulary goals in the first three years of life commencing even before the palate surgery (Scherer, 2015). Limited data on early intervention reveals various models including clinicians providing direct intervention to children with/without including parents as active participants or observers and clinicians providing indirect intervention by training parents to provide intervention to children.

Aims: To understand the practice patterns of speech language pathologists (SLPs) in India related to early intervention for speech-language development among young children with CP±L before three years of age.

Methods: An online survey with 25 questions focusing on a range of components including clinical case load, client contact, assessment and intervention for speech and language development was developed. Twenty-seven SLPs across India, working in specialized cleft and craniofacial centers/clinics/ hospitals completed the survey. All the respondents had greater than three years of experience in cleft care.

Results: SLPs reported early contact with children with CP±L either before/at lip repair (30%), at/immediately after palate repair (48%) or within 1-3 months of palate repair (22%). Further, SLPs (71%) initiated intervention focusing on speech and language development before 12 months of age. Early intervention involved low frequency parental education and counselling for children below 18 months and monitoring of language development; this continued till 3 years. Direct one-on-one intervention began typically between 2-3 years of age (48%) only. While a few SLPs reported working on articulation, resonance and loudness of speech between 18 months to three years, majority reported focus on these speech domains after 3 years.

Conclusions: Early intervention for young children with CLP in the first three years of age was delivered largely through parental education and counselling with frequency of sessions depending on family's access to professionals.

Parent education, Speech Therapy, LMIC,

1105

Development and preliminary validation of a training module for caregivers on early speech-language stimulation of children with cleft lip and palate

Ms Meghana Srinivasan[1], Dr Lakshmi Venkatesh[1], Dr Savitha Hariharan V[2], Dr Subramaniyan Balasubramanian[1], Prof Roopa Nagarajan[1]

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TU4.3 SPEECH, Fintry, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction: The field of cleft care is increasingly adopting parent-implemented intervention models targeted at children's early speech and language development. Such models hold promise for delivering early intervention in resource constrained contexts within low- and middle-income countries.

Aims: To develop and validate the contents of a training module for training caregivers on facilitating early speech-language skills among children with cleft lip and palate (CLP).

Methods: A training module comprising of three sections with information on 1) speech-language and play development in typically developing children, 2) development of speech-language and nature of speech errors among children with CLP and 3) speech-language stimulation strategies focusing on both speech and language domains were developed in English and Tamil. Audio samples of speech errors in children with CLP were included for listening training.

Eight SLPs and parents evaluated the content of the module individually. Two caregiver-child dyads (children with repaired CLP aged 35-months and 18-months) participated in assessing the feasibility of implementing the training program through six sessions over a two-week period. Communicative behaviours of the caregiver in the context of caregiver-child interaction in free play was analyzed pre-training and one-week post-training.

Results: Both SLPs and parents rated the content of the module to be appropriate in language level, structure and organization and beneficial for training caregivers. The content could be delivered as planned during the training. Caregivers demonstrated improvement on a knowledge questionnaire related to content delivered from pre- to post-training. Changes were observed in verbal communicative behaviours of caregivers post-training in comparison to two baseline observations. Supportive directives, labels/comments, imitations with appropriate recasting aimed at improving children's production increased with concurrent reduction in the use of direct commands and questions.

Conclusion: The training module developed may be used to deliver a low-intensity parent training program on initiating early intervention for children before and after palate repair.

Parent training, Speech-Language Therapy, LMIC

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Speech at Home - An Evidence Based Innovative Approach to Intervention in Children with Cleft Palate

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TU4.3 SPEECH, Fintry, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction: Often speech interventions for cleft palate related speech disorders lack a rigorous evidence base. However, between 2012 and 2021, Sweeney and Sell conducted four studies providing evidence for a parent led intervention for cleft palate articulation therapy, in which the onus of therapy shifts from the speech language therapist to the parents. An integral aspect of this intervention was parent training and the efficient development of speech therapy programmes with resources. Based on this, Speech@Home was developed as an online integrated, innovative speech intervention package for children with cleft palate and related conditions

Aim: To provide the background evidence and demonstrate the Speech@Home online resource (www.speechathome.org).

Research Background: A parent focus group highlighted parents' anxiety and frustration regarding speech intervention and the need for parental empowerment (2012). The feasibility study (Sweeney et al, 2016) informed the full trial, identifying inclusion criteria, assessment and intervention protocols, and trialling teletherapy. The two centre randomised controlled trial showed improvements in speech outcomes, activity and participation (Sweeney et al, 2020) and positive parental experiences (Sell et al, in preparation). Following this, two quality improvement projects evaluated the use of Speech@Home in clinical practice (Sell et al, 2020;2021).

Resource Demonstration: Speech@Home includes
a) an in-depth training course for parents undertaking regular therapy activities, working in partnership with a therapist
b) a two hour introductory webinar for parents who are attending therapy, or whose child's early speech shows signs that therapy will be required
c) a Therapy Programme Builder, a drop-down menu software package containing over 180 therapy activities, each linked to the appropriate therapy resources. This can be used with trained parents, and also in face to face therapy, teletherapy or a hybrid approach with untrained parents.

Conclusion: Speech@Home provides an evidence-based online parent training and therapy resource for children with cleft related speech disorders.

speech intervention, parental empowerment, evidence-based

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Implementing Speech@Home into clinical practice using a quality improvement (QI) methodology

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TU4.3 SPEECH, Fintry, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction

The efficacy of Parent Led, Therapist supervised Articulation Therapy for children with cleft type speech disorders has been shown (Sweeney et al, 2020). The intervention has been adapted as an online integrated package consisting of parent training courses, a Therapy Programme Builder (TPB) with linked automated resources.

Aims

This presentation reports a two-phased evaluation of Speech@Home in clinical practice, using a QI methodology.

Methods

Six Speech and Language Therapists (SLTs) from 4 Cleft Centres took part. SLTs completed a training webinar before each phase.

Phase 1 – Therapy Programme Builder and Resources. Sixteen untrained parents and children received 10 weekly teletherapy sessions, delivered by the therapist using the TPB and resources.

Phase 2 – In-depth Parent Training Course. Nine different parents undertook the online training course, and delivered therapy guided by the programme, under the supervision of the SLT.

Quantitative and qualitative feedback of the SLTs' and parents' views of the website's usability, activities and resources and the in-depth Parent Training Course were evaluated. Baseline and post-intervention speech data on the were documented in both phases.

Results

In Phase 1, SLTs and parents rated usability, activities and resources with almost all high scores (mean = 4.4). SLTs' qualitative feedback led to improvements in the website. Both groups gave overall positive feedback and both requested parent training.

In Phase 2, all participants reported they would recommend the training course to other parents/clinicians. Parents requested success stories, access to the webinars for their assignments, and individual tailoring of two of the eight webinars. SLTs recommended revision of one assignment.

In both phases some SLTs involved SLT assistants in therapy delivery.

Conclusions

This project has provided evidence for the effectiveness of the Speech@Home approach based on data from 5 novel therapists, 21 parents and speech results. It has the potential to be used with SLT/Teaching assistants.

speech therapy, Speech@Home, parents, technology

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Long term results of the secondary bone grafting in unilateral cleft lip and palate (UCLP) patients in Riga Cleft Lip and Palate Centre

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TU4.4 ALVEOLAR BONE GRAFT, Kilsyth, EICC - Streamed, July 12, 2022, 14:00 - 15:00

The aim was to evaluate the outcome of the secondary bone grafting in UCLP patients performed in Riga Cleft Center from 2000 to 2019.
Methods. Data were collected from the medical records, x-rays, photos and casts. The results were analyzed with respect to the height of the bone in grafted area as described by Lilja et al. and the space closure in the dental arch mainly.
Results. Out of 90 operated patients, 76 (47 male and 27 female) patients were followed. The average age of the patients at bone grafting was 10.00 years (range 6.9 - 30.3).The intra-oral radiographic observation period was 7.9month (range 5month to 2.11years). The primary healing was observed in 73 (96.06%) patients while wound dehiscence occurred in 3 (3.94%) patients, no total resorption were recorded. Eighty eight percent of our patients had alveolar bony height between the teeth bordering the former cleft more than 75% of the normal height of the alveolar process. The cleft space in the dental arch has been closed (or planned) by orthodontic means in 89% cases and by prosthodontics - 11%.
Conclusions. Long term results of bone grafting showed high rate of success. In most of our patients (89%) gap of alveolar arch was closed by orthodontic means. When lateral incisor was present in the cleft area, space closure might be achieved orthodontically in all patients.
cleft, secondary alveolar bone grafting

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Longitudinal observations of maxillary growth of patients with UCLP following early vs. late timing of secondary bone grafting

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TU4.4 ALVEOLAR BONE GRAFT, Kilsyth, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction: The previous reports, about severe maxillary inhibition following primary bone grafting cannot be compared unambiguously with the maxillary development following late secondary bone grafting (SABG) - the procedure performed after cleft palate repair, since they base not only on different procedure timing but a different surgical technique as well. The reliable comparison of the results should base on the treatment performed according to analogous methods except for different bone graft timing. Naturally, the most conclusive results come from the observations performed at skeletal maturity.
Aims: to compare extend of maxillary growth of matured patients with complete unilateral cleft lip and palate (UCLP) following early versus late secondary alveolar bone grafting (SABG).
Method: medical documentation including cephalograms of 135 patients who had one-stage primary repair of complete UCLP in infancy was evaluated. That enabled to establish two groups for comparison: E-SABG group composed of 70 patients (47 males, 67.1%; mean age at evaluation 18 years, SD = 1.4) who had SABG performed before 6 years of age and L-SABG group composed of 65 patients (40 males, 61.5%; mean age at evaluation 18.3 years, SD = 1.8) who had SABG done after 6 years. Five linear regression models with SNA, SNB, ANB, Co-A, and MP/SN as dependent variables and age at primary cleft repair, age at SABG, age at taking cephalogram, surgeon, and total number of surgical interventions as independent variables were created.
Results: proportion of complications (e.g. oro-nasal fistulas, velo-pharyngeal incompetence) and surgical burden of care was similar in both groups ($p > 0.05$). Regression models demonstrated that independent variables were not associated with values of SNA angle, SNB angle, ANB angle, MP/SN angle, and Co-A distance ($p > 0.05$)
Conclusions: Burden of surgical care and maxillary growth of matured patients after early and late SABG is comparable.

early SABG, UCLP, maxillary growth

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Factors affecting the outcomes of alveolar bone grafting in Cleft Patients and ways to improve results.

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TU4.4 ALVEOLAR BONE GRAFT, Kilsyth, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Objectives: Maxillary defects in CLP patients are very heterogeneous. There is no consensus on the methods, age, or surgical techniques. The results remain controversial. The aim of this study was to assess the quantitative characteristics of alveolar defects and reveal correlations with final results of treatment.
Methods: The study included 150 patients with a unilateral cleft lip and palate aged from 7 to 17 years. Alveolar bone grafting (BG) after orthodontic treatment used in all patients. A geometrical model of the maxillary defect was obtained by subtraction of mirror copy from the original 3D-model; different measurements were done (CranioTools ® software). Surgical technique consisted in harvesting cortical bone and chips from the body and ramus of the mandible mixed with Bio-Oss and using resorbable and non-resorbable fixation. CT scans performed before the surgery and 8 months after. We analyzed two groups differed by fixation type. In each group, patients were clustered by age, morphology, and surgical outcomes. The results of the BG were classified using Bergland and Chelsea scales, and our own scales based on 3D-analysis.
Results: Good results were achieved in 91% and 81% in groups with non resorbable and resorbable fixation respectively without statistically significant difference. The size of the defect revealed from 0.46 to 2.9 cm3 (mean 1.32 ± 0.54 cm3). The results of the BG had no correlation with defects size, age and morphology. The BG results were defined apparently by early and late surgical complications presence in follow-up period.
Conclusion: In contrast to the earlier published data this study has shown that the result of BG is not related to age, size of the defect and its morphology. In all cases it was possible to restore alveolar defect with low-traumatic technique. The surgical technique carried out according to the presented algorithm allows to obtain good results in most cases.
CLP, Alveolar defect, bone grafting

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The Effect of Earlier Bone Grafting, Prior to OrthodonticTreatment, on SWAG Ratings of Graft Outcomes

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TU4.4 ALVEOLAR BONE GRAFT, Kilsyth, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Aim

Peer benchmarking by inter-center comparison has identified a range of ABG outcomes. Poor graft outcomes in one Center using a traditional protocol to mixed dentition ABG led to a change of protocol at that Center, including earlier grafting before any orthodontics. After that change, outcomes were compared between 2 groups treated at that center: one with original protocol (8-10yrs & after pre-grafting ortho); the other with new protocol (5-7yrs before ortho. A third group was the benchmark with earlier grafting, pre-orthodontics.

Methods/Description:

Sample was 99 consecutively grafted patients with complete clefts from 2 Centers forming 3 Groups. Two Groups (30 and 29 patients) from Center 1 had undergone either "original" protocol (mean10.2yrs) after pre-grafting orthodontics or "new" protocol of late primary dentition grafting (mean age 6.5yrs) pre-orthodontics. The third Group (N=40) from Center 2 was the benchmark (mean 6.7years). Using occlusal radiographs, the Americleft SWAG scale was used to rate graft outcome (mean 15.5 months post-ABG. Six raters blindly scored each radiograph twice and averaged for the final score. Reliability was assessed using Weighted Kappa. Significance of differences was determined with Kruskal-Wallis test and Dunn's test ($p<.05$).

Results:

Inter-rater reliability was good (0.631). Intra-rater reliability was excellent (0.817). There was a tendency for improved total ABG outcome in Center 1's early-grafted Group compared to the later-grafted group. Improvement was significantly different in only the coronal third (1.13 to 1.83;$p=.009$). The difference was not statistically significant for the total graft (3.63 to 4.17;$p=.283$). Outcomes from both Center 1 Groups however were significantly poorer than the early-grafted Group from Center 2.

Conclusions:

A change in grafting protocol as a result of an internal audit of bone graft outcomes through comparison with other centers and peerbenchmarking (earlier age and prior to orthodontic treatment), led to an improvement in graft results.The improvement was limited to the coronal third.

SWAG, Bone Graft, Protocol Changes

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LONG-TERM CT COMPARISON OF ALVEOLAR BONE FORMATION IN UCLP PATIENTS TREATED WITH TWO DIFFERENT SURGICAL APPROACHES: EARLY SECONDARY GINGIVOALVEOLOPLASTY OR BONE GRAFT

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TU4.4 ALVEOLAR BONE GRAFT, Kilsyth, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction
The surgical timing and procedures for alveolar cleft repair is still one of the most discussed topic in cleft treatment.
Aims
The aim of this study is to compare the quality and volume of the ossification in unilateral cleft lip and palate patients who underwent early secondary gingivoalveoloplasty (ESGAP) according to the protocol of Milan, with the ones who underwent traditional alveolar bone graft in the same center, using a three-dimensional CT scans.
Methods
We compared two samples: 22 patients treated by ESGAP with 21 patients treated by secondary bone graft from iliac crest (IC). Selection included non syndromic unilateral complete cleft lip and palate. The ossification was evaluated in permanent dentition with CT scans, both axial and dental scan reconstruction, and through 3D reconstructed models: alveolar thickness (AT), measured at three different levels, and nasoalveolar height (NAH). All measurements were normalized and ratios of the affected versus non affected sides were provided as well as the statistical comparison between the two groups's ossification outcomes.
Results
In both groups alveolar height and thickness of the affected side reached, in a large majority of the patients, an ideal (>75%) and good (>50%) ossification compared to the non affected side. These measurements resulted statistically significant using a paired T-test and Spearman Rho test. Using the bone percentage of cleft versus non-cleft side in the four parameters, we compared the outcomes in term of the ossification of the two procedures using parametric and non parametric tests in order to find any statistical difference.
Conclusion
A correlation between ESGAP and ideal and good ossification has been detected with many test, most of them statistically significant. Early secondary gingivolaveoloplasty seems to reach particularly better results than IC bone graft in terms of bone volume in the alveolar cleft: the statistic results were corroborated visually by three dimensional reconstructions

alveolar, bone graft, gingivoalveoloplasty, CT

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Circummaxilary sutureal maturation in UCLP patients treated with two different surgical protocols for alveolar repair

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TU4.4 ALVEOLAR BONE GRAFT, Kilsyth, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction: The surgical treatment of cleft lip and palate contributes to the impaired growth of the maxilla, thus leading to further orthopedic and/or surgical treatments of maxillary hypoplasia. The correct assessment of the maturational stages of circummaxillary sutures can guide the clinical decisions in this field, avoiding useless treatments and reducing the burden of care of these patients.

Aim: The objective of our study is to evaluate the patency of circummaxillary sutures (Midpalatal suture, zygomaticomaxillary sutures and pterigomaxillary sutures) in patients who underwent different types of surgical procedures for the correction of alveolar cleft: early secondary gengivoalveoloplasty and bone graft.

Methods: Our sample includes subjects affected by unilateral cleft lip and palate: 36 patients underwent early secondary gengivoalveoloplasty (esGAP) at 2.5years of age (Average age at CT= 12.8 ± 4,1 years) while 43 patients were treated with alveolar bone graft (Average age at CT = 12 ± 3 years). CT scans of the patients were collected, analyzed and compared. Patency of midpalatal, zigomaticomaxillary and Pterigomaxillary sutures was classified as alfa, beta or gamma depending on the images of CT scans, considering 30% of cuts the threshold for giving a certain value.
Results and conclusions: Comparing data, it seems that these two types of surgery might have a relation with ossification, thus with sutures patency. Patients who underwent esGAP seem to have an earlier sutural ossification when compared to patients who underwent bone graft at similar ages.
Complete Data and analysis will be presented during the congress.
Sutures, Alveolar bone graft, gengivoalveoloplasty

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Diagnostic gene panel testing in (non)-syndromic patients with cleft lip, alveolus and/or palate in the Netherlands.

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TU4.5 GENETICS, Moorfoot, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Introduction
Clefts of the lip, alveolus and/or palate (CLA/P) are the most common craniofacial congenital malformations in humans. These oral clefts can be divided into non-syndromic (isolated) and syndromic forms. Many cleft-related syndromes are clinically variable and genetically heterogeneous, making it challenging to distinguish syndromic from non-syndromic cases. Recognition of syndromic/genetic causes is important for personalized tailored care, identification of (unrecognized) co-morbidities and accurate genetic counseling. Therefore, Next Generation Sequencing (NGS) based targeted gene panel testing is increasingly implemented in diagnostics of CLA/P patients.
Aims
To assess the yield of NGS gene panel testing in a retrospective cohort of CLA/P cases.
Methods
We included 212 unrelated CLA/P cases who had diagnostic gene panel testing after genetic counseling between 2015 and 2020 as part of routine care performed in Cleft Centers in the Netherlands. Medical records including family history and results of additional genetic tests were evaluated.
Results
In 24 CLA/P cases (11.3 %) causal genetic variants were identified. Twenty out of these 24 had a genetic syndrome requiring specific monitoring and follow-up. Six of these 24 cases were presumed to be isolated CLA/P cases prior to testing.
In eight CLA/P cases (3.8%) without a diagnosis after NGS based gene panel testing, a molecular diagnosis was established by additional genetic analyses (e.g., SNP array, single gene testing, trio WES).
Conclusions
This study illustrates the added value of NGS based gene panel testing in CLA/P patients. Early diagnosis facilitates personalized care for patients and accurate genetic counseling of their families.

cleft, genetics, gene panel

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GENETIC VARIATION AND CLEFT LIP AND PALATE SURGICAL OUTCOMES

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TU4.5 GENETICS, Moorfoot, EICC - Streamed, July 12, 2022, 14:00 - 15:00

INTRODUCTION: Surgical outcomes in cleft lip and palate in regard to maxillofacial growth were reported to be associated with surgical protocols and cleft severity. This is the first study that considers genetic variation and treatment outcomes in individuals born with cleft lip and palate.
AIMS: To investigate genetic if variation in TGFA, GLI2, MMP2, and FGFR2 are associated with maxillofacial outcomes in individuals born with cleft lip and palate.
METHODS: Dental casts, cephalometric radiography, and DNA samples were obtained from 395 individuals born with nonsyndromic cleft lip and palate . The outcomes were analyzed using maxillo-mandibular relationship (Wits appraisal) and maxillary position (Nasion- perpendicular to point A) on the cephalometric radiographs and occlusal index (GOSLON and Atack for the unilateral and bilateral index for bilateral clefts) in dental casts. Genomic DNA extracted and 6 single nucleotide polymorphisms (SNPs) across 4 genes were genotyped. MANCOVA test was used to analyze the association between maxillo-mandibular relationship and maxillary position with genotype frequency, using age as covariable. Occlusal Index was classified into good (1 and 2 scores), moderate (score 3), and bad prognoses (scores 4 and 5), and chi-square was used to test the overrepresentation of genotype/alleles depending on the prognosis at significance level of 0.05.
RESULTS: Allele T of MMP2 rs9923304, allele G of GLI2 rs3738880, and allele G of FGFR2 rs11200014 were associate to lower values of Wits ($p< 0.001$, $p=0.015$, and $p=0.005$, respectively) and Nasion- perperdicular to point A ($p= 0.002$, $p=0.001$, and $p<0.001$, respectively). Prognosis based on the occlusal index was associate to TGFA rs2166975 ($p=0.009$), MMP2 rs99230 ($p<0.001$), and FGFR2 rs11200014. No associations were found with SNPs GLI2 rs2278741 and FGFR2 rs1076303.
CONCLUSION: Genetic variation on MMP2, GLI2, TGFA, and FGFR2 play a role in cleft lip and palate surgical outcomes.
This work was supported in part by Smile Train, Inc.

polymorphism, maxillo-mandibular growth, cleft

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One size does not fit all. Epigenetics, and personalized and precision medicine approach to prevention of nonsyndromic cleft lip and palate.

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TU4.5 GENETICS, Moorfoot, EICC - Streamed, July 12, 2022, 14:00 - 15:00

INTRODUCTION.
About 7 million of individuals with orofacial cleft (OFC) live on our planet - 1 in 1000 inhabitants. Risk of recurrence of clefts for their children is 40 times higher compared to risk in general population. Our cleft prevention studies began in 1980' (published in 1982 in Lancet). It is a long time overdue to go beyond providing a treatment only and focus on prevention.
METHODS.
About 65% of OFC are nonsyndromic (NCLP) with multifactorial etiology involving interactions of genetic and nongenetic/environmental factors. During 50 Rotaplast cleft medical missions around the world, we collected blood specimens and gathered data using Food Frequency Questionnaire (FFQ) and General Genetic Questionnaire (GGQ) from cases and controls. Several gene polymorphisms and variables from FFQ and GGQ were analyzed and compared between cases and controls.
RESULTS.
Our results clearly demonstrated different genetic factors involved in etiology of NCLP in different populations (countries, cities, locations, ethnicities). Specifically, polymorphisms of folate metabolism related genes (MTHFR 677CT, RFC1 80AG) were found significantly different in cases and controls in some locations but not different in others. Differences in mothers' consumption of folic acid, of critical nutrients, and lifestyle characteristics were also found. These findings may have had roots in differences of cultural background, dietary habits, religion, climate zone, and other environmental factors.
CONCLUSIONS.
Research on etiology and mechanisms of development of NCLP is focusing on epigenetic mechanism, especially, if applied to prevention. Specific genotypes include "susceptibility" genes for NCLP in a mother and in a fetus. Epigenetics is coming in play determining whether these genes are turned on or off in a critical period of embryonic development and contribute to development of a cleft. We can modify or exclude epigenetic risk factors in nutrition and lifestyle habits, toward personalized cleft prevention.

Folate-related genes in 18 studied populations.

Comparison of proportions of MTHFR 677CT and RFC1 80AG genotypes in cases and controls

Country	City	cases n	controls n	p value as tested by $\chi 2$ MTHFR 677CT	RFC1 80AG
Argentina	Santiago del Estero	90	84	p=0.050	p=0.030
	Trelew	72	38	p=0.041	p=0.032
	Mendoza	104	88	p=0.026	p=0.037
Chile	Antofagasta	117	78	NS	NS
	Valdivia	66	21	NS	NS
Czech Republic	Prague	119	86	p=0.027	p=0.038
Egypt	Sohag	116	81	p=0.048	p=0.039
El Salvador	San Salvador	103	61	p=0.028	p=0.011
Guatemala	Guatemala City	242	102*	p=0.005	p=0.023
India	Karaikal	274	94	NS	NS
	Nagamangala	131	42	NS	p=0.049
	Udaipur	57	30	NS	NS
Peru	La Oroya	78	71	NS	NS
Philipines	Cebu City	105	80	NS	NS
Venezuela	Barquisimeto	120	92	p=0.041	p=0.032
	Cumana	72	57	p=0.043	NS
	Maracaibo	115	57	p=0.037	p=0.042
Vietnam	Can Tho	40	41	NS	NS
TOTAL		**2021**	**1101**	**NS**	**NS**

NS (non significant) is considered when ***p*** is higher than 0.05

* additional controls were obtained for continuing analysis

prevention, cleft lip and palate

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Shared genetic risk between major cleft subtypes in the African population

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TU4.5 GENETICS, Moorfoot, EICC - Streamed, July 12, 2022, 14:00 - 15:00

Aims

To investigate the genetic overlap between the major Non-syndromic orofacial clefts (NSOFCs) phenotypes: cleft lip (CL), cleft lip and palate (CLP) and cleft palate (CP) using our African-only genome-wide association study (GWAS) data on NSOFCs.

Methods

The African GWAS on NSOFCs consists of 394 individuals with CL, 415 with CLP, 205 with CP, and 2159 unrelated controls. We obtained the single SNP (MAF > 5%) and SNP by sex interaction association summary statistics for each phenotype (CL, CLP, and CP vs controls). The coefficient estimates and standard error for each SNP's effect (either additive effect or interaction between sex and additive effect) were extracted. We tested for genetic overlap between the common cleft subtypes (CL vs CLP and CLP vs CP) using the R package PLACO after decorrelating the Z-scores. Further, we investigated for sex-specific differences using the summary statistics from the SNP by sex interaction models.

Results

We found a genome-wide significant locus rs34150107 (ILKAP gene, p= <4E-08) which increases the risk for both CL and CP. We also found a suggestive significant variant rs75194070 (MAZ gene, p= <4.8E-07) which reduces the risk for both phenotypes. The ILKAP gene is a physiologic regulator of the integrin-linked kinase signaling of the glycogen synthase kinase 3beta, an important component of the Wnt pathway - a pathway crucial to lip and palate formation. Our analyses for sex-specific differences identified two genome-wide significant loci; rs7493964 (CRIP2 gene, p = 3.22E-08) and rs516680 (KAZN gene, p = 4.25E-08). Both having opposite effects on the sex-specific difference in risk for CL and CP. The CRIP2 gene is expressed in relevant craniofacial structures (pre-migratory, migratory neural crest cells, and the pharyngeal arches) during development.

Conclusions

Our results showed evidence for shared genetic risk with the same direction of effect on the major cleft subtypes in the African population.

Genetic risk, Non-syndromic orofacial clefts

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Provider Knowledge on Returning Secondary Genomic Findings for Cleft families in Africa.

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Objective: The advances in genomic research have made the return of secondary findings (SFs) an important and ongoing discussion amongst researchers. Studies, however, have shown that lack of resources and knowledge are barriers to returning genomics results. Moreso, there is a scarcity of information on the level of expertise and knowledge of cleft-craniofacial providers in Africa about genetic disorders, despite the high burden of genetic disorders on the continent.

Methods: Using an online survey completed by 252 providers across participating cleft-craniofacial clinics in Ghana, and Nigeria, we evaluated their experience towards the return of secondary genetic findings across five domains. These include experience with genetic testing, genetics education, and returning genetic results, knowledge, comfort with returning results, potential barriers, and available resources to assist with genomic findings.

Results: Only 1.6% had an expert understanding of when and how to incorporate genomic medicine into practice. About 79% had no formal genetic education, and 50.0% agreed that all SFs should be returned to patients. Regarding the comfort level, 43.6% were very comfortable with discussing genetic risk factors with patients and 82.1% were comfortable with returning genetic results. Finally, about a third of the respondents (63%) believed that resources were currently available to enable them to access needed genetic information.

Conclusion: Overall, providers were aware that genetic testing could help in the clinical management of diseases. However, they cited lack of knowledge about genomic medicine, uncertain clinical utility, and lack of available resources as barriers to incorporating genetics into clinical practice. This is the first Ethical, Legal, and Social Implications (ELSI) study to document the knowledge and comfort level of cleft providers in Africa in returning SFs. The knowledge gained from this work will assist with developing guidelines and policies to guide providers on the return of SFs in sub-Saharan Africa and across the continent.

Secondary findings, Cleft, Africa

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Impact of COVID-19 on Elective Cleft Surgery in Low- and Middle-income Countries

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TU4.6 LMICs/Covid, Tinto, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Background: The COVID-19 pandemic disrupted health systems worldwide,
including in low- and middle-income countries (LMICs). Many countries limited the delivery of elective surgery. To date, COVID-19's impact on elective surgery in LMICs has been unquantified. We use operative data from a large international non-government cleft organization to compare case volume for 2019 and 2020 to quantify the impact of COVID-19.
Methods: Smile Train supports a partner network of over 1100 partners globally to deliver treatment to children with cleft lip and cleft palate (CLP). Treatment data is documented into a proprietary digital platform, Smile Train Express. We compared monthly treatment data for 2019 to 2020, by country, and by World Bank Income group to describe the effect that the COVID-19 pandemic has had on CLP surgery in LMICs.
Results: Our analysis shows 25,444 (31.4%) fewer primary operations performed between January and December 2020 than in the same period in 2019 with the most significant decline in procedures observed in April 2020. Many countries resumed elective surgery for CLP procedures from May onward and volume approximated that of pre-pandemic baseline by November of 2020.
Conclusions: The emergence of the COVID-19 pandemic had a large impact on health systems and service delivery across the world. We find that this is evident in the delivery of CLP surgery in LMICs. The impact is characterized by a dramatic decrease in surgery rates in April of 2020 with a recovery of surgical volume from July 2020 onwards. The rate of surgical rate recovery is consistent across World Bank Income groups.
COVID-19, Surgery

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Solutions for Comprehensive Cleft Care (S4CCC): A collaborative approach to addressing the impact of COVID-19 upon cleft care delivery in resource-constrained contexts

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TU4.6 LMICs/Covid, Tinto, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction:

The delivery of Comprehensive Cleft Care (CCC) in Low-to-Middle-Income Countries (LMICs) has experienced unprecedented disruption as a result of the COVID-19 pandemic.

Aims:

This project sought to a) identify difficulties professionals faced in delivering CCC in LMICs b) co-create solutions among LMIC and High-Income Country (HIC) cleft professionals via remote working c) share emerging good practices d) propose an innovative design for global collaboration.

Methods:

In June 2020, a brief survey for global cleft professionals was developed with international advisors to the Circle of Cleft Professionals (CoCP) network. The survey focused both upon challenges faced early in the pandemic, as well as identifying the support required to deliver CCC.

Based on survey findings (n=57), the inaugural S4CCC online conference was designed with interactive roundtables focussed upon exploring practical solutions. 93% of participant surveys (n=86) identified a strong interest in a follow-up conference.

Survey 2 (n=172) was launched early in 2021 and identified high-priority topics for focused exploration by LMIC cleft professionals. For the second S4CCC conference, multidisciplinary professionals participated in 6-8 member Solutions Groups (SGs) to develop, over 8 weeks, practical CCC guidelines for LMICs amidst COVID-19.

Results:

140 participants from 30 countries and 48 participants from 20 countries participated in the 2020 roundtables and 2021 SGs respectively. Participant concerns included decreased patient volume and outcome limitations, reluctance to access CCC, restrictive transportation rules, and insufficient patient access to internet/mobile phones. Recommendations addressing telehealth, outcome evaluation, CCC

protocol modification and parental engagement were disseminated. 92% of SG members (n=26) rated their experience as excellent.

Conclusions: This project both identified areas of pressing LMIC need and responded with a tangible process, accessible technology, and clear structure for co-creating solutions among LMIC and HIC professionals. Administrative and technical support from NGO staff was crucial to keeping the projects on track amidst clinician schedules and differing time-zones.
CCC, LMIC, COVID-19, Collaboration, NGO

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Comprehensive cleft care during Covid Pandemic: A Multicentric experience in India across ABMSS cleft centers

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TU4.6 LMICs/Covid, Tinto, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

INTRODUCTION

The Covid-19 Pandemic has proved to be a historic challenge for all health care professionals and Comprehensive cleft care(CCC) has been impacted with regards to optimal timing and Prioritization. Ideally the CCC should not be totally suspended and to this end new protocols need to be developed.

AIM

To prioritize safe cleft care and present on the impact on CCC during the pandemic

METHODS

ABMSS supports over 28 cleft centers across India to deliver treatment to children born with cleft lip and cleft palate. Robust documentation collected in to its database was compared during the Pre-pandemic and Pandemic times to look at the impact of the pandemic. Further a color coded protocol was developed and implemented across its CCC to optimize and prioritize safely timed cleft care. Further data on number of professionals and patients who contracted Covid during the care was obtained.

RESULTS

The multicentric observations show that during the 2 waves we performed only 16% of our routine care and there was a rebound phenomenon due to the backlog resulting in 128% increase in the procedures overall following the second wave. Less than 0.3% of our patients and 10% of our professionals were affected by Covid and all of them recovered fully.

CONCLUSIONS

Though cleft care is elective in nature , considering its functional and psychosocial impact; its important to continue with CCC prioritizing cleft treatment in a safe manner. While a number of routines and treatment regimens were changed, there was no major decline in number of CCC treatments including all surgeries across our ABMSS centers and safe interventions were possible to positively impact the cleft community.

Covid Impact
Comprehensive cleft care

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The Impact of COVID-19 on Cleft Surgical Care in Africa

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TU4.6 LMICs/Covid, Tinto, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Background: COVID-19) pandemic has significantly affected surgical health care in LMICs where there is significant shortage of medical resources. These led to widespread case rescheduling and implementation of lockdown protocols.
There are no studies which have investigated the impact of COVID-19 on cleft surgical care (case volume, the type of surgery affected, etc) in Africa.

Objective
To investigate the impact of COVID-19 on the surgical care of cleft patients in African

Methods: We compared the cleft surgical care in 2019 the pre-pandemic cohort and 2020 -the COVID-19 cohort. All cleft patients who were operated at the Smile Train partner hospitals in Africa during the study period were included for analysis. We assessed the overall surgical volume, surgical procedures: Primary and secondary.
Results
A total of 19761 patients 11298 (57.1%) males and 8463 (42.8%) females included. The analysis included the three UN African regions (Eastern, Western and central African). Eastern Africa 9159(46.3%), western Africa 8504 (43.0%) and Central Africa 2098 (10.6%). The total cleft cases were 11923 and 7838in 2019 and 2020 respectively. Cleft surgical care reduced by 34.3% across all regions. However, the reduction in cleft surgical care was only statistically significant in the Eastern and Central African Regions (P<0.001). The reduction in cleft surgical care was more for primary cleft surgeries compared to secondary surgeries (36.7%) and 19.2% reduction respectively). There were 10270 and 1653 primary and secondary cleft surgeries in 2019 compared to 6502 and 1336 cleft surgeries in 2020. Further, we found a statistically significant increase in the duration of hospital stay in 2020compared to 2019 (P<0.001).

Conclusion
Our result showed a reduction in cleft surgical care during the pandemic across the three African regions. It is important to strategically plan for surgical care in the face of a disease pandemic and during disasters including prioritization.

impact,Covid-19,LMIC,Africa

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EVALUATION OF FREE SURGERY SERVICES BEFORE AND DURING THE COVID-19 PANDEMIC ON THE NUMBER OF PATIENTS WITH CLEFT LIP AND PALATE AT HOSPITALS PARTNERING WITH SMILE TRAIN IN THE TERRITORY OF INDONESIA

Ulfa Elfiah[1], EVALUATION OF FREE SURGERY SERVICES BEFORE AND DURING THE COVID-19 PANDEMIC ON THE NUMBER OF PATIENTS WITH CLEFT LIP AND PALATE AT HOSPITALS PARTNERING WITH SMILE TRAIN IN THE TERRITORY OF INDONESIA Saktrio Darmono Subarno[2], EVALUATION OF FREE SURGERY SERVICES BEFORE AND DURING THE COVID-19 PANDEMIC ON THE NUMBER OF PATIENTS WITH CLEFT LIP AND PALATE AT HOSPITALS PARTNERING WITH SMILE TRAIN IN THE TERRITORY OF INDONESIA M. Idris Ibnu Ikhsan[3], EVALUATION OF FREE SURGERY SERVICES BEFORE AND DURING THE COVID-19 PANDEMIC ON THE NUMBER OF PATIENTS WITH CLEFT LIP AND PALATE AT HOSPITALS PARTNERING WITH SMILE TRAIN IN THE TERRITORY OF INDONESIA Kushariyadi Kushariyadi[4]

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TU4.6 LMICs/Covid, Tinto, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction
The impact of the high incidence of COVID in Indonesia affects health services. This condition also affects cleft lip and palate services in various regions in Indonesia.

Aim
This study aims to evaluate the number of cleft and palate patients before and during the pandemic.

Methods
The study used a retrospective design. This study evaluate the management of cleft lip and palate at two hospitals that provide free cleft lip and palate surgery services. Data collected using secondary data from medical records and interviews. The data collected is the total number of cleft patients who were operated on before the pandemic in 2019 and during the pandemic period in 2020 and 2021. The data obtained are presented in the table and analyzed using the Wilcoxon sing rank test with a significance level of $p<0.05$ to determine the effect of service components on the number of patients.

Result: 612 patients was treated, consisting of 298 patients at Jember Lung Hospital, and 314 patients at Aliyah Hospital. Statistical analysis describe the effect of free cleft lip surgery services before and during the COVID-19 pandemic on the number of patients from 2019 to 2020 with a p value = 0.000. There is an effect of free cleft lip surgery services before and during the COVID-19 pandemic on the number of patient from 2019 to 2021 with a p value of 0.000. The positive rank value of the two hospitals has increased from 2020 to 2021.

Conclusion: This study describes a significant change in the number of patient with cleft and palate patients before and during the pandemic. There is an effect of cleft lip service before and during the COVID-19 pandemic on the number of patients receiving free surgery services at hospitals partnering with Smile Train in Indonesia.

Patients At Pandemic, CLP, Covid-19

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Impact of the Covid-19 Pandemic on Volunteer Participation in Cleft Surgical Outreach Programs

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TU4.6 LMICs/Covid, Tinto, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction: Healthcare systems have endured hardships due to the COVID-19 pandemic. Most affected are low- and middle-income countries (LMICs) who have unmet surgical needs and burden of disease. This was previously met by international outreach programs that provided care through workforce and resource allocation. However, travel restrictions and flight changes have severely impacted them. Most programs rely heavily on volunteers, for instance, Global Smile Foundation (GSF) volunteers have delivered interdisciplinary cleft care for the past 35 years. Consequently, GSF has had to swiftly adapt to new challenges created by the pandemic.
Aims: Evaluate the impact the COVID-19 pandemic had on surgical outreach programs in LMICs.
Methods: In this study a 6-question multiple-choice, checkbox, and free-text answers survey was used. Inclusion criteria included individuals who participated in at least one GSF surgical outreach program and whose contact information is in the database. In total, there were 403 subjects and no exclusion criteria.
Results: 223 responses were received, corresponding to a 55% response rate. Although most volunteers (64%) intend on joining future GSF outreach programs, 31% were reluctant about their future commitment. The main reasons are fear of COVID-19 infection (85%), mandatory quarantine in their home-country post-trip (69%) and in the host country (60%). There is still a lot of concern regarding the safety of outreach programs. Most volunteers preferred not traveling until a vaccine was available (30%). And 70% reported that their institution had travel restrictions and 78% of these had not yet determined a time to resume traveling.
Conclusions: This study indicates that the COVID-19 pandemic did not deter GSF volunteers from assisting with cleft care in LMICs; however, there's uncertainty about upcoming surgical outreach programs, exacerbating the existing burden of disease. A modified framework for conducting outreach programs may be needed to resume safe international cleft care delivery during high-risk conditions.

Impact, cleft outreach, volunteers, pandemic

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Velopharyngeal insufficiency in postoperative cleft palate: An Experience from a Tertiary Hospital in South India.

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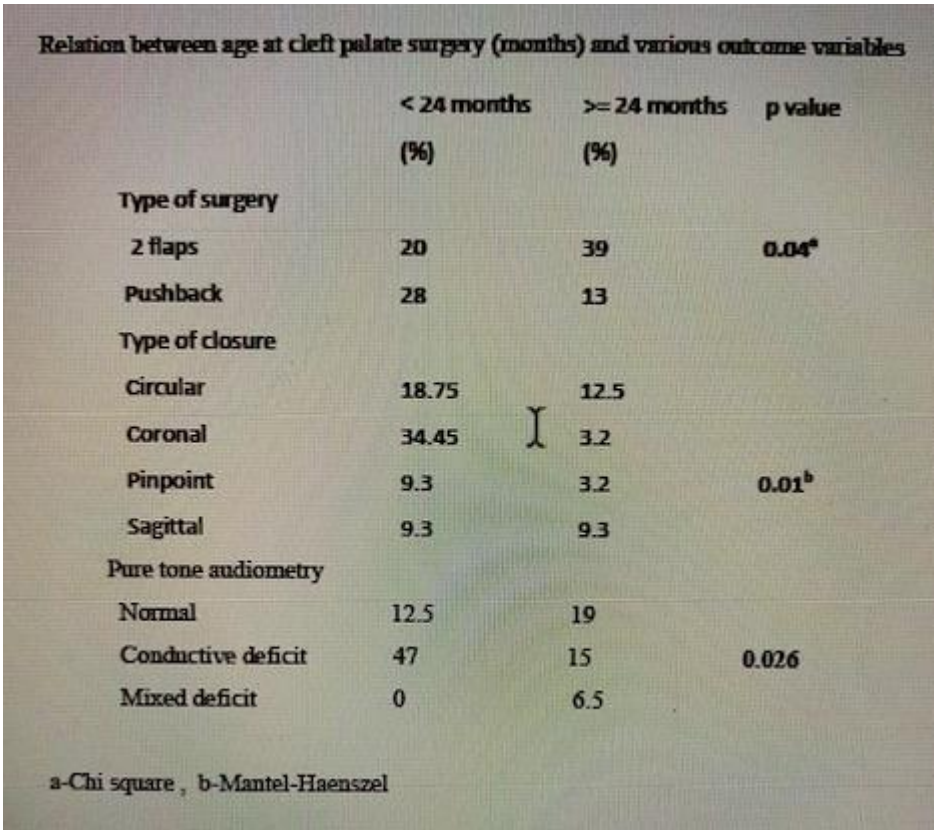
TU4.7 PRIMARY SURGERY, Carrick, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction and Aim: Velopharyngeal insufficiency with speech defects and Eustachian tube dysfunctions persist in postoperative cleft palate patients. This study was to correlate long term structural and functional outcomes of reconstructed cleft palate.
Patient and Methods: This was a cross sectional study of postoperative cleft palate patients.
Result: There were 32 patients, assessment being from 3.5 to 6 years postoperative period. None had preoperative speech, otological or nasendoscopic evaluation nor intraoperative otological procedure. Video-nasopharyngoscopy revealed coronal closure in 37.5% and circular in 31.3% patients. Surgery was done less than 24 months age in 59%, majority by Veau-Wardill-Kilner pushback technique (p=0.03), and showing coronal closure (p=0.01), both being statistically significant. Surgery done less than 24 months age was the significant positive predictor of structural outcomes of coronal closure with pushback flap (Odd Ratio of 12.5 and 5.9 respectively) and of significant bilateral conductive hearing loss (p=0.03). Speech assessment revealed moderate to severe hyper-nasality (63%), noticeable to audible nasal emission (53%) and unintelligent speech (34%). Large lateral velopharyngeal gap had significant lesser speech intelligibility (p= 0.04).
Conclusion: This post-operative study of reconstructed cleft palate revealed multiple speech defects significantly related to larger velopharyngeal gap and with bilateral conductive hearing loss. None had standard practice of preoperative audiological, speech and nasendoscopic evaluation inspite of the national survey reporting that paucity of the same more than a decade ago. There is an urgent need for multidisciplinary involvement in our country with standardized protocols preoperatively to tailor effective intraoperative techniques followed by postoperative evaluation for identifying optimum functional recovery in reconstructed cleft palate.



Relation between age at cleft palate surgery (months) and various outcome variables

	< 24 months (%)	>= 24 months (%)	p value
Type of surgery			
2 flaps	20	39	0.04[a]
Pushback	28	13	
Type of closure			
Circular	18.75	12.5	
Coronal	34.45	3.2	
Pinpoint	9.3	3.2	0.01[b]
Sagittal	9.3	9.3	
Pure tone audiometry			
Normal	12.5	19	
Conductive deficit	47	15	0.026
Mixed deficit	0	6.5	

a-Chi square , b-Mantel-Haenszel

Palatoplasty outcomes, Velopharyngeal insufficiency

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Demonstrating Reproducibility in Standardised Speech Outcomes for the Sommerlad Palatoplasty in Primary Palatal Repair

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TU4.7 PRIMARY SURGERY, Carrick, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction

Reproducibility of speech outcomes for a technique of primary palate repair is vital if it is to be adopted in preference to other procedures. The Sommerlad Palatoplasty (Sommerlad 2003), early complete palate closure with radical muscle dissection, is reported with excellent outcomes (Baille and Sell, 2020). These outcomes have not been consistently reproduced, with only Cairns (2014) publishing similar outcomes following training by Sommerlad.

Aims

To demonstrate that with attention to technical detail Sommerlad Palatoplasty provides reproducibility in excellent speech outcomes for primary cleft palate repair.

Methods

A single surgeon retrospective consecutive case series. Patients were identified from the Trent Regional Cleft Network Database born between 01/01/2010 and 31/12/2015, with a palatal cleft operated by the main author. Patients followed Sommerlad protocols with a Sommerlad Palatoplasty carried out at 6-12 months of age. With involvement of the lip a superiorly based vomerine flap was added at 3 months of age.

Between 5 years and 5 years 11 months patients underwent standardised assessment following the UK Audit protocols; a speech video recording of a standard speech sample including conversational speech, counting and sentences from the Great Ormond Street Speech Assessment ‘98 (GOS.SP.ASS’98) (Sell et al., 2009). Recordings were analysed using Cleft Audit Protocol for Speech Augmented (CAPS-A; John et al., 2006) by consensus by two CAPS-A calibrated cleft speech therapists. Patients with a syndromic diagnosis were excluded.

Results

284 patients underwent primary palatoplasty using the Sommerlad Protocols. 39 were excluded with a syndromic diagnosis. Of 245 eligible for inclusion, 181 (73.9%) attended an audit clinic and completed CAPS-A speech assessment.

90.1% patients had speech with no evidence of structurally related problems and had not had velopharyngeal surgery or fistula repair.

Conclusion

The Sommerlad Palatoplasty is a technically demanding procedure with reproducible speech outcomes. Key aspects in achieving reproducibility of outcomes will be suggested.

Table: Standardised Cleft Audit Protocol for Speech—Augmented (CAPS-A) Outcomes for Sommerlad Palatoplasty in Non-syndromic Primary Cleft Palate Repair

CAPS-A	**CAPS-A Standard definition**	**Study** (n=181)	*Sommerlad Series (Baille & Sell 2020)*
CAPS-A Standard 1	By 5.0-5.11 years, over 50% of children with CP+L will have speech within the normal range	**71.8%** (130)	*68%*
CAPS-A Standard 2a	By 5.0-5.11 years, over 70% of children with CP+L will have speech with no evidence of structurally related problem and have not had velopharyngeal (VP) surgery or fistula repair	**90.1%** (163)	*81%*
CAPS-A Standard 3	By 5.0-5.11 years, over 50% of children with CP+L will have no cleft-related articulation difficulties requiring therapy and/or surgery	**72.9%** (132)	*83%*

Cleft palate, Surgery, Speech, Outcomes

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CLEFT SHAPE CHARACTRISTICS IN PATIENTS WITH ROBIN SEQUENCE TREATED WITH PREEPIGLOTTIC BATON PLATE

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TU4.7 PRIMARY SURGERY, Carrick, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction:
Age at cleft palate repair plays an important role in speech development in patients with cleft palate and should be performed as early as possible at approximately 6 months. Cleft repair in patients with Robin sequence is more difficult than in patients with cleft palate only. This is due to limited mouth opening due to retro/micrognathy and glossoptosis, complicating the placement of the mouth gag and surgical access. The correction of a U-shaped horrendous cleft palate is even more difficult. Therefore, cleft palate repair is commonly postponed in infants with RS.
AIM:
To evaluate the role of PEBP (as a presurgical orthopedics correcting jaw relation, normalizing tongue position) in reducing cleft width, which ameliorates the conditions for surgeons and allows for early operation.
METHODS:
We documented cleft shape changes in 37 patients with RS treated with PEBP and compared them with CPO patients, treated with palatal plates. We differentiated between U- and V-shaped clefts, cleft widths, asymmetrical velar halves, and hypoplastic muscles.
Results:
Mean age at cleft palate closure was 8,1 vs 7,3mo in the CPO group.
Almost all clefts narrowed with palatal plates and PEBP. Most impressive changes and particularities were observed in patients with RS, whose tongue postnatally fitted exactly the cleft palate. They exhibited the greatest cleft width reduction, better tension control, needed less mobilization, and presented symmetrical velar halves and adequate muscles for the levator sling.
Conclusion:
We believe that children with RS and tongue- based cleft palates present better surgical conditions after successful and immediate treatment with PEBP. We hypothesize, that tongue- based clefts are of deformational origin, because their cleft palate repair was less challenging in comparison to children with CPO whose clefts may be malformational i.e. of heterogenous origin. This requires further studies.

RS, PEBP, palate repair

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Prognostic Factors Analysis for the Surgical Management of Submucous Cleft Palate

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TU4.7 PRIMARY SURGERY, Carrick, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction： The often late diagnosed submucous cleft palate (SMCP) is a particular type of congenital cleft palate. Factors influencing the speech outcome of its surgical management need further investigation.

Aims： To identify potential prognostic factors critical to the speech outcome of patients with SMCP receiving surgical treatment.

Methods： This study reviewed patients with nonsyndromic SMCP who received either Furlow palatoplasty (FP) or posterior pharyngeal flap (PPF) between 2008 and 2021 in a tertiary hospital-based cleft center. Both univariate and multivariate logistic regression models were employed to analyze preoperative variables including cleft type (overt or covert SMCP), age at surgery, mobility of velum and pharyngeal wall, velopharyngeal closure ratio, velum length and pharyngeal depth. Receiver operating characteristic curve analysis was utilized to determine the cut-off value for the predictor of significance.

Results： A total of 131 patients were enrolled in this study, with 92 receiving FP and 39 receiving PPF. Age at operation and cleft type were identified with significant impacts on FP outcome. Patients operated before the age of 9.5 years yielded significantly higher ratio of velopharyngeal competence (VPC) than those operated after. The speech outcome of patients with covert SMCP was significantly worse than overt cases after FP treatment. No preoperative variable was suggested as correlated with PPF outcome.

Conclusions： The prognosis of FP among patients is sensitive to age and cleft type. PPF might be considered for aged patients especially when covert SMCP is diagnosed.

Submucous cleft palate, Furlow palatoplasty

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Submucous Cleft Palate (SMCP): Indications and Outcomes of Radical Muscle Dissection Palatoplasty in Children Under 4 Years of Age

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TU4.7 PRIMARY SURGERY, Carrick, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction: Submucous cleft palate (SMCP) is a congenital disorder arising from abnormal soft palate musculature development. In some cases, radical muscle dissection palatoplasty is required. This study aims to delineate the indications, referral sources and outcomes of radical muscle dissection palate repair carried out in the first four years of life for patients with SMCP.

Methodology: Retrospective analysis was performed of a single surgeon's management of twenty-three children with non-syndromic SMCP. All children underwent radical muscle dissection repair before their fourth birthday between April 1997 and December 2007.

Results: The largest proportion of referrals to the cleft lip and palate clinic were received from paediatricians (39%) due to the presence of cleft lip/palate on pre-natal scans or during neonatal examination. Over half (n=12, 52%) of patients in this series had severe anatomical anomalies being in grade IV (score 8-9), with the classical triad present to some extent in all but two of the patients. The main indication for surgery were nasal regurgitation of food and liquid (n=9, 35%) followed by hypernasality (n=6, 21%), difficulty feeding (n=3, 8%), and severe anatomical defect (n=2; 4%). Post-operatively the presenting complaint improved in the majority of cases.

Conclusion: Submucous cleft palate is often a missed diagnosis in non-syndromic children. It presents with nasal regurgitation, feeding problems and/or hypernasality. Early radical muscle dissection repair in the first four years of life is safe and effective, facilitating normal speech development.
Submucous cleft palate

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Brain functional evaluation of palatal sensation of patients with cleft palate after palatoplasty

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TU4.7 PRIMARY SURGERY, Carrick, EICC - Onsite Only, July 12, 2022, 14:00 - 15:00

Introduction: Palatal sensation is important for articulation, feeding, and swallowing. Due to the complexity and high cost of objective evaluation, palatal sensation in patients with cleft palate (CP) after palatoplasty has been inadequately evaluated.

Aims: This study aims to evaluate and compare the somatosensory evoked magnetic fields (SEFs) induced by electrical stimulation of the palates of patients with CP after palatoplasty with those of healthy subjects.

Methods: The CP group consisted of 11 patients with unilateral cleft lip and palate (UCLP) who received push-back palatoplasty, and the control group consisted of 31 healthy subjects. Four areas of the palate (incisor papillae, posterior palate, non-cleft side of palate, and cleft side of palate) in each subject were electrically stimulated to detect SEFs. The palatal sensory thresholds (PSTs) of the stimulation were also measured subjectively for comparison. Latency, intensity of the SEFs, and PSTs to electrical stimulation were further compared between the groups.

Results: Compared to the control group, the latency of the SEFs in the UCLP group was significantly longer in the cleft side of hemisphere during stimulations in both the incisor papillae ($p<0.01$) and non-cleft side of palate ($p<0.05$). Hence, the neural pathways in the palates of patients with UCLP might be different from those in healthy subjects. No significant difference in the intensity was found. However, the PSTs in the UCLP group were significantly higher than those in the control group in all sites ($p<0.05$). Therefore, the electrical signals transmitted from palatal sensory receptors of patients with CP might be amplified by a compensation mechanism in the central nervous system.

Conclusions: SEFs was an effective objective evaluation method for examining palatal sensation in patients with CP after palatoplasty. Evaluation of SEFs during palatal sensory stimulation in patients with CP after palatoplasty may lead to better surgical methods that take palatal sensation into consideration.
Cleft palate, palatal sensation

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POSTERIOR PILLAR AUGMENTATION PALATOPLASTY (PPAP) – A POSSIBLE SURGICAL OPTION FOR THE MANAGEMENT OF VPI

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

INTRODUCTION. The author's first option in the management of VPI following palate repair is to re-repair the palate. However, many repaired palates are short, requiring either palate lengthening or pharyngoplasty. Palate lengthening by buccinator flap or modified Hyne's pharyngoplasty have been the favoured options. However, each has significant morbidity. Sanvenero-Roselli, Delaire and others have attempted to lengthen the palate at primary repair by suturing the posterior pillars of the fauces together behind the uvula. However, this has the effect of pulling the palate down into the pharynx and reducing velar elevation.
AIMS. To present a preliminary evaluation of this technique.
METHOD. In some patients where the mucosal envelope is too short and, especially where the posterior pillars are close together, the author has developed a technique where the posterior pillars are joined, the velar muscles are retroposed into the new mucosal envelope, and the posterior pillars are then divided inferiorly to allow the velum to elevate.
RESULTS. The technique has been carried out in 70 patients to date. Many of these have been carried out in countries where investigation and follow-up are challenging. Pre and post-operative speech recordings and lateral videofluoroscopies have been compared where possible.
It has not been possible to employ the rigorous standard of assessment of previous studies. Some results have been very encouraging. There has been one post-operative haemorrhage. A tight scar at the posterior border of the velum may be avoided by a modification which the author will describe.
CONCLUSION. This technique offers the possibility of an operation for some patients with less morbidity than other procedures for management of VPI. Other surgeons have apparently achieved good outcomes using the procedure. Further evaluation is necessary.

VPI Veloplasty Secondary palatoplasty

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‘Suspension palatoplasty’ for the treatment of moderate to severe VPI 5 years follow-up.

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction:
Surgical correction of VPI except in mild cases is difficult by using conventional procedures alone. Unfortunately, great majority of patients have moderate to severe VPI and need a different approach if we are to succeed.

Aims:
To develop a new approach based on optimal spatial positioning of palate at the time of VPI correction, by using a non-obstructive, high, midline pharyngeal flap.

Methods:
‘Suspension palatoplasty’ for the treatment of moderate to severe VPI.
The procedure presented is completely different from earlier described methods. In this technique DOZ (Double opposing z plasty) is used to revise the palate and a small pharyngeal flap (midline superiorly based at the lower 1/3 of adenoids) is used to position the palate as close to the pharyngeal wall as possible. This is done both by mucosal tetherance to the base of the flap and also anchoring the muscle to the flap as close to the base as possible.

Results:
The resultant lateral ports on post op Endoscopic studies studies have been shown to be dynamic and non-obstructive. 104 patients were operated by this method from the year 2014 to 2016.
Speech in all showed improvement as per the universal parameters. And 29 out 41 where complete speech results were available, found to have normal speech, many of these did not have speech therapy at all.
As can be expected younger patients had better speech outcomes but what came on a pleasant surprise is that many of the adults also developed normal speech.

Conclusion:
Suspension Palatoplasty is a physiologically sound and predictable procedure for surgical correction of Moderate to Severe VPI. It has minimal to negligible side effects or complications.

Suspension Palatoplasty-Modified Pharyngeal Flap

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Buccinator myomucosal flap for the treatment of velopharyngeal insufficiency in patients with cleft palate and/or lip

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

1. Introduction: Approximately 5-36% of patients with cleft lip and palate submitted to primary palatoplasty have post-operativevelopharyngeal insufficiency. Velopharyngeal insufficiency results in mandatory and compensatory speech disorders that impair the overall quality of life and the interpersonal relationships of patients with clefpalate.palatoplasty for the elongation of thepalatine veil using the myomucosal flap of the buccinatormuscle has been performed with the aim of normalizingthe velopharyngeal function.
2. Aims: The purpose of this study was to assess speech outcomes and complication rate in nonsyndromic repaired cleft palate patients undergoing bilateral buccinator myomucosal flaps for velopharyngeal insufficiency management.
3. Methods: A prospective study of consecutive repaired cleft palate patients with velopharyngeal insufficiency who underwent bilateral buccinator myomucosal flaps was conducted. Three experienced evaluators performed a blinded perceptual speech evaluation (hypernasality, audible nasal emission, and intraoral pressure). Successful speech outcome was defined as normal or borderline sufficient velopharyngeal function at 15 months postoperatively. Obstructive sleep apnea screening tools were applied preoperatively and postoperatively. Complication rate was also collected.
4. Results: 53 patients were included. There were 11 (21%) surgical complications, with no complete flap loss, snoring, sleep disturbance, and/or mouth breathing. All patients presented low pre- and postoperative risk for obstructive sleep apnea. At 15 months postoperatively, hypernasality (0.4 ± 0.6), audible nasal emissions (0.2 ± 0.4), and intraoral pressure (0.1 ± 0.3) were significantly (all $p < 0.05$) lower than preoperative measurements (hypernasality: 2.7 ± 0.5; audible nasal emissions: 2.2 ± 0.8; and intraoral pressure: 0.9 ± 0.3). Forty-five (85%) patients presented successful speech outcome.
5. Conclusions:The bilateral buccinator myomucosal flap is an effective and safe surgical strategy for the management of persistent velopharyngeal insufficiency.
Buccinator flap Velopharyngeal insufficiency Speech

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Buccal myomucosal flaps: the easy and the versatile

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: Buccal myomucosal flaps (BMMF) have been proposed in literature as a local pedicled flap that offers solutions for several problems within the oral cavity for both cleft and non-cleft associated defects.
Aim: The aim of the current presentation is to illustrate our experience utilizing the BMMF at our cleft care center over the past five years for management of various types of secondary palatal defects.
Methods: More than 30 patients with cleft palate received BMMF whether unilateral or bilateral for management of different forms of secondary defects in both the hard as well as the soft palate ranging from; oronasal fistulae in the anterior, middle or posterior palate and/ or management of VPI by palatal lengthening with or without palatal re-repair as well as management of complete palatal dehiscence defects. The technique adopted and tips on how to optimize the outcomes shall be elaborated.
Results: The use of the BMMF whether unilateral or bilateral in management of secondary palatal defects proved to show successful outcomes in the majority of cases with a success rate of 94% comparable to that in literature. It was associated with successful closure of oronasal fistulae and successful lengthening of the soft palate and improvement of VPI. The use of BMMF is associated with minimal morbidity. It was accepted by most of the patients offering results comparable to tongue flaps but with less morbidity.
Conclusions: BMMF are easy and versatile flaps that should be amongst the techniques within the hands of any cleft surgeon offering fast and reliable solutions for some of the most difficult problems.

buccal myomucosal flaps

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Cleft Lip and Palate in Infants with Trisomies 13, 18, and 21

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Background: Trisomy 13, 18, and 21 may occur with cleft lip and/or palate (CL/P). This study examines phenotypic presentation and management considerations in infants with Trisomy 13, 18, or 21 and CL/P.

Methods: A retrospective review of infants with Trisomy 13, 18, or 21 and CL/P treated at a tertiary care center between 1987-2020. Prenatal diagnoses not resulting in live birth were excluded. Phenotypes, comorbidities and cleft care details were documented.

Results: 28 patients were identified, 10 with Trisomy 13, 3 with Trisomy 18 (2 with partial trisomy), and 15 with Trisomy 21. All infants with Trisomy 18 and 21 survived beyond two years, but only 40% of patients with Trisomy 13 did. In Trisomy 13, 40% had CP, 40% had bilateral CL/P and 20% had unilateral CL/P; only 30% underwent surgical repairs. In Trisomy 18, 33.3% had CP and 66.6% CLP; the two patients with partial Trisomies underwent repairs. In Trisomy 21, 33.3% had CP, 47% had unilateral CL/P and 20% had bilateral CL/P; 80% underwent repair. No infants were identified with isolated cleft lip. Additional anomalies were identified in all 28 patients, but the average total number of defects was greater among patients with Trisomies 13 and 18.

Conclusions: All infants with chromosomal abnormalities and facial clefts were found to have involvement of the palate. They also had additional congenital defects that impact decision on whether and when to perform cleft-related operations.

Cleft Lip, Cleft Palate, Trisomy

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Combined use of Islanded Greater Palatine Artery Flap and Buccinator Flap for Oronasal Fistula Closure

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: Oronasal fistula (ONF) is a challenging problem encountered after cleft palate repair. The main symptoms associated with ONF are nasal regurgitation of food, poor oral hygiene and hyper nasality of voice.
Aims: To describe the usefulness of islanded greater palatine artery flap for repair of anterior oronasal fistula and buccinators flap for donor defect closure.
Methods: Twenty five patients were selected for the study that had history of cleft palate repair. Selection was based on location and size of fistula and amount of residual palatal mucosa. Assessment was done for postoperative wound complications, postoperative speech and swallowing and donor site morbidity.
Results: All the patients underwent islanded greater palatine artery flap unilateral or bilateral. Postoperative diet started from 1st post op day. Patients were discharged on 1st postoperative day without any postoperative donor site or recipient site complications. Patients were reassessed on one month follow up and division and insetting of buccinators flap was done if needed.
Conclusions: The islanded greater palatine artery flap offers a reliable method of primary reconstruction of anterior oronasal defects without significant donor site morbidity.

Islanded greater palatine artery flap,

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Secondary Cleft Lip Residual Deformities: A Classification System

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: Residual cleft lip deformities are common following primary unilateral or bilateral cleft lip repair. Factors that contribute to the development of residual deformities are diverse and depend on the meticulousness of the primary repair, as well as the natural effects of expected tissue growth. Numerous classification systems have been proposed to describe congenital cleft lip deformities, but little has been described regarding secondary residual deformities, as each of the latter present with unique characteristics and peculiarities.
Aim: Describing a classification system that standardizes the diverse presentations of residual cleft lip deformities.
Methods: The classification system identifies and groups secondary deformities into one of five types, based on involved anatomical subunits and extents of tissue involvement. Since 2013, the system has been adopted on numerous cleft outreach programs.
Results: The system is concise, user-friendly, and provides accurate description of the residual cleft deformities. It allows for enhanced planning of the appropriate surgical procedure, as basic goals of repair are depicted for each cleft revision type in order to achieve anatomical balance and symmetry.
Discussion: Further studies are underway to study the applicability and reliability of this classification system in cleft outreach settings.

Cleft Revision
Classification
Residual Deformities

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FRACTIONAL LASER AND MEDICAL TATTOOING FOR REPAIRED CLEFT LIPS: NEW TOOLS FOR COSMETIC CLEFT CARE.

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: Scarring after cleft lip repair is a common cause for parent's and patient's dissatisfaction. Whatever the surgical technique, the scars remain. We tried to evaluate efficacy of both Fractional CO2 laser for cleft lip scars and medical tattooing and micropigmentation to the white roll and vermillion.

Methods: 120 patients with cleft lip scars divided into three groups had been engaged. The first group started laser three weeks post-operatively, second group started laser three months postoperatively, while the third group had applied creams only. The laser was applied for 5-7 sessions with 4 weeks apart. Vancouver scar scale VSS was used to evaluate scars for vascularity, pigmentation, pliability, and height. Micropigmentation had been applied for the white rolls and vermilions of 20 female patients using natural pigments with selection of the best color match for each patient, sessions repeated every 6 weeks for 3 times to fix the colors.

Results: Patients showed a great degree of improvement in their lip scar after laser sessions. Laser therapy induced improvement in the appearance of the lip scars in group I more than group II and III with mean scores of (44.17 ± 3.45), (36.53 ± 4.43) and (30.40 ± 5.22) respectively. Micropigmentation had proved a very significant difference in lip appearance with very high patient satisfaction.

Conclusion: Fractional CO2 laser and medical tattooing are very significant ancillary cosmetic tools to improve cleft lip scars. The early use of this laser for 5-7 sessions is better than its delayed use, and the delayed use is better than not to use it. Micropigmentation for 2 -3 sessions is very impressive in the final appearance of the repaired lips. Both techniques are ideal complementary methods for the comprehensive cleft care.

Laser - tattooing - cosmetic

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The Assessment of Oro-facial muscle Movements in Surgically Managed Cleft Patients Using 4D Imaging.

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction:
The static 3D capture of the face does not record the dynamic of facial muscle movements; therefore, it does not allow the full analysis of the pattern and the direction of the distorted facial expressions.
Aims:
Evaluation of the residual facial asymmetry during maximal smile in surgically managed Unilateral Cleft Lip and Palate (UCLP) cases using a real time 3D imaging system (4D) and applying sophisticated morphometric analysis.
Methods:
Twenty-five surgically managed UCLP cases and an equal number of non-cleft volunteers at 10 years of age had their facial muscle movements recorded using Stereo-photogrammetry during maximum smile a rate of 60 3D frames/second. The smile took three seconds and generated 180 3D images. The asymmetry of lip movements was measured using a mathematical facial mask which consisted of about 10,000 quasi landmarks, to provide a detailed morphological representation of the underlying surface of the face. The conformed mesh was mirror imaged; the two images were superimposed for analysis. The asymmetry scores represented the measured distances between corresponding vertices of the 3D surface meshes of the superimposed images. The directionality of asymmetry was also assessed in the x, y, and z directions
Results:
During maximum smile the UCLP cases showed a statistically significant higher facial asymmetry compared with the non-cleft group ($p<0.05$). A higher average asymmetry was detected in the UCLP group between rest and maximum expression and mid-way between maximum smile and the final rest position. Strong positive correlation was detected between the magnitude of asymmetry at rest and various time intervals throughout the course of the smile ($p<0.05$).
Conclusions:
4D imaging is a sensitive tool for the analysis of the dynamics of facial muscle movements to disclose the mechanism of the asymmetry of facial expressions. Surgical repair of cleft lip requires further surgical refinements to reduce residual dysmorpholgy and asymmetric lip movements.

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3D, 4D, asymmetry, lip, expression

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Cleft rhinoplasty with the Piezotome

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: Cleft rhinoplasty is a challenging procedure and precision is required to achieve good results with cases often presenting with more complex structural and soft issue asymmetries than non-cleft/ aesthetic rhinoplasties.
Recent years have seen a huge increase in the interest and use of Piezoelectiric surgery in the cosmetic sector and which is reflected across the literature but its value is arguably even greater in cleft surgery. The Piezotome uses ultrasonic vibrations to cut bone. At a certain frequency it will only cut bone; sparing soft tissues. This selectivity has several advantages. It has been reported to decrease postoperative pain, oedema and ecchymosis, but more importantly, it allows accurate nasal bony work under direct vision, while maintaining stability of the bony fragments by preserving the underlying periosteum.
In this study, we present a single surgeon experience of piezoelectric surgery in cleft rhinoplasty.
Method: We reviewed the case histories of 21 consecutive cases of cleft rhinoplasty in patients undergoing Piezo assisted surgery between 2017 and 2021. We present operative techniques and results of piezoelectric cleft rhinoplasty and compare it with patients operated on over the same period using conventional instrumentation. The duration of surgery was compared to 19 patients having also undergone a cleft rhinoplasty, but using conventional osteotomies and bony work over the same time period, again by the same surgeon.
Results: Piezo assisted rhinoplasty steps included bony osteotomies, hump removal; modification of composite cartilage/ethmoid grafts and instrumentation of the anterior nasal spine. There were no significant complications and no revisional surgeries. There was no difference in operative time compared to conventional instruments.
Conclusions: Piezoelectric instrumentation is a valuable and efficient tool in cleft rhinoplasty surgery. It offers potentially significant advantages in terms of the precision of bony work.

Rhinoplasty, Cleft rhinoplasty, Piezotome, Piezosurgery

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Bilateral cleft lip treatment: two-staged vermilion plasty using banked prolabial vermilion island flap

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction/Aims:
Soft tissue deficiency in the median tubercle and central vermilion can cause the whistling deformity in bilateral cleft lip patients. This study was conducted to evaluate the outcome of constructing a full median tubercle of bilateral cleft lips in two phases: primary repair and preschool surgery. We evaluated the results of this method by comparing the surgical outcomes with the lips of normal children.
Methods:
We created a vermilion only with lateral lip elements during the primary repair while banking the dry vermilion tissue of the prolabium on the oral side, following the Mulliken method. The dry vermilion of the prolabium is located on the oral side of the lateral mucosal lips sutured in the midline. The banked prolabial vermilion was subsequently shifted to the outside of the mouth using an island flap in pre-school age to create a full median tubercle. The banked vermillion was put to use in 19 children. Lip measurements of 17 of those patients were obtained and compared with the average lip measurements of six-year-old Japanese normal children. We obtained the 3 antropometric measurements of the lips. Each patient's median tubercle was evaluated based on her photographs taken before and after the operation. It was graded on a five-point scale. The grades were analyzed using the paired sample T test.
Results:
Our method produced a natural shape and sufficient volume of the median tubercle without further exposing the mucosal surface to the exterior.
Conclusions:
For patients with cleft lips, the current prevailing surgical technique, which relies solely on the lower lip tissue, poses a challenge as the volume of tissue is insufficient to create a full median tubercle. A two-step technique using a vermilion tissue that was banked at the time of primary repair is promising in addressing this issue.

Change in the five-point scale before and after surgery

	Pre-operation	Post-operation	
scale mean	3.76	4.41	$p < 0.05$
variance	0.32	0.88	

The five-point scale: Type 1 (whistling); Type 2 (flat) ; Type 3 (tiny tubercle); Type 4 (enough tubercle and exposed mucosal lip), and; Type 5 (enough tubercle and not exposed mucosal lip).

The pre- and post-operative photographs showed an average score of 3.8 before the corrective surgery and an average score of 4.4 after the surgery, a statistically significant improvement ($p < 0.05$).

median tubercle, two-staged vermilion plasty

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Changes in CUCLP Nasolabial Appearance Ratings With and Without Secondary Revision Surgery

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WE3.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: There is a lack of information about whether revisions result in measurable improvement in nasolabial appearance. The purpose was to assess nasolabial (NL) appearance ratings before and after secondary revision surgery compared to changes in nasolabial rating to those evident at a similar age range without any secondary revision surgery.
Methods: 38 photographs were used to assess Nasolabial (NL) appearance of 19 patients with CUCLP (13 male, 6 female) who underwent revision surgery at mean age 11y:9m. Each patient was assessed at 2 different ages before and after revisions using the Q-sort method and the Asher-McDade scale. Frontal and profile images were prepared and cropped identically for blinding. Vermilion border(VB), nasolabial frontal(NF) and nasolabial profile(NP) views were rated. Profile images were all cleft side. Each patient was rated twice by 6 raters. Intra- and inter-rater reliabilities were assessed with Weighted Kappa. A Mixed Effects Model and Multiple Linear Regression were used to test for the significance of changes over time ($p<0.05$).
Results: Intra-rater agreement was Good to Very Good (mean Kappa for VB=0.794, NF=0.800, NP=0.794) Inter-rater agreement was Good for VB (0.623) and NF(0.661), Moderate for NP(0.529). There were no significant effects related to gender and orthodontic appliances. All mean scores in the after-revision group improved (decreased): NP 3.48 to 2.96; NF 3.50 to 2.95; VB 3.09 to 3.05. These changes were not significant for NP and VB when compared to the changes in the no-revision control group. However, the improvements in NF score and the Total NL score were significant when compared to the no-revision control group ($p=.003$ and .046 respectively).
Conclusions: NF ratings and Total NL scores of nasolabial appearance in this sample of CUCLP improved significantly following secondary revision surgery. NP scores improved but not significantly and there was no measurable change in VB scores.

Lip/Nose Revisions, Q-sort Rating, Asher-McDade

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Reaching agreement on a method for assessing and documenting post-operative oronasal fistulae – The UK and Ireland DELPHI Fistula Study

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction

Reporting of post-operative fistulae has long been a controversial topic among cleft surgeons, with large variation in definitions, reported rates and therapeutic interventions. Many variations exist due to small sample sizes and difference of opinion on when and how fistulae should be examined and reported.

Aims

To develop a consensus based on expert opinion of a practical and valid method for assessing and documenting oronasal fistula following cleft palate repair.

Methods

A DELPHI Consensus model was used to maintain anonymity and validity of data. An expert steering group devised a broad ranging survey. Emails were sent to all 16 UK and Irish cleft teams inviting participation for cleft surgeons, specialist nurses, orthodontists, speech and language therapists and paediatric dentists with significant (>2yr) experience in working with patients with clefts. These 54 volunteers from 12 cleft centres comprised the expert panel.

The expert panel were surveyed via a secure online website, with aggregated results sent out to all panel members after the first round, and then asked to complete the survey a second time after review of these results.

Results

Responses were received from all 12 cleft centres. Round 1 returned 54 responses (44 complete). Round 2 returned 52 responses (37 complete). Incomplete results were discarded.

Both rounds showed a good concordance, and showed strong consensus agreement on specific demographics, classification systems, cleft metrics, surgical reporting, fistula assessment methods and time points. LAHSHAL was suggested the most popular method for reporting primary diagnosis. The most suggested time point to assess for fistula was 6 months post-op in both rounds.

Conclusions

This consensus will be used to propose a minimum data set for consistent reporting of post-operative fistula at this meeting, enabling meaningful comparative outcome studies. This in turn will lead to improved outcomes for our patients.

Surgery, Fistula, Outcome measures, DELPHI

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Sufficient velar length is prerequisite to the effectiveness of intravelar veloplasty: a randomized controlled study

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction: Intravelar veloplasty (IVV) has long been incorporated into various modern palatoplasty techniques, but high-level evidence is still scarce in analyzing its effectiveness or potential prognostic factors.
Aims: To comprehensively evaluate the outcome and prognostic factors of radical IVV with a prospective randomized controlled study.
Methods: Consecutive patients with congenital cleft palate visiting our cleft center in 2012 at the age before 18months were prospectively assigned into two treatment groups according to a random number table. In the IVV group, the velar muscle was dissected and transpositioned according to Sommerlad's description. In the non-IVV group, the velar muscle was left attached to the nasal mucosa and approximated by mattress sutures. The velar length, cleft width and pharyngeal depth were measured before operation. The fistula occurrence and velopharyngeal function were evaluated at the age of five. Subgroup analyses were performed basing on the velar length, cleft width and pharyngeal depth.
Results: A total of 150 patients were enrolled, with 44 followed in the non-IVV group and 63 followed in the IVV group. No significant differences were detected in the cleft severity, cleft types, surgical age, fistula rate, or velopharyngeal competence (VPC) rate between the two groups. Among the patients with velar length shorter than 12mm, the VPC rate was similar between the two groups (70.0% for both non-IVV and IVV, p=1.000); while among the patients with the velar length greater than 12mm, the VPC rate was significantly higher in the IVV group (67.7% for non-IVV and 80.0% for IVV, p=0.042). The IVV procedure was thus modified with additional soft palate lengthening, and the resultant VPC rate reached 95.7%.
Conclusions: Sufficient velar length is the premise to the effectiveness of intravelar muscle retroposition.

intravelar veloplasty, velum length

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Long-term speech outcome in patients with Robin sequence after cleft palate repair and tongue-lip adhesion

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction: Tongue-lip adhesion (TLA) is commonly used as a surgical treatment for upper airway obstruction (UAO) in patients with Robin sequence (RS).

Aim: The effect on speech and articulation outcomes after TLA and subsequently cleft palate (CP) repair is insufficiently investigated. The purpose of this study was to assess the effect of TLA on the long-term speech and articulation outcomes of patients with RS after cleft palate repair. These outcomes were compared to patients with RS who required positioning alone and to isolated cleft palate (ICP) patients.

Methods: All consecutive patients with RS (with or without TLA) versus isolated cleft palate (ICP) that underwent cleft palate repair were retrospectively reviewed. Speech and articulation included all assessments between the age of 3-6 years. Outcomes included: Secondary speech operations, velopharyngeal insufficiency (VPI), hypernasality, and articulation errors by cleft type characteristics (CTC), including 4 categories: 1.Passive 2.Non-oral 3.Anterior-oral 4.Posterior-oral.

Results: 41 RS-patients (56% syndromic, 44% isolated) and 61 ICP-patients underwent repair with sufficient follow-up. Of them, 56% underwent a TLA at median age of 12 days. Rates of hypernasality (p =.004), secondary speech operations (p =.004) and posterior oral CTC (p =.042) were higher in RS compared to ICP. Isolated RS had similar speech outcomes compared to ICP, however syndromic RS-patients needed more secondary speech operations compared to isolated RS (p =.043). TLA-RS-patients did not demonstrate differences in speech outcomes or any CTC's (all p >.05) compared to non-TLA-RS-patients, except for the anterior oral CTC (74% TLA-RS vs. 28% non-TLA-RS, p =.005).

Conclusion: RS-patients have higher rates of hypernasality and needed more secondary speech operations compared to ICP-patients. In RS-patients, our findings demonstrated that TLA does not affect long-term velopharyngeal function. However, TLA-RS-patients demonstrated higher rates of anterior-oral CTC, that might be related to a different positioning of the tongue after TLA.

Robin-sequence, cleft-palate-repair, tongue-lip adhesion, speech

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A more extensive intravelar veloplasty during primary palate repair results in a decreased rate of secondary speech surgery

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction: The extent of intravelar veloplasty (IVV) varies amongst surgeons. The impact on speech of a more aggressive dissection and levator repositioning remains unknown. The senior author changed practice, adopting a more aggressive technique, in 2008, providing an opportunity for comparison.

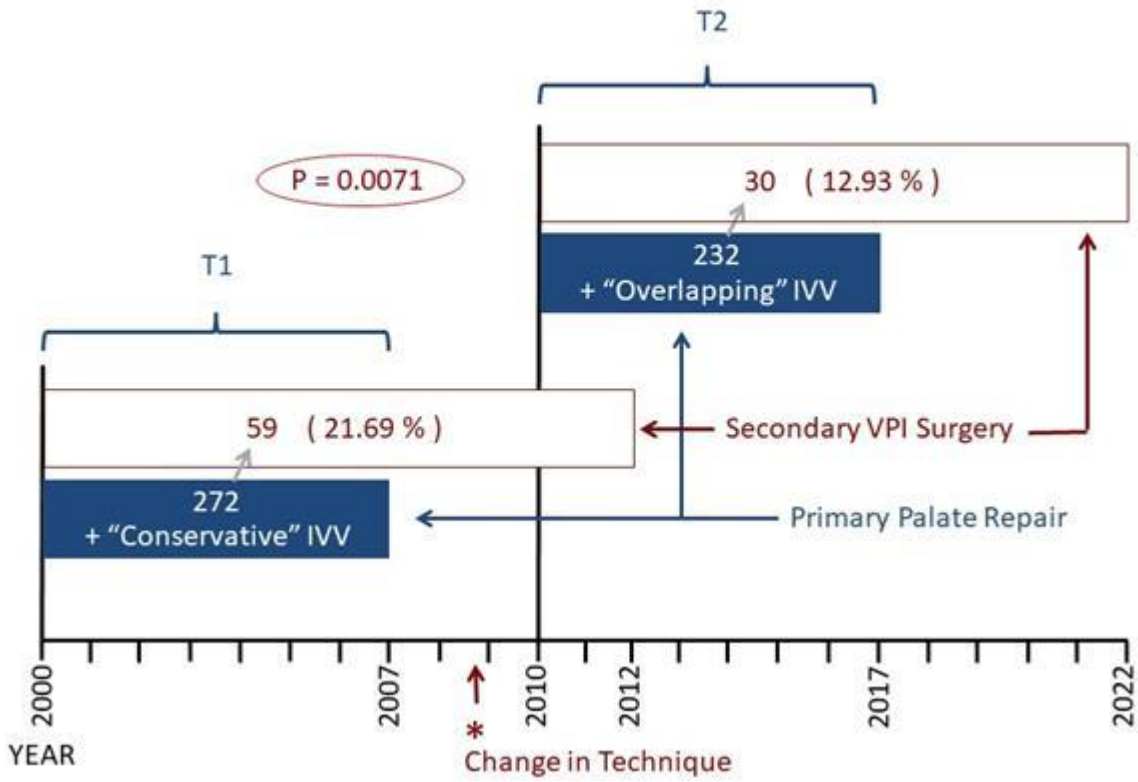
Aims: The aim of this study was to compare two methods of intravelar veloplasty, “conservative” versus “overlapping”, performed by the same surgeon. The duration of case collection (7 years) and the follow-up period (range 5 – 12 years) was identical for each group.

Methods: A review was performed of prospectively acquired data from a 22-year period. All patients in the study underwent a straight-line repair with IVV. The first group (performed January 2000 to January 2007) underwent a “conservative” IVV, which entailed release of the velar musculature from the hard palate and nasal side mucosa sufficient to allow midline approximation of the muscles. The second group (January 2010 to January 2022) underwent an “overlapping” IVV. This dissection involved complete release of the velar muscles (palatopharyngeus and levator) from the hard palate shelf, nasal component of the tensor, tensor aponeurosis, and nasal side mucosa as far as the levator tunnel. This latter technique allowed for transverse retro-positioning of the levator muscles and overlapping of the velar muscles across the midline. Patients in each group were followed over the subsequent 5 to 12 years and the rates of secondary surgery for velopharyngeal insufficiency (VPI) were compared.

Results: Patients who received the more aggressive “overlapping” IVV had a significantly ($p<0.05$) lower rate of secondary surgery for VPI than those who underwent a more conservative IVV; 12.93% (30 of 232) versus 21.69% (59 0f 272). The rate of pharyngoplasty was also significantly lower ($p<0.05$); 2.16% versus 11.76%.

Conclusions: A more aggressive dissection and levator retro-positioning results in a lower rate of secondary surgery for VPI.

RESULTS



Palatoplasty; intravelar veloplasty; velopharyngeal insufficiency

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Assuring the Quality of Speech Assessment of Velopharyngeal Function via Telehealth

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Assuring the Quality of Speech Assessment of Velopharyngeal Function via Telehealth– Niamh Ward

Introduction: Achieving successful speech outcomes for patients with Velopharyngeal Dysfunction (VPD) is one of the primary treatment goals of palate repair surgery (Kara et al., 2020; Baillie and Sell, 2020). A comprehensive perceptual speech assessment is central to evaluating this (Sweeney and Sell, 2008). Covid-19 has resulted in the wide-scale adoption of telehealth as the medium of service delivery (Ben-David et al., 2020; Pamplona and Ysunza, 2020). There are significant gaps however, in the evidence currently available regarding the safety and quality of the assessment of airflow symptoms associated with VPD via telehealth.
Aims: This project aims to use simultaneous assessment of airflow parameters (hypernasality, hyponasality, audible nasal emission and turbulence) using existing speech audit protocols to identify whether there are any differences between face-to-face and telehealth assessments.
Methods: This is a quantitative quality assurance project which used a within subject design. Audio speech samples were collected from 8 participants using the Cleft Audit Protocol for Speech- Augmented (CAPS-A) (John et al., 2006). Assessments were simultaneously recorded face-to-face and via telehealth. Speech data was analysed by two CAPS-A trained listeners who were blind to participant and assessment condition. Intra- and inter-rater reliability was high overall.
Results: No statistically significant differences were found between ratings of hypernasality, hyponasality, nasal emission or turbulence in face-to-face or telehealth data samples using the Wilcoxon Signed Rank Pair Test ($p =< 0.05$). Percentage exact agreement, however indicated that 50% of ratings of hypernasality and 100% of turbulence ratings identified in the face-to-face condition were not detected via telehealth.
Conclusions: This quality assurance project highlights the need for further exploration of the differences between assessment of VPD face-to-face and via telehealth to ensure patients are accessing safe and equitable care regardless of assessment medium.
(300 words)

VPD, Speech Assessment, Telehealth

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On the Benefits of Speech-Language Therapy forIndividuals Born With Cleft Palate: A Systematic Review and Meta-Analysis of Individual Participant Data

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction: Cleft lip and/or palate (CLP) is a common birth defect, and after reconstructive surgery, about 50% of children at 5 years of age have speech deviations and are referred to speech-language therapy (SLT). The peer-reviewed evidence for the benefit of SLT has been uncertain.
Aims: Our objective was to systematically review and metaanalytically summarize the benefit of SLT for individuals born with CLP.
Methods: A systematic search was conducted (last search on February 19, 2021) on studies evaluating SLT with pre and post measures on speech production, language ability, intelligibility, and/or patient-reported outcomes. We sought individual participant data (IPD) and evaluated on an individual level if the outcome measure had improved to a clinically relevant degree during SLT and if the outcome measure was on a level with peers or not after SLT. Meta-analyses and metaregressions were applied to synthesize IPD across studies.
Results: Thirty-four eligible studies were found. Nineteen studies provided IPD (n = 343) for the main analysis on speech production. The synthesized information suggests that, during SLT, speech production improved to a clinically relevant degree for many individuals (95% CI [61%, 87%]) and that speech production was on a level with peers for some individuals after SLT (95% CI [10%, 34%]).
Conclusions: The main strength of this meta-analysis is that we evaluated on an individual level pre- and post-intervention data based on considerations of clinical relevance. This approach allowed us to conclude that many individuals benefit from SLT and that further work on evaluating SLT in this patient group is meaningful.
This project was published January 2022 in the Journal of Speech, Language, and Hearing Research; https://doi.org/10.1044/2021_JSLHR-21-00367.
cleft palate; systematic review; intervention

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Newly identified developmental delays in a large population of children with non-syndromic cleft lip and/or palate

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction: Non-syndromic cleft lip and/or palate (NSCLP) is the most common congenital craniofacial anomaly. Early recognition of any associated developmental delay aids family counseling and development of individualized treatment plans.

Aims: To identify developmental delays associated with NSCLP in a large population of children in order to begin identifying etiology and improve multidisciplinary management.

Methods: This is a single-center retrospective analysis of all children age 5-21 years with a diagnosis of cleft lip and/or palate. Demographic and clinical variables were collected from this study population and from the 2018 National Survey of Children's Health (NSCH) database (control population).

Results: After excluding children with confirmed or suspected genetic syndromes at our center (n=160) and from the NSCH database (n=1,383), 619 children with NSCLP were included in our study cohort and 29,147 in our NSCH control group. Mean birth weight of NSCLP children was lower than the national cohort (108.5±24.8oz vs 117.8±19.1oz; p<0.0001). Compared to the control cohort, children with isolated cleft palate had significantly higher (p<0.00001) rates of intellectual disability (3.2% vs 0.5%), speech delay (70.8% vs 7.1%), global developmental delay (15.7% vs 5.8%), cerebral palsy (2.2% vs 0.3%) and hearing loss (25.9% vs 1.0%). Children with cleft lip (with or without cleft palate) had significantly higher rates of ADD/ADHD compared to the normative national cohort: isolated cleft lip (7.7% vs 2.3%, p=.0092), unilateral cleft lip & palate (4.6% vs 2.3%, p=0.0088), bilateral cleft lip & palate (5.9% vs 2.3%, p=0.0153).

Conclusions: Our study demonstrates higher rates of developmental delays in children with NSCLP compared to the general pediatric population. This includes increased intellectual disability, global delays, and cerebral palsy in children with non-syndromic isolated cleft palate and increased ADD/ADHD in children with cleft lip (with or without cleft palate). This association highlights the importance of proper risk assessment, appropriate family counseling, and multidisciplinary team management.

developmental delay, cleft, ADD, ADHD

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Validation of the Intelligibility in Context Scale (ICS) in Sinhala for use with children with Cleft Lip and Palate in Sri Lanka

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction

Speech and Language Therapists (SLTs) use a range of assessments to measure speech outcomes in children with cleft lip and palate (CLP). The Intelligibility in Context Scale (ICS) is a screening questionnaire that focuses on parents' perceptions of children's speech in different contexts. The original version of the ICS has high internal reliability (α=0.93), construct validity and sensitivity (McLeod et al., 2012). It has been translated into 60 languages to date, but not Sinhala, the principal language spoken in Sri Lanka.

Aims

To translate and validate ICS into Sinhala.

To compare the ICS-S ratings of children with repaired CLP and typically developing (TD) children.

Methods

The ICS was translated into Sinhala following Gulimen et al. (1993). This required two forward translations from English to Sinhala; followed by reconciliation and agreement and a backward translation from Sinhala to English. Final forward Sinhala translation was checked for linguistic and conceptual equivalence to the original and then piloted. Fifty parents of typically developing children (aged 12-15) and 38 parents of children with repaired CLP (aged 12-15) were asked to complete the Sinhala ICS questionnaire.

Results

The ICS - S had high internal consistency for both groups (TD $\alpha = 0.87$, $p<0.05$, CLP $\alpha = 0.97$, $p<0.05$). The ICS-S total scores and item scores showed significant correlations, indicating good construct validity. TD participant group's ICS-S average mean scores ($M = 4.88$, $SD = 0.29$) were significantly higher compared to the CLP ICS-S average mean scores ($M = 4.64$, $SD = 0.67$).

Conclusions

A considerable proportion of young children with repaired CLP were found to have reduced intelligibility in their speech. The Sinhala version of the ICS has overall good psychometric properties. Therefore, this tool can be recommended as a parent-rating screening tool for clinical and research purposes in Sri Lanka.

speech intelligibility, adolescents, cleft palate

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Development and validation of facilitator's training program for community cleft telespeech therapy

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction: Telepractice has emerged as a promising service delivery model especially in low- and middle-income countries (LMICs) and for families living in remote areas. This has underscored the need for preparing the caregiver who serve as facilitators at the remote end. This study aimed to develop and validate a video module in Tamil for caregivers of individuals with CLP in Tamilnadu India, for training them to serve as facilitators during tele-speech therapy.
Method: Phase1: Content for the video module was developed with the inputs from 03 SLPs and 50 caregivers of individuals with CLP. This was collected using independent questionnaire developed by the investigators. Phase 2: Video module was conceptualized in a logical sequence which were supplemented by digital illustrations and voice over. Illustrations, content, and the script were reviewed by independent evaluators and their suggestions were incorporated. The final version was recorded in a professional studio. The 09 minute video included information on device and technology, setting up an ideal environment and facilitation of the session. Phase 3: The developed video module was validated by 10 caregivers and SLPs. The data was subjected to descriptive and percentage analysis.
Result: The survey conducted in the first phase of the study revealed that all the caregivers (100%) were interested to learn about the role of facilitators and 82% preferred video module for learning over other modalities. In the validation process, 09 SLPs and 10 caregivers reported the content to be appropriate and adequate. The quality of the module was rated to be optimal by all the SLPs and caregivers. Nine out of the 10 SLPs felt that the video can be used as a self-training module.
Conclusion: The developed video module can serve as useful resource for caregivers of individuals with CLP with basic smart phone facility to understand their role as facilitators during telespeech therapy.

cleft telespeech, training, facilitators, LMIC,

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Evidence-based cleft palate speech intervention: integration of the best available research evidence with the therapists' and the parents' perspectives

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WE3.2 Arnold Huddart and Owen Cole Prize Session - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 11:00 - 13:00

Introduction: Almost two decades ago, the World Health Organization stressed the need for efficacy studies within the field of cleft palate (CP) speech disorders. Unfortunately, evidence for speech intervention approaches in this population is still lacking.
Aims: To provide an overview of two randomized controlled trials (RCT) investigating the effectiveness of speech intervention approaches and speech intervention intensities in children with CP. Additionally, the therapists' and parents' perspectives on cleft palate speech intervention will be discussed.
Methods: The effect of motor-phonetic intervention was compared with linguistic-phonological intervention in 14 children with CP (Mage = 7.71y) using a block-randomized, sham-controlled trial. Each group received 10 hours of intervention for 2 weeks. In addition, the effect of high intensity speech intervention (HISI, five 1-hour sessions/week for 2 weeks) was compared with low intensity speech intervention (LISI, one 1-hour session/week for 10 weeks) in 12 children with CP (Mage = 8.0y) using a longitudinal RCT. Therapists' and parents' perspectives on cleft palate speech intervention were investigated using semi-structured interviews.
Results: Only in the group receiving linguistic-phonological intervention, percentage correctly produced consonants significantly improved following treatment. Concerning the intervention intensities, children in the HISI group made equally and for some variables even superior progress in only 2 weeks of therapy compared to children in the LISI group who needed 10 weeks of therapy. Therapists and parents had some specific concerns regarding the used approaches and intensities.
Conclusions: With regard to intervention approaches, a linguistic-phonological approach was found to be more effective in terms of improving speech outcomes than a motor-phonetic approach. With regard to intervention intensities, HISI is a promising strategy to improve speech outcomes in a shorter time period. Integration of the therapists' and parents' perspectives with the best available research evidence is indispensable for the provision of high-quality cleft speech care.
Evidence-based practice, randomized controlled trial

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Improvement in Speech Outcomes in England, Wales and Northern Ireland (2001-2012)

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Background: Regional cleft centres in England Wales and Northern Ireland have been routinely auditing speech outcomes for 5 year olds with cleft palate using consistent inclusion/exclusion criteria, for 12 years. Outcomes have been reported against agreed National Standards.
Method: For birth years 2001-2012, speech recordings on 5210 children were collected and analysed by consensus by trained speech & language therapists using the Cleft Audit Protocol for Speech – Augmented (CAPSA) audit tool. Statistical analysis was undertaken on each three year cohort 2001-03, 2004-06, 2007-09 and 2010-12.
For birth years 2001-2006 the data was collated manually and reported using anonymised data. For birth years 2007 onwards data has been collated, analysed and published by the National CRANE Database and NHS England Cleft Dashboard. The outcomes for each centre were initially compared against an evidence-based theoretical standard and are now compared against the national benchmark. Standards are defined using CAPSA requirements.
Results: Speech outcomes for all three standards have improved nationally with each three year cycle. They may now be beginning to plateau.
On Standard 1: 48% of children born 2001-03 achieved speech within the “normal” range increasing to 61% of children born 2010-12.
On Standard 2a: 66% of children born 2001-03 had no evidence of structurally related speech difficulties and no history of velopharyngeal surgery or fistula repair for speech purposes,
increasing to 71.5% of children born 2010-12.
On Standard 3: 60% of children born 2001-03 had no significant cleft speech characteristics requiring therapy or surgery increasing to 68% of children born 2010-12.
Conclusions: Systematic audit of speech outcomes for 5 years olds against national standards over the last 12 years has enabled UK cleft centres to benchmark their speech outcomes. This has helped drive improvements in speech outcomes for children born with cleft palate across England, Wales and Northern Ireland.

Audit, Standards, Speech, Outcomes, national

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Guidance to develop a multidisciplinary, international cleft registry

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

INTRO
The European Reference Network for Craniofacial anomalies and ear, nose, and throat disorders (ERN CRANIO) is a Europe-wide initiative to improve craniofacial care on an international level.
One of the workstreams, focused on cleft lip and/or palate (CL/P) and orodental anomalies, is dedicated to improve standardization of practices in cleft care all over Europe. However, the best treatment protocol has not been determined currently. The need to systematically register outcome measures on an international level was widely recognized within the CL/P workstream.

AIMS
The aim of the study to identify essential features, important considerations and main pitfalls when developing a multidisciplinary and international pediatric registry; the do's and don'ts.

METHODS
A systematic review was performed. Studies were included if their primary or secondary aim was to describe the design and/or the methods to develop or maintain an existing multidisciplinary registry that involves pediatric patients. For data extraction, thematic analysis was used, and data was assigned to the appropriate key theme. Structured narratives of each key theme were made.

RESULTS
A total of 30 studies were found throughout the search term. An additional 9 studies were identified. A list of 21 key themes was created. Purpose, data collection, and organization were most often highlighted in previous studies. Furthermore, specific considerations apply for pediatric registries, as different problems occur at different ages. When including multiple countries in a registry, caution should be made especially for the manner of data collection.

CONCLUSION
There is a great need for a more uniform and systematical cleft registration that is accessible and achievable for all types of cleft centers, regardless their geographical location or resources. In order to accomplish such a goal, the first important step is to create a scientifically solid fundament. This systematic review identified the important considerations for building a registry.
Standardized care; outcome measures; international

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Medical Documentation in Low- and Middle-income Countries: Lessons Learned from Implementing Specialized Charting Software

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction

The implementation of electronic health record (EHR) software at healthcare facilities in low- and middle-income countries (LMICs) is limited by financial and technological constraints. Smile Train, the world's largest cleft charity, developed a cleft treatment EHR system, Smile Train Express (STX), and distributed it to partnered institutions. Despite being a quality improvement tool, STX has also become the primary medium for medical documentation at some Smile Train-partner institutions.

Aims

The purpose of this study was to investigate trends in medical documentation practices amongst Smile Train-partner institutions to characterize the impact that specialized EHR software has on medical documentation practices at healthcare facilities in LMICs.

Methods

Surveys were administered electronically to 843 Smile Train-partnered institutions across 68 LMICs. The survey inquired about institutions' internet connection, documentation methods used during patient encounters, rationale for using said methods, and documentation methods for cloud-based storage of healthcare data. Institutions were classified by their geographic and economic characteristics according to the United Nations' M49 geographic classification system and the World Bank's Income Classification System, respectively.

Results

A total of 162 institutions (19.2%) responded to the survey. Most institutions employed paper charting (64.2%) or institutional EHR software (25.9%) for data entry during a patient encounter with the latter's use varying significantly across geographical subgroups (P = 0.01). STX was used by 18 institutions (11.1%) during a patient encounter. Workflow was the most frequently cited reason for institutions to employ their entry method during a patient encounter (51.4%) with data reliability (23.4%) and double-checking of data (21.7%) being the second most frequently cited reason for using paper and electronic documentation methods, respectively.

Conclusions

STX influenced medical documentation practices at several institutions; however, regulations and guidelines have likely limited its integration into daily clinical workflows. Further studies are needed to characterize trends in medical documentation in LMICs at a more granular level.

	Total	Central & South Asia	East & Southeast Asia	Europe & North America	Latin America & Caribbean	North Africa & West Asia	Sub-Saharan Africa	
	Value (%)	Value (%)	Value (%)	Value (%)	Value (%)	Value (%)	Value (%)	*p*
Internet Connectivity (n=160)								0.33
Good most of the time	55 (34.4%)	21 (42.9%)	11 (26.8%)	1 (50.0%)	10 (35.7%)	4 (80.0%)	8 (22.9%)	
Good sometimes	77 (48.1%)	22 (44.9%)	22 (53.7%)	1 (50.0%)	14 (50.0%)	1 (20.0%)	17 (48.6%)	
Limited/unreliable	23 (14.4%)	4 (8.2%)	6 (14.6%)	0 (0%)	3 (10.7%)	0 (0%)	10 (28.6%)	
No access	5 (3.1%)	2 (4.1%)	2 (4.9%)	0 (0%)	1 (3.6%)	0 (0%)	0 (0%)	
Entry Method: During Patient Encounter (n=162)†								
Paper	104 (64.2%)	34 (69.4%)	23 (54.8%)	2 (100%)	18 (64.3%)	1 (20.0%)	26 (72.2%)	0.13
Offline software	14 (8.6%)	4 (8.2%)	5 (11.9%)	0 (0%)	2 (7.1%)	0 (0%)	3 (8.3%)	0.93
STX (online)	18 (11.1%)	2 (4.1%)	6 (14.3%)	0 (0%)	3 (10.7%)	0 (0%)	7 (19.4%)	0.28
Institutional EHR	42 (25.9%)	13 (26.5%)	12 (28.6%)	0 (0%)	10 (35.7%)	4 (80.0%)	3 (8.3%)	**0.01**
Entry Method: Cloud-Based Storage (n=160)†								**0.02**
STX	95 (59.4%)	29 (59.2%)	30 (73.2%)	0 (0%)	12 (42.9%)	1 (20%)	23 (65.7%)	
STX + Other EHR	65 (40.6%)	20 (40.8%)	11 (26.8%)	2 (100%)	16 (57.1%)	4 (80%)	12 (34.3%)	

† = Only responses stating that an institution used the selected entry method are shown. STX = Smile Train Express; EHR = Electronic Health Record.

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"IndiCleft" - a web-based standardised research tool and a national resource for cleft anomalies

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction
In India, approximately 35,000 new cleft patients are born every year. Many patients receive suboptimum, improper, little or no treatment: The cumulative burden of cleft care is up to 1 million cases. The spectrum of problems is varied, the case load is enormous, and the logistics of treatment delivery are complicated. ICMR taskforce project was launched in 2012 to evaluate the status of cleft care in India and develop strategies to provide comprehensive cleft care through a dynamic multidisciplinary and multidimensional tool. This enormous data of multiple specialities of the enrolled cleft child has to be captured and managed from participating centres across India through a structured, digitised and standardised web tool, which can be linked to different e-platforms of national Programmes the Government for improving the care of patients with Cleft anomalies.

Aim
Develop and test a web-based application to create a system for national data of patients with cleft anomalies and digitise the patient records in a standardised pre-agreed format.

Methods
Corresponding to contemporary digital technologies, and evolutionary improvements in data collection, a web-based data collection instrument, including text, photographs, X-rays and audio files, was considered the most appropriate. The experts from varied domains in consult with the experts in cleft care, Indian Council of Medical Research and National Informatics Centre (NIC) evolved a web-based data collection instrument the "IndiCleft tool' . The tool has been tested and used over the years and is being upgraded to a NATIONAL RESOURCE of cleft data for research and cleft care registry.

Conclusion
The present paper describes experience and strengths of a "DYNAMIC" web-based data collection instrument involving multiple disciplines. The IndiCleft tool is the National resource on cleft data in India.

IndiCleft, web-based tool, dynamic, registry

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Inter-center comparison of speech outcomes at 5 years of age based on the Swedish Cleft Lip and Palate Registry

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Introduction: The objective of the Swedish Cleft Lip and Palate Registry (CLP registry) is to promote quality control, research, and improvement of treatment, by comparison of long-term results. The aim was to compare the six treatment centers, regarding speech outcomes at 5 years of age, using data from the CLP registry. In a parallel study, data on surgery up to 5 years was assessed.
Methods: Participants were 430 children born in Sweden between 2009 and 2014, with cleft palate with/without cleft lip and without known syndromes and/or additional malformations. Percent correct consonants, percent non-oral errors, and velopharyngeal competence at 5 years of age were assessed. Multivariable binary logistic regression adjusted for sex and cleft type was used to compare results among the six centers.
Results: Children treated at one of the six centers (center 4), that 2008 introduced a new method of soft palate closure, were less likely to achieve ≥86% correct consonants (OR=0.169, P<0.001), being without non-oral speech errors (OR=0.347, P<0.001), or having competent or marginally incompetent velopharyngeal competence (OR=0.244, P<0.001), compared to the average results of the other centers. At this center, a higher proportion of the children (61.5%) underwent speech-language therapy before the age of 5 than at the remaining centers (21.2-51%). Centers with fewer patients showed equivalent or better results than centers with more patients.
Conclusions: The Swedish CLP registry can be used for open comparisons of treatment results, to provide a basis for improvement of treatment methods. If deviating negative results are seen consistently at one center, one should reflect, analyze the data, try to find the reasons for the deviation and correct them. The findings did not support the idea that centralization of the CLP care in Sweden would improve outcomes of speech.

Registry, outcome, speech

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Upgraded Electronic Medical Records for Facial Anomalies (EMRFA) in Bulgaria

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction:
Our electronic medical records database started in 2013. It is open to the patients-parents and connects with a national network of specialists. In 2020, ALA received the support from Transforming Faces, Canada to develop more functionalities for comprehensive care and follow up of the patients.
Aims:
Develop global evaluation scores in each specialty for important periods of life, treatment steps and growth of the patient. Link the data depending on the severity of the anomaly, psychosocial risk factors, quality of the follow up and treatment.
Methods:
The platform has been migrated from Visual Studio 2013 - to 2019, MS.net framework Core 3.1 and from a server to a cloud server. An update of the posts “consultation” and “therapy” on the wall of the patients has been done according to a mix of international standards for documentation and new posts “global evaluation” at ages 5-7, 8-11, 12-14, 16-18 and 19+. The global evaluation posts (GEP) have been constructed to represent the temporary score in each specialty – surgery, speech, hearing, maxillofacial growth and psychosocial.
Results:
Over 1500 users and 1300 patients are registered in the EMRFA. Within 2 months of the updated EMRFA, we succeeded to obtain retrospectively 234 partial GEP and 27 full GEP. The quality of the follow up is directly related to the work of the core Team to obtain more and full GEP in each age period.
Conclusions:
Our EMRFA development is an attempt to optimize the follow up of patients at important age periods and to check for the patients that have dropped out of treatment or follow up. We have included in our database design many optimal follow up parameters such as screening for delay in the general development, psychosocial risks factors and a score evaluation of the treatment by the patient-parents themselves.

electronic medical record

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Natural history of cleft lip and palate: a registry-based study

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: with the control of infectious diseases and malnutrition, congenital anomalies (including cleft lip and palate) are now making a proportionally greater contribution to ill health in childhood in many countries. The cleft lip and palate defects are the most common orofacial anomalies causing dental deformities and malocclusion, difficulty in chewing, swallowing, esthetic, speaking, and a significant social and economic burden.

Aims: the aim of this study was to provide the natural history and occurrence pattern of cleft lip and palate in the northwest region of Iran from 2000 to 2019.

Methods: since 2000, infants born with birth defects have been identified/registered in Tabriz Registry of Congenital Anomalies (TRoCA). For this study, the data of newborns with cleft lip and palate were collected using the TRoCA registry.

Results: a total of 291,569 births were investigated by TRoCA registry from which 431 cases were identified as having cleft lip and palate presenting a prevalence of 1.48 per 1000 live births (95% CI: 1.34-1.62) over the past 20 years in the region. The occurrence of cleft lip and palate was more common in males than females. The fetal death ratio was 5 percent of live-born children. The mortality rate in this group of anomalies was 5 percent among all birth defects. The proportion of infants with cleft lip and palate surviving to the second week was 54 percent.

Conclusions: our findings may have a role in identifying clues to the etiology of cleft lip and palate in the region and similar areas. The results may be useful in genetic consultation, prognostic values, and in planning and evaluating the primary prevention measures of cleft lip and palate, particularly in high-risk populations.
epidemiology, mortality, survival, prognosis

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Achieving Standardized Measurement of Aesthetic, Dental, and Speech Outcomes in Children with Cleft Lip and/or Palate: A Pilot Study of a Multifaceted Implementation Strategy

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Introduction: Standardized outcome measurement enables rigorous assessment of care delivery. Collecting measures consistently on all patients remains a challenge.

Aims: To evaluate a multifaceted implementation strategy to collect aesthetic, dental, and speech outcomes for children with cleft lip and/or palate (CL/P)

Methods: A one-armed pilot study of a multifaceted implementation strategy was conducted at a high-volume cleft center in the United States. The clinical intervention being implemented was the standardized measurement of aesthetic, dental, and speech outcomes for children with CL/P at five years of age. The standardized measures were: facial photographs; occlusal photographs and dmft index of caries burden; CAPS-A-AM assessment, SNAP-R test of nasalance, and GFTA-3 test of articulation. The implementation strategy included: (1) brief educational sessions for providers and staff; (2) a registry containing surgical history and outcome measurements of all patients; (3) Plan-Do-Study-Act (PDSA) cycles to address barriers to patient recall; (4) PDSA cycles to address barriers to collecting measures during clinic visits; and (5) development of an implementation blueprint detailing expectations of clinical team leaders. The primary outcome measure was penetration of the intervention, defined as the proportion of all five-year-old children for whom the standardized measures were collected. The secondary outcome was acceptability of the intervention, evaluated with the Acceptability of Intervention Measure. Outcomes were assessed 12-months following deployment of the implementation strategy.

Results: The implementation strategy resulted in high penetration of standardized outcome measurement: aesthetic outcome measurement increased from 16% to 80% ($p<0.0001$); dental outcome measurement increased from 0% to 58% ($p<0.0001$); speech outcome measurement increased from 33% to 77% ($p=0.0002$). Acceptability of standardized outcome measurement was high: 95% of cleft team providers and staff (n=19) reported that standardized outcome measurement met their approval, was welcomed, and was liked.

Conclusions: Collection of aesthetic, dental, and speech outcomes increased substantially following deployment of a multifaceted implementation strategy.
outcome measurement, team, CAPS-A-AM

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Inter-center comparison of data on surgery up to 5 years of age based on the Swedish Cleft Lip and Palate Registry

Plasticsurgeon Magnus Becker[1], Patient representant Marie Eriksson, Plasticsurgeon Avni Abdiu, Speech therapist Karin Brunnegård, Plasticsurgeon Jenny Cajander, Speech therapist Emelie Hagberg, Plasticsurgeon Malin Hakelius, Speech therapist Christina Havstam, Plastic surgeon Hans Mark, Speech therapist Åsa Okhiria, Plasticsurgeon Petra Peterson, Speech therapist Kristina Svensson, Speech therapist Krisitna Klintö
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Becker M, Eriksson M, Abdiu A, Brunnegård K, Cajander J, Hagberg E, Hakelius M, Havstam C, Mark H, Okhiria Å, Peterson P, Svensson K, Klintö K.

Introduction: The objective of the Swedish Cleft Lip and Palate Registry (CLP registry) is to promote quality control, research, and improvement of treatment, by comparison of long-term results. The aim was to compare the six treatment centers, regarding data on surgery up 5 years of age from the CLP registry. In a parallel study, data on speech outcomes at 5 years of age were assessed.
Methods: Participants were 430 children born in Sweden between 2009 and 2014, with cleft palate with/without cleft lip and without known syndromes and/or additional malformations. Number of primary and secondary palatal surgeries up to 5 years of age, and timing of the last primary palatal surgery were assessed.
Results: At one of the six centers (center 4) that 2008 introduced a new method of soft palate closure, the palate was closed in one to three stages, and at the remaining centers in one or two stages. At this center, more children underwent a higher number of palatal surgeries before 5 years of age, and the last primary palatal surgery was performed at a higher age. Furthermore, at this center a higher proportion of children (35.1%) was treated with secondary palatal surgery before 5 years than at the remaining centers (0-21.8%).
Conclusions: The Swedish CLP registry can be used for open comparisons of treatment results, to provide a basis for improvement of treatment methods. If deviating negative results are seen consistently at one center, one should reflect, analyze the data, try to find the reasons for the deviation and correct them.

Surgical, intercenter comparison, quality register

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Demography and surgical treatment of internationally adopted and Swedish-born children with CL/P: a comparative, registry based study

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Aim:
This study compares demography, concurrent medical conditions, and surgical procedures in the national cohorts of internationally adopted children (IAC) and Swedish-born children (Swe-born) with CL/P until the age of five.
Method:
This is a national registry-based comparative study. Data on cleft-type and gender for 331 IAC and 2064 Swe-born (born 2007-2018) were extracted from the Swedish CL/P registry. Data on concurrent medical conditions and surgical procedures performed in Sweden until age five were collected for IAC and Swe-born with UCLP and BCLP, born 2007-2013. The main outcome measures were cleft type, gender, concurrent medical conditions, and number and type of surgical procedures until five years of age.
Results:
A higher prevalence of UCLP and BCLP ($p<0.0001$) and a predominance of male patients with UCLP ($p=0.0025$) was identified among the IAC compared to Swe-born. Differences in concurrent medical conditions in IAC vs Swe-born infants were non-significant. Primary palatal surgeries performed in Sweden were delayed for IAC ($p<0.0001$) and IAC received more secondary surgery before age five ($p<0.0001$).
Conclusions:
The Swedish CLP registry provided national coverage of the CL/P cohort. Internationally adopted children exhibited a predominance of more severe cleft-types, a predominance of males, delayed primary surgery and increased need for secondary surgeries before age five.

Table 1. Summary of palatal surgical procedures performed in Sweden before five years of age. Comparisons are drawn between the national cohorts of IAC and Swe-born with UCLP and BCLP, born 2007-2013.

	UCLP			BCLP		
	IAC n=138 Mean ± SD	Swe-born n=251 Mean ± SD	p-value	IAC n=70 Mean ± SD	Swe-born n=122 Mean ± SD	p-value
Age at first primary palatal surgery (months)*	24.3 ±.6.6	10.1 ± 5.0	<0.0001	25.7 ± 7.3	11.2 ± 5.3	<0.0001
Number of primary palatal surgeries per child	1.4 ± 0.8	1.6 ± 0.6	0.0064	1.6 ± 0.8	1.7 ± 0.1	0.9617
	IAC	Swe-born	p-value	IAC	Swe-born	p-value
	n %	n %		n %	n %	
Total number of children who underwent secondary surgery	55 39.9	30 12.0	<0.0001	32 45.7	23 18.9	<0.0001
Total number of children who underwent two or more secondary surgeries	14 10.1	6 2.4		10 14.3	5 4.1	

*The results for age at first primary palatal surgery were based on 124 IAC and 243 Swe-born with UCLP as well as 66 IAC and 117 Swe-born with BCLP. **Abbreviations:** IAC, internationally adopted children; Swe-born, children born in Sweden; UCLP, unilateral cleft lip and palate; BCLP, bilateral cleft lip and palate; SD, standard deviation.

Adoption, CL/P, palatal surgery, Registries

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The Cleft Outcomes Registry-Research Network - CORNET: A Comparative Effectiveness Study of Speech and Surgical Outcomes and a Framework for Future Collaborations

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction and Aims

Children with cleft palate (CP) undergo numerous surgical, orthodontic, speech, and other interventions designed to lessen the impact of clefting. Yet, there is genuine uncertainty about many aspects of cleft care. Significant historical barriers to research in CP have existed including: poor intercenter collaboration; underpowered studies; a lack of standard protocols for collecting, recording, and rating data; and a limited number of appropriate study designs/statistical techniques. In 2018, the NIH-NIDCR funded a multisite study of 16 cleft palate-craniofacial centers across the US. In addition to the hypothesis-driven study of primary palatoplasty outcomes, the project is attempting to characterize practice variation in speech interventions and their impact on outcomes. A unique aspect of the grant is the creation of the Cleft Outcomes Registry-Research Network (CORNET); which will serve as the first true “biopsy” of current clinical practice and outcomes for children with CP+L in the US while also facilitating interdisciplinary collaborations through data/resource sharing.

Methods

A prospective-longitudinal-comparative-effectiveness design is being used to compare outcomes of two palate repair techniques (intra-velar veloplasty and Furlow Z-plasty). Children (1,500) are enrolled prior to surgery. Common data elements (CDEs) (demographic, medical, surgical, developmental, etc.) are collected across multiple time points. Providers (surgeon and SLPs) also complete point-of-care forms and provide information on their training/experience. Speech and surgical outcomes are assessed at age three by blinded speech raters.

Results

One-thousand-fifty children are currently enrolled. As an extension of this project, a new study of health and psychosocial outcomes will utilize CORNET to recruit participants, collect data from existing enrollees, and utilize shared CDEs.

Conclusion

The CORNET project provides an innovative model for collaborative multicenter outcomes research. The goal of this network is to provide an enduring contribution to the field of CP and to support timely, novel, and clinically relevant research across all domains of cleft care.

registry, speech and surgical outcomes

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Birth registration percentages and national congenital anomaly registers (CAR) - an analysis of global data.

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WE3.3 REGISTRIES, Fintry, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction
Birth registration is a human right. Despite this, comprehensiveness of birth registers remains poor in many countries, with a quarter of all children under the age of 5 remaining unregistered. Additionally, surveillance of congenital anomalies is also very limited in some areas, which affects access to care and service delivery planning for congenital anomalies.

Aims
The aim of this study was to evaluate any link between birth registration percentages and the existence of a national CAR per country.

Methods
A search was performed on 202 countries and territories recognised by the United Nations to establish where national CARs exist, including data from the International Clearing House of Birth Defects Surveillance and Research (ICBSDR) and the European network of population-based registries for the epidemiological surveillance of congenital anomalies (EUROCAT). This was analysed along with birth registration data from UNICEF to ascertain if there is an association between the percentage of births registered in a country/territory and the existence of a national CAR using a t-test for equality of means.

Results
Out of 202 countries, 43 were found to have a national congenital anomaly register. Birth registration data was unavailable for 25 countries (3 of which reported a national CAR). In countries with a national CAR, the average percentage of all births registered was 97.4%, compared with 79.9% among those without a CAR; a highly significant mean difference of -17.44 ($p<0.0001$).

Conclusions
The importance of national CARs is widely recognised, but the significant association between the lack of a national CAR and (countries with) lower birth registration, suggest that successful national CAR development cannot be planned in isolation and we may need to consider broader factors that hinder birth registration as a whole; and address them through global collaboration.
registries, congenital anomalies, birth registration

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Incidence of Cleft Palate Fistula: A Single Surgeon Experience with Two-Stage Palatoplasty

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Background:
Reported oro-nasal fistula rates after cleft palate (CP) repair vary widely ranging from 0-78%. Fistulas are clinically significant when patients experience nasal regurgitation or when they demonstrate signs of velopharyngeal insufficiency.
Aims:
This study aims to determine the incidence of palatal fistula in patients undergoing two stage CP repairs at the authors' institution.
Methods:
This retrospective analysis of 37 patients (23 males and 14 females) with CP treated by a single surgeon between 2006 to 2021 includes all patients with CP who underwent two-stage palatoplasty and had at least 3 months follow-up after the second stage. Patients who underwent prior palatal surgery, were immunocompromised, had wound healing disorders, developed infection or had oral/airway instrumentation within the first 6 weeks post-operatively were excluded. The mean length of follow up was 98 months ranging from 4 to 162 months.
Results:
The incidence of palatal fistula was 8.1% (Three patients). One patient had clinically significant fistula requiring repair by Von Langenbeck palatoplasty for hypernasal speech. The other two fistulas were slits measuring less than 2mm2 which closed spontaneously. Statistical evaluation was performed using multivariate regression. The incidence of fistula increased significantly without nasoalveolar molding (NAM) to 33% (1/3) from 5.9% (2/34) in patients who underwent NAM ($p = 0.02$). The patient with a fistula who did not undergo NAM was the only patient with a clinically significant fistula requiring repair. No significant differences between patients with and without fistulas were identified with respect to patient gender, need for dental implants, age at intravelar veloplasty or age at palate repair.
Conclusions:
Two stage palate repair with the assistance of NAM is highly effective for achieving closure of CPs in all patients, including syndromic patients. And, in those who do develop fistulas with this technique, it is unlikely that they will be of clinical significance or require surgical repair.

Cleft Palate,
Fistula,
Palatoplasty

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Curved line cleft lip repair in unilateral complete cleft lip patients: Should the Noordoff's point always be in the same place?

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

1. Introduction
Alignment of the upper lip symmetry is fundamental in cleft lip repair. Variety in the tissue amount and three-dimensional structure, make it difficult to accurately adjust the symmetry in curved line, unlike straight line.

2. Aims
We attempted to restore the symmetry and minimize tissue sacrifice with a curved line design and wire technique and analyzed the postoperative outcomes.

3. Methods
Medical records of complete unilateral cleft lip patients who underwent unilateral cheiloplasty between August 2017 and February 2019 were retrospectively reviewed. The 3-, 6-, and 12-month postoperative clinical photos were analyzed using ImageJ software to determine vertical, diagonal philtral heights and the horizontal lengths of the upper lip. The average of the cleft side to non-cleft side length ratios were compared between the curved line group and conventional group.

4. Results
This study included 55 patients (curved line group: 25 patients; conventional group: 30 patients). At 3, 6, and 12 months, the average vertical length ratios were significantly greater in the curved line group than in the conventional group (0.927 to 0.823, p=0.007; 0.940 to 0.885, p=0.037;, and 0.947 to 0.883, p=0.040, respectively), but the average horizontal length ratios were not significantly different between the two groups.

5. Conclusions
Curved line cheiloplasty aids in preventing short lip deformity development at regular term without significantly sacrificing the horizontal length and can be an alternative to rotation-advancement cheiloplasty. Curved line cheiloplasty with wire is a more effective method than conventional methods and guarantees philtral symmetry and less tissue sacrifice. The catch-up growth of horizontal length may compensate the amount sacrificed during preoperative design to match the symmetry of the vertical lip length.
Curved line, Cheiloplasty, cleft lip

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Mathematical Considerations in the Use of the Fisher Repair in Patients with Large and Very Large Philtral Height Discrepancy

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction
The anatomical subunit approximation technique, described by Fisher (PRS, 2005), describes passive lengthening of the medial side of the cleft lip using a combination of reverse V-Y plasty and Rose-Thompson curvi-linear lengthening. The original case series presented average philtral height discrepancy (PHD) of 2.4mm (range 0.5-3.5mm), majority contribution from reverse V-Y plasty (triangular base 2mm) and residual by Rose Thompson effect. Work by Chen et al has demonstrated philtral height discrepancy significantly greater than that reported by Fischer. We discuss theoretical mathematical limitations of this technique and potential modifications.

Aim
To define mathematical limitation of philtral height discrepancy correction using the |Fischer technique and demonstrate challenges of the technique in relation to cases with PHD >3mm.

Methods/Results
We demonstrate maximal theoretical cleft phitral lengthening achieved using Fischer markings (uniform medial and Short/Ideal/Long /Very Long lateral lip markings) in very mild (0-1mm PHD) Moderate (1-3mm) Large (3-5mm) and Very Large >5mm. (Senior author consecutive series PHD mean 4mm, mode 5mm, range 1.5-7mm).

Taking a mathematical approach to this problem several options are available to address the potential 'short' comings of this technique in large and very large PHD's. These include use of a larger triangle, placement of the inferior triangle more superiorly to allow an increased Rose-Thompson effect, amend the angle of the medial lip back cut to a more acute angle and use of more than one triangle. Theoretical visual outcomes and potential shortcomings of each modification will be presented and discussed.

Conclusions
Given our own experience and the publication of PHD's ranging beyond that originally described for the technique, we demonstrate theoretical limits of its applicability and present and discuss alternate theoretical modifications for consideration.

cleft lip, Fisher, philtral height

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Thick vermilion due to scar tissue after cleft lip surgery becomes thinner as it grows over 12 years

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: The vermilion on the cleft side often thickens and bulges during early childhood after primary repair of unilateral cleft lip, and we showed previously that the bulging was due to postoperative scar tissue. However, there have been few reports of morphological changes in the vermilion over the long term from primary repair to the end of growth.
Aims: This study was performed to clarify the long-term changes that occur along the suture line on the vermilion.
Methods: The study population consisted of patients with unilateral cleft lip who underwent primary lip repair between 1996 and 2004 and were followed up until the age of 18 years. The shape of the vermilion was divided into three grades: nodular, flat, and recessed. The shapes were evaluated on photographs at four time points: 1 year old, 5 years old (before revision surgery), 10 years old, and at the end of growth.
Results: Forty-eight patients were included in the study consisting of 23 cases of complete cleft and 25 cases of incomplete cleft. The vermilion was nodular in 58% of all cases, flat in 15%, and recessed in 27% at 1 year old, which changed to 4%, 21%, and 75% at the end of growth. At the end of growth, recessed vermilion was seen on the suture line in most cases in the complete group and on the midline in 40% of those in the incomplete group.
Conclusion: As operative scar tissue matures slowly, surgical results with regard to the shape of the vermilion should be followed up until the end of growth.

Vermilion shape \ age	1 year	5 years	10 years	18 years
Nodular	28	14	8	2
Flat	7	17	19	10
Recessed	13	17	21	36

Change of the case number of each vermilion shape with age (n=48)

thick, vermilion, scar, thinner, growth

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Comparison of the Modified Millard Rotation-Advancement and Anatomical Subunit Fisher Cleft Lip Repairs

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Abstract

Background: Unilateral Cleft Lip Repair is one of the most commonly performed surgery by cleft surgeons. The initial learning curve and the later pursuit for finesse in outcomes keep the surgeon humbled and yearning for more nuances. The two most commonly performed techniques worldwide are Millard's rotation and advancement techniques with its modifications and the anatomic subunit approach described by Fisher, gaining popularity in the last decade. This study compares the outcomes of the two techniques in the hands of a single surgeon in his first year as a consultant after ten years of training in Cleft and Craniofacial anomalies.

Methods: Postoperative outcomes of fifty-one consecutive cleft lip repairs were subjectively assessed using the Asher McDade scale by three trained cleft surgeons not affiliated to the same unit. Six months postoperative photographs were cropped and passed on with viewing instructions to reduce magnification distortions and assessment biases. The photographs were also assessed anthropometrically using cleft side to non-cleft side ratio to quantify the asymmetry using four parameters: lip height, lip width, vermilion height and alar base described by Rossell-Perry, by one single evaluator from the same unit.

Results: Twenty-seven patients were operated using the Modified Millard's technique and twenty-four using the Fisher technique and compared for their outcomes. The results were compared using the Mann Whitney to compare the mean objective and subjective values of different study parameters between the two groups.

Conclusions: The findings of this study highlight the different outcome parameters and their statistical correlation when comparing the two techniques. The learning curve of the techniques are similar, and although the craft of the "cut as you go" modified Millard's technique seems easier to learn, the adoption of Fisher's technique as described in his article is not difficult once the concepts of the sub-anatomic delineation are understood.

Unilateral Cleft Lip, Millard, Fisher

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Long Term Treatment Outcomes of NasoAlveolar Molding with or without Gingivoperiosteoplasty from Birth to Facial Maturity

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction
The clinical outcomes to facial maturity of NasoAlveolar Molding (NAM) with or without gingivoperiosteoplasty (GPP) as applied to patients with a unilateral cleft are lacking.

Aims
To present an outcomes analysis of NAM with or without GPP in patients with a unilateral cleft followed from birth to facial maturity

Methods
A single-institution retrospective review of all patients with a unilateral cleft who underwent NAM between 1990 and 2000. Collected data included surgical and orthodontic outcomes, GPP, alveolar bone grafting, surgery for velopharyngeal insufficiency, palatal fistula repair, orthognathic surgery, nose and/or lip revision, and facial growth. Cephalometric analysis was performed at facial maturity and compared to Eurocleft data.

Results
Sixty nine patients with a unilateral cleft met inclusion criteria. Average age of follow-up was 20 years. GPP was performed on 54 patients (78%). Of those patients, 32 of 54 (59%) did not require alveolar bone grafting. Revision surgery to the lip and/or nose was performed before facial maturity in 6 of 69 patients (9%). 14 study patients (20%) did not require a revision surgery prior to facial maturity, alveolar bone grafting, or orthognathic surgery. Cephalometric analysis was performed on all patients with unilateral cleft lip and palate. No statistically significant difference was found in maxillary position compared to Eurocleft data SNA 72.7° (5.6°) versus 74.9° (3.7°) (p = 0.372). This non-significance was reproducible across each Eurocleft center and when all Eurocleft data was pooled.

Conclusions
NasoAlveolar Molding with or without gingivoperiosteoplasty demonstrates a low rate of soft-tissue revision and alveolar bone grafting, and a low number of total operations. Completion of midface growth does not appear to be hindered by these interventions.

NasoAlveolar Molding, Gingivoperiosteoplasty, cleft lip

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Long-term Outcomes in Adulthood of Patients with Cleft Lip with or without Cleft Palate after Primary Unilateral and Bilateral Cleft lip-nose Repair- A Follow-up Study

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Background: Primary unilateral and bilateral cleft lip-nose repair with integrated and functional reconstruction was introduced by the author in 2000 with good preliminary outcomes. Long-term care and continuing assessment of patients with cleft lip±palate (CL±P) until they reach maturity are essential, but there are challenges for the cleft center or hospital to present these results. This study was aimed to present the long-term outcomes of patients with CL±P who received the integrated and functional reconstruction of primary unilateral and bilateral cleft lip-nose repair by the author.
Patients and Methods: The study included patients with CL±P who received the primary cleft lip repair in Srinagarind Hospital, Khon Kaen University, Thailand at the age before 6 months or according to the Tawanchai interdisciplinary cleft care protocol, and were at the age of 18 years or over in 2021.
Results: There were 143 patients with 101 UCL±Ps, and 42 BCL±Ps, 53 males and 90 females. The age ranged from 18-41 years. Primary cleft lip repairs were performed by modified rotation advancement technique, functional muscle reconstruction, correction of nasal deformities, and vermillion reconstruction. Subsequent repairs were performed according to the residual deformities and the needs of patients and families. Each patient was evaluated as good (normal /near normal), average (minor revision was needed), and poor results (major revision was needed). The results were good in 109 patients (76.22%), average in 34 patients (23.78%), and no patient had poor result. The factors that may be related to average results are discontinuity of follow-up and distant home location.
Discussion: The cleft care should be provided by a competent interdisciplinary team with comprehensive care program. More improvement of outcomes can be achieved by continuing assessment of these patients until they reach maturity, continuing refinement of technique, and improvement of interdisciplinary care.

Cleft lip repair, Long-term outcome,

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Benefit of plication of the alogenian sulcus during primary cheilorhinoplasty for Cleft lip

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction
The postoperative use of silicone plates sutured at the tip of the nose is described in primary cheilorhinopasty techniques in order to limit post-dissection dead space and so reduce secondary thickening. Disadvantage to this technique is the need for a second general anesthesia to remove the plaque.

Aims
The objective of this work was the technical description of the plication of the alogenian sulcus during primary cheilorhinoplasty as an aid to nostril conformation, and as an alternative to the use of silicone plates.

Methods
Single-center retrospective study between 2014 and 2021, a single operator.
After performing a septorhinoplasty with release and complete correction of the deformation of the alar cartilage; realization on request, several trans-nostril stitches (resorbable Optime R® 4/0 thread; triangular needle 3/8; 16mm; Surgical Peters) in alogenian sulcus homolateral to the cleft, and at the tip of the nose opposite the soft triangle. A conformation of the nostril was then carried out using a SEBBIN® intra-nostril shaper (4 mois) and 3M® Steri-strips (10 days).

Results
70 patients were included. The length of hospital stay was on average 24 hours postoperatively. The resorption of the threads was spontaneous, without aesthetic sequelae. Two patients, at the start of the experience, presented transiently a granuloma on a thread (probably the consequence of a too wide thread "loop" on the skin). No nose tip thickening was noted in this series.

Conclusion
The plication of the alogenic sulcus during primary cheilorhinoplasty is a technique that combines simplicity and efficiency. It can be proposed to help with nasal shaping and function while optimizing the child's care. It reduces post-operative care and length of stay, while ensuring the maintenance of an optimal opening of the nostril.
These elements make this surgical technique a potential therapeutic alternative to the use of silicone plates.

Rhinoplasty
Cleft lip
Plastic surgery

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Non-Interventional Factors Influencing Velopharyngeal Function Following Initial Cleft Palate Repair: A Systematic Review

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Introduction: The influence of non-interventional factors on speech outcomes following primary cleft palate repair is poorly described.

Aims: To identify non-interventional factors influencing velopharyngeal function following primary cleft palate repair.

Methods: A systematic review of the literature was carried out according to PRISMA guidelines. DistillerSR systematic review software was used to facilitate three-stage screening by two reviewers and data extraction by eight reviewers. Studies reporting speech outcomes and/or incidence of secondary speech surgery were included.

Results: A combined computerised and hand search yielded 1901 studies, of which 383 were deemed relevant. Most studies were single-centre (89%), cases series (75%), with high rates of unrecorded outcomes and participant exclusion. Cleft type was reported in 95% of studies, biological sex in 64%, syndrome diagnosis in 44%, hearing loss in 28%, developmental delay in 16%, Robin Sequence in 16% and 22q11.2 microdeletion syndrome in 11%. Only 21% of studies reported blinded perceptual speech assessment outcomes. Fifteen percent of studies reported speech outcomes for all participants and 12% reported incidence of secondary speech surgery. Resonance and secondary surgery rates varied according to cleft type (Veau I best outcomes, Veau IV worst outcomes). Meta-analysis provided strong evidence that Robin Sequence (7 studies; 1.54 RR) and syndrome diagnosis (12 studies; 1.64 RR) were associated with higher secondary surgery rates. There was weak evidence to suggest that male biological sex was associated with worse outcomes.

Conclusions: There is a lack of high-quality evidence in the literature to indicate which non-interventional factors influence speech outcomes following initial palatoplasty. Our review suggests that patients with Robin Sequence or a diagnosed syndrome are at higher risk of requiring secondary speech surgery. Uniform prospective documentation of preoperative characteristics and speech outcomes across multiple centres is required to further characterise the groups of patients who are at risk of poor speech outcomes.
cleft palate, palatoplasty, speech, VPI

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ANALYSIS AND EVALUATION OF RESULTS WITH FISHER'S TECHNIQUE FOR CHEILOPLASTY

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

INTRODUCTION: To the great anatomical diversity of labial fissures we must add the ethnic, cultural and geographical diversity, which make each patient unique, which forces us to adapt the different treatments that we have available to offer the patient and their family the best opportunity . That is why in our surgical training we have to talk about the mutation of cheiloplasty surgical techniques. Thus, we adopt the technique described by Fisher in our daily practice, which allows us to adapt it to each anatomical variant of cleft lip.
OBJECTIVE: As a training center, our objective is to show the learning curve that resident doctors have, objectified with sequential iconography. And demonstrate the individual evaluation of each profesional.
MATERIALS AND METHODS: Retrospective evaluation with pre-surgical and immediate postoperative sequential iconography, at 3, 6 and 12 months after surgery. And by evaluating the personal satisfaction of each professional in training, with monitoring of their operated patients 12 months after surgery.
CONCLUSION: The cheiloplasty technique described by Fisher allows us a short learning curve, easy to apply and adapt to each patient in particular. Regarding the results of the technique, they have proven to be very reliable in the medium and long term, it was also accompanied by great satisfaction by the intervening doctors when applying the surgical technique.
queiloplasty, fisher,

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Results of a Two-Triangle Modification of the Fisher Unilateral Cleft Lip Repair Technique with Talmant-Delaire Muscle dissection/ McComb Nasal dissection

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction
Multiple cleft lip repair techniques use triangles to address philtral height discrepancy (PHD). Fisher's anatomical subunit approximation technique uses Rose Thompson lengthening with a single 2mm inferior triangle. Original description involved cases up to 3.5mm PHD. Experience of greater PHD left the senior author uncomfortable in achieving appropriate lengthening with the described Fischer technique and unhappiness with transverse philtral scar appearance following use of larger (>3mm) inferior triangles. Results of a two-triangle modification of the Fisher technique for patients with larger PHD are presented.

Aims
To describe the range of PHD in our series, the two-triangle modification of the Fisher repair and post-operative results.

Methods
Two lateral triangles with corresponding medial back cuts are employed in philtral skin. - Inferior triangle as described by Fischer and superior triangle 2/3 up the lateral neo-philtral element. In complete clefts a Talmant-Delaire muscle dissection was employed, with pars orbicluaris asymmetric incisions to allow muscle interdigitation and lengthening corresponding to the full PHD. A single triangle with PHD base is employed in the buccal lip mucosa to achieve full thickness lengthening.

A cutaneous equilateral triangle with maximum 3mm base was employed (theoretical maximal philtral projection 2.64mm). Where differing sized triangles are required, the larger triangle is placed inferiorly. PHD and triangle base dimension were recorded prospectively.

Results
63 patients underwent unilateral cleft lip repair by the senior surgeon (2014-2020, 39 complete, 29 incomplete). Mean PHD 4.1mm (range 1.5-7mm, IQR 1.5mm). 47 patients underwent two-triangle modification with the average PHD 4.0mm (range 2.5-7mm). Average base width of the triangles 2.2mm (1-3mm) with a difference of 0.5mm between each (range 0-1.5mm).

Conclusions
The original Fisher repair does not accommodate for patients with a greater PHD. In these cases we feel the two-triangle modification gives better aesthetics than a single, larger triangle extending in the philtrum.
cleft lip, surgery, triangle

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Growth of the Lip and Nose after Primary Surgery for Unilateral Cleft Lip and Evaluating the Effect of the Surgery

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WE3.4 PRIMARY SURGERY, Kilsyth, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Objective
In the treatment for cleft lip and palate, long-term postoperative morphological changes are important when considering the pros and cons of the surgical procedure. In this study, we examined the changes in the left-right difference in the growth of the lip and nose in patients with unilateral cleft lip who underwent surgery.
Patients and Methods
For the patients underwent primary surgery between 1998 and 2011, we measured the lips and nose using reference points set on clinical photographs before primary surgery, immediately after primary surgery, at 1-year-old, at 5-year-old, one year after the secondary cleft lip surgery, and at 10-year-old. For the left-right comparisons, the ratio of the length of the affected side and the unaffected side were calculated, and how it changed over time was investigated retrospectively. In addition, we quantified the degree of improvement at each time point using the formula (1-|A-1|/|B-1|)%; (A: comparison time point, B: comparison control past date) as an indication of how close the value was to 1 due to surgical intervention and post-surgical growth.
Results
Fifty-two patients with unilateral cleft lip (complete:18, incomplete:34) were included. In both cases, the ratio of right and left nostrils improved immediately after surgery and showed a tendency to mildly worsen at 1-year-old. The balance between the right and left sides caught up by 5-year-old, and was obtained at 10-year-old. Although there was some retraction of the lip at 1-year-old after the initial surgery, the right and left sides of the lip remained balanced by 10-year-old. However, the red lip tends to shorten slightly on the affected side immediately after the secondary cleft lip surgery.
Conclusion
We showed trends in how surgical intervention and growth affect the extraoral nasal changes. Generally, there was a tendency for left-right differences to decrease and catch up by 10-year-old.
cleft lip, post-surgical growth, change

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Long term results of nasolabial appearance in UCLP patients.

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Aims
The aim of this study was to evaluate the naso labial appearance in a sample of UCLP patients during early childhood and at the completion of growth, in order to evaluate if the nasolabial complex is subjected to changes throughout growt.

Methods
Nasolabial appearance was qualitatively assessed using the Asher McDade Aesthetic Index at 6 years of age and at 20 years of age (or before secondary rhinoplasty).
All of the patients were treated and evaluated at San Paolo Hospital, Smile House, Milan. 52 consecutive patients treated by the same surgeon were recalled,12 patients didn't come for assessment, and photographic records during childhood were available for 25 patients
The first surgical step (average age of 6 months) was cheilorhinoplasty (Millard modified Delaire technique, without septplasty) and soft palate repair (Pigott). The second step (average age of 35 months) was hard palate and alveolar repair performed simultaneously with an early secondary gengivo alveolo plasty.

Results
In this study labial appearance is stable from infancy to adulthood. Conversely nasal appearance especially on the frontal view seems to get worse during growth.

Conclusions
Labial appearance remains stable, whereas nasal symmetry worsens during growth.
In order to prevent nasal deformity and to reduce burden of care in these patients we have introduced primary septoplasty, a more invasive primary rhinoplasty and the use of nasal retainers. Further studies are needed to demonstrate if this surgical modifications will reduce nasal asymmetry and the need for secondary surgery

UCLP, Long term results.

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A novel and practical protocol for three-dimensional assessment of alveolar cleft grafting procedures

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: The surgical treatment protocol for patients with cleft lip, alveolus and palate in most cleft teams worldwide includes secondary alveolar bone grafting (SABG). Several two- and three-dimensional measurement methods have been proposed to assess alveolar cleft volume. Different problems in various cleft assessment methods are encountered. Such as establishing cleft defect landmarks because of the differences in morphology and the growing skeleton in combination with the eruption of the permanent dentition. Combining semi-automatic segmentations, with well-defined borders and precise standardized anatomic landmarks might improve the reproducibility of the assessment methods.

Aims: To evaluate the reproducibility and accuracy of a new, easy-to-use volumetric assessment of the alveolar cleft.

Methods: Twelve cone-beam computed tomography (CBCT) datasets of patients with a unilateral cleft lip, alveolus and palate were evaluated by two investigators. Residual alveolar cleft calcified volume one year after surgery was analyzed by using eight standardized landmarks to determine the borders of the cleft defect and semi-automatically segment the alveolar cleft defect. To measure the similarity between the segmentations of the observers, the Dice-coefficient was calculated. A good overlap occurs when the Dice-coefficient is >0.7 to represent a good inter-observer reliability.

Results: The Dice-coefficient between observers for the segmented preoperative alveolar cleft defect was 0.81. Average percentage of residual alveolar cleft calcified material was 66.7% one year postoperatively.

Conclusions: This study demonstrates a reliable and practical semi-automatic three-dimensional volumetric assessment method for unilateral clefts using CBCT.
Alveolar cleft, CBCT, segmentation, 3D-method

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Human palatal surface development from 6 years to early adulthood: data modeling using 3D geometric morphometry

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction & Aims: The study followed postnatal developmental changes of the healthy palatal surface. The main objective was to model healthy palatal growth based on transverse data in relation to sex and increasing age from 6 years to early adulthood.
Methods: The sample consisted of 214 3D palatal models of healthy individuals from the Czech population. Subjects were classified according to age (preschool age, younger school age, older school age, younger adolescence, older adolescence, young adults) and sex (♂ n=101, ♀ n=111). Analyses were based on geometric morphometry and multivariate statistics (CPD-DCA, PCA, superprojection methods).
Results: The male palate manifested a trend of continous increase in size, with the largest changes occurring between 12–15 years as a result of the pubescent growth spurt. These growth changes led to a wider, larger and longer palate at older ages. In contrast, intense size increase was noticed in girls in the youngest age category of 7–10 years and once more between 12–15 years due to pubescent growth spurt. Interestingly, in the period between 10–12 years, palatal enlargement of females was temporarily interrupted, possibly due to teeth eruption. The overall rate of sexual dimorphism increased over time from 15 years of age due to the earliest gonadal changes at puberty and the previous termination of palatal development in girls.
Conclusions: Based on the results of this 3D study, comparative standards valid for the Czech population can be established and utilized in clinical practice. Normal reference subjects and their comparison with patients with craniofacial morphologies represent the first step in the diagnosis of palatal dysmorphologies and the determination of effective therapy.
palate, healthy, 3D, geometric morphometry

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Mandibular Dental Arch Changes in Patients with Complete Unilateral Cleft Lip and Palate - a five-year follow-up

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction. Only few studies are available on long-term follow up after treatment of cleft lip and palate (CLP). However, none is paying attention to mandibular dental arch adaptation that may occur after treatment.
Aims. To evaluate mandibular transverse dimensions and interarch transverse changes in patients with complete non-syndromic unilateral cleft lip, alveolus, and palate (CUCLAP) up to five years after treatment.
Methods. Retrospective longitudinal study in 75 consecutive patients with CUCLAP, treated from birth on in the same center, directly after comprehensive treatment (16.5 ± 2.3 yr), two (18.4 ± 2.2 yr), and 5 years after treatment (20.9 ± 2.4 yr). Mandibular transverse dimensions were measured. The modified Huddart Bodenham (MHB) Index was applied to assess the transverse interarch relationship. Paired t-tests and ANOVA were used to analyze transverse and interarch transverse changes. Linear regression analysis was done to define contributing factors.
Results. Paired t-tests showed a significant decrease of the mandibular inter first and second premolar distances ($p<0.05$) and an increase of the inter second molar distance, whilst the MHB Index deteriorated at all time points for all segments and for the total arch score ($p<0.05$). Linear regression showed no clear contributing factors on the decrease of the transverse distances. Interarch transverse relationship was significantly affected by age at the end of treatment, missing maxillary lateral incisor space closure, and the GOSLON Yardstick score at the end of treatment ($p<0.05$), especially during the first two years after treatment.
Conclusions. A younger age at the end of treatment, space closure for a missing maxillary lateral incisor and a higher GOSLON score at the end of treatment negatively influence the interarch transverse deterioration especially in the first two years after treatment. These factors should be taken into account when planning the retention phase.

treatment outcome, cleft palate, orthodontics

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The relationship between the palatal morphology and the severity of the cleft by using 3D digital casts

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: The severity of cleft affects the success of the treatment in individuals with cleft lip palate. Besides angular and dimensional values of maxilla, palatal structures are affected to varying degrees by cleft severity. Increase in the severity of the cleft causes difficulty in surgical treatment.
Aims: To assess the impact of palatal morphology and cleft severity in newborn babies with clefts
Methods: Linear, angular and volume measurements of palatal area were performed on 98 digital models of newborn babies with UCLP (mean 1,4 months) and 95 digital models of newborn babies with BCLP (mean 1,6 months). Casts were digitized with a 3-shape Trios scanner and digital models were then generated. The digital models were imported as STL files in the Mimics software (Mimics v19.0, Materialise-Belgium) for analysis. Groups were compared using an paired samples t-test for each region of interest and for each quartile.The analysis was performed using STATA software version 14.1. Statistical significance was reported at a 0.05 confidence level.
Results: Compared UCLP to BCLP, BCLP subjects presented higher palate at the level of the anterior region ($p<0.01$), but generally a lower palate in the middle region ($p<0.001$). UCLP subjects showed a flatter palate posteriorly ($p<0.05$) while BCLP exhibited more transversal constriction ($p<0.001$). 3D analysis revealed a shallower palate in the UCLP group both in the middle ($p<0.01$) and the posterior part ($p<0.05$). Anterior cleft severity correlated with palatal height ($p<0.001$).
Conclusions: UCLP palates differ from BCLP in width and height.The variability of palatal size and shape in BCLP patients was greater than UCLP. The shape of the palatal configuration of premaxilla and adjacent area was convex in BCLP patients. BCLP children have more elongated and wider palatal arches, premaxillary protrusion is typical. The variability of palatal size and shape in BCLP patients is much greater in comparison with UCLP.

cleft, orthodontics, palatal morphology

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Skeletal Changes in Growing Cleft Patients with Class III Malocclusion treated with Bone Anchored Maxillary Protraction - a 3.5-year follow-up

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

The aim of this prospective controlled trial is to evaluate long-term skeletal and dental changes of Bone Anchored Maxillary Protraction (BAMP) in growing cleft patients with a class III malocclusion, using 3D surface models and 2D lateral cephalograms derived from a Cone beam CT (CBCT). Subjects and Methods: Nineteen patients (11.4±0.7 year) with a complete unilateral cleft lip and/or palate and a Class III malocclusion, were included in this clinical study. CBCT scans were taken before the start of BAMP (T0) after 1.5 (T1) and 3.5 years of treatment (T2). On STL surface models, 3D skeletal changes were measured using a colour mapping method. Cephalometric measurements were made on lateral cephalograms derived from the CBCT scans. As a control group, 17 cleft patients with no orthopaedic treatment were included. Results: The inter-observer agreement of all measurements was high (ICC=0.847). Significant skeletal changes were observed in the midface region. A total forward displacement of 2.7±0.9 mm was observed in the maxilla and a total displacement of 3.8±1.2 mm on the zygomas (3.0 mm forward, 1.5 mm downward and 1.5 mm outward). The B ROI displaced a total of 2.4±1.2 mm forward and 0.1±0.4 mm downwards. On the lateral cephalograms the overjet increased significantly with 3.5 mm in the BAMP group. The BAMP group shifted to more class I, while the control group shifted to more class III malocclusion. In the BAMP group the Gonial angle closed significantly during the treatment. In conclusions, BAMP therapy in cleft children with Class III malocclusion appears to be a clinically effective and stable treatment option with positive effects on the zygomaticmaxillary complex and the vertical dimension.

Bone-anchored, Maxillofacial-protraction, Class-III, CBCT, 3D-superimposition

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Should All Bilateral Cleft Lip&/or Palate Infants Be Treated Equal?

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction
The size of the premaxilla in children born with BCLP acts as a significant predictor for future growth and outcome of treatment.
Infants born with a rudimentary premaxilla are different from the well-developed premaxilla in not only size, but quality of covering tissues, and number of teeth carried within the premaxilla.
It will be unfair to treat all BCLP infants with the same protocol, as the size of the premaxilla is not only a predictor of treatment outcome, but also a predictor of future facial growth.
Aim
Reach a qualifiable understanding of the difference between the BCLP patients with protruding vs rudimentary premaxillae at different growth stages.
Methods
A retrospective study of a sample 44 non-syndromic patients with complete BCLP. Two groups were assigned, the Protruding premaxilla group (P), and the Rudimentary premaxilla group (R). Each of the 2 groups had a respective infant subgroup and an adolescent subgroup. A series of dental model measurements were made for infants in both groups to assess changes after presurgical infant orthopedics and primary lip repair, while the adolescent subgroups were radiographically assessed for the number of teeth found in the 2 different premaxillae phenotypes.
Results
Premaxillary width was statistically significantly different between the 2 groups ($P<0.00$), changes in anteroposterior position of the premaxilla were significant one and three months after primary lip repair. For the adolescent group, the number of teeth in the premaxilla were significantly different among Group R and Group P. Maxillary lateral incisor showed the highest percentage of agenesis in the two groups.
Conclusion
There are differences between the two types of premaxillae that should be considered during treatment planning.

BCLP, Premaxilla, Rudimentary

667

Comparison of professionals' ratings of dental arch relationships and parent-reported satisfaction with teeth and occlusion at age 5 years. A subgroup analysis within Scandcleft RCT of primary surgery in children with unilateral cleft lip and palate

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction: Cleft studies comparing professionals' ratings and parents' satisfaction with teeth and occlusion are few.
Aims: This single-center analysis within the randomized Scandcleft multicenter study compares professionals´ scoring of dental arch relationships and parent-reported satisfaction with teeth and occlusion in 5-year-old children with unilateral cleft lip and palate (UCLP).
Methods: Dental casts of 86 (55 boys) consecutive 5-year-old children (mean age 5.1, range 4.9-5.9) with non-syndromic complete UCLP were available. The primary operations were done during 1997-2006 with Scandcleft one- and two-stage techniques by two high volume senior surgeons. In Arm A soft palate closure was done at 3–4 months (n=39), followed by hard palate closure at 12 months. In Arm C both hard and soft palate were closed together at 12 months (n=47). None of the children had nasoalveolar molding or orthodontic treatment.
Dental arch relationships were graded into five categories from excellent (1) to very poor (5) using the 5-year-olds' (5YO) index. At 5 years age, a questionnaire was used to assess parents' perceived satisfaction with features associated with cleft and its treatment. The satisfaction was rated on a 7-point scale, ranging from very satisfactory (1) to very unsatisfactory (7). Seventy parents filled the questionnaire, and 65 answered the questions about teeth and occlusion.
Pearson's correlation and Kappa statistics were used in e statistical analysis.
Results: The mean 5YO index score was 2.5 (range 1-5). The parents-reported satisfaction with teeth and occlusion were 3.1 (range 1-6) and 3.2 (range 1-7), respectively. The mean 5YO index scores did not correlate with the parents-reported scores. The intra-rater reliability of the 5YO index was very good.
Conclusions: Most parents reported satisfaction with their child's teeth and occlusion. The parents-reported satisfaction did not correlate with professionals' 5YO index scores.

UCLP, 5YO index, parents' satisfaction

869

Development and evaluation of intra-oral automated landmark recognition (ALR) for dental and occlusal outcome measurements in cleft care

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Background:
Digital workflow technology using digital dental models, automated landmarking and machine scoring for dental arch relationships is valid and accurate. However, there is no published literature on the use of artificial intelligence and machine learning to fully automate dental landmark recognition for the deciduous, mixed and permanent dentition.
Objectives:
To develop and evaluate a fully automated system and software tool for the identification of landmarks on deciduous and permanent teeth using geometric computing, image segmenting and machine learning technology.
Methods:
Several hundred digital models were used in the automated landmark recognition (ALR) validation phase comprising subjects with cleft palate and unilateral cleft lip and palate aged 5, 10 and 15 years. These were manually annotated to facilitate qualitative validation. Additionally, landmarks were placed on 20 adult digital models manually by 3 independent observers. The same models were subjected to scoring using the ALR software and the differences (mm) calculated. All the teeth from the total sample of models were evaluated for correct recognition by ALR with a breakdown to determine the stages of the process where errors arose and then addressing this within the system.
Results:
The results revealed that the majority of teeth are correctly identified by ALR, and the accuracy validation gave 95% confidence intervals for the geometric mean error of [0.285, 0.317] and [0.269, 0.325] for ALR—a negligible difference.
Conclusions/implications:
ALR software tools incorporating geometric computing, image segmenting and machine learning technology has applications across cleft care and clinical dentistry as well as research. ALR is an accurate and objective tool for handling large datasets and is not resource-intensive unlike manual landmarking by experts.

Dental arch relationships, automated landmarking

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Psychological wellbeing across the lifespan: an audit of assessment by clinical psychology in cleft teams across the UK

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WE3.5 ORTHODONTICS, Moorfoot, EICC - Streamed, July 13, 2022, 11:00 - 13:00

Introduction

All 16 UK cleft teams receive clinical psychology input. These clinical psychologists monitor and support the psychological wellbeing of those with a cleft (and their families) across the lifespan.

Aims

To audit the routine psychological assessment of patients with a cleft in the UK: who provides it, at what ages/stages and using what measures.

Methods

Clinical psychologists in the 16 UK cleft teams were surveyed on staffing, routine ages/stages of psychological wellbeing assessment and outcome measures used.

Results

Whilst all 16 UK cleft teams include clinical psychology, capacity varied from 0.2 WTE (2 half day sessions weekly) for approximately 100 annual births to 3.2 WTE (32 half day sessions weekly) for approximately 45 annual births.

All 16 teams had a designated lead clinical psychologist, the most common seniority band being 8c (10/16 teams). Other leads were a less senior band, the lowest being 8a (2/16 teams).

Across 15/16 teams able to provide the required information, routine assessment was provided at 22 different ages/stages (including those relevant only to some patients e.g. ABG, osteotomy). Minimum assessment points from diagnosis to age 20 ranged from 0 to 6 per team (mode=4). Optional clinics/groups were offered at 8 additional ages/stages for interested patients.

21 different outcome measures were used to assess wellbeing, with 2/21 clinician reported, 8/21 parent reported, and 11/21 patient reported.

Of the measures, 11/21 were standardised; 7/21 were devised by the cleft clinical psychology CEN (UK clinician network), and 3/21 were developed by individual teams to address gaps.

Conclusions

All UK cleft teams include clinical psychologists. However, the resource available varies substantially. Common ages/stages and measures of assessing psychological wellbeing are identifiable across teams,

though a lack of area specific standardised measures necessitated development of own measures in some teams. More equitable funding of clinical psychology and validation of area specific measures are encouraged.

Psychology, MDT, Multicentre

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Tessier 30- Median Mandibular Cleft: A Report of 3 Cases

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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

INTRODUCTION
Median mandibular cleft is an extremely rare congenital abnormality even among the atypical craniofacial cleft anomalies. Since 1819, when Couronne reported the first case, fewer than 100 cases have been described in the world literature so far.
Paul Tessier has described the cleft as facial cleft no. 30.

AIM
This paper is presented with an aim to share perspective regarding comprehensive treatment options (surgical and orthodontic) for midline mandibular clefts.

METHOD
In this paper, we report the occurrence of this mandibular cleft anomaly in 3 patients who first reported to our Centre at 6 months,7 months and 8 months of age when they were operated for primary closure of the defect. The patients reported again at 8 years and 10 years of age when they were re-evaluated. Alveolar Bone Grafting was performed at this stage. Presently they are undergoing orthodontic treatment at our center.

RESULTS
The condition varies in severity from a mild variety in which there is a sub-mucous cleft and notching in the lower lip to a severe variety, involving the tongue, floor of the mouth, mandible, absent hyoid, atrophic neck muscles, and sternum. Frequently, the cleft extends into the mandibular symphysis and the tongue is attached to the cleft alveolar margin.

CONCLUSION
A clear plan of management, successful surgical and orthodontic corrections, and long-term follow-up of the patient are essential for the treatment. The rarity and variation of severity of the condition are responsible for the lack of a concordance regarding nature and timing of the corrective procedures.

Mandibular Cleft
Tessier 30 cleft

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Preferences in Diagnosis Delivery and Health Education for Parents of Children with Cleft Lip and Palate: A Survey Study

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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction: Children with cleft lip and/or palate (CL±CP) require a multidisciplinary approach for surgical and nonsurgical care throughout their lives. Parents/primary care givers play an active role in the decision-making process and are integral members of the cleft team. It is therefore imperative that cleft-care practitioners have highly developed communication skills. However, previous studies have shown that there are discrepancies between physicians and parents with respect to information need, delivery, and content.

Aims: To evaluate the satisfaction of parents of patients with cleft lip/palate (CL±CP) diagnoses, focusing on delivery/content of information provided.

Methods: A non-validated survey was prospectively disseminated over a 6-month period to parents of patients < 14 years of age with CL±CP being treated at an ACPA-approved Cleft Centre. Fifty-seven surveys were included in our analyses. Data collected included: patient demographics, prior knowledge of CL±CP, timing of diagnosis delivery, content of information, treatment options, perioperative care, social support, cosmetic expectations, and preferences of information delivery format.

Results: The most common diagnosis was cleft lip and palate (n=32/57) and 53% of parents (n=31) had no prior cleft knowledge. Diagnoses were commonly communicated verbally (n=47(82.5%)) to parents who were satisfied with the quantity of information and information regarding perioperative care. Parents would have preferred to receive information via online resources (n=34(66.7%)). Only 53.0% (n=26) of parents were satisfied with information about possible financial implications and 40.8% (n=20) were satisfied with parent support resources, although 53.8% (n=21) thought that such groups would have been helpful. Finally, 96.2% (n=50) of parents felt that they were provided with realistic expectations of their child's physical appearance.

Conclusion: Our results suggest that parents felt prepared with the information provided to care for their child and were satisfied with cosmetic expectations. There is room for improvement in awareness surrounding genetic testing, financial implications, local support groups, and online resource availability.

cleft lip/palate, health education, survey

355

Reliable, reproducible and teachable: Correction of transverse facial clefts with the anatomic approximation approach across 3 generations of cleft surgeons

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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Abstract:

Introduction:

Transverse facial clefts are rare, and more methods of repair have been described than the number of cases a busy cleft surgeon will treat over the course of a career. The reported techniques include varying transpositions of skin, muscle, and mucosa; can be difficult to understand or reproduce; and tend to be characterized by prominent scars, distorted appearance, and recurrent deformity. We previously described a simple, anatomic approach to repair with favorable outcomes.

Aims:
The purpose of this presentation is to revisit that approach and demonstrate how it can be adopted and reproduced by surgeons that are new to practice.

Methods:
The anatomic approximation approach involves overt placement of anthropometric landmarks to define the design for repair. The site of transition from normal to hypoplastic tissues (akin to the “Noordhoff point” in common cleft lip) is identified along the upper and lower lips to define the site of the neo-commissure. The skin incision is designed to match contralateral creases of animation. Muscle is repaired by direct repair with an emphasis on anatomic alignment of the risorius and orbicularis muscle, including the including the 3-dimensional “J” shape of the pars marginalis. At the surface, the muco-vermilion junction, vermilion border, and cutaneous roll are approximated along the new commissure

Results:
The technique has been applied in 10, 4, and 1 case by the experienced, mid-career, and new surgeon respectively. All patients achieved normal oral competence, favorable scaring and appearance of the lateral oral commissure. There was no recurrence or relapse in any of the patients and none of the patients have required revisional surgery. Clinical examples will be presented.

Conclusions:
The anatomic approach to transverse facial clefts is a reproducible, reliable, and teachable technique for repair of transverse facial clefts.

tessier 7, transverse cleft, teaching

1029

Cleft Care in Iraq

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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

ABSTRACT
Cleft Care in Iraq
Introduction:
Cleft management is challenging to health professionals especially in developing countries. Gathering all specialties that involve in cleft patient management in one center demands availability of volunteer professionals, support from the local health authorities and economic funding. Iraq has only recently emerged for over 50 years of war and cleft care has not been a priority
Aims:
The aim of this study is to show the quality of cleft care available in Iraq and the importance of establishing a cleft center to drain and collect all patients to be managed in one place.
Methods:
Four different major cities in Iraq are selected and management of cleft patients are investigated including the availability of professionals, hospital facilities and funds.
Results:
Cleft care in Iraq has been uncoordinated and largely dominated by surgeons. There is only one speech and language therapist in Iraq. Until recently, interdisciplinary care has been non-existent. A comprehensive cleft centre is being established in the Kurdish region of Iraq. It is hoped that this will be a model centre for the country
Conclusion:
Establishing a cleft center for the whole country gives the opportunity for the patients to be managed under the supervision of cleft professionals thus decreasing morbidity and mortality.

Cleft care, cleft management

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Experience of atypical clefts from 2 Nigerian centres: the need for interdisciplinary collaboration

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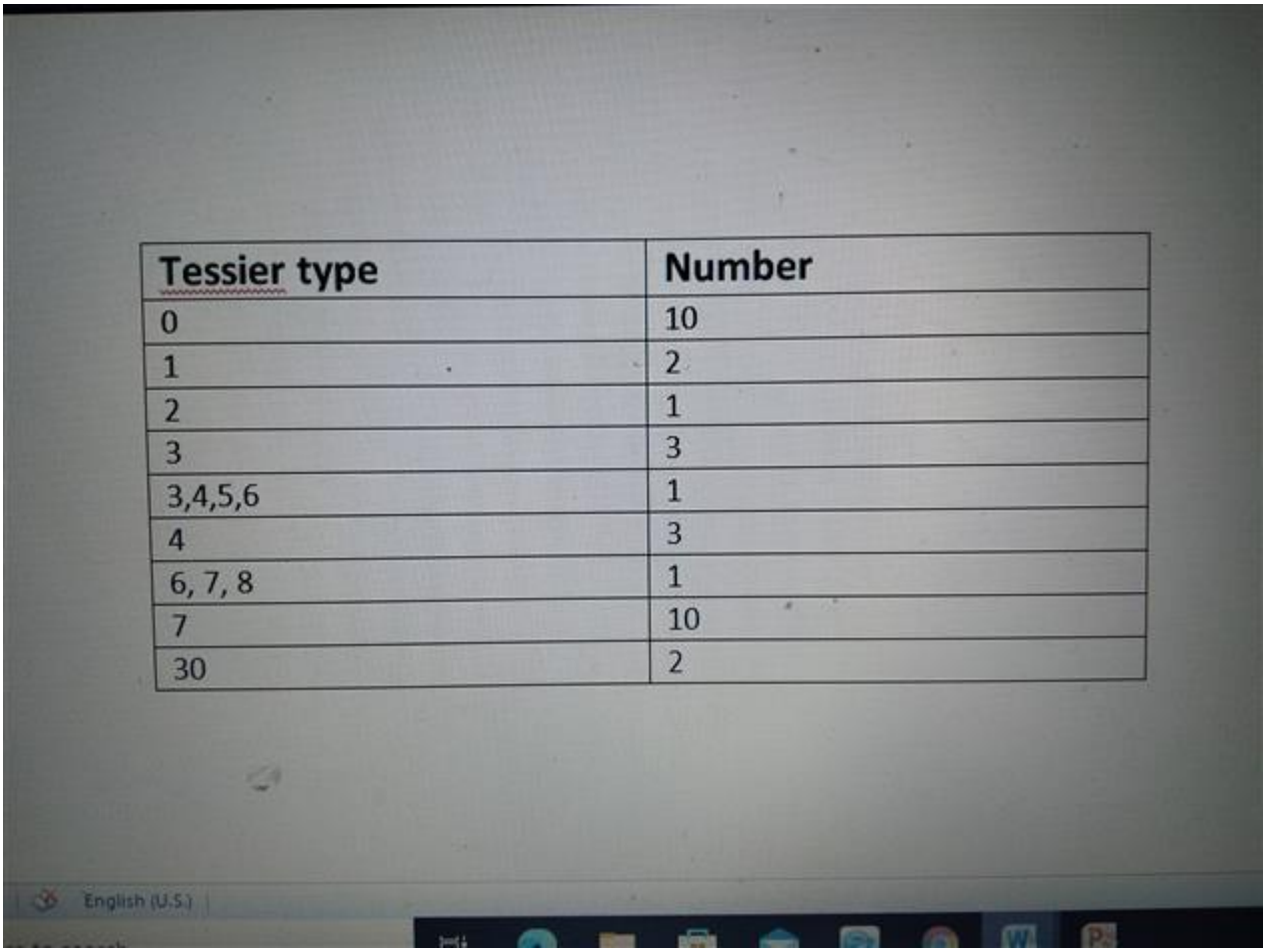
WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction
The National Orthopaedic Hospital Enugu is a centre for cleft surgery as well as the Good Shepherd Speciallists Hospital Enugu. Rare craniofacial clefts are occasionally seen and attempts to manage them are limited by lack of skilled manpower and a complete craniofacial team.
Aims
We wish to share experiences with others in the hope of eliciting collaboration for these complex conditions
Methods
A retrospective review of records in both hospitals spanning 20 years
Results
33 patients with atypical clefts noted with Tassier 0 and 7 jointly the commonest. All Tassier 7 satisfactorily operated upon but 3 Tassier 0 unoperated. Surgery was also offered to the other cleft types. No mortality in the period from the patients. A number were seen during cleft outreaches. Nutritional challenges were noted in a significant number
Conclusions
Atypical clefts are present in Nigeria and collaborative work is urgently needed to assist the patients



Tessier type	Number
0	10
1	2
2	1
3	3
3,4,5,6	1
4	3
6, 7, 8	1
7	10
30	2

Atypical cleft

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Nonsyndromic Oral clefts and associated risk factors in Gansu Province ,Northwest of China

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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

1.Aims:This study aimed to investigate the incidence of demographic and parental risk factors among patients with nonsyndromic oral cleft (NSOC) in Gansu Province, Northwest China.
2. Methods:A multicenter study was conducted on patients with NSOC who received care in our centers between January 2017 and January 2019. Demographic data, pregnancy associated risk factors, hereditary history and consanguineous marriage were collected.Chi-square test was tabulated to identify the statistical significance of the data.P-value<0.05 was regarded as statistically significant.
3.Results:A total of 600 patients with NSOC were enrolled in the present study. Among the cases, 26.8% were CL, 50.2% were CLP, and 23% were isolated CP. The ratio of boys to girls was higher in CL(1.5:1) and CLP (1.8:1), while CP recorded a lower ratio(0.5:1). Most of cases had type O blood group(40%) and were the first births in their families(53.5%). Higher rates of cases were born in winter(28.3%) and spring(28.2%), with a peak incidence in April(11.5%). Most of presented cases were born by late parental middles age(25−29 years). Maternal passive smoking, paternal smoking and drinking, infectious diseases, abortion history, and drug use recorded the highest rates (53.8%, 53.3%, 50%, 30.5%, 23.3%,and 18.7%,respectively) among all parental risk factors. Among all demographic and parental risk factors, birth seasonality, early paternal middle age, prenatal infection,and fever were found to have a significant tendency for a certain cleft type or sex of patient.
4..Conclusion: NSOC is a complex disease, could be the result of a combination of genetic and environmental factors. Familial history,consanguinity,seasonal changes,infections,fever, drug use, parental ages, and passive smoking are among risk factors that may be associated with NSOC. Our findings could provide references for proper resource use, NSOC prevention programs, and will contribute in minimizing the incidence of NSOC in the area of study.

Table 1
Type and location of clefts with sex ratios and differences.

Type of Clefts	Total		Boys		Girls		Sex Ratio	*P*
	N	P%	N	P%	N	P%		
Cleft lip	161	26.8	96	16	65	10.8	1.5:1	0.308
Unilateral	138	23	83	13.8	55	9.2	1.5:1	0.820
Bilateral	23	3.83	13	2.2	10	1.6	1.3:1	
Left	87	14.5	50	8.3	37	6.2	1.4:1	0.473
Right	51	8.5	33	5.5	18	3	1.8:1	
Cleft lip & palate	301	50.2	193	32.2	108	18	1.8:1	<0.001*
Unilateral	232	38.67	149	24.8	83	13.8	1.8:1	1.000
Bilateral	69	11.5	44	7.3	25	4.2	1.8:1	
Left	165	27.5	104	17.3	61	10.2	1.6:1	0.651
Right	67	11.2	45	7.5	22	3.6	2.1:1	
Cleft palate	138	23	47	7.8	91	15.2	0.5:1	<0.001*
Hard and soft palate	125	20.8	41	6.8	84	14	0.5:1	0.366
Soft palate	13	2.2	6	1	7	1.2	0.9:1	
Total	600	100	336	56	264	44	1.27:1	

* Significant *P*-value.

Nonsyndromic， Epidemiology ，
Risk factors

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The Throat pack debate: A review of Current Practice in UK and Ireland cleft Centres

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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction
The use of throat packs during oropharyngeal surgery has been a topic of debate among cleft surgeons. The advantage of inserting an absorbent tulle within the pharynx must be weighed against the risk of unintended retention post- operatively. Despite safety check mechanisms in place, retention may occur with potentially life-threatening consequences.
Aim
The aim of this study was to perform a comprehensive review of throat pack use in all cleft units within the United Kingdom and Ireland.
Methods
All 20 cleft surgery units in the United Kingdom and Ireland were surveyed on their use of throat packs in children aged 6 months to 2 years undergoing elective cleft palate surgery.
Results
The response rate to the survey was 100%. Seventy-five percent of units currently use throat packs; in 40%, they are used in addition to cuffed endotracheal tubes (ETTs). Inclusion of the throat pack in the surgical swab count was perceived as the safest mechanism employed to avoid retention. 26.1% of respondents were aware of at least 1 incident of pack retention in their unit.
Conclusion
The reported UK and Irish experience demonstrates that three-quarters of units routinely use packs. Notably, a quarter of respondents to the survey have experience of an incident of throat pack retention. Nevertheless, the majority of respondents considered the perceived risk of retaining a pack to be low. The growing use of microcuffed ETTs in UK cleft units paired with a low incidence of perioperative complications when a throat pack is not introduced might prompt cleft surgeons to review routine pharyngeal packing.

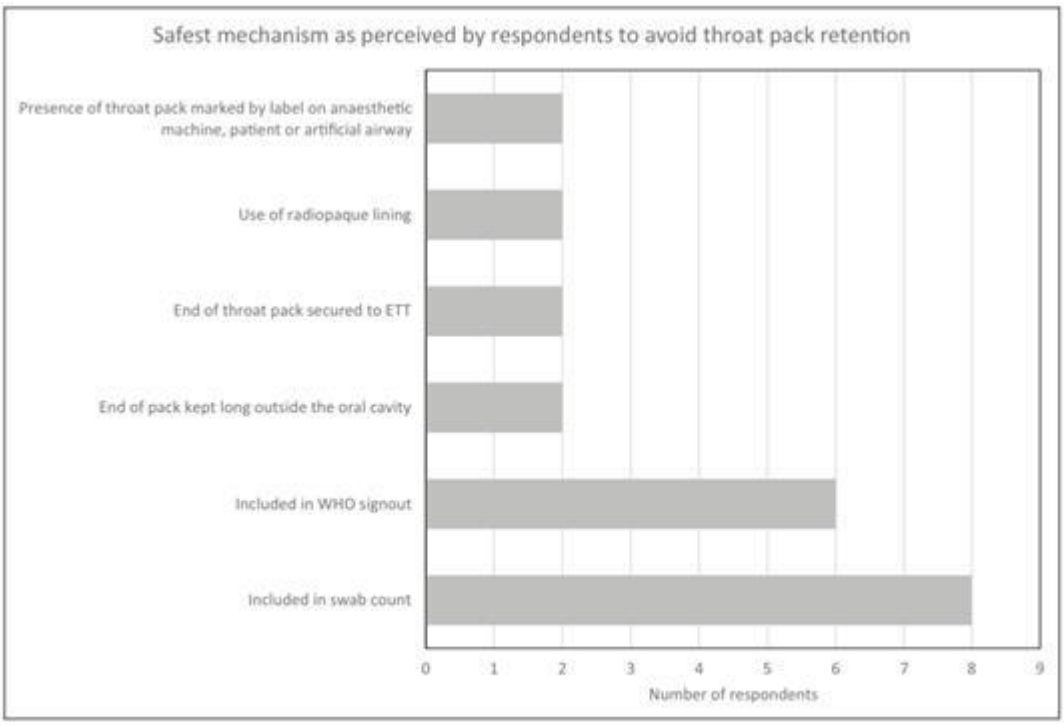

Figure 3. Bar chart showing the safest mechanism as perceived by the respondent that is used to prevent retention of a throat swab.

Throat pack, Cleft surgery, CuffedETT

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Pre-Hispanic Evidence of Cleft lip and/or Palate in Mesoamerica

Dr Ramon Aleman[1]
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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction:
Mesoamerica is a culturally defined geographical area corresponding to modern Mexico's central and southern parts and the northern part of Central America.

Aims:
The aim of this study was to explore the pre-Hispanic archaeological evidence for representations of cleft lip and/or palate in the region and discuss the pre-Hispanic beliefs in concern to facial clefts.

Methods:
From 2016 to 2017, all exhibited pre-Hispanic paintings, ceramics, and facial bones of five anthropology museums were analyzed in search of archaeological representation of cleft lip and palate. The following museums were studied: The National Anthropology Museum of Mexico, the Anahuacalli Museum (Mexico), the National Anthropology Museum of El Salvador (El Salvador), the Pablo Tesak Museum (El Salvador), the National Anthropology Museum of Guatemala (Guatemala).

Results:
Sixteen anthropomorphic figurines with evidence of cleft lip and/or palate were identified; nine at the Anahuacalli Museum, six at the National Anthropology Museum of Mexico, and one at the National Anthropology Museum of El Salvador. All sixteen were ceramics, of which fifteen originated from the Shaft Tombs, a pre-Hispanic culture from Western Mexico (Jalisco, Colima, and Nayarit; 200 B.C. – 600 A.D.). One ceramic originated from the Cotzumalguapa, a pre-Hispanic culture from western El Salvador (200 A.D.-900 A.D.). Of the 16 ceramics, 12 had male characteristics, and 3 had female characteristics; 15 were anthropomorphic figurines resembling bilateral cleft lip, nine were incomplete, and 6 were complete clefts. Three items demonstrated evidence of cleft palate. Two of these items showed a representation of complete bilateral clefts (primary palate [premaxilla] anteriorly displaced and separated from the secondary palate). Lastly, one item represented a complete unilateral cleft lip and palate but associated with a Tessier 3 facial cleft.

Conclusions:
There is archaeological evidence that supports the presence of cleft lip and palate in the population of pre-Hispanic Mesoamerica.

Pre-Hispanic, cleft lip, cleft palate.

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Congenital midline cervical clefts

PD Dr. Dr. Susanne Kluba[1], Prof. Dr. Dr. Siegmar Reinert[1], Prof. Dr. Dr. Michael Krimmel[1]
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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction:
Midline cervical clefts are a very rare and uncommon congenital facial anomaly. Embryopathogenesis is not completely clear up to now, but most authors assume a disturbance in the fusion of the first or second branchial arches.

Cases:
2 cases, a 4-month old boy and a 2 years old girl, presented with suspected midline cervical cleft. Typical symptoms with a reddened medial skin defect in the anterior neck and a skin tag at the upper end were observed in both cases. The anomaly started submentally running downwards and in one case reached up to the cranial part of the jugulum. The extension of the neck was slightly impaired. Surgical treatment included the excision of the skin and of strong fibrous cord in the depth. In order to create an aesthetic, inconspicuous scar the longer cleft was closed in broken line technique.

Conclusion:
Due to their rare occurrence and their clinical appearance midline cervical clefts may be overlooked or wrongly diagnosed. Especially thyroglossal ductus cysts should be excluded as they require different surgical treatment. An early and complete surgical excision should be favored to receive best possible aesthetic results and to avoid recurrence and further impairments.

midline cervical cleft

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Rare facial clefts- A journey from Tessier 1 to 30

Dr. Asif Masood[1]
[1]*Savitri Hospital And Research Center, Gorakhpur, India*

WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

INTRODUCTION
Craniofacial clefts are extremely rare congenital malformations that have adverse functional, psychosocial, and aesthetic effects on patients' life. Although the exact incidence is unclear, it is estimated between 1.4 and 4.9 per 100,000 live births.

AIMS AND METHODS
Records over the past 16 years at our Centre were analyzed and incidence of rare craniofacial clefts and their clinical presentations along with their treatment were recorded and classified according to Tessier Classification.
We are also in the process of collecting data from other cleft centers around the world regarding the incidence and management of rare craniofacial clefts.

RESULTS
At our center, 13500 patients with cleft have been operated on in the past 16 years. Among these, 115 cases fall into the category of rare craniofacial clefts. Tessier craniofacial cleft classification has been used for classifying the clefts. The most common were Lateral cleft Tessier no. 7 – 41
Midline cleft Tessier no. 0/14 – 23
Nasal cleft Tessier no. 2/3 – 27
Mandibular cleft Tessier no. 30 – 4
Others - 3
Data from other cleft centers will also be analyzed and presented.

CONCLUSION
In this paper clinical presentation of the patients across all the categories of the Tessier classification, that is from Tessier 0 to 30 have been discussed. Very little literature is available regarding management of such cases. We have attempted to briefly outline the treatment of such craniofacial clefts.
With data from other centers, we intend to formulate a guideline for comprehensive treatment of rare craniofacial clefts.

Rare Craniofacial clefts

1003

Commissuroplasty for macrostomia: surgical technique and long-term aesthetic and functional results assessment

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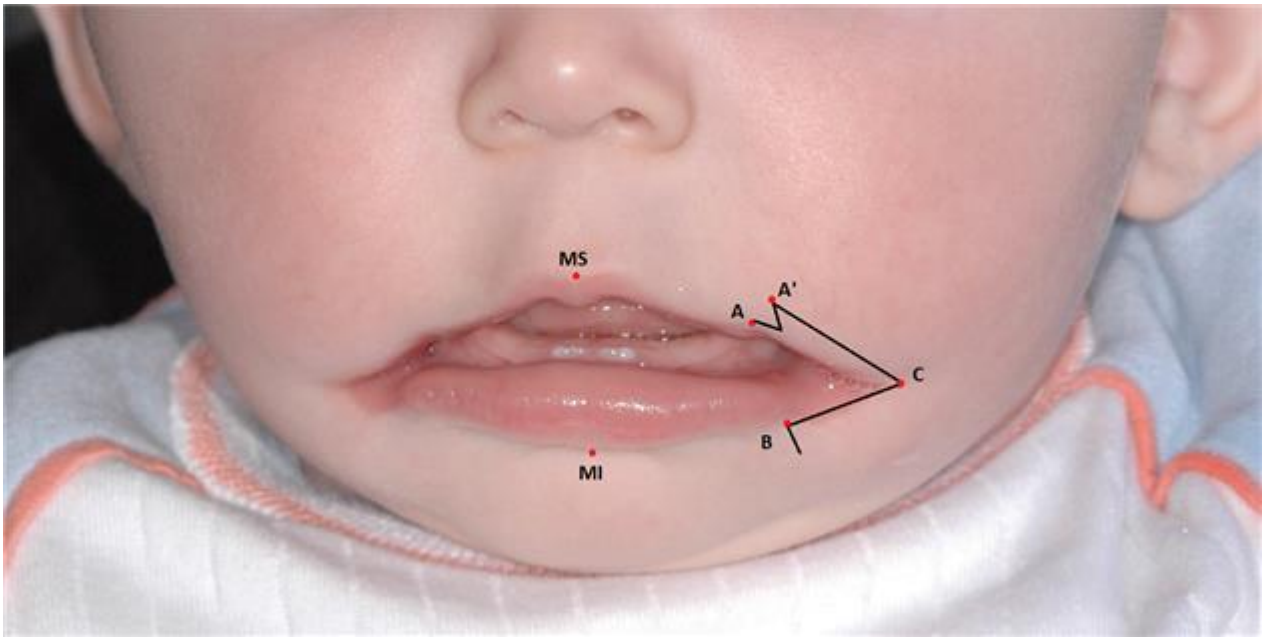
WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Background
Macrostomia (or lateral cleft lip) is a rare congenital deformity and various repair techniques have been described. However, the repair techniques have only been described in single cases or small cohorts, which make it difficult to objectively and consistently evaluate their results.
This single-center retrospective study aimed to describe our technique for commissuroplasty and to examine our outcomes from patients who were treated between 1995 and 2014.

Methods
The results were evaluated by the patients themselves with a satisfaction questionnaire, as well as independent surgeons and non-medical lay persons, based on a set of questions with binary responses.

Results
The questionnaire was completed by 18 patients. The overall satisfaction results were generally good (n=8) and very good (n=7).
Third-parties assessed 21 patients, including five children with isolated lateral cleft and 16 patients with associated lateral cleft.
The medical assessors reported subjective results of very good for non-syndromic patients and good for syndromic patients. The non-medical assessors reported subjective results of good for non-syndromic patients and syndromic patients with minor asymmetry, and average for syndromic patients with major asymmetry.

Conclusion
We have reported our commissuroplasty technique, which appears to provide good outcomes based on assessments by surgeons, lay persons, and the patients.



Lateral cleft lip; macrostomia; commissuroplasty;

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Congenital Heart Diseases in Patients with Cleft Lip And/Or Palate And Its Impact on Cleft Care: A Retrospective Longitudinal Study

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WE3.6 CRANIOMAXILLOFACIAL, Tinto, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction: Cleft lip and/or palate(CL/P)is the commonest craniofacial anomaly and congenital heart disease the commonest congenital anomaly. Therefore association of CHD with clefts poses additional risks for anaesthesia with potential increase in morbidity and mortality, especially in a resource-poor country such as Bangladesh.
Aim: To investigate the prevalence of congenital heart disease (CHD) associated with CL/P, type of CHDs and to know its impact on treatment planning.
Methods: This is a retrospective longitudinal study. Data was collected from hospital records of the Comprehensive Cleft Care Centre, Dhaka, Bangladesh from 2016-2020. All non-syndromic cleft lip and/or palate cases were included. The case cohort consisted of patients with cleft lip and/or palate with CHD. The control group consisted of cleft cases without CHD.
Results: Among 424 cases there were 222 male and 202 female. There were 44 cases of CHD (10.4%) which included 24 cases of ASD (5.7%),5 VSD (1.2%), 5 TR (1.2%) and PDA (1.2%) each, 2 MR (0.5%), 2 cases of AS (0.5%) and 1 case of TOF (0.2%). Apart from these major CHDs, there were 38 cases of PFO (9.0%). Murmur was the commonest clinical feature detected while routine examination (n = 24). There was only 1 case of cyanotic heart disease (TOF). CHD is found more frequently among CLO (15.1%) and CPO (12.9%) cases than CLP cases (7.4%). Mean age at first surgery among CHD cohort was 14.36 months compared to 25.60 months among cohort not having CHD. Among many causes of delay in cleft surgery, CHD accounted for only 7% (n = 13). All 39 operated cases had uneventful anaesthesia.
Conclusion: 10.4% of patients with CL/P had CHD. Timely diagnosis, proper treatment, multidisciplinary team approach and safe anaesthesia can produce comparable outcomes in surgery for these patients without added risk of mortalities or morbidities.
Congenital heart disease, Cleft, Anaesthesia

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The Hub and Spoke Model In Rwanda: Improving Patient Care and Surgical Training in rural areas

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction.

Estimated 5,030 Rwandan patients are in need of cleft surgery. Operation Smile (OS) has partnered with local institutions to address the unmet surgical need of cleft disease in Rwanda. Together this dyad has provided surgery for 2,032 patients over the last decade. To meet the remaining unmet need, the dyad restructured its service delivery model to offer specialized care at a tertiary hospital (hub) and standard care at selected secondary hospitals (spokes)

Aims

This abstract recounts the transition from a traditional mission model to a diagonal system focused on sustainability of services and education

Methods
OS and the University of Rwanda identified a tertiary hospital in Kigali as a hub and secondary hospitals in Ruhengeri, Kibuye, Bushenge, Gisenyi, Kibungo as spokes. In this model, the hub trains healthcare providers and shares resources with the peripherally-located spokes. Multidisciplinary volunteer hub teams provided comprehensive cleft, plastic, and reconstructive surgery care to patients in the spokes during one-week missions.

Results

Six one-week surgical programs were conducted; one at the hub and five at the spokes. Free surgeries including burn contracture releases (40.0%), cleft lip and palate repair (32.8%), and other plastic and reconstructive interventions (27.2%) were provided to 233 patients. Twelve Rwandan residents (3 plastic surgery, 4 general surgery and 5 anesthesiology) were trained by staff at the hub during these surgical programs

Conclusion

The hub and spoke model significantly increased access to care for peripherally located Rwandan patients. In just six weeks, the dyad offered care to more patients than the previous annual caseload. This model helps provide decentralized, inclusive, and locally-driven cleft and plastic surgery care. We believe this model can be scaled and replicated in other low- and middle-income countries.

OS
Hub

Spoke

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Organizing and performing short medical missions during the COVID-19 Pandemic in the Republic of Panama. 2021 experience and limitations.

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction
During the COVID-19 pandemic, traditional Medical Missions, international and local, have been limited by public health measures. During the year 2021, Operation Smile International Panama organized Short Medical Missions by working with public health officials and local Children's Hospitals and private practices. Evaluation of all safety measures started in the year 2020. After partnering with a public children's hospital, Hospital Materno Infantil Jose Domingo De Obaldia (HJDO) and a private ambulatory surgery center, Cirugia Plastica Ambulatoria (CIRPA), we started performing surgery between February and December 2021.
Aims
To present our experience during the COVID-19 pandemic taking into account the safety of our patients and volunteer healthcare workers.
Methods
We reviewed medical records of all patients who received surgical care between January to December 2021.
Results
11 Short Medical Missions were performed, 103 patients were evaluated, and 78 patients received queiloplasty, palatoplasty or both, totaling 128 surgical procedures. 600 orthodontic, speech therapy and mental health interventions were performed. Pre operative screening for SARS-Cov2 infection was performed 48 hours prior to admission and detected 9 positive cases in patients or their guardian.These were referred for contact tracing and care. Personal Protection Equipment (PPE) was provided to all volunteers, regardless of vaccination status. All but two volunteers had complete vaccination for COVID-19 as described by the Panamanian Ministry of Health (MINSA). There were no related SARS-CoV2 infections in volunteer or facility workers during the missions.
Conclusions
Performing life altering cleft surgery and providing cleft care during the COVID-19 pandemic is challenging. There is a need to engage between non governmental organizations such as Operation Smile, local health regulators and the private sector in order to perform safe surgical procedures for patients and healthcare workers. These Short Medical Missions provide an alternative to traditional Medical Missions and help provide a safe work environment for healthcare workers.

OUTCOMES OF SHORT MEDICAL MISSIONS FROM FEBRUARY TO DECEMBER 2021, REPUBLIC OF PANAMA	
Missions performed	11
Patients evaluated	103
Patients operated on	78
Surgical procedures performed	128
Non surgical procedures performed (orthodontic, speech therapy, mental health interventions)	600
Positive cases detected on patients or their guardian	9
Volunteers exposed or infected during the Missions	0

COVID-19, cleft surgery, medical mission

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A hidden community: Facial disfigurement as a globally neglected human rights issue

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Disability rights continue to lag behind other equality movements worldwide. Disfigurement rights have an even
more uncertain position, sometimes included in disability rights law, but often not explicitly. This article describes the efforts of Face Equality International to end “face-ism” worldwide, and how healthcare and mental
health providers, community developers, and educators can engage to move this vision forward. Beyond medical
and surgical treatments, mental health needs, societal, and legal barriers must be addressed. We call for strong
and explicit legal protections for disfigurement. Culturally appropriate public education to counteract stigma is
crucial in shaping an inclusive and sustainable environment for people with disfigurements.
face equality, discrimination, human rights

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Maternal Education and Perceived Barriers to Seeking Cleft Care in India: A Multi-Site Study

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction
Orofacial clefts are one of the most prevalent birth defects worldwide with an incidence of 1 in 700 live births. India has the world's highest burden of unrepaired clefts- estimated at over 200,000 patients. There has been minimal literature published on patient perceived barriers to cleft surgery in this highly vulnerable population.

Aims:
We aim to better understand the impact of maternal education level on a cleft patient and their families' perceived barriers to receiving care at four cleft centers in India.

Methods:
Patient survey instruments covering maternal education and perceptions of obstacles to cleft care were administered from August 2019 to January 2022 at cleft care centers in Srinagar, Mumbai, Durgapur, and Bangalore. Descriptive statistics and analysis were used to evaluate the study population.

Results:
Among 869 mothers, the most common barriers reported were financial (80.4%), family opinion (15.4%), fear (12.2%), and medical mistrust (9.3%). Although financial burden was the predominant variable regardless of education, we found a significant difference in the type of primary barrier reported by education of the mother ($p < 0.001$). There was a higher percentage of mothers with primary or less education who reported family opinion (15.3%), medical mistrust (13.0%), and fear (6.1%) compared to mothers with secondary education (7.9%, 8.9%, and 5.3%, respectively).

Conclusion:
This study identifies barriers to cleft care in India and their associations with maternal education level. Barriers such as family opinion, medical mistrust and fear decreased as maternal education increased suggesting that these barriers are modifiable through education. Augmenting the provision of maternal educational workshops could help address these barriers and improve access to cleft care.

Cleft, Surgery, India, Barriers, Perceptions

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Advancing the provision of safe, comprehensive cleft services in India: The Durgapur Cleft Center

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction

India has the highest estimated number of unrepaired clefts in the world at over 200,000 patients. Operation Smile (OS) is a non-government organisation that provides cleft surgery in low and middle-income countries (LMICs) around the world.

Aims

In January 2019, OS India set up a year-round multidisciplinary Cleft Center in Durgapur - a rural area with no existing, dedicated cleft services. We aim to improve access to quality cleft care in India through the provision of free, ongoing, comprehensive service.

Methods

The Durgapur Cleft Center (DCC) provides a year-round, multidisciplinary cleft program through teams of surgical, anesthesia, dental, pediatric, nursing, nutrition, psychosocial, ENT, and speech and language healthcare providers to a population of approximately 65 million. Prospective data was collected from all patients treated at DCC from inception to June 2021, including patient satisfaction surveys.

Results

There were 1,056 cleft procedures performed over 27 months at DCC, including 932 primary and 124 secondary cleft procedures. The most common age group operated was 2-4 years (n=433). Usage of the WHO surgical safety checklist was monitored over a 4-month period and completed for 100% of patients. Satisfaction surveys were completed by 322 families. 147 (46%) strongly agreed and 172 (53%) agreed to being happy with their surgery. Regarding satisfaction of overall services received in the hospital, 118 (36.5%) were very satisfied and 202 (63%) were satisfied. A total of 24,380 consultations were performed across the various multidisciplinary cleft specialties.

Conclusions

The multidisciplinary cleft center model described represents a targeted strategy to increase access to safe cleft care in an area of need through long-term NGO and government partnerships. Further expansion to other sites in India is underway. Scaling this model to other LMICs could be beneficial in addressing the burden of cleft conditions globally.

NGO, cleft, capacity-building, LMICs

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Surgical Technician Training in Nigeria: A Pilot Program

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction:
Surgical technicians in low- and middle-income countries (LMICs) often lack expertise required to ensure the safety and maintenance of surgical instruments for use in the operating room. Smile Train, the world's largest cleft charity, partnered with the Safe Surgery Initiative (SSI), an organization dedicated to providing refurbished surgical tools to hospitals in LMICs, and to train technicians to properly inspect, sterilize, maintain, and refurbish surgical instruments using their Surgical Instrument Repair Technician (SIRT) program.

Aims:
Smile Train and SSI aim to build capacity of repair technicians across LMICs using this sustainable training program.

Methods:
The SIRT pilot program was hosted in Nigeria over a six-week period. Twenty-two participants who had prior experience handling surgical instruments were recruited. Trainees completed a pre- and post-training assessment to measure their perceived competency of surgical instruments by a five-point Likert scale (strongly agree=5 to strongly disagree=1). Trainees' technical skill proficiency was measured following completion of the SIRT training program and will be subsequently tracked every 3 to 6 months using online learning modules and practical examinations.

Results:
At the beginning of the program, participants frequently agreed or felt neutral in their perceived ability to identify and evaluate the quality of surgical instruments. On average, trainees agreed or strongly agreed in their ability to manage all aspects of surgical instrumentation after completing the program. Following completion of training, 20 of 22 participants demonstrated a passing level of competency on the technical skill proficiency examination.

Conclusions:
Participants of the SIRT pilot program reported improvement in their surgical instrument competency with the majority exhibiting passing scores for technical skill following participation. Further studies are needed to assess the SIRT program's impact on surgical care at Smile Train partner hospitals that participated in this training program.
sustainable surgical care, mission, LMIC

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Home Grown Cleft Support

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction:
There are many NGOs all over the world. How does a Malaysian home grown cleft support group adopts a holistic approach and makes a difference to the cleft community?

Aims:
With 800 – 1000 new born clefts annually in Malaysia, how does an organization, primarily made up of laypersons, position itself to provide support enabling parents and cleft borns to make knowledge based decisions on their life and future. How do we ensure shortcomings of the past do not repeat and compromise the lives of future cleft borns.

Methods:
Support three groups (parents, cleft borns and healthcare providers) to ensure cohesive engagement beneficial to the cleft community.
Parents are supported from detection at ante natal stage or upon birth of a cleft infant. They are equipped with information on cleft management protocol, feeding guides and financial support.
Cleft teenagers/adults are provided with information to guide them in decision making with respect to cleft treatment post pediatric age. Also, special purpose programs on career, self esteem are conducted to promote confidence and self acceptance.
Healthcare providers are supported through the advocacy on Combined Cleft Clinic (Multidisciplinary Cleft Clinics), sponsorship of specialised needs (such as “Feeding MasterClass”) and programs dedicated to clefts (Continued Medical Education)

Results:
CLAPAM has been able to deliver the following annually (slght drop off in 2020-2021 due to Covid pandemic):
Antenatal counselling : 2-3 cases a month
New Born Cleft counselling : 300 – 400 cases a year
Feeding aids : 800 – 1000 year
Cleft intervention sponsorship : 60 – 90 cases per year

Conclusions:
A home grown cleft support group, if properly managed and with the right objectives, can be a great help to health care providers and importantly, to cleft parents and cleft individuals.

NGO, Cleft Support, Malaysia

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International Policy and Advocacy Engagement for Cleft Organizations: The Operation Smile Experience

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction
The global prevalence of cleft lip and palate (CLP) is estimated at 7.94 per 10,000 live births per year. Most individuals affected by this disorder live in low- and middle-income countries (LMICs). LMICs face numerous challenges in addressing disease burden, with infectious diseases getting the most attention and CLP getting relegated down the priority list. Organized health policy and advocacy (P&A) activities are needed to raise the priority level of CLP in national and international health priority agendas.

Aim
To recount Operation Smile's (OS) experience raising awareness and garnering institutional support for CLP in LMICs.

Methods
OS developed an intentional P&A strategy that increased participation in international global surgery initiatives, local and international stakeholder identification and engagement, communication on global and local media, and the design and implementation of evidence-based CLP policies.

Results
Members of the P&A department assumed leadership positions at international P&A civil society organizations like the Global Alliance for Surgical, Obstetric, Trauma, and Anaesthesia Care (The G4 Alliance), International Society of Surgery, Bethune Round Table, World Cleft Coalition, Circle of Cleft Professionals, and Global Initiative for Children's Surgery. As a member of these groups, OS aims to advance the CLP agenda by contributing to international conferences and supporting broader efforts such as the development of international global surgery policies and the inclusion of surgical diseases in the agenda of governments and development agencies.

Conclusion
OS has actively contributed to leadership, research, and education in international CLP P&A. This experience will help guide the P&A involvement of other CLP organizations.
Cleft, non-governmental organization, policy, advocacy

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Strategic Partnerships to restart NGO Surgical Care During COVID

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction: Operation Smile Perú (OSP) is a non-governmental organization (NGO) founded in 1999 that provides cleft care in underserved communities, reaching 798 patients in 2019. Canceled elective operations in 2020 due to the COVID-19 pandemic created a backlog of cleft patients awaiting care. The traditional OSP model congregated hundreds of patients from a large geographic region for surgical care every month; care was administered by volunteer local and international medical providers. The COVID-19 pandemic motivated OSP to modify their approach to minimize COVID-19 spread and increase program sustainability by using local resources and providers. When elective surgeries resumed in 2021, OSP initiated continuous cleft care programs at two partner hospitals in Lima that minimized large gatherings.

Aims: Assess the efficacy of a continuous surgical model using a continuous program instead of larger monthly programs to reduce COVID-19 exposure risk while providing high volume surgical care.

Methods: OSP's new methodology provides cleft care and cleft surgery at partner hospitals continuously. Follow-up consultations took place at one and four weeks postoperatively. OSP maintains longitudinal contact with patients to identify complications.

Results: Eighty-nine patients received surgical care from August 28th to December 18th, 2021 (37 male, mean age 1.6 years, 70 from Lima). Sixty-six cleft lip and 23 cleft palate repairs were performed. Six operations were done each week on average, which predicts 312 operations annually. Pre-pandemic, OSP did an average of 320 operations per year. The novel program provided continuous, locally-sustainable surgical care without any contracted COVID infections.

Conclusions: OSP was able to adapt service methodology to implement safe, sustainable and impactful cleft surgical programs while avoiding COVID infections. The program's initial success allowed for incorporation of an additional hospital partner which facilitated expansion of essential cleft care to treat patients from distant regions within Peru.

COVID-19, cleft, LMIC, surgery, NGO

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Institutional experience of NGO based cleft lip and palate care: maintaining quality care in a tertiary care hospital

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction: Every 1 in 450 children in Pakistan born with cleft lip and palate. NGO and charity based cleft lip and palate surgeries are common in Pakistan as cleft lip and palate are more common in poor population. Maintaining quality while dealing clefts is challenging and those who are doing cleft surgeries are those who are ready to take these challenges. Patel hospital is a busy tertiary care hospital where Plastic surgery department along with busy work of burns unit, head and neck reconstructions and 24 hour trauma cover, is also doing cleft lip and palate surgeries.
Materials and methods: In Patel hospital we are doing NGO based cleft surgeries since 2007. Since 2007 almost 1000 surgeries has been done. We have evaluated our work from June 2013 to Dec 2021, looking into numbers of clefts, type of cleft, pre-operative evaluation, ancillary facilities, cost, nutritional support, and programs to improve quality care.
Results: Since June 2013, 791 cleft surgeries were done. 315 primary lip nose unilateral cleft, 59 primary bilateral cleft lip, 302 primary cleft palate, 53 lip nose revision, 15 secondary palate/VPI, 31 fistula repair, 14 alveolar bone grafts were done. Pre-operative evaluation included evaluation by pediatrician, orthodontist, anesthetist, laboratory investigations, weight measurement, depends on timing of presentation and types of deformity. NAM was done by orthodontist in selected children. Ancillary facilities available are orthodontist, speech therapist, otolaryngologist, and nutritionist.
Conclusion: cleft lip and palate care is a challenging job. It requires multidisciplinary care and close follow up. Maintaining quality care requires time, money and efforts. Funding is very necessary Programs like evaluation camps, advertisements, workshops for surgeons and paramedics are important to improve program.

cleft lip, palate, NGO,

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Utilizing a Cleft Organization to Facilitate Delivery of Essential Burn Reconstructive Surgery in Resource-Limited Settings

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction: Cleft non-governmental organizations (NGOs) possess valuable expertise on delivering safe and effective reconstructive surgery in resource-constrained settings. However, other significantly disabling conditions, such as burns, that require reconstructive interventions lack the same level of local and international support. Cleft NGOs are optimally positioned to assist with delivering essential reconstructive care through sustainable service delivery models similar to those developed for cleft care.

Aims: To perform a study assessing the efficacy of a cleft NGO at delivering burn reconstructive surgery.

Methods: A cleft NGO with forty years of experience delivering global cleft care was utilized to establish a collaborative effort in Jordan between local and international burn experts to provide burn care. Preoperative screening was performed by a Jordanian burn surgeon to identify patients. Virtual case conferences were held weekly to optimize operative planning. Subsequently, a five-day surgical program with a mixed team of Jordanian and international volunteers was held. Patient demographics, interventions, and outcomes are summated.

Results: Fifty-two burn patients were screened with twenty receiving surgery. Average age was 15 years with 50% females and 25% refugees. Most had scald (65%) or flame (30%) burns from household accidents. Local cutaneous flaps were used in all cases. Only one patient required supplementary skin grafting. Seven patients had multiple operative sites that were addressed with a two-team approach. No early perioperative complications occurred. All patients were followed-up by the local team between 7 and 42 days. Five patients presented with minor complications - 5 flaps with partial necrosis and 2 partial dehiscences. None required surgical intervention.

Conclusions: The successful delivery of safe and effective reconstructive burn surgery by a cleft NGO is possible through combined local and international efforts. Cleft NGOs have the resources and experience that allows them to implement impactful surgical programs for other conditions that are critically lacking access to essential reconstructive care.
NGO, burn, reconstructive, surgery, refugee

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Nasolabial assessment using the Electronic Medical Record For Facial Anomalies(EMRFA)

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WE3.7 LMIC Theme, Carrick, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

-Introduction: The main stumbling block for the nasolabial assessment remains the factor of subjectivity as there isn't a universal scoring method. The Electronic Medical Record For Facial Anomalies (EMRFA) has been functioning since 2013 and since then there are more than 1500 patients being followed. The "wall" of the patient contains pictures and videos uploaded by specialists or the patients themselves. From 2021 we added a periodic mandatory "global evaluation post" (GEP) based on the data and scores in the last consultations in the age period. The GEP are done in each specialty -surgery, speech, orthodontics, hearing and psychology.

– Aims: The aim of this study is to present our system for surgical assessment for the pre- and postoperative scores.

– Methods: The assessment was done retrospectively using the EMRFA. The clinical sample includes 440 patients from 5 to 25 years with uni and bilateral cleft lip/and palate patients. Postoperative scoring is done shortly after surgery and at several age periods 5-7, 8-10, 11-14, 15-18, 19+. A CHASQ test is used for evaluation of patient's opinion of the treatment outcome.

– Results: The GEP for surgery of the lip-nose area have been evaluated by 3 surgeons retrospectively using pictures and video samples included in the EMRFA. Current findings show that with growth the spontaneous evolution of the lip and nose in some patients scores higher in time without secondary surgeries. Other patients which underwent corrective surgeries demonstrate positive results in the postoperative scorings.

– Conclusions: The follow up of the patient's growth and outcomes can be improved using GEP in several important periods of life when a general and comprehensive assessment of the patient is required by the platform.

Nasolabial, assessment, EMRFA, surgical, clefts

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Timely Diagnosis of Cleft Palate in Newborns: A population-based cohort study using CRANE Database registrations for England, Wales and Northern Ireland.

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction
The 2012 Cleft Registry and Audit NEtwork (CRANE) report highlighted the issue of diagnosis beyond 24-hours from birth among children with cleft palate (CP). Nearly one third of children were diagnosed late according to the National Standard (for 2011 births). In 2015 the Royal College of Paediatrics and Child Health (RCPCH) formally launched their guidance (and training) to ensure full newborn examinations be undertaken within 72-hours of birth, including examination of the palate.

Aim
Assess the impact of the introduction of RCPCH guidance on the timing of diagnosis of cleft palate.

Methods
CRANE was used to identify recent CP diagnoses (2011-2020 births). Rates of diagnosis of CP within 24-hours were evaluated across the ten-year period, and in two groups either side of the introduction of RCPCH guidance (2011-2015 vs. 2016-2020). Rates of diagnosis of CP within 72-hours were evaluated over the six-year period of data available. Significance was assessed using Chi-Squared analysis.

Results
There have been significant improvements in the rates of timely diagnosis of CP (antenatally or within 24-hours of birth) across the recent decade (66% 2012 vs. 75% 2019, p=0.005). Mean rates of timely diagnosis for the 5-years post-introduction of the RCPCH guidance were significantly improved compared with the 5 years before the guidance was launched (73.4% 2015-19 vs. 67.6% 2011-15, p=0.000). An improvement was also observed in the rate of CP diagnosis within 72-hours (87% 2019 vs. 80% 2015, p=0.015).

Conclusion
Almost 8 of every 9 live births with a CP are now diagnosed within 3 days of birth, reflecting a significant improvement since the launch of the RCPCH guidelines in 2015. Whilst it is encouraging to see this improvement within the parameters of the formal full newborn examination, the cleft clinical community still supports an emphasis to improve earlier diagnosis within the first 24-hours from birth.

Diagnosis, Timing, Guidance, CRANE

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Adapting to COVID 19: developing online nurse training for early cleft care specialists at Val d'Hebron University Hospital, Barcelona - some reflections

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction

The European Cleft Organisation has run face to face nurse training courses in Europe for the past decade. In 2020 Val d'Hebron University Hospital, Barcelona, requested that ECO run a course for them. However, it became clear that this would not be possible because of Covid19. ECO decided to re-work its training programme and conduct it online.

Methodology

A proposal was put together for a pilot that could be run over a series of weeks in short modules. The modules focused on: Epidemiology, Early Care/Feeding, Family impact and Case histories. The development and delivery was costed out and Smile Train agreed to fund it. The first task was to translate the training resources into Spanish. The training itself needed to be run in Spanish and after research we opted to use VoiceBoxer, an online platform offering simultaneous interpretation

Results

Twenty four participants registered for the course which was run over 5 weeks in autumn 2020 by specialist cleft nurse Kostadinka Bojikova from Bulgaria. Participants completed a pre course test which was repeated at the end. Additionally we collected feedback scores for each session.

The feedback scores for all the sessions were between 4 and 5 out of 5.
The results of the pre and post tests show improved knowledge in all areas with increased knowledge ranging from 20% to 40%.

Conclusions

Results were favourable and demonstrated the effectiveness of the training. In future, blended learning may be an option, where introductory training can be offered online followed by in-depth training face to face. Following-up online is difficult because there is not the opportunity to properly interact with, and get to know, the trainees. The interpretation platform could be improved allowing for more interaction - new technology may emerge that is more effective and this should be explored .

online, training, nursing, Barcelona, blended

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Intern Training Programme to Support the Development of the Clinical Nurse Specialist within Cleft Lip and Palate

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction

The clinical nurse specialist (CNS) role is embedded within cleft teams following recommendations of the Clinical Standards Advisory Group (2001).
The role requires a skilled and innovative nurse with a plethora of qualifications registered within the Nursing, Midwifery Council (NMC). This includes paediatric nursing, neonatal, health visiting. In addition, desirable competencies such as counselling, non-medical prescribing and clinical skills are integral. A CNS is renumerated as band 7 PayScale within Agenda for Change and can be an attractive position.
A misconception is that the Cleft Nursing course will provide this training however this course runs infrequently with is a course that supports consolidated experiential learning and networking

Aims

The author identified the need to develop an apprentice programme akin to an intern fellowship programme whereby the nurse is employed on a lower PayScale and follows a structured training programme. On completion the CNS will transition to a substantive position.

Methods

The development of rigorous and comprehensive training programme that following a pathway exposing the nurse to a graded complexity. This commences from the basics of the assessment of the baby with a cleft lip/palate progressing to complex feeding and airway management and additional co morbidities. The programme develops over a 12-month programme and includes research and development, and leadership.

Results

A grounded theory approach to explore the CNS experiences undergoing the training programme and the completion with the time scale

Conclusions

Will this training programme attract a CNS who is able to fulfil the training competencies and transition to a credible CNS.

Evaluation

Does a staged exposure to the challenges within cleft facilitate provide a
supportive learning environment, attract the correct calibre of applicants /support staff retention?

Nursing, Development, training

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Advancing nutrition care provision to children born with a cleft in limited-resource countries: insights into Smile Train's nutrition strategy

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Background: In low- and middle-income countries (LMICs), the needs for early cleft identification and feeding assistance to mothers of infants with cleft are largely unmet. Consequently, over 40% of children under-5 reaching a cleft care provider in LMICs are malnourished. Besides delaying surgery, malnutrition threatens the life of patients and prevents them from reaching their physical and cognitive potential. Smile Train is a global cleft NGO supporting cleft care provision through partnerships with cleft practitioners in 2,090 hospitals across 85+ countries.

Aims: 1-Explore nutrition care provision available to patients managed by Smile Train's partner hospitals globally; 2-Address pressing needs in nutrition care provision.

Methods: A multi-choice questionnaire was used to capture key indicators of nutrition care provision by partner hospitals. The survey was open for one month in November 2020 online on Smile Train's patient database.

Results: 67.1% of hospitals that operated patients in 2020 responded to the survey. Only 55.4% reported offering feeding counselling to every mother of children with cleft. Less than 50% reported using anthropometric measurements plotted on WHO Growth Charts to assess patients' nutritional status. No nutrition specialist was involved in patient management in one-third of hospitals while nearly 50% reported that a nutrition specialist would only manage cases identified as malnourished. Out of 58% of hospitals that reported managing malnutrition, 25% said that the management was not overseen by a nutrition specialist.

Conclusion: There is a pressing need to integrate nutrition in cleft care provision in LMICs. Smile Train stepped up activities and financial commitments to improve the quality and amount of feeding and nutrition care provided to every patient born with a cleft. This includes developing resources and training materials, running workshops to train cleft team members, partnering with local professional bodies, and allocating grants and offering local technical assistance to its partners
Nutrition, Feeding, LMIC, Smile Train

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Anthropometric nutrition outcomes of children under 5 years undergoing cleft palate repair at CoRSU rehabilitation hospital Uganda; trends, patterns and determinants

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Background: Despite complete cleft palate repair, children under 5 who suffered preoperative malnutrition run a risk of recurrence of malnutrition and higher post-surgical complications. However, there is inadequate data about nutrition outcomes following cleft palate repair in low and middle income countries. We assessed the prevalence and determinants of postoperative malnutrition and compared pre- and postoperative trends of malnutrition among children under 5 years undergoing cleft palate repair at CoRSU rehabilitation hospital.
Methods: A one-year cross-sectional study was conducted on 115 non-syndromic children under 5 years who had undergone complete cleft palate repair at CoRSU Rehabilitation hospital at least 3 months previously. Individual children's weight, height and age were obtained at initial, preoperative and postoperative visits, corresponding anthropometric parameters computed using the WHO anthropometric calculator and compared as proportions.
Results: Average age of study participants was 24 months; male to female ratio was 1.7:1. 53.6% had had an illness in the previous one month. 74.8% had cleft palate repair at or above 6months, 51.3% had recorded a post-surgical complication; 54.2% of these had been re-operated. 69.6% had breastfed for an average of one month. The commonest feeding technique was by cup (86.7%) and plate (85.5%). 57.0% and 59.2% respectively had a minimum acceptable diet and dietary diversity. The prevalence malnutrition at different hospital visits is as shown in table 1 below. Postoperative stunting was independently associated with age groups 12-23months(p=0.013) and 24-59months(p=0.006), residing in Eastern(p=0.021) and Western(p=0.033) regions and being stunted(p=0.000) or wasted(p=0.028) preoperatively.
Conclusion: Malnutrition recurs postoperatively. stunting and overweight are the most prevalent types.

Table 1, Prevalence and trend of different types of malnutrition at different hospital visits.

	Type of malnutrition			
Hospital visit	*Wasting*	*Underweight*	*Stunting*	*Overweight*
Initial	*53.0%*	*57.4%*	*44.4%*	*0.0%*
Preoperative	*12.7%*	*34.8%*	*41.7%*	*5.2%*
Postoperative	*4.4%*	*15.7%*	*48.7%*	*9.6%*

Underweight, Wasting, Stunting, overweight.

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The Durgapur Cleft Center Nutrition Program- A community-focused approach to address rising rates of malnutrition among patients with cleft

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction:
Children with cleft are prone to malnutrition due to anatomical and socioeconomic factors, lack of awareness around feeding techniques, and associated comorbidities. Although several studies report on the high prevalence of malnutrition in children with cleft, there is scarcity of literature on how to address this problem.

Aims:
The objective of this program is to reduce the number of patients turned down for surgery due to malnutrition at the Durgapur cleft center (DCC).

Methods:
A comprehensive nutrition program launched through DCC in March 2021. Patients are initially identified at organized outreach camps. They receive a virtual consultation by the DCC nutritionist or in-person program coordinators (PCs) to provide age-standardized nutritional care. Nutrition kits are distributed to patients at the camps or home visits by PCs and NGO partners to reduce financial and social burden on families. Parents are counselled on improving home-based diet instead of depending on expensive nutritional supplements. Regular weight monitoring is conducted by the PCs. Once a child achieves normal age-appropriate weight, they are scheduled for surgery.

Results:
Of the 170 patients enrolled since March 2021, the average age is 11 months with 15% having an isolated cleft lip, 50% cleft lip and palate, and 35% cleft palate only. 84% (143) attended at least one follow-up visit, 70% at least two, and 62% were visited 4+ times. 47 children have received surgery as of December 2021.

Discussion:
Children with cleft are denied surgery due to nutritional status and without intervention continue to have feeding problems. Comprehensive, community-driven nutritional programs such as this are imperative to break this vicious cycle, specifically in regions with limited opportunities for surgical treatment and soaring malnutrition rates due to the COVID pandemic. This structure provides a long-term, sustainable option for families from poor socioeconomic backgrounds and has enabled patients to receive safe, timely surgical treatment.

Nutrition, LMIC, pediatrics, NGO, partnership

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Faltering weight in infants with cleft lip and palate

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

INTRODUCTION
Feeding in neonates with orofacial clefts can be challenging; faltering growth can be observed. Inadequate nutrition can cause a delay to surgical intervention, and may impact on post-operative recovery including wound healing. Since the restructuring and centralisation of cleft services in the UK in 1998 following the Clinical Standards Advisory Group report, there has been an emphasis on a multidisciplinary team approach and integration of a cleft Clinical Nurse Specialist into cleft care. This involves a feeding assessment within 24 hours of referral to enable the nurse specialist to offer specific specialist advice and provide appropriate feeding equipment.

AIM
The aim of this study is to review data from our regional cleft centre to demonstrate how this change in service provision has impacted upon patient nutrition.

METHODS
We present the findings of a review of all patients undergoing cleft lip and/or palate repair at our two-site centre between 1st January 2017 and 31st December 2019. Note has been made of birth weight, gestational age, cleft diagnosis, presence of a syndrome or additional anomalies, weight & age at the time of the primary surgery, deprivation score, ethnicity, and family history.
The intervention required to correct the child's faltering growth has also been recorded (e.g. high calorie formula feed, nasogastric tube).
These data were collected from 77 patients across two hospital sites, of all patients who underwent cleft surgery within the given three-year period. Their growth chart centile was calculated at birth, primary surgery, and at subsequent procedures; this enabled us to identify patients where weight gain was not progressing appropriately, and to demonstrate that early feeding assessment and intervention helps to prevent and address faltering weight.
The findings will be summarised with accompanying statistical analysis and with reference to historic data recorded prior to the centralisation of UK Cleft services.
Nutrition, Weight, Feeding

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Nutritional status in U.S. children with orofacial clefts in the first 6 months of life

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction: Infants with orofacial clefts (OCs) have a higher prevalence of malnutrition, however the trajectory of growth over the first 6 months is not well characterized.

Aims: To estimate malnutrition in a large cohort of infants with OCs in the United States (U.S.) overall and by phenotype.

Methods: We conducted a cross-sectional study to examine malnutrition by month of age in infants with an OC between 0-6 months of age at a single U.S. tertiary care hospital from 2010 to 2020. We calculated the average weight-for-age z-scores (WAZ) and weight -for-length z-scores (WLZ) for each child for each month from 0-6 months of age using World Health Organization (WHO) norms. We calculated the proportion of infants underweight (WAZ) and wasting (WLZ) below -2 standard deviations monthly from 0-6 months of age. We compared the distribution of WAZ and WLZ among children with OCs to the expected using a one-sample t-test with a Gaussian distribution.

Results: We included 883 infants with OCs, and 14,193 weight and 7,322 length measurements. Compared to the WHO expected proportion of infants being underweight (2.3%), a larger proportion of infants with OCs were underweight between 0-1 months (10.6%), peaking between 2-3 months (27.1%) and remaining high between 5-6 months (16.3%). Compared to the WHO expected proportion of infants (2.3%), a higher proportion of infants with OCs had wasting between 0-1 month (7.3%), peaking between 2-3 months (12.8%) and remaining high between 5-6 months (5.3%). The mean WAZ and WLZ was shifted downward -0.98 and -0.29, (both p-values <0.001) compared to WHO norms. Similar findings were observed regardless of cleft type and comorbidities.

Conclusions: Infants with orofacial clefts compared to normative peers have substantial malnutrition in the first 6 months of life. Identification of those at highest risk, monitoring and contextually appropriate strategies to ensure growth in infants with OCs are needed.

nutritional status, growth, malnutrition

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How Japanese obstetricians do refer after the Prenatal Diagnosis of Cleft Lip? A preliminary survey in Miyagi prefecture

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WE3.8 FEEDING, Harris, EICC - Onsite Only, July 13, 2022, 11:00 - 13:00

Introduction: The successful referrals to a cleft team after prenatal diagnosis of cleft lip are important not only for subsequent treatments, but for the psychosocial aspects of infant and their family. But as a cleft team, we have sometimes reported by parents that they must wait a long time before the referral, or cannot get enough information before consult a cleft team. Aims: In order to understand the actual state of referral to a cleft team in Miyagi prefecture in Japan, a field survey study was conducted.
Methods: A survey was conducted on 101 obstetricians participated in the Miyagi Society of Obstetrics and Gynecology meeting held in Sendai, 2018, and 29 obstetricians completed the survey (17 males and 12 females, mean age 54 years, response rate: 28.7%).
Results: Of 19 obstetricians who had experience with prenatal diagnosis, 12 were diagnosed in the second trimester of pregnancy and 7 in the last trimester of pregnancy. All obstetricians provided prenatal notification about cleft, and 14 (73.6%) requested the presence of their spouse at the time of notification. During their notification, physical care for pregnant women (2), psychological care for pregnant women (18), provision of accurate treatment information (13), and provision of information on childcare (10) were listed as considerations. After diagnosis, 14 reported referred to a cleft team immediately, while 4 reported after birth.
Conclusions: While many obstetricians experienced prenatal diagnosis of clefts, the results suggested there is no standard procedure of care for obstetricians in prenatal diagnosis, notification, and subsequent treatment. The content of prenatal notification and the timing of referral to a cleft team may have a big impact on mothers, families, therefore an urgent consideration for building the standard of care around obstetricians' prenatal diagnosis and notification are needed.
obstetricians, prenatal diagnosis, referral

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Scaling up speech services in specialized cleft units in India: The road map and challenges

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WE4.1 Task Force SPEECH, Sidlaw, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction: Comprehensive cleft care is the ultimate objective of any successful cleft and craniofacial team. Speech services are an integral aspect of comprehensive cleft care. In a developing country like India, continuous efforts are being taken over the last two decades to support cleft speech services in specialized units and sustain them. A road map was drawn for scaling up speech services and ensuring their availability across the country as part of the SmileTrain India program. This provided the mechanisms of sensitizing speech language pathologists (SLPs) across the country about cleft team work, training and mentoring the identified SLPs, providing opportunities for continuing education and support systems to facilitate working as a team member.
Aims: This paper aims to highlight the processes in implementing the above roadmap, its challenges, methods adopted to ensure sustainability of speech services, and its outcomes.
Working Model: In the initial phase, training and sensitization activities were carried out across the country to highlight cleft lip and palate as an area of specialization among SLPs. Master trainers in the region were identified and mentored. The master trainers were then involved in conducting training programs and executing the roadmap in India. The roles and responsibility for the master trainers included facilitating recruitment of SLPs in specialized training units, development of training modules, conducting periodic training programs at the beginning, intermediate, and advanced levels, mentoring of SLPs at the workplace, conducting annual reviews and providing feedback to the units.
Conclusions: This process has resulted in establishment of speech services in specialized cleft units pan India. Currently, more than 30 SmileTrain units have dedicated SLPs providing a wide range of cleft speech services. SLPs have reported the periodic training programs and reviews to be beneficial in expanding the range of services offered in their respective units.

Speech, Service delivery, Training, Mentoring

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Improving Access to Speech Therapy in Ile Ife, Osun State, Nigeria through PACT

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WE4.1 Task Force SPEECH, Sidlaw, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction

As of 2017, there were only fourteen licensed speech professionals serving over 200 million people across the six geopolitical zones of Nigeria. Many of these professionals were not trained to work with individuals with orofacial clefting. With such low level of training and the estimated prevalence of orofacial clefting in Nigeria being 0.5 per 1000, there were not enough speech therapists to treat these patients. At Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC) in Ile Ife, Osun State, speech therapy was not easily accessible to patients before and after cleft repair which resulted in poorer speech outcomes.

Established in 2008, Partners in African Cleft Training (PACT) fosters interdisciplinary cleft management across Sub-Saharan Africa through shared learning and didactic experiences. A PACT trainer identified a need for speech therapy at OAUTHC and recruited a dental nurse with an interest in speech to participate in speech training during the 2017 PACT seminar to improve access to speech therapy in Ile Ife.

Approach

In November 2017, PACT hosted speech trainees from Ethiopia, Ghana, Liberia and Nigeria. Training focused on the perceptual evaluation of velopharyngeal function and differentiation of velopharyngeal insufficiency versus velopharyngeal mislearning. Interdisciplinary care and communication within the cleft team was emphasized. Therapy techniques were modeled by trainers, and speech trainees practiced hands-on clinical skills. Following the seminar, continued mentorship between trainers and trainees occurred via WhatsApp, e-mail, and video conferencing. Trainees were also informed of additional resources such as SmileTrain's speech program and other online resources.

Results

Over 20 patients ranging in ages from 3 to 24 years have been seen for speech therapy at OAUTHC since 2017. Protocols, including routine speech assessments before and after cleft repair, have also been established.

Conclusions

Following the 2017 PACT program, access to speech therapy in Ile Ife, Nigeria increased.

speech, Nigeria, cleft, team

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Evaluating Efficacy, Global Impact, & Trainee Perception of International Speech Therapy Trainings

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WE4.1 Task Force SPEECH, Sidlaw, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction/Aims: This presentation highlights the benefits and challenges of implementing speech therapy trainings utilizing a train-the-trainer model. Children born with CL+/-P need comprehensive care from a cleft team to ensure that they can meet their highest potential and engage in all aspects of life in their communities. However, in these areas it can be difficult to locate health professionals with the capacity to address cleft palate speech characteristics. Limited research has been conducted focusing on the efficacy of speech therapy trainings intended to provide a sustainable impact on these communities.

Methods: This poster shares comprehensive data from a survey distributed to training attendees from the past 5 years. Trainings were organized by Smile Train and facilitated by local health professionals at partner hospitals.

The survey was distributed in August 2020 and consisted of three sections: Personal & Demographic information, Global Impact & Outreach, and Speech Training Feedback. The survey elicited a group of respondents (n=52) who each attended one of 14 trainings over a five year span (2015-2020). Authors collected demographic data of respondents, measured respondents' self perception of competency, and gathered trainee feedback for future trainings.

Results: Results indicated that trainee confidence in treating those with speech conditions resulting from a CL+/-P significantly increased after the training (4/10 on average at baseline, improving to 9/10 after training). Further, 56% of trainees have now begun to train other health professionals in their communities. Constructive feedback included requests for continuing education and the need to address the lack of resources/funding in home countries. Finally, trainees report difficulties in implementation as a result of the COVID-19 pandemic.

Conclusion: Utilization of a train-the-trainer model for speech trainings can provide a lasting, sustainable impact for LIMCs based on respondent feedback. Future survey analysis is imperative to continuously evaluate the efficacy of these trainings.

Speech-Language Pathology, International Cleft Care

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Repairing Cleft Palates in LMICs: Are we Missing Isolated Cleft Palates?

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WE4.2 Task Force on Neonatal Safety in Cleft Care (TNSCC) - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 14:00 - 15:00

Introduction
While external orofacial clefts such as cleft lip with or without cleft palate are easily identified, isolated cleft palates (ICPs) often remain underdiagnosed or even unrepaired. Unrepaired cleft palates lead to morbidity (feeding, nutrition, growth, speech, hearing and airway problems) and mortality. While the diagnosis of ICPs is challenging in high- and low/middle-income countries (LMICs), LMICs are disproportionately affected.

Aims
To quantify the proportion of ICPs repaired, relative to all primary cleft surgery, in LMICs using a large cleft charity's electronic health record.

Methods
Smile Train Express (STX), the electronic health record database developed by Smile Train, was retrospectively interrogated to identify ICP surgeries, as matched by both diagnosis and surgery type. Selection criteria specific to unique entries with hard and/or soft palate clefts without history of cleft lip or alveolus were identified by country. Each country's Human Development Index (HDI) and age at ICP repair were collected. Data were analyzed and crosschecked against documented surgery methods with a range of sensitivity and specificity.

Results
A total of 217,326 out of 1.6 million (13%) cleft surgeries were identified as ICPs across 50+ LMICs. The ICP intervention fraction varied between 1.4% - 24%. Countries with the lowest ICP fractions (<5%, n=12) were all located in Africa and Central/South America. They included 2,678 ICPs out of 86,196 interventions, with an average age at ICP repair of 6.6 years. Age at ICP repair correlated negatively with HDI ($p<0.0001$).

Conclusions
A significantly low fraction of primary cleft surgery was for ICP repair in countries with the lowest HDI. In high income countries, ICPs range from 25-50% of all clefts. In this analysis LMICs had very low numbers of ICP repairs, despite cleft palate with cleft lip being commonly repaired in these countries. Intensive efforts must be placed on ICP diagnosis and earlier surgery to prevent morbidity and mortality.

Figure 1. Smile Train cleft surgeries per country with isolated cleft palate repair rates, sorted by percent ICP out of total surgeries.

Country	Percent ICP / total	Average age at ICP Surgery (years)	Human Development Index 2019
Chad	1.41%	8.51	0.398
Congo, DR	1.99%	8.92	0.480
Guatemala	2.21%	4.48	0.663
Ethiopia	2.38%	11.77	0.485
Burundi	2.91%	6.28	0.433
Tanzania	3.48%	5.34	0.529
Somalia	3.54%	11.10	0.361
Uganda	3.77%	5.16	0.544
Zambia	4.37%	2.94	0.584
Bolivia	4.44%	2.87	0.718
Kenya	4.48%	5.78	0.601
Mexico	5.57%	3.57	0.779
Nigeria	5.62%	7.48	0.539
Mali	5.75%	4.87	0.434
Indonesia	6.04%	6.30	0.718
Rwanda	6.04%	6.22	0.543
Colombia	6.63%	4.67	0.767
Peru	6.75%	5.44	0.777
Nicaragua	7.22%	4.55	0.660
Ecuador	8.12%	4.69	0.759
Myanmar	8.17%	6.82	0.583
Argentina	8.41%	3.66	0.845
Laos	8.86%	5.96	0.613
Philippines	9.04%	7.53	0.718
Cameroon	9.56%	6.75	0.563
Cambodia	9.76%	4.82	0.594
Côte D'Ivoire	10.09%	5.17	0.538
Thailand	10.91%	2.36	0.777
Mongolia	11.09%	3.90	0.737
Chile	11.44%	2.32	0.851
Egypt	11.59%	2.18	0.707
India	11.82%	5.99	0.645
Niger	12.05%	8.30	0.394
Nepal	12.26%	7.29	0.602
Bangladesh	13.14%	4.32	0.632
Brazil	13.20%	5.06	0.765
Pakistan	14.50%	4.93	0.557
Afghanistan	14.51%	5.24	0.511

isolated cleft palate, LMIC, surgery

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A Call for Global Standardised Newborn Examination Guidelines for Cleft Palate

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WE4.2 Task Force on Neonatal Safety in Cleft Care (TNSCC) - English, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 13, 2022, 14:00 - 15:00

Background
Globally, isolated cleft palate (ICP) affects 3-7 in 10,000 newborns annually. ICP, having no externally observable features, may be overlooked without intentional inspection and examination. Late or missed ICP diagnosis can lead to preventable morbidity (e.g., feeding, speech, airway obstruction) and mortality. Examination practices vary globally. Introduction of routine visual inspection of the entire palate within 48-72 hours from birth have reduced the incidence of missed diagnoses of ICP.

Aims
To examine international guidelines for newborn examination of the palate.

Methods
A literature search was conducted looking at recommendations and current practices for palate examination in the newborn. This included peer-reviewed indexed publications on PubMed, as well as grey literature to include publicly available national or regional newborn screening guidelines, healthcare policy and guidance documents; as well as video platforms such as YouTube, which is increasingly used by clinical staff for guidance. Other sources, such as search engines were searched for articles and training that may not have been accessible in PubMed.

Findings
Our search results showed that techniques for palate examination vary between palpation and/or visual examination. USA specifies palpation predominantly, UK guidelines specify visual examination and palpation, Australian guidelines advise visualisation only, while the WHO makes no specification at all. The fact that babies may have an ICP without any external facial anomalies was not consistently made clear.

Conclusions
While localised teaching/training for front-line staff, can improve screening for ICP, these lessons and messages are weakened by inconsistent and potentially confusing national and international guidelines. Thus, there is need for clear and standardised palate examination guidelines globally, with recognition that palpation alone may miss ICPs and delay care. Clarity about the need for visual inspection of the entire palate with a light source, while depressing the tongue, is important.
cleft palate, newborn, inspection, guidelines,

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Multicentre assessment of orthodontic outcomes in UK patients born with cleft lip and/or palate

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WE4.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction: The PAR index is a standardised objective assessment that looks at changes in the occlusion of patients undergoing orthodontic treatment using pre and post treatment study models of the teeth. It is a valid and reproducible index used in non-cleft orthodontics across the UK.

Aims: To assess orthodontic treatment outcomes in a multicentre sample of UK patients born with cleft lip and/or palate (CL/P), including all cleft types, using the Peer Assessment Rating (PAR) index.

Methods: UK cleft team members submitted anonymised PAR data for all patients who had their braces removed in 2015 -2019. Cases where treatment was discontinued were included. The exclusion criteria included patients with syndromes, simple adjunctive treatment or where treatment was the first stage of a more comprehensive plan. Results of the PAR scores were analysed using simple statistics in Excel and compared with national standards.

Results: A total of 413 cases fulfilled the inclusion criteria and represented orthodontic care in eight UK regional cleft services. The mean pre-treatment PAR score was 40 and mean post-treatment PAR score was 7. Across all cleft types, the overall mean PAR score reduction was 82%. For UCLP cases, the mean PAR score reduction was 81%. The proportion of patients where the PAR score reduction was 'worse or no different' was 1.7%. 81.8% of cases were considered 'greatly improved' and 16.5% cases 'improved'.

Conclusions: Using the PAR index for UK cleft patients showed good orthodontic treatment outcomes for all cleft types. These were comparable to national standards. PAR scoring appears to be a useful assessment of orthodontic outcomes in cleft patients. Moving forwards, continued national data collection is being conducted and we hope to present a greater dataset in relation to cleft type, locale of treatment and completion rates.
PAR, cleft, orthodontics, occlusal, outcome

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Longitudinal Evaluation Of The Maxillomandibular Relationship Of Individuals With Complete Unilateral Cleft Lip And Palate (CUCLP)

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WE4.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Aims: To evaluate the prognosis of the maxillomandibular relationship, from mixed to permanent dentition, in patients with CUCLP treated orthodontically at the Hospital for Rehabilitation of Craniofacial Anomalies, University of São Paulo.
Methods: Consecutively digital study models of 367 individuals with repaired CUCLP, were selected from 2017 to 2018 and assessed on two stages: T1, on the mixed dentition phase (+/- 7.2 y) and T2, on the permanent dentition phase (+/- 16.4 y). Samples that required orthognathic surgery were evaluated with models prior to surgery. Goslon yardstick was used to classify the sample into three groups: A (G1 and G2), B (G3) and C (G4 and G5), representing the prognosis of good, regular and poor maxillomandibular relationship, respectively.
Results: At T1, the Goslon distribution was: A (26,2%); B (20,7%); and C (53,1%). At T2, the distribution was: A (38,1%); B (14.4%) and C (47.4%). From T1 to T2, regarding group A, 68.75% remained on the same index; 17.71% aggravated to B and 13.54% to C. Regarding group B, 40.8% improved to A; 25% remained on B and 34.2% worsened to C. Considering group C, 22,05% improved to A; 8.72% improved to B and 69.23% remained on C.
Conclusion: At T1, those individuals who presented good prognosis in the mixed dentition (Group A), 86.46% had a satisfactory to very good prognosis at T2. Individuals with regular prognosis (Group B), 65.8% remained or improved to better occlusion, considering orthodontic treatment. Those individuals with poor prognosis (Group C), only 30.72% presented an improvement on the maxillomandibular relationship, confirming that most of cases with severe maxilo-mandibular discrepancies in T1, evolve to the need for orthognathic surgery, although some cases ended with compensatory orthodontic treatment.
This work was supported by Smile Train, Inc.

CUCLP, arch relationship, maxillary growth

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INFLUENCE OF THE SURGICAL PROTOCOL OF LIP AND PALATE CLOSURE ON THE DENTO-FACIAL CHARACTERISTICS OF PATIENTS WITH CLEFT LIP AND/OR PALATE

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WE4.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction

A change in surgical protocol for palate repair was gradually implemented in the University Hospitals Leuven in 2011-2012.

Before, the soft palate was closed at 12 months by using a modified Veau-Wardill-Kilner push-back technique and the hard palate between 5 and 7 years by the modified von Langenbeck procedure. Since 2011-2012, the hard palate is closed using a vomer flap during lip repair at 3 months and the soft palate repair takes place at 12 months by radical intravelar veloplasty, as described by Sommerlad.

Aim

We investigated the influence of the type and timing of palate closure on dental, occlusal and craniofacial characteristics of six year old patients with cleft palate (CP), unilateral (UCLP) and bilateral (BCLP) cleft lip and palate.

Methods

Only patients whose complete surgical interventions were performed at University Hospitals Leuven and patients with complete records around 6 years old were included. Those records consist on 3D facial imaging (Vectra), 3D digital casts (Digimodels) and intra- and extra-oral pictures.

Dental arch relationship was assessed by the 5-Year-Old's Index. Dental arch width, sagittal occlusion, overjet, overbite, cross-bite and agenesis were noted. The sagittal, vertical and transversal dimensions of the maxillofacial area were examined on the 3D facial images by relating the soft tissue landmarks to the underlying hard tissues by following the protocols described by Farkas and Swennen et al.

Results

50 patients (20 with CP, 18 with UCLP and 12 with BCLP) who underwent the old protocol were included, as well as 34 patients (14 with CP, 11 with UCLP, 9 with BCLP) from the new protocol. From all 84 patients, 50 were boys and 34 girls. From the 29 patients with UCLP, 15 patients presented clefts on the right side. Further analyses are currently ongoing.

Orthodontics, surgical protocol, palate closure

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GROWTH OUTCOMES AUDIT FOR UNILATERAL CLEFT LIP AND PALATE (UCLP) AFTER 2-STAGE PALATE REPAIR

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WE4.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 13, 2022, 14:00 - 15:00

INTRODUCTION: One stage primary palate repair (1-Stg) had been used to close hard and soft palate by a Brazilian center for many decades; however, a new two-stage (2-Stg) treatment protocol was introduced 10 years ago.
AIM: To evaluate the current protocol of 2- Stage palatoplasty (2-Stg) adopted by a Brazilian cleft center for patients with UCLP, reporting the growth outcomes.
METHODS: A total of 349 study models of patients with UCLP, between 5 to 10 years of age, without previous orthodontic intervention were evaluated by three calibrated orthodontists using Goslon and Atack indexes. The 2-Stg palatoplasty group (n=169), which had lip, nasal ala and hard palate repair with vomer flap at 3-6m and soft palate repair at 12-18m, were compared to 1-Stg palatoplasty group (n=180) operated with simultaneous hard and soft palate closure at 12 to 18m. Three calibrated orthodontists evaluated the interarch relationship using Goslon and Atack indexes.
RESULTS: Intra-rater and inter-rater assessment revealed sufficient reliability with k=0.89 (0.81 to 0.98) and k=0.69 (0.56 to 0.83), respectively. Difference was not found between mean occlusal index of 2Stg and 1Stg groups: 2.77 and 3.03, respectively. The mean index among surgeons varied from 2.38 to 3.0 (2Stg) and 2.91 to 3.2 (1Stg).
CONCLUSIONS: There was no significant difference between 2-Stg and 1-Stg protocols. Despite the statistical difference in the distribution of index 5 between 2 Stg and 1Stg group (1.15% x 11.11%), it cannot be stated that the 2Stg palatoplasty is better than the 1Stg palatoplasty protocol. The variable operating surgeon showed considerable variation in the distribution of mean occlusal indexes (2.38 to 3.2) in 2Stg group. It is suggested that there is no difference between surgical protocols, but rather in the professional's expertise.
“This work was supported by Smile Train.Inc”

CUCLP, growth outcomes, palatoplasty

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A SUMMARY OF OUTCOMES IN CHILDREN BORN WITH OROFACIAL CLEFT IN NEW ZEALAND PART 2: ORAL HEALTH, SPEECH, BEHAVIOURAL PROBLEM AND QUALITY OF LIFE

Associate Professor John Thompson[1], Professor Peter Stone[1], Ms Maeve Morrison[2], Ms Louise Ayrey[1], Dr Peter Fowler[3,4]

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WE4.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Background: Approximately 100 children a year are born in New Zealand (NZ) with an orofacial cleft resulting in a treatment journey that can last 20 years or more, with intensive treatment at various points depending on the cleft phenotype. Little was known about outcomes for children born and treated in NZ with an orofacial cleft compared to international standards.

Methods: A longitudinal study investigating standardised outcomes in children aged 5 and 10 years of age at all NZ centres treating children with an orofacial cleft. Outcomes measured, oral health, speech, behavioural outcomes, general and oral related quality of life.

Results: A higher (49.6%) caries prevalence and mean caries score at five years (2.3 dmft) was found in children with OFC than 5-year-olds in the general population (40.4% caries and 1.8 dmft). Children with orofacial cleft were also found to report worse oral health related Quality of Life (QoL) compared to the normal population. A large proportion of five-year-old children with any type of orofacial cleft had speech that was considered not completely intelligible (30%), was not acceptable (54%), and had inadequate velopharyngeal function (50%). This led to a clinical judgement that further speech and/or surgical intervention was required in 85% with CLP, 65% with cleft palate (CP) and 26% with CL. Children with orofacial cleft were found to have higher levels of conduct and peer relationship problems, but lower levels of pro-social problems than children in the general population. Children with orofacial cleft generally had good levels of QoL, however there were impacts on family impact QoL scales.

Conclusion: Health related outcomes in children with orofacial cleft in general are significantly worse than those reported from internationally recognised best practice centres and/or the general population. Changes to cleft services are required to improve outcomes for children born with an orofacial cleft in NZ.

speech, QoL, oral health, behaviour

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A SUMMARY OF OUTCOMES IN CHILDREN BORN WITH OROFACIAL CLEFT IN NEW ZEALAND PART 1: FACIAL MORPHOLOGY AND AESTHETICS

Associate Professor John Thompson[1], Professor Peter Stone[1], Ms Maeve Morrison[2], Ms Louise Ayrey[1], Dr Peter Fowler[3,4]

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WE4.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Background: Approximately 100 children a year are born in New Zealand (NZ) with an orofacial cleft resulting in a treatment journey that can last 20 years or more, with intensive treatment at various points in time, depending on the cleft phenotype. Little was known about outcomes for children born and treated in NZ with an orofacial cleft compared to international standards until this nationwide study took place.

Methods: A longitudinal study investigating standardised outcomes in children aged 5 and 10 years of age at all NZ centres treating children with an orofacial cleft. Outcomes measured included dental-arch relationships, alveolar bone grafts, and nasolabial aesthetics assessed using standardised categorical scales and visual analogue scales.

Results: Of the 100 unilateral Cleft Lip and Palate (CLP) dental models available, 46% had poor/very poor, 28% fair, and 26% had good/very good dental arch relationships; results were similar for children with bilateral (n=32) CLP, 37% poor/very poor, 41% fair and 22% good/very good. The quality of bone graft (n=45) rated 31.1% as unsatisfactory or a complete failure. For nasolabial aesthetics (n=470), better outcomes were found for children with cleft lip (CL) vs CLP; no differences were found for sex, ethnicity, age at photo, or cleft laterality (unilateral). Analyses using VAS scales found results consistent with those of the categorical scales but provided a higher degree of sensitivity in terms of scoring and power for analyses.

Conclusion: Outcomes for most outcomes measured were significantly worse, particularly dental arch relationships and alveolar bone grafting than those reported from internationally recognised best practice centres. Changes need to be made to the structure of cleft services in NZ to improve outcomes for children born with an orofacial cleft in NZ.

outcomes, morphology, aesthetics

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Craniocervical instability in the hemifacial microsomia

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WE4.4 ANAESTHESIA, Kilsyth, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction: The oculoauriculovertebral spectrum (OAVS) are anomalies of the first and second pharyngeal arches, causing craniofacial changes, principally facial asymmetry, as well as anomalies in spine, that can be a cause of instability of the craniocervical junction - manipulation of an unstable spine can result in compression of the spinal cord, resulting in morbimortality. However, few studies have related OAVS to craniocervical instability. Objectives: Correlate patients with OAVS through radiography with craniocervical instability, and prediction of its occurrence. Methods: Through a radiographic study of the cervical spine, the assessment of vertebral malformations and the presence of craniocervical instability was performed, and clinical assessment using the OMENS score as a phenotypic criteria for patients with OAVS, by a specialized multidisciplinary team. Student's t test, Kolmogorov-Smirnova and chi-square were performed. Results: 26 patients with OAVS were evaluated, 7 (26.9%) had craniocervical instability, that OMENS score was three times higher, but without statistical significance. OMENS score below 5: none of 6 patients had craniocervical instability; score between 5 and 9 - significantly higher frequency of instability (5 of 15 individuals, or 33.3%); score equal to or greater than 10 - higher frequency (2 of 5, or 40%). All patients with instability also had spinal malformations, and of those without craniocervical instability (19 patients), 57.8% had spinal malformations. Vertebral malformations had a similar incidence in those with and without instability, the most common being scoliosis. There was no statistical significance in the presence or absence of spinal malformations with the presence or absence of craniocervical instability. Extracraniofacial findings were found in all patients with instability, 71.4% of them were radial. Conclusions: patients with higher OMENS scores had more craniocervical instability, but without statistical significance. It also did not show statistical relevance between the presence of malformations and craniocervical instability. We attribute the results to the small sample size.

		N	Mean - OMENS	*p*
Cervical Instability	Absent	19	7.16 (±2.85)	0.369
	Present	7	8.33 (±3.01)	

* t student Test 95% confidence level

hemifacial microsomia, joint instability

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A COMPARATIVE STUDY OF BILATERAL INFRAORBITAL NERVE BLOCK WITH INTRAVENOUS PENTAZOCINE ON THE IMMEDIATE POSTOPERATIVE PAIN MANAGEMENT FOLLOWING CLEFT LIP REPAIR IN INFANTS.

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WE4.4 ANAESTHESIA, Kilsyth, EICC - Streamed, July 13, 2022, 14:00 - 15:00

INTRODUCTION
Surgical repair of cleft lip and/or palate is usually accompanied by moderate to severe postoperative pain and it is important that child is pain-free during the immediate postoperative period.
AIM
This study compared the efficacy of bilateral infraorbital nerve block using Bupivacaine with intravenous Pentazocine for the control of immediate postoperative pain in an infant age group following cleft lip repair.
METHODS
This was a randomized controlled, single-blinded, prospective study in children aged 3 to 12 months who had primary repair of cleft lip done. Primary outcome was the duration of analgesia following the administration of both drugs. Assessment of immediate postoperative pain was done using the FLACC (Face, Leg, Activity, Cry, Consolablity) pain scale. Scoring was done at hourly intervals postoperatively, observing the child for 1 minute at each hour and rescue analgesia given when FLACC score exceeds 3. Descriptive and comparative statistics were computed using SPSS and the p-value set at <0.05.
RESULTS
Analysis of result included 40 participants. Mean age was 5.2 months and 52.5% were females. Both groups were comparable for age, sex, weight and duration of surgery. The mean duration of analgesia in the bilateral Bupivacaine infraorbital nerve block group was longer (291.80 ± 95.4 minutes) than that of the intravenous Pentazocine group (151.50 ± 24.9 minutes). This difference was statistically significant (p=0.001). By the 3rd hour post-surgery, a significant number (N=15, 75%) of participants in the Pentazocine group received rescue analgesia, while only 2 (10%) participants in the Bupivacaine group received rescue analgesia at the same time point.
CONCLUSION
A bilateral infraorbital nerve block with 0.5% plain Bupivacaine at 2mg/kg provided a longer duration of analgesia in the postoperative period in comparison with intravenous Pentazocine at 0.5mg/kg in an infant age group following cleft lip repair.

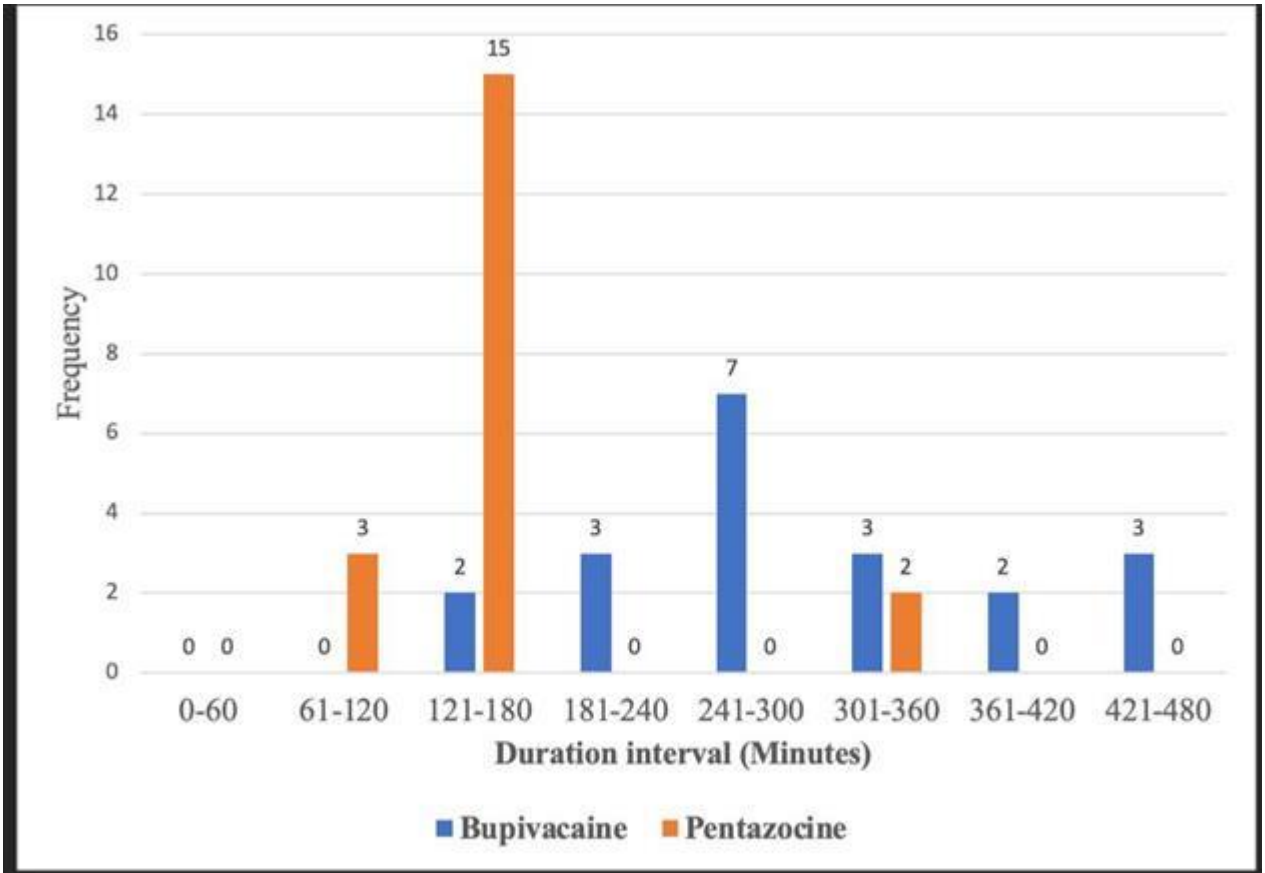

Figure 4. Comparison of the Time of Administration of Rescue Analgesia in Both Groups

Bupivacaine, Infants, Cheilorrhaphy, Postoperative analgesia

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Smile Train-Lifebox Safe Surgery and Anesthesia Initiative Capnography Project

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WE4.4 ANAESTHESIA, Kilsyth, EICC - Streamed, July 13, 2022, 14:00 - 15:00

1. Background

Due to its technical requirements and cost, capnography is not available in most operating rooms in low- and middle-income countries (LMICs). A robust capnography solution for use in pediatric surgery in these settings is recognized as a priority for patient safety. Recent efforts by the World Federation of Societies of Anaesthesiologists (WFSA) have determined basic specification requirements for capnography use in LMICs. Smile Train and Lifebox have partnered to develop a "capnography solution" to Smile Train partner hospitals in their provision of safe, comprehensive cleft care.

2. Stages of development

- Project Governance:
  - Establishing an Advisory group and a Technical group
- Development of Target Product Profile:
  - Minimum capnometer specifications defined by WFSA
  - Human Centered Design approach (Interviews with key-stakeholders)
  - Product landscape analysis
  - Ideal device specifications
- Request for Proposal (RFP):
  - Inviting industry partners to submit proposals
- Testing:
  - Engineering, accuracy and usability
- Contract Award & Device Dissemination
- Education and Monitoring and Evaluation
  - Adapted training materials
  - 12 months project follow up

3. Results

A Target Product Profile (TPP) has been created based on WFSA minimum specifications and interviews with end-users. A RFP inviting 35+ manufacturers to submit proposals was launched in October 2021. Proposals were received for 13 devices of which 3 were selected for testing by the Technical group.

4. Conclusions

A Human Centered Design approach has confirmed the importance of capnography and lack of access are important issues in providing safe pediatric anesthesia and surgical care. The identification of several potential devices that meet the TPP demonstrates that introducing affordable, high-quality capnography to resource constrained settings is possible and can ensure safe pediatric surgery.

Capnography, Specification, LMICs, HCD, TPP

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A Systematic Review of Practice Recommendations for Cleft Lip and/or Palate Management: Limitations of Current Standards

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WE4.4 ANAESTHESIA, Kilsyth, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction:
Cleft lip and/or cleft palate (CL/CLP) management is complex, with varying standards across centres, disciplines, and teams. Thus, there is a need to characterize and unify existing CL/CLP standards of care.

Aim:
To identify, characterize, and appraise quality of regional, national, and international standards of care relating to CL/CLP.

Methods:
Adhering to PRISMA guidelines, MEDLINE, EMBASE, SCOPUS, Web of Science, and Cochrane Database of Systematic Reviews databases were systematically reviewed by three independent reviewers for cleft management standards.

Results:
Forty-eight standards were selected for inclusion. The majority of studies were performed in the United States (44%) and United Kingdom (38%). Standards consisted of primarily expert consensus recommendations (38%), clinical practice guidelines (CPGs; 23%), and systematic reviews (17%). Recommendations were principally developed by a task force or after expert consensus (46%), followed by systematic database searches (27%), retrospective analysis (17%) and prospective studies (10%). Recommendations were coded according to nine thematic domains: "Feeding/Nutrition", "Orthodontics/Dental Health", "Surgery and Perioperative Care", "Speech/Otology", "Breathing","Appearance/Cosmetic Outcome", "Psychosocial Outcome", "Team Composition and Dynamics", and "Cost of Care/Burden of Disease". No guideline encompassed all domains. Of all standards, the American Cleft Palate Association's Parameters of Care standards were determined the most comprehensive, encompassing seven domains. Additionally, it was noted the majority of Level I Evidence or strong recommendations endorsed in CPGs were based on one of eight multicentre studies, including Americleft, Eurocleft, Dutchcleft, Scandcleft, The Cleft Care UK Study, and the Clinical Standards Advisory Group Study completed in 1998. Generally, discrepancies were observed across domains, guideline setting, and data collection method.

Conclusions:
The current body of evidence-based standards consists of limited recent research, lacks rigorous trials, and is predominantly biased for CL/CLP care in America and Europe, warranting careful appraisal and updated high-quality outcomes research.
cleft lip, cleft palate, standards

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A survey on Enhanced Recovery After Surgery (ERAS) elements in cleft palate repair

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WE4.4 ANAESTHESIA, Kilsyth, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Purpose: Enhanced Recovery After Surgery (ERAS) protocols are beneficial but reports in children are limited. Beyond enhanced recovery, the very integrity of a cleft palate repair benefits from a protocol limiting patient discomfort and crying (therefore strain on the muscle repair). Hence, palatoplasty provides valuable context for ERAS implementation and longitudinal evaluation.

Aims: This study characterizes current use, knowledge, and attitudes toward ERAS protocols by academic craniofacial surgeons.

Methods: Each academic craniofacial surgeon in the U.S. was emailed a survey by the senior author (n=102). Respondents rated use of, knowledge about, and willingness to implement preoperative, intraoperative, and postoperative interventions modeled after adult ERAS protocols.

Results: There was a 30.4% response rate (31 of 102 surgeons). 74.2% answered pediatric craniofacial surgery is their primary practice and 51.6% repair more than 20 cleft palates each year. A majority (67.7%) rated they are “very knowledgeable,” “knowledgeable,” or “somewhat knowledgeable” about ERAS although 61.3% “never use” a standardized ERAS protocol for palatoplasty. A majority practice three ERAS elements for all patients: avoiding prolonged perioperative fasting (67.7%), preventing hypothermia (74.2%), and minimizing postoperative opioids (62.5%). Most never administer a bolus (71.0%) or infusion (80.6%) of tranexamic acid. 12.9% use Precedex™ in all patients during extubation and 16.1% use it in all patients during postoperative recovery; 22.6% never use it for extubation and 48.4% never use it for recovery. More than half (64.5%) do not audit patient outcomes. Overall, 67.7% replied they are willing to implement a ERAS protocol for cleft palate repair.

Conclusions: Many surgeons use interventions compatible with an ERAS approach and a majority are willing to implement a protocol for palatoplasty. Use of tranexamic acid, as a bolus or infusion, is uncommon. Informed by our survey, we initiated an ERAS protocol for cleft palate repair alongside an IRB-approved prospective study to assess recovery and speech outcomes.

ERAS, cleft palate, speech

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Understanding the Scope of Available Anesthesia Programs in Low- and Middle-Income countries (LMICs).

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WE4.4 ANAESTHESIA, Kilsyth, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction:
It is estimated that over 136,000 additional anaesthesia providers are needed worldwide to meet the current global need, with the majority necessary in LMICs. Cleft lip and palate are one of the most common birth defects globally- requiring specialized pediatric anesthesia training. To date, there is no systematic or scoping review describing cleft anaesthesia training in LMICs.

Aims:
This scoping review aims to synthesize the scope and focus of literature on graduate anaesthesia physician training programs in LMICs.

Methods:
All original studies published in peer-reviewed journals addressing graduate physician anesthesia training resource-limited settings were included. This includes qualitative studies, cross-sectional analyses, questionnaires, longitudinal analysis, controlled trials, case reports, and observational studies. 1365 papers were found, 76 were eligible for full-text review, and 24 were included.

Results:
The authors found a total of 33 programs described in the articles, over 63% of training methods described were in person, with 50% published on the use of simulators to train anaesthesia providers. Only 38% of programs were tailor-made for the LMIC workforce, although 96% of the programs were conducted in LMICs. None of the programs covered anaesthesia training specific to cleft surgery.

Conclusion:
Teaching high-quality, safe anaesthesia in low-resource settings can be met with many challenges such as limited operating rooms, equipment, and drugs. There is currently a large gap between the need for anesthesia workforce and the availability of training programs appropriate for LMIC providers. Additionally, developing training programs for the existing anaesthesia workforce can improve general patient care peri-operatively and post-operatively. Additional skill sets would help improve the provision of specialized procedures such as cleft.

cleft surgery anaesthesia, anaesthesia programs

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TO DETERMINE MEAN DIFFERENCE IN PRE AND POST OPERATIVE OVER HANGING NASAL APEX AFTER CORRECTION OF CLEFT LIP NOSE USING TAJIMA TECHNIQUE.

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WE4.5 PRIMARY SURGERY, Moorfoot, EICC - Streamed, July 13, 2022, 14:00 - 15:00

INTRODUCTION: In all patients with complete cleft lip nasal deformity is quite obvious. The ala on the cleft side is lengthened vertically. The lower lateral cartilage is depressed and spread across the cleft. The nasal tip is deviated toward the non-cleft side. The columella on the cleft side is shortened significantly.
Many techniques are available to address. One of the technique is that described by Tajima

AIMS: The aim of this study was to assess effectiveness of Tajima technique for correction of cleft nose and assessment of symmetry compare to non cleft side.

METHODS: The U incision was made on the dorsum of the nostril and inside the ala, similar to the nostril shape on the non-cleft side. Subcutaneous undermining between the skin and cartilage was performed to the whole nose. Adequate exposure was obtained and the cartilage, together with vestibular skin and mucosa, were elevated and fixed to the upper lateral cartilage and contra lateral lower lateral cartilage by supporting sutures. By doing this technique, the lower lateral cartilage on the cleft side was mobilized higher than the contra lateral cartilage.

RESULTS: Age range in this study was from 03months to 02 years with mean age of 10.3 ± 8.9 months Out of 65 patients, 42(65%) were male and 23(35%) were female.
47(72%) of the patients were of left cleft lip nasal deformity and 18(28%) were of right cleft lip nasal deformity, shown in chart. There was a statistically significant decrease in alar base width on the affected side in response to surgery, and a significant increase in columellar height) and nostril apex height.

CONCLUSION: Tajima technique is quite useful to address the problem of asymmetry of ala in Unilateral cleft –lip nose.

cleft ala, Tajima technique,

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ROTATIONAL COMPOSITE FLAP TECHNIQUE FOR PRIMARY INCOMPLETE CLEFT NOSE DEFORMITY

MD PhD FACS Percy Rossell-Perry[1,2]
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WE4.5 PRIMARY SURGERY, Moorfoot, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction:
Nasal deformities accompanying unilateral incomplete cleft lip have minor skeletal and soft tissue deficiencies, compared with deformities associated with unilateral complete cleft lip. Extended dissection and surgical incisions (often required for nasal deformities in complete cleft lip) are not recommended to address deformities accompanying incomplete cleft lip.

Aim:
The purpose of this study is to describe an innovative method involving a rotational composite flap for nasal repair in patients with unilateral cleft lip.

Methods:
Since 2016, 49 consecutive patients with unilateral incomplete cleft lip have undergone primary anatomical repair of accompanying nasal deformities. The technique involves a skin incision along the marginal and intercartilaginous borders to create a V-shaped composite flap consisting of vestibular skin and alar cartilage. Rotational mobilization of the composite flap creates a triangular raw surface laterally, which is closed by advancement of the vestibular skin.

Results:
This innovative method, which is based on use of a rotational composite vestibular flap, achieves proper symmetry of the repaired nose.

Conclusions:
The herein described composite flap rhinoplasty is a good surgical option, which provides a good overall nasal symmetry in patients with nasal deformities accompanying unilateral incomplete cleft lip.

Table II. Postoperative comparisons of non-cleft side and cleft side using the rotational composite flap technique for unilateral incomplete cleft lip nose repair. (n: 49)

	Anthropometric measurements		
	Cleft AW – Non-Cleft AW	**Cleft CL – Non-Cleft CL**	**Cleft NDH – Non-Cleft NDH**
Z	-,197	-,351	-,664
Asymp. Sig.	0,844	0,725	0,506

Mann-Whitney U test. $p < 0.05$

AW: Alar width

CL: Columellar length

NDH: Nostril Dome Height

Incomplete cleft lip,
Primary rhinoplasty

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THE IMPORTANCE OF THE ALAR PORTION OF THE NASAL MUSCLE REPOSITIONING DURING CLEFT LIP NOSE REPAIR.

Dr Eudes Nóbrega[1]
[1]*Hrac -centrinho Usp, Bauru, Brazil*

WE4.5 PRIMARY SURGERY, Moorfoot, EICC - Streamed, July 13, 2022, 14:00 - 15:00

THE IMPORTANCE OF THE ALAR PORTION OF THE NASAL MUSCLE REPOSITIONING DURING CLEFT LIP NOSE REPAIR.

Eudes Soares De Sá Nóbrega, M.D.
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Brazil

The primary correction of the cleft lip nose has been attempted only on the last seven decades, before then, the authors did not even mention that deformity on their papers or manuscripts. Later, it became "forbidden" to "invade" the infant's noses during the first lip surgery.
The interest on acting on that structure was reborn with the works of Skoog T. late sixties and McComb H.mid seventies.
Better looking results were achieved and a new era was born.
With all these advancements, however, we observed that none of these papers mentioned the role of the nasal muscle -alar portion- on the repair of the cleft side nasal floor.

The purpose of this presentation is to show the importance of the reposition of this little muscle -alar portion of the nasal muscle- on the achievement of a better more natural looking nasal floor.

Methods:
Anatomical and functional description, along with surgical steps will be presented including Motion pictures, early and late results as well.

Conclusion= We conclude that this approach will brig us better and more symmetrical results on our Cleft lip noses
Finally, we ask the collaboration the audience to bring their own cases on next meetings.

Please feel free to ask some pre and post op images.
The present work was supported by Smile Train ,Inc.

cleft Nose floor, alar simetry,

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Primary cleft rhinoplasty - comparison of two techniques in alar corrective surgery

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WE4.5 PRIMARY SURGERY, Moorfoot, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction
Primary cleft nose repair remains a challenge to cleft surgeons. In the quest to further improve outcome, refinements in the technique have to be evaluated.

Aims
Our aim was to determine differences in the aesthetic outcome of the nose in unilateral cleft lip repair. Two groups of patients were treated with the same surgical technique on the lip, but differed in the suture technique (buried PDS permanent vs. non-buried Vicryl removed after 2 weeks) on the nose.

Methods
24 matched pairs of patients with identical unilateral cleft were evaluated at a mean age of 6.8 years using pre- and postoperative photographs in a frontal view. For evaluation anthropometric analysis on the postoperative photographs was performed (cleft side compared to non-cleft side, ratio of 1 means equal measurements on both sides of the face), the Asher McDade aesthetic index (AMAI, five point ordinal scale, 1=very good appearance, 2=good appearance, 3=fair appearance, 4=poor appearance, 5=very poor appearance) was defined for nasal symmetry as well as nasal shape and the parents were asked with a questionnaire.

Results
The distance between subalare – crista philtri was significantly shorter for the PDS vs. the Vicryl technique. PDS showed a ratio of 0,92 (±0,09) vs. Vicryl 0,97 (±0,06) (p = 0,02). No significant differences could be found in the other measurements or in multivariate analysis. The assessment by 11 professionals using AMAI showed a significantly better result for Vicryl regarding the shape of the nose (Vicryl 2,28 (±0,91), PDS 2,47 (±1,13), (p=0,03), but no significant difference regarding symmetry or overall appearance. Parents questionnaire showed no discrepancy in terms of postoperative comfort.

Conclusions
There was no stringent significant difference between the applied suture techniques concerning aesthetic outcome of the nose and patient comfort. The achieved results on the nose seem to be superior to results reported in the recent literature.

cleft nose, alar correction, suture

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An anatomical nasal lining subunit technique in primary cleft nose correction: prospective case series

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WE4.5 PRIMARY SURGERY, Moorfoot, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction
Current methods of primary surgical correction of cleft lip nasal deformity are associated with a significant rate of long-term nasal collapse. It has also been observed that the nasal lining of the cleft side is distorted and deficient. A new surgical correction technique proposes an anatomical subunit approach, applied in both primary and secondary cleft nose deformities.

Methods
A prospective case series of 7 patients were investigated. Data collected, put in a digital format and analyses. Pre- and post-operative anthropometric measurements (nasal width, nasal projection, and nostril width and nostril height) were done on the baby. Digital photographs were obtained pre- and post-surgery.

Results
A prospective case series of 7 patients were included in the study. Six patients had primary cleft nasal deformity, and one patient had a secondary deformity. The age of surgical intervention for primary deformity was 7 months (4-20 months) and secondary was 17 years. Mean surgical time was 2.5 hours (1.5-3.5 hours) and average length of stay was 2 days (1-3 days). All patients had intra operative nasal stents for a mean duration of 5 months. The nasal height, nasal width and tip projection were all maintained at follow up, with minimal relapse. The nasal symmetry was maintained in all patients.

Conclusion
A novel subunit surgical approach technique was performed in the correction of both primary and secondary nasal deformity. This is the first case series demonstrating the validity of the surgical technique and forms the basis for long term studies.

cleft nose, anatomical subunit lining

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Functional and aesthetic outcome in cleft nose repair

Prof. Dr. Dr. Siegmar Reinert[1], Dr. Andreas Schwarz[1], Prof. Dr. Dr. Michael Krimmel[1]
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WE4.5 PRIMARY SURGERY, Moorfoot, EICC - Streamed, July 13, 2022, 14:00 - 15:00

Introduction: Cleft nose repair is one of the most challenging problems in celft surgery.
Aims: The aim of the study was to measure functional and aesthetic outcome of primary and secondary cleft nose repair.
Methods: From 2002 to 2021 more than 450 cleft nose repairs were performed by a single surgeon, 340 septorhinoplasties in the age of skeletal maturity, more than 110 corrections in childhood and adolescence. Open technique was used in all secondary procedures. We changed the regime from internal to external osteotomies. Diced cartilage was used in 75% of the cases. Diced cartilage and diced cartilage in fascia was used in 70 cases.
For outcome rating a morphometric analyses and a rating by a neutral jury of 90 medical professionals and non-professionals was performed.
Results: All patients with compromised nasal ventilation reported about improvement of nasal ventilation after surgery. In a follow up investigation 88 % of the patients were satisfied with the aesthetic outcome. A neutral jury rated the preoperative situation as aesthetic good in 9%, in 91 % as aesthetic bad, the postoperative result was rated as good in 85 % and in 15 % as not good or bad.
Morphometric measurements demonstrated a significant improvement in all parameters, however remaining asymmetries were still seen depending on the degree of deformity.
Conclusion: Complete analysis of the nasal functional and aesthetic deformity as well as analysis of the facial pathology are the key to for successful management of the cleft nasal deformity. Initial closed rhinoplasty together with lip repair is helpful in reducing the nasal asymmetry in childhood. The results of final cleft septorhinoplasty using a standard algorithm with use of septal or rib cartilage are good. Diced cartilage is an excellent additional tool. The patient should be told that a second corrective procedure might be indicated.

cleft nose repair, septorhinoplasty, rhinoplasty

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Does Sidedness Matter in Complete Unilateral Cleft Lip?

Mr Daniel Bradley[1], Ms Ambika Chadha[2], Mr Matt Fell[3], Dr Atenas Bustamante[1], Dr Maria Fernanda Tapia[1], Mr David Chong[1,4]

[1]Operation Smile Inc., Virginia Beach, Virginia, USA , [2]Oral & Maxillofacial Surgery, East of England Deanery , , UK , [3]The University of Bristol , Bristol , UK , [4]Cleft & Craniofacial Surgery, The Royal Children's Hospital, Melbourne , Australia

WE4.6 Laterality of Orofacial Clefts, Tinto, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction

Complete Unilateral Cleft Lip (cUCL) displays directional laterality with left sided clefts occurring twice as commonly as right sided. Anecdotally there is a notion that one side may be more challenging to reconstruct than the other. The perceived impact of laterality, from a cleft surgeon's perspective, has not been previously investigated.

Aims

To establish a global perspective on whether cleft surgeons consider cUCL sidedness to impact intraoperative difficulty and surgical outcomes, and to explore potential factors that may influence a surgeon's experience of laterality.

Methods

An online survey was designed to assess cleft surgeons' perceptions of the impact of laterality in cUCL. Nineteen questions, with opportunity to add free commentary, identified the demographics and professional experience of cleft surgeons worldwide on the issue of cleft laterality. The survey was disseminated on social media via professional associations and conducted in English and Spanish. Responses were described by percentages and analysis of influencing factors performed using Chi-Squared.

Results

Responses were received from 281 cleft surgeons in 46 countries worldwide, 80% worked in a cleft unit and 88% were right-handed. Surgeons had previously considered a difference between left and right sided cUCL presentations in 49% of responses (137/281). Whilst the majority of surgeons denied a difference in surgical difficulty based on laterality, 22% (63/281) reported right sided cUCL to be more challenging whereas only 7% (20/281) reported left sided to be more difficult. Surgeons reporting right sided clefts to be more difficult cited hand dominance as a perceived reason, yet there was no evidence that this subset of surgeons were more likely to be right-handed (X2 1.69; P=0.193).

Conclusions

Half of the cleft surgeons surveyed report considering differences in cUCL by laterality. Why nearly a quarter found right sided cUCL a greater operative challenge remains an enigma, warranting further investigation.

UCL, sidedness, laterality, phenotype, hypoplasia

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Orofacial cleft laterality and additional congenital anomalies: Analysis of linked national databases.

Mr Matthew Fell[1], Miss Kate Fitzsimons[2], Dr Mark Hamilton[3], Miss Jibby Medina[2], Miss Sophie Butterworth[2], Mr Hussein Wahedally[2], Min Hae Park[2], Mr Jan Van der Meulen[2], Mr David Chong[4], Mr Craig Russell[5]

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WE4.6 Laterality of Orofacial Clefts, Tinto, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction

Orofacial clefts display directional laterality, with left sided clefts consistently reported twice as commonly as right sided clefts. The mechanisms that determine laterality of clefts are poorly understood. Complex interaction between genetic and environmental factors has been suggested. Knowledge of additional congenital anomalies in left and right clefts may help to provide insight into underlying aetiology.

Aim

To investigate the relationship between laterality of orofacial clefts and additional congenital anomalies.

Methods

A national registry of children born with a cleft, established in 2000 (The CRANE Database), was linked to data from a national administrative database of hospital admissions (NHS Digital, Hospital Episode Statistics Database). The percentage of children with additional congenital anomalies, identified by ICD-10 code was stratified by cleft laterality (right/left) and subtype (complete unilateral cleft lip +/-alveolus (cCL+/-A) or cleft lip and palate (cUCLP)). The association between cleft subtypes /laterality and presence of additional congenital anomalies was assessed using logistic regression analysis.

Results

3,258 children (born 2000-2012) with a cUCL+-A (1,894) and cUCLP (1,364) were included in the study. Similar percentages of right sided clefts (35%) were present in both cleft subtypes (cUCL+/-A and cUCLP). There was no evidence to suggest a difference in the prevalence of additional anomalies in children with right (22%) compared to left (22%) sided cUCL+/-A (OR 1.01, 95%CI 0.81-1.27; P=0.905). There was, however, strong evidence of a higher prevalence of additional anomalies in right (34%) compared to left (24%) sided cUCLP patients (OR 1.62, 95%CI 1.27-2.07; P <0.001). Malformations of the circulatory, digestive and respiratory systems were most common.

Conclusion

Findings demonstrate a higher frequency of congenital anomalies in right compared to left sided cUCLP patients but not in cCL+/-A patients. These data support the hypothesis that cCL+/-A has a different underlying aetiology from cUCLP and that left cUCLP may have a different aetiology than right cUCLP.

Laterality, congenial anomalies, CRANE, aetiology

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Phitral Height Discrepancy in Complete and Incomplete Cleft Lip+/-Palate Patients – Results from a Single Nation Consecutive Cohort

Miss Clare Rivers[1,2], Mr David Drake[1,2], Mr Toby Gillgrass[1,2], Mr Mark Devlin[1,2], Mr Craig Russell[1,2]
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WE4.6 Laterality of Orofacial Clefts, Tinto, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction
The aim of unilateral cleft lip repair is to restore form and function, including symmetrisation of cleft and non-cleft philtral height. Anecdotally, expectation of best outcome is achieved in situations with minimal asymmetry and this is assumed occurs most often in incomplete cleft lip only patients. However is this true? Findings from a single, whole country cohort of prospectively collected philtral height data are presented.

Aim
To investigate Philtral Height Discrepancy (PHD) in children with unilateral cleft lip+/-palate.

Methods
Review of prospectively collected PHD measurements taken at time of surgery for all children undergoing unilateral cleft lip repair in Scotland born Jan 2017 – December 2020. Data was collected using Microsoft Excel and analysed using embedded statistical software.

Results
102 consecutive patients with unilateral lip involvement were identified from the national database. 94 had prospectively documented PHD (92.2%). 2/3rd's of patients were male (66.0%). A similar proportion presented with left sided clefts (68.1%). Cleft lip only (51.1%) and cleft lip associated with cleft palate patients (48.9%) presented in relatively similar numbers. In-complete clefts presented more frequently (52.1%) than complete clefts (47.9%). Mean PHD for the whole cohort was 3.91mm (standard deviation 1.01mm, range 1-6mm). The difference in mean PHD (in-complete versus complete) was 1.1mm (3.4 vs. 4.5, $p < 0.001$). For lip only versus lip and palate the difference in mean PHD was 1.0mm (3.4 vs. 4.4, $p < 0.001$).

Conclusions
This single country, whole population review of PHD in children undergoing unilateral cleft lip repair statistically supports the anecdotal notion that incomplete and lip only cases as having lesser asymmetry at presentation. However this cohort presents a PHD with greater range than previously reported in the literature.

cleft lip, philtral height, surgery

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Laterality of orofacial clefts and child growth, dental health, facial growth, speech and psychology in relation to outcomes at 5 years of age: Findings from the CRANE Database for England, Wales and Northern Ireland.

Ms Jibby Medina[1], Dr Kate Fitzsimons[1], Mr Matthew Fell[2], Ms Sophie Butterworth[1], Dr Muhammad Ally Hussein Wahedally[1], Dr Min Hae Park[1,3], Professor Jan van der Meulen[1,3], Mr Craig Russell[1,4], Mr David Chong[5]
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WE4.6 Laterality of Orofacial Clefts, Tinto, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction
Cleft description data collected in LAHSAL code format allows the laterality of orofacial clefts to be determined. Orofacial clefts have non-random laterality, with left-sided clefts reported as occurring twice as often as right-sided clefts. Little is understood about the determinants of laterality, and whether or not laterality affects cleft-related outcomes.

Aim
To utilise the Cleft Registry and Audit NEtwork (CRANE) Database to explore the association between laterality of orofacial clefts and clinical outcomes at 5 years of age in children residing in England, Wales and Northern Ireland.

Methods
CRANE clinical outcome data from the most recently available birth-year cohorts (births 2004-2013, N=9,861) were explored by cleft laterality (right/left) and subtype (complete unilateral cleft lip and palate (UCLP) / unilateral cleft lip +/-alveolus (CL+/-A)). The association between laterality/cleft subtype and outcomes for child growth (N=), dental health, facial growth, speech and psychology were assessed using logistic regression analyses.

Results
Analyses revealed that having a right-sided complete-UCLP was associated with better velopharyngeal function at age 5, compared to children with left-sided complete-UCLP (OR 1.48, 95% CI 1.10 to 1.99, p=0.0085). Data also suggest that right-sided CL+/-A may be associated with greater numbers of missing teeth, compared to left-sided CL+/-A (OR 1.73, 95% CI 0.98 to 3.06, p=0.0583). No statistically significant associations were found between laterality of cleft and child growth, facial growth and psychology outcomes at 5 years of age.

Conclusion
These findings indicate that children with a complete right-sided UCLP, compared to complete left-sided UCLP, are more likely to achieve a positive speech outcomes at 5 years of age. Data also indicate that there is more hypodontia in right-sided clefts by comparison with left-side cleft. However the nature of the data prevents determining whether this is congenital or acquired. Further work is required to explore the impact of laterality on cleft-related outcomes.
Orofacial cleft
Laterality

Outcomes

905

Analysis of the influence of cleft laterality on the 5 year old index of mid facial growth

Mr Matt Fell[1], Mr Bruce Richard[2], Mr David Chong[3], Dr Ting-Li Su[4], Dr Paras Parmar[2], Dr Lars Enocson[2]
[1]Bristol Children's Hospital, Bristol, United Kingdom, [2]Birmingham Children's Hospital, Birmingham, United Kingdom, [3]Melbourne Children's Hospital, Melbourne, Australia, [4]Manchester University, Manchester, United kingdom

WE4.6 Laterality of Orofacial Clefts, Tinto, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Background
Facial growth is an important outcome in children with a cleft lip and palate. Factors affecting maxillary growth include extrinsic factors such as surgical approach, timing and quality of repair, as well as intrinsic factors such as hypoplasia of the lip/palate. Literature suggests that the infant arch form may correlate with the extent of lip hypoplasia and furthermore, a recent anthropometric study has identified a higher rate of hypoplastic lips in right sided complete clefts.

Aims
To investigate whether facial growth outcome at age five year is different for children with a right versus left sided cleft.

Methods
Children were included if born between the years 2000 and 2014 with a complete unilateral cleft lip and palate (cUCLP) from a national United Kingdom (UK) database of 3-D scans of pre-surgical dental models. In addition, children needed to have a 5-Year-Old's index measure of facial growth. Cleft laterality was determined from the scanned models and the association with the 5-Year-Old's index score was analysed with a one-sided T test and logistic regression.

Results
Data were derived from 9 UK cleft units and included 378 children with cUCLP. 248 (66%) were male and 130 (34%) were female. 122 (32%) had a right sided cleft and 256 (68%) had a left sided cleft. 5-Year-Old's index scores ranged from 1 (good) to 5 (poor): the mean score was 2.923 and median was 3. There was no evidence to show a difference between the facial growth scores for right and left sided clefts on the T test (T= 1.04; P=0.15) or the logistic regression (OR 1.09, 95% CI 0.92-1.32; P=0.30).

Conclusions
There is no evidence for an association between cleft laterality and 5-Year-Old's index scores. Definitive analysis of the association between cleft laterality and maxillary growth requires further investigation of older growth indices and arch forms.

Laterality, Right, Left, facial growth.

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Cleft laterality dental arch relationship outcomes for Unilateral Cleft Lip and Palate (UCLP)

Dr Peter Fowler[1,4], Dr Heather Keall[2], Dr Dan Kennedy[2], Dr David Healey[3], Assoc Prof John Thompson[4]
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WE4.6 Laterality of Orofacial Clefts, Tinto, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Aims
Cleft laterality incidence with UCLP is relatively consistent where left-sided cleft occurs approximately 2:1 in relation to those on the right. Despite the reasons for this difference being unclear, right and left-sided UCLP clefts are often assumed to be homogenous when assessing outcomes. The aim of this study was to investigate cleft laterality dental arch relationship outcomes of children with non-syndromic complete UCLP in New Zealand.
Methods
A retrospective nationwide study used virtual 3D orthodontic study models from 104 patients with UCLP (L=80: R=24). The models were collected prior to undertaking secondary alveolar bone grafting and were assessed using 3D Maestro Ortho Studio 2.8 viewer software. Four calibrated assessors used a categorical (GOSLON Yardstick) and continuous Visual Analogue Scale (VAS) where the models were randomised between 2 separate assessment sessions. The assessors referenced GOSLON master scoring models while VAS scores used a 100mm line where 0mm represented the worse and 100mm the best possible arch relationship. Weighted Kappa were used to determine the intra/inter-rater reliability for the GOSLON and correlations for the VAS.
Results
Intra-rater reliability ranged from 0.57-0.88 (GOSLON) and 0.45-0.93 (VAS). Inter-rater reliability ranged from 0.62-0.86 (GOSLON) and 0.64-0.93 (VAS).
GOSLON scores for the left UCLP were 31.2% for good/very good; 26.3% for fair; 42.5% for poor/very poor while the right UCLP scored 8.3% for good/very good; 37.5% for fair; 54.2% for poor/very poor. The mean VAS for left UCLP was 53.4 (sd 22.5) and 44.6 (sd 17.1) for right UCLP. Neither the categorical nor VAS differences reached statistical significance (both p=0.08)
Conclusions
From a clinical perspective right UCLP had worse dental arch relationship outcomes, however, there was insufficient power to reach statistical significance. Further studies using larger sample sizes are required to determine if cleft laterality is an important consideration when investigating UCLP dental arch outcomes.

Cleft laterality dental arch outcomes

1010

CLINICAL CHARACTERIZATION OF ANOPHTHALMIC AND MICRO-OPHTHALMIC CAVITIES IN INDIVIDUALS WITH CRANIOFACIAL ANOMALIES

MD Isabella Parizotto Paula[1], Msc Raul Gonçalves Paula, MD Michele Brandão, Msc Julianna Parizotto, Ph.D. Nivaldo Alonso, Ph.D. Nancy Nakata, Ph.D. Cristiano Tonello
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WE4.7 CRANIOMAXILLOFACIAL, Carrick, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction

Anophthalmia refers to the absence of eye tissue in the orbit. In turn, the definition of microphthalmia is an eye with an axial length two standard deviations below that of the normal population, this correlates with an axial length below 21 mm in the eyes of adults. As is known in embryology of the face, there is a concomitant period in which genetic or secondary factors act causing facial (fourth and 12o week) and ocular anomalies (fourth to eighth week).

Aims

The aim of this work is the clinical characterization of anophthalmia / microphthalmia in individuals with craniofacial anomalies.

Methods

This is a descriptive, cross-sectional and retrospective study. Participants were individuals regularly enrolled at the HRAC-USP and diagnosed with congenital anophthalmia and / or microphthalmia by the HRAC-USP Craniofacial and Genetic Surgery Team between 2000 and 2010. Information contained in medical records were collected and the clinical profile of microphthalmia or anophthalmia were assessed using secondary data through medical description of the physical examination, photographs and imaging findings from computed tomography (CT) and magnetic resonance imaging (MRI).

Results

Anophthalmia were diagnosed in 57 (53%) patients and 19 patients (17.7%) have anophthalmia on one side associated with microphthalmia on the other. The total number of microphthalmics was 34 (31.7%).
The main malformations associated with anophthalmia and microphthalmia, cleft lip and palate, rare clefts, craniofacial alterations (nose, ear and central nervous system), extracranial alterations were described in 72.9% of the cases. The most frequent malformation found was the presence of cleft lip and palate in 29.9% of the cases and the presence of rare clefts in 19.6%.
The cases in which anophthalmia and microphthalmia were isolated represent 27.1%.

Conclusion

Changes that affect early embryology tend to be associated with early-stage malformations, such as eyeball formation and facial clefts. Hence their frequent association.

	LPC	LPC + CEA	LPC + FR	LPC + RC + ACE	RC	RC + CEA	CEA	GGS	ISOLATED	TOTAL
ANOPHTHALMIA	9	3	1	1	9	2	19		13	57
MICROPHTHALMIA	8	2			3	1	6	1	13	34
ANOPHTHALMIA + MICROPHTHALMIA	5	3	1		3		2		3	19
TOTAL	22	8	2	1	15	3	27	1	29	107

Table 1 LPC: lip and plate cleft. CEA: craniofacial and extra craniofacial anomalies. RC: rare cleft. GGS: Gorlin-Goltz Syndrom.

anophthalmia, microphthalmia, craniofacial, orbit, cleft.

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Classification of cleft palate fistulas amongst craniofacial specialists: a cross-sectional survey study

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WE4.7 CRANIOMAXILLOFACIAL, Carrick, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

INTRODUCTION
Cleft palate fistulas have a high overall incidence of about 8% globally in cleft palate patients, but ranges from 1-40%. The anatomical location of the palatal fistula dictates the surgical intervention, with possible treatments varying widely. Therefore, uniform classification of fistulas is crucial in comparing results of primary and secondary palate repair.

AIMS
The objective of this study is to investigate how craniofacial specialists classify palatal fistulas. We focus on three different anatomical locations (i.e., hard palate, soft palate, junction hard/soft palate) to analyze agreement/disagreement at various anatomical locations.

METHODS
In this cross-sectional survey study, participants of an international webinar that focused on palatal fistula were included. The survey was designed to examine the classification and treatment of palatal fistulas and included nine patient cases with palatal fistulas at different anatomical locations, requiring different surgical intervention. For this study, we used three randomly selected cases to examine classification prior and post webinar.

RESULTS
A total of 141 participants completed the questionnaires prior to the webinar and 109 participants completed the survey after the webinar. In total, four classification systems were used (i.e., Pittsburgh, Pakistan Comprehensive Fistula Classification [PCFC], anatomical and 'other'). Table 1 shows that Pittsburgh was the most commonly classification system used in all cases. However, Pittsburgh inter-rater reliability was low (kappa=0.19). Surprisingly, a substantial shift was observed from the anatomical to Pittsburgh classification after the webinar, indicating limited awareness of the Pittsburgh classification system.

CONCLUSIONS
This study demonstrates a wide variety in the classification of cleft palate fistulas among participants. Interestingly, a large shift was observed from anatomical to Pittsburgh classification after the webinar. Classifying palatal fistulas in a homogenous fashion could enhance comparison of primary palate repair and could improve treatment of palatal fistulas.

	Hard palate fistula pre	Hard palate fistula post	Soft palate fistula pre	Soft palate fistula post	Junction hard/soft palate fistula pre	Junction hard/soft palate fistula post
Pittsburgh	47.5%	76.2%	47.5%	76.2%	46.1%	74.3%
Anatomical	44.0%	19.3%	44.0%	18.4%	46.1%	19.3%
PCFC	1.4%	2.8%	1.4%	2.8%	1.4%	2.8%
Other	7.1%	1.8%	7.1%	2.8%	7.1%	3.7%

PCFC = Pakistan Comprehensive Fistula Classification

Cleft, Fistula, Classification, Cross-sectional survey

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Comprehensive treatment in hemifacial microsomia: stability of the results after orthognatic surgery

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WE4.7 CRANIOMAXILLOFACIAL, Carrick, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction: Hemifacial microsomia is the second most frequent cranio-facial malformation, due to an aberrant development of structures derived from first and second branchial arches. Patients affected are characterised by asymmetry of variable degree involving facial skeleton, nervous structures and soft tissues. This condition can cause low self-esteem and inhibition in social relations.
Aims: The correction of cranio-facial asymmetry in patients affected by hemifacial microsomia is still challenging for maxillo-facial surgeons, because of the presence of unilateral or bilateral hypoplasia of maxilla, mandible and related soft tissues. Our study wants to evaluate the entity and long-term stability of the movements of the jaws in these patients, comparing the results with a sample of non-treated patients.
Methods: Our study was conducted on 22 patients affected by hemifacial microsomia with various degrees of mandibular deformity who underwent orthognatic surgery (Le Fort I osteotomy, mandibular osteotomy and bimaxillary osteotomy), preceded or not by mandibular distraction osteogenesis at the Operative Unit of Maxillofacial Surgery - San Gerardo Hospital - University of Milano Bicocca and at the Smile House - Regional Centre for Orofacial Clefts and Craniofacial Anomalies - San Paolo Hospital - University of Milan. The control group was made up from 33 patients, matched for severity, who underwent only camouflage surgery and procedures on the soft tissues. Standardised cephalometric X-rays and cephalograms were collected for all patients included in our study in the pre-surgical phase, in the immediate post-surgical phase and during long-term follow-up. Superimposition was carried out and surgical movements were measured. Skeletal stability was assessed.
Results and conclusions: Data and analysis will be presented during the congress.
Hemifacial microsomia, Orthognatic surgery

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Is the Frontal Volet Necessary in Scaphocephaly Treatment?

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WE4.7 CRANIOMAXILLOFACIAL, Carrick, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction
Craniosynostoses causes an aberrant head shape; in sagittal craniosynostosis the skull elongates antero-posteriorly, causing the condition hallmark, i.e. frontal bossing. Scaphocephaly may lead to raised intracranial pressure and its complications, like cognitive and motor dysfunctions, aesthetic decline.
There is agreement on early surgical correction for isolated sagittal craniosynostosis, but not about the gold standard procedure.

Aims
To review the surgical techniques for correction of isolated, non-syndromic scaphocephaly and advocate for the use of orbital bar and supraorbital frontal volet with resorbable osteosynthesis fixation devices in cases with frontal bossing.

Methods
We retrospectively analysed a cohort of isolated scaphocephaly cases with frontal bossing treated with orbital bar and supraorbital frontal volet. Following the procedure, cranial bones were fixated by means of resorbable plates. A strict follow-up program was implemented to assess surgical results on function and aesthetics. No significant complications were recorded, and no patient was reoperated.

Results
All cases had a relevant improvement in cranial shape and growth, with correction of scaphocephaly and frontal bossing. In no case were re-interventions needed, neither to further correct the cranial shape, nor to remove the osteosynthesis devices. No patient presented long-term cognitive dysfunctions.

Conclusion
Offering technical safety, and durable, satisfactory results both in aesthetics and function, with no need for reintervention, we recommend that the orbital bar and supraorbital frontal volet approach coupled with resorbable osteosynthesis devices be considered in all isolated scaphocephaly cases with frontal bossing as a potential management option.

sagittal
craniosynostosis
frontal volet
orbital

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The use of 3D planning & 3D molds in craniosynostosis

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WE4.7 CRANIOMAXILLOFACIAL, Carrick, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction

In craniosynostosis, one or more cranial sutures are closed too early, as a result of which normal growth is disrupted. Surgical skull correction is often required, with the aim of cosmetic correction and facilitating normal growth of the brain.

Aim

With timely diagnosis, endoscopic treatment can take place. If craniosynostosis is diagnosed later, extensive, open skull reconstruction is necessary. Good preparation by using a 3D Virtual Surgical Planning (VSP), helps to make this procedure as efficient as possible.

Methods

A digital 3D model of the skull is made based on a CT scan. Using a 3D model of an average, healthy skull at the same age as reference, various surgery scenarios are simulated. The average skull shape is reconstructed as optimally as possible with as few bone segments as possible. When the final plan is established, 3D molds are created that help the surgeon to cut the planned bone segments into the correct shape (marking template) and return them to the planned position (reconstruction template).

Results

By the use 3D Virtual Surgical Planning (VSP), including the templates as mentioned above, the mean OR time could be reduced by 5 hours, blood loss to 40 ml and postoperative ICU admission to 1 night. The end result approximates the average skull shape.

Conclusion

With the use of 3D Virtual Surgical Planning and 3D printed surgical templates, skull reconstructions can be optimized even further.

VSP, Craniosynostosis, 3D, molds,

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Counterclockwise Craniofacial Distraction Osteogenesis for tracheostomy dependent syndromic obstructive airway: Indications, Outcomes and Mid-term Follow-up

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WE4.7 CRANIOMAXILLOFACIAL, Carrick, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction: Counterclockwise craniofacial distraction osteogenesis (C3DO) has shown early success in achieving decannulation in tracheostomy-dependent patients with severe Treacher Collins Syndrome (TCS).
Aims: To review the experience of C3DO performed for TCS and other conditions with recalcitrant airway obstruction and to present mid-term follow-up outcomes on this new technique.
Methods: Clinical variables such as demographic variables, diagnosis, previous surgical history, operative data, and surgical complications were recorded on a retrospective review of all C3DO procedures from 2008-2021. Cephalometric data and polysomonography results were analyzed.
Results: 17 patients with severe upper airway obstruction underwent C3DO at 10.2±4.9 years of age with an average follow-up of 47.1 months. 13/17 had previous airway surgeries with persistent airway obstruction. 12 of the 15 tracheostomy-dependent cases (80%) were successfully decannulated. Average palatal rotation was 14.7 degrees and mandibular lengthening was 14.7 mm. Average apnea-hypopnea index decreased from 24.0 ±18.7 preoperatively to 4.8 ± 3.8 postoperatively ($p<0.01$). 24% relapse in palatal rotation was noted at 12.9±8.2 months and 42.7% at 4.5±1.9 years. However, no decannulated patients has required reinsertion of tracheostomy tube. One or more complications occurred in 66.7% of cases, but most were minor and involved surgical site infections or distractor adjustments.
Conclusions: C3DO performed at mixed dentition is a safe and effective technique to alleviate severe airway obstruction in select patients with maxillomandibular hypoplasia and clockwise rotational deformity.

Table 1 Patient Characteristics

CFM, craniofacial microsomia; TCS, Treacher-Collins syndrome; F, female; M, male; T&A, tonsillectomy and

Patient	Diagnosis	Age* (yrs)	Sex	Previous Airway Surgeries	Trach	Rib Graft	Zygoma Recon	Decannulated	Airway Surgeries after C3DO	Follow-up (mo.)
1	CFM	5	M	T&A	Y	N	N	Y	none	147
2	CFM	6	M	T&A	Y	N	N	Y	Adenoidectomy, septorhinoplasty	115
3	TCS	4	F	none	Y	Y	N	N	T&A	77
4	TCS	8	F	MDO, adenoidectomy	Y	N	Y	Y	none	63
5	TCS	12	M	MDOx3	Y	N	Y	Y	none	45
6	TCS	7	M	Choanal atresia repair	Y	N	Y	Y	Choanal atresia repair, tonsillectomy	27
7	Auriculo-condylar	8	F	MDO	Y	N	N	Y	Tonsillectomy	36
9	TCS	8	M	MDO, T&A	Y	Y	N	Y	none	7
10	Burn-McKeown	16	M	MDO, T&A, choanal atresia repair	Y	Y	N	N	Tonsillectomy	13
11	TCS	8	M	Adenoidectomy	Y	N	N	Y	None	24
12	TCS	10	F	MDOx3, adenoidectomy	Y	Y	Y	Y	Adenoidectomy	19
13	Miller syndrome	19	M	Tonsillectomy, Septorhinoplasy	N	N	N	n/a	none	9
14	CFM	9	M	MDOx2	Y	Y	N	Y	Tonsillectomy	6
15	CFM	13	M	MDOx2	Y	Y	N	N	none	12

adenoidectomy; MDO, mandibular distraction osteogenesis;

*Age refers to age at the time of C3DO operation.

Syndrome, apnea, craniofacial, orthognathic, tracheostomy

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Cytomegalovirus Infection as a Casual Factor for Occurrence of Severe Orofacial Clefts

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WE4.8 GENETICS, Harris, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction:
Orofacial clefts are the most prevalent type of the craniofacial anomalies. Despite of its high prevalence, etiological factors behind the incidence of cleft lip and palate (CLP) is still unknown. Cytomegaloviruses (CMV) infection was scarcely reported as a predisposing factor of CLP incidence.
Aim:
The aim of this study is to report an association between CMV infection and incidence of severe orofacial clefts.
Methods:
Five infants with severe orofacial clefts were included in the current study. One of the infants is with an oblique facial cleft extended to the left orbit and associated with missing left eyeball. Another infant was with facial cleft extending downward resulting in a clefted lower lip, clefted mandible and clefted tongue. All patients and their mothers were evaluated for the amount of CMV IgM and CMV IgG in blood samples.
Results:
All the five infants and their mothers had a positive CMV IgG results in the collected blood samples. On the other hand, CMV IgM was negative in all the included patients.
Conclusion:
Within the limitation of the rareness of cases with severe orofacial clefts, CMV infection to mothers during pregnancy might be a predisposing factor of incidence of severe orofacial clefts.

Cytomegalovirus Infection
Severe Orofacial Clefts

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Gene dosage sensitivity and enhancer loss drive phenotypic specificity in isolated Pierre Robin sequence

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WE4.8 GENETICS, Harris, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction

Patients with Pierre Robin sequence (PRS) exhibit underdevelopment of the lower jaw (micrognathia) and posterior tongue displacement (glossoptosis), which frequently leads to cleft palate. The most common genetic cause of isolated PRS are non-coding mutations far upstream of the SOX9 gene. SOX9 is an important transcriptional regulator with many roles during development including controlling the activation of skeletal genes.

Aims

We set out to explore disease mechanisms for PRS, and hypothesised that mutations near the SOX9 gene may ablate distal-acting gene regulatory elements, such as enhancers. Enhancer deletion could cause dysregulation of SOX9 function leading to aberrant development and jaw malformation.

Methods

We leveraged directed differentiation of human embryonic stem cells (hESCs) to cranial neural crest cells (CNCCs), progenitor cells that give rise to the majority of the vertebrate head and neck. Through genome editing in hESCs and mouse we modelled PRS mutations and regulatory sequence ablation to explore the impact on SOX9 expression and facial development.

Results

We identified and characterised two enhancer clusters that regulate SOX9 expression over extremely long genomic distances (up to 1.45Mb), act during a restricted window of craniofacial development and are conserved in activity down to Coelacanth fish. To understand the specificity of phenotypes in PRS, we utilised mouse models to propose a novel disease mechanism arising from a combination of: confinement of Sox9 dosage perturbation to the developing face through context-specific enhancer activity, and a heightened sensitivity of the lower jaw to reduction in Sox9 levels. We further explored how PRS locus enhancers regulate gene expression over vast genomic distances through exploration of 3D genome folding.

Conclusions

Together, we functionally characterized the longest-range human enhancers involved in congenital malformations, directly demonstrated that PRS is an enhanceropathy, and illustrated how small changes in gene dosage can lead to morphological change.

enhancer, SOX9, neural crest, PRS

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Vitamin B12 deficiency; a risk factor for orofacial cleft -nutritional and genomic study

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WE4.8 GENETICS, Harris, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction:
The multifactorial risk factors for occurrence of CLP comprises of the genetic variants as well as the extrinsic factors including environmental toxins and nutritional deficiencies. Vitamin deficiencies are one of several factors contributing to the etiology of cleft lip and palate disorders. Vitamins B6, folic acid (B9) and B12 play an essential role in the methylation cycle. Vitamin B12 acts as a cofactor for Methionine Synthase (MS) enzyme that catalyzes the conversion of 5' methyl tetra-hydro-folate (THF) and homocysteine in to tetra-hydro-folate (THF) and Methionine. This step provides a methyl group to various substrates (DNA, RNA, proteins, membrane phospholipids and neurotransmitters) for further functions. For DNA it is very important since methylation and de-methylation are the switches to control gene expressions.

Material and methods:
More than 1000 samples were collected from cleft patients and parents. Dietary history of mother during pregnancy was taken and MTHFR gene was studies for variations, polymorphism and mutations. Vitamin B12 and Homocystein estimation was done.

Result:
In our initial studies on genetics of clp on more than 1000 samples from eastern U.P. and Western Bihar populations, we have found that folate level was normal but the vitamin B12 was significantly low. Also the homocysteine level was significantly high (above risk level 15 micro mol per litre) which is a consequence of the either low B12 and / or MTHFR mutations. In majority of cases, the low B12 was due to dietary deficiency whereas in some cases it was due mutation in RFC1 gene or malabsorption through gut. B12 deficiency due to gut microbes is being investigated.

Conclusion:We conclude from our study that Vitamin B-12 deficiency during first trimester of pregnancy increases risk for cleft lip and palate in developing baby.

VitB12, cleft nutrition, cleft genetics

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Novel Genetics Variations associated with Non-syndromic Cleft Lip and Palate (NSCL/P) Patients in Indian Population

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WE4.8 GENETICS, Harris, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction: Non-syndromic cleft lip with or without palate (NSCL/P) is multifactorial and common birth malformation caused by genetic, environmental factors and effect of teratogens. Genome-wide association studies found genetic variations with modulatory effects of NSCL/P formation in Chinese and Iranian populations.
Aim: We aimed to identify the susceptibility of single nucleotide polymorphisms (SNPs) to NSCL/P in the Indian population.
Methods: The present study was conducted on 96 NSCL/P patients and controls, genomic DNA was extracted from peripheral blood and Axiom- Precision Medicine Research Array (PMRA) was performed. The Axiom-PMRA covers 902,527 markers and several thousand novel risk variants. Quality control passed samples were included for candidate genetic variation identification, gene functional enrichment, and pathway and network analysis.
Results: The genome-wide association study identified fourteen novel candidate gene SNPs that showed the most significant association with the risk of NSCL/P, and eight were predicted to have regulatory sequences.
Conclusion: The GWAS study showed novel candidate genetic variations in NSCL/P formations. These findings contribute to the understanding of genetic predisposition to NSCL/P in Indian population.
NSCL/P, Multifactorial, PMRA, GWAS, SNPs

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Molecular signaling pathways governing the fate of the medial edge epithelium of the cleft palate

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WE4.8 GENETICS, Harris, EICC - Onsite Only, July 13, 2022, 14:00 - 15:00

Introduction:
Non-syndromic cleft lip and palate is a common congenital deformity whose aetiopathogenesis still remains undefined.
Palatogenesis with midline fusion of the hemi-palates requires expression of many genes in a synchronized fashion and precise timing. Failure of the process results in clefting where both genetic and environmental factors contribute. While several suspect genes have been identified, these have not been consistent across populations. The latter involving maternal exposures to malnutrition, alcohol, tobacco, folate and anti-epileptic drugs etc. have shown little consistency regarding cause and effect.
Comparison of affected and unaffected individuals/ animals using exhaustive whole genome sequencing results in a very wide palette of variable gene expressions with a large number of confounding factors. This may be minimized by confining the test and the control to the same subject with an incomplete cleft palate

Aim:
To study the cause of failure of midline fusion in the incomplete cleft palate by comparing the RNA expression between fused and unfused portions in the same patient.

Methods:
Tissues from unfused and fused palatal mucosal edges are subjected to transcriptome analysis and compared for differential gene expression.

Results:
Gene network analysis of the readouts were carried out and the up/down regulated genes and their pathways were identified. 338 significantly up-regulated genes with annotations for 39 genes and 168 significantly down-regulated genes with annotations for 30 genes were identified. In addition to previously established biological processes involved in the formation of a cleft, we found new biological pathways that may significantly contribute to the same. (Ref: Table 1)

Conclusions:
We believe that these findings are significant in understanding the mechanism of differential gene expression and identifying epigenetic modifications of these regulatory genes. We have already commenced a larger study which would enhance our understanding of the key causes driving the formation of the cleft palates.

UPREGULATED

GO molecular function complete	
3-galactosyl-N-acetylglucosaminide 4-alpha-L-fucosyltransferase activity (GO:0017060)	Carbohydrate and lipid metabolism
Fucosyltransferase activity (GO:0008417)	Carbohydrate and lipid metabolism
Cadherin binding involved in cell-cell adhesion (GO:0098641)	Cell to cell adhesion
UDP-galactosyltransferase activity (GO:0035250)	Carbohydrate and lipid metabolism
Galactosyltransferase activity (GO:0008378)	Carbohydrate and lipid metabolism
NADP binding (GO:0050661)	INADPH binding
Cell-cell adhesion mediator activity (GO:0098632)	Cell to cell adhesion
Cell adhesion mediator activity (GO:0098631)	Cell to cell adhesion
Immunoglobulin receptor binding (GO:0034987)	Antigen binding
Antigen binding (GO:0003823)	Antigen binding
GO cellular component complete	
Secretory dimeric IgA immunoglobulin complex (GO:0071752)	Antigen binding
Secretory IgA immunoglobulin complex (GO:0071751)	Antigen binding
Dimeric IgA immunoglobulin complex (GO:0071750)	Antigen binding
Polymeric IgA immunoglobulin complex (GO:0071749)	Antigen binding
Monomeric IgA immunoglobulin complex (GO:0071748)	Antigen binding
IgA immunoglobulin complex, circulating (GO:0071746)	Antigen binding
IgA immunoglobulin complex (GO:0071745)	Antigen binding
Desmosome (GO:0030057)	Cell junction
Immunoglobulin complex, circulating (GO:0042571)	Antigen binding
Immunoglobulin complex (GO:0019814)	Antigen binding

GO biological process complete	
Glomerular filtration (GO:0003094).	Cell adhesion
Renal filtration (GO:0097205)	Endothelial cell migration

Incomplete cleft palate, Gene expression

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Speech and airway safety: an effective treatment approach for patients with Velocardiofacial Syndrome (VCF) without using airway restricting pharyngeal flaps; speech analysis comparing patients with VCF to patients with non- syndromic submucus clefts.

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction
Patients with sub-mucous clefts often seek care later in life. Many have syndromes, with Velocardiofacial syndrome (VCF) one of the most common.

Patients with VCF frequently have velar hypotonia, plus congenital heart disease. Heart failure is the primary cause of premature death in VCF patients. It is well proved that airway collapse/restriction increases cardiac stress, so, protecting airway dimension is paramount for patients with VCF.

Historically, patients with poor velar movement are treated using classic pharyngeal flaps which can reduce airway dimensions. For patients with VCF, the Anatomic Cleft Restoration Philosophy (ACRP), a tissue replacement approach, seeks to retain good velar movement without constricting the airway.

Aims
Delegates will be able to describe;
- why airway protection is important.
- the difference in result between patients with and without hypotonia.
- the best treatment options for VCF.

Method/Results
A review of primary authors patients from 1985-2015 identified 36 patients with either non-syndromic, sub-mucous clefts or VCF syndrome. Data included primary and secondary treatment type and results, and resonance rating, plus the data listed below.

Group 1; 22 pts; Non-syndromic sub-mucus, (4 LTFU/inadequate records)
- Average presenting age 6.7 yrs., post-surgery F/U average 4.5 years.
- 83% normal resonance after primary surgery.
- 17% hyper-nasal, requiring speech surgery.
- 100% normal resonance after speech surgery.

Group 2; 14 Pts, VCF (1 inadequate F/U.)
- Average presenting age 7.7 yrs., post-surgery F/U average 5.5 years.
- 54% normal resonance after primary surgery.
- 46% hyper-nasal, required speech surgery.
- One patient required two speech surgeries.
- 100% normal resonance after completion of speech surgeries.

Conclusion

This study compares the results of patients with non-syndromic, sub-mucus clefts, to patients with VCF. Both groups achieved very good to excellent speech resonance, showing that patients with VCF can get excellent speech results without using classic pharyngeal flaps.

velocardiofacial syndrome, Pharyngeal flap,ACRP

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Beating the odds: Early results of a systematic treatment protocol for children with velopharyngeal dysfunction (VPD) and 22q11 Deletion Syndrome (22q11DS)

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction
Treatment of VPD in children with 22q11DS is difficult and internationally results are not as good as in the wider cleft population. An audit of results from the north of England and Scotland in 2015 showed we in the Trent Region of the UK were not even achieving the global average.

Aims
1. To systematically address the anatomical pathology in patients
2. To safely achieve as physiological a velopharyngeal mechanism as possible
3. To optimise communication and speech therapy in these “VP improved” children

Methods
We reviewed the available literature on the results of treatment for VPI in 22q11DS, the surgical pathology, surgical procedures used to address it and their complication profiles. We developed a staged approach to surgically address palatal factors (intrevelarveloplasty) and pharyngeal factors (Hynes pharyngoplasty) coupled with structured SLT review and treatment. All patients were closely followed up for outcomes and any complications.

Results
10 patients have received the staged treatment approach. All surgery was performed by one of two cleft surgeons on the team.
Speech results: following the two surgical procedures, most patients showed an improvement in resonance, nasal airflow and passive speech characteristics. All children continued to have non oral speech characteristics which require speech therapy.
No patients suffered serious complications.

Conclusions
The two stage approach has given our patients better than global average speech results. It safely addresses palatal mobility and closure vector and facilitates functional VP closure in speech. Notably, the children have shown a significant increase in the confidence in their communication.
22q11DS
VPI
Surgery
Speech results

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Velopharyngeal Dysfunction in 22q11.2 deletion syndrome: outcomes of surgical management and the impact of other speech subtypes.

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Children with 22q11.2 deletion syndrome are well documented to experience a complex speech & language profile with overlapping conditions related to motor speech disorders, velopharyngeal dysfunction, cognitive and language delays impacting on the outcome of surgical intervention for speech (Solot et.al, 2019). The reporting of outcomes for this group of children has also been variable in terms of the parameters reported and timing post operatively of the data collection.
Aim: This paper will describe the pre and post operative speech characteristics of a cohort of 20 children with 22q.11.2 deletion syndrome who received surgical intervention for the treatment of velopharyngeal dysfunction.
Design _Method: Retrospective analysis of the speech results of a group of children with22q11.2 deletion syndrome with velopharyngeal dysfunction (n=20) will be presented including resonance, nasal emission, speech error types (including motor speech subgroups) and results of instrumental evaluation of velopharyngeal function. The pre and post- surgical speech outcomes of surgical management for velopharyngeal dysfunction will be presented to identify the timing of maximal improvement post operatively for this group of children and identify the impact of other motor speech diagnostic subgroups on the speech outcome. The outcomes reported will include the Core Outcome Set for recording the interventions for velopharyngeal dysfunction (Blacam et.al, 2021)
Conclusion: The effects of co-occurring diagnostic speech subgroups including articulation disorder, dysarthria, Childhood apraxia of speech (CAS), phonological disorder and Speech Motor delay have variable outcomes on the effect of surgical management. The optimal timing for the reporting of the results of surgical intervention on speech and velopharyngeal function for speech to will be summarized for children with 22q11.2 deletion syndrome. Diagnostic and management issues for both speech intervention and surgical management will be discussed.

22q11.2, surgery, motor speech disorder

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A Comprehensive Scheme for Classifying VPI Surgeries and the Intentional Technique Variations Among Surgeons

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1. Introduction

While surgical procedures for velopharyngeal insufficiency (VPI) can generally be categorized into palate re-repair, pharyngeal flap, sphincter pharyngoplasty, and posterior wall augmentation, there is substantial variation in how these procedures are performed.

2. Aims

To describe a classification schema for VPI surgical procedures developed by surgeons participating in the Velopharyngeal Insufficiency Outcomes Prediction Study (VPI-OPS) that incorporates intentional variations in surgical technique.

3. Methods

Two cleft surgeons completed an in-depth review of VPI surgery publications and developed a preliminary schema that encompassed all existing VPI surgical procedures. Forty-one cleft surgeons from twelve hospitals across the United States and Canada then reviewed the schema and either confirmed that it encompassed all VPI surgeries they performed or requested additions. The schema was updated to include all requested additions. The two cleft surgeons who developed the initial schema then directly observed VPI procedures at all twelve hospitals to confirm consistency of schema application among surgeons. During these observations, details were recorded on each surgeon's technique.

4. Results

VPI surgical procedures were divided into three groups: palatoplasty; pharynx-based reconstruction (e.g. pharyngoplasty); and augmentation. Palatoplasty operations included straight line mucosal incision with intravelar veloplasty, Furlow double-opposing Z-plasty, and palate lengthening with buccal myomucosal flaps. Many surgeons blended maneuvers from these three techniques, so a more descriptive schema was developed classifying the maneuvers employed on the oral mucosa, nasal mucosa, and muscle. Pharynx-based reconstruction included pharyngeal flap and sphincter pharyngoplasty, with variations in design for each. Augmentation procedures included palate and posterior wall augmentation, with variations in augmentation materials.

5. Conclusions

A comprehensive schema for classifying VPI surgical procedures is presented and encompasses viewpoints from over forty surgeons. This schema will serve as the frame for evaluating surgical outcomes in the VPI-OPS study.

VPI, speech, technique

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Change in Apnea Hypopnea Index on Polysomnography after Sphincter Pharyngoplasty

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Background:
Obstructive sleep apnea (OSA) is a common complication in patients undergoing surgical intervention for velopharyngeal insufficiency (VPI). OSA can be assessed with polysomnography (PSG) and quantified by the total apnea hypopnea index (AHI).
Aims:
This study compares AHI prior to sphincter pharyngoplasty with AHI at post-operative follow up and assesses the clinical relevance of that change.
Methods:
This retrospective analysis of 23 patients (14 male and 9 female) with VPI treated by a single surgeon between 2006 and 2021 includes all patients with VPI who underwent sphincter pharyngoplasty and have both pre-op and post-op PSG. Patients without pre-operative or post-operative AHI measurement were excluded. Mean follow-up PSG occurred 11.9 months after the index surgery with times ranging from 2 months to 73 months post-op.
Results:
The average change in AHI after sphincter pharyngoplasty was + 2.5 and the median change was + 0.7. The difference in these values comes mainly from two patients who had dramatic increases in their post-operative AHI with one patient increasing from 0 to 18.5 and the other increasing from 0.94 to 22.87. The first patient required CPAP for treatment. The second patient had no clinical signs or symptoms of OSA, and no additional intervention was required. The range of post-op AHI changes runs from - 3.8 to + 21.93. Post-operative AHI (P=0.03) increases significantly as determined by paired T-test. Patient gender, pre-operative AHI, age at sphincter pharyngoplasty, time to follow up PSG and presence of cleft palate were evaluated with a multivariate regression model, and none were found to be significantly predictive of the post-operative AHI result.
Conclusions:
In agreement with prior studies, sphincter pharyngoplasty increases AHI but, for most patients, this increase is not clinically significant. They remain in the minimal to mild OSA range with only one patient developing symptomatic post-op AHI greater than 15 requiring intervention.

Velopharyngeal Insufficiency,
Apnea hypopnea index

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Changes in the Velopharyngeal Port on Long Term Follow up after Furlow Palatoplasty and Sphincter Pharyngoplasty

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction:
Furlow palatoplasty (FP) and sphincter pharyngoplasty (SP) treat improper velopharyngeal port closure to decrease oro-nasal regurgitation and uncontrolled nasal airflow during speech. Nasendoscopy and videofluoroscopy allow for quantitative assessment of port closure before and after surgery, assist with selection of surgical procedures and evaluate surgical success.
Aims:
This study aims to determine the change in port size over time after surgical intervention as this is the technical determinant of surgical success.
Methods:
This retrospective analysis of 53 patients with velopharyngeal insufficiency (VPI) treated by a single surgeon between 2006 and 2021 includes all patients who underwent FP or SP and had at least 3 months follow-up. Excluded patients had syndromic abnormalities such as velocardiofacial syndrome, had undergone prior pharyngeal flap surgery or did not complete their 3-month post-operative visits.
Results:
Of 53 patients, 22 underwent FP, 21 underwent SP and 10 underwent both. Mean pre-op nasendoscopy velar closing ratios (VCR) were 0.51, 0.69, and 0.43 (P=0.04) for FP, SP, and both respectively. This compares with mean videofluoroscopy VCR of 0.71, 0.87, and 0.44 (P<0.001). These values were obtained with ANOVA. Pre-operative VCR was then compared with 3-month and 12-month VCR via T-testing demonstrating an increase in mean nasendoscopy VCR to 0.93 (P<0.001), 0.96 (P<0.001) and 0.83 (P<0.001) after FP, SP, and both respectively. This change was preserved at 12 months post-operatively with mean VCR of 0.99 (P=0.15), 0.89 (P=0.09) and 0.81 (P=0.41). Similar findings were noted on videofluoroscopy with an increase in mean VCR to 0.95 (P=0.003), 0.98 (P=0.001) and 0.80 (P=0.006). This change was preserved at 12 months post-operatively with mean VCR of 0.99 (P=0.16), 0.98 (P=0.38) and 0.9 (P=0.17).
Conclusions:
Technical success in treatment of VPI can be assessed with nasendoscopy and videofluoroscopy to compare pre-operative and post-operative VCR. This study demonstrates that FP and SP produce durable improvements in VCR.

Velopharyngeal Insufficiency,
Videofluoroscopy,
Nasendoscopy

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Buccinator Myomucosal Flap (BMF) is a Good Option for Management of VPI and Palatal Fistula

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: The buccinator myomucosal flap (BMF) has been introduced as a useful and versatile technique for correcting palatal fistula and/or VPI. BMF is associated with extremely low morbidity and optimal functional results.
Aim:To evaluate the role BMF in correction of palatal fistula and/or VPI.
Methods:This study was performed at the comprehensive cleft center of Dhaka Medical College Hospital and Sheikh Hasina National Institute of Burn and Plastic Surgery, Dhaka, fromJanuary 2017 to December 2019. A total of 10 patients whowere admitted for surgical repair of secondary palatal fistula or VPI following palatoplasty were included in this study. Patients who had a history of previous surgical correction of palatoplasty complications, and those who did notattendpostoperative visits were excluded from the study.The buccal artery and the posterior buccal branch of the facial artery are the basis of the BMF. Making incisions on the marked out lines, BMFs were raised from the donor site.The mucosa and buccinator muscle were incised. The muscle was elevated and separated from deep buccopharyngeal fascia.The flaps were transferred to the recipient site and donor sites were closed primarily.
Results: The flaps' widths were 1 - 2.5cm and lengths were 7 - 9 cm. One patient had flap dehiscence. Another patient experienced recurrence of the palatal fistula with marginal necrosis of the BMF which was repaired successfully by local flap.However, there were no casesof majornecrosis. None of the patients reported donor-site morbidity.
Conclusion: Our findings demonstrated that using BMFs could be a safe, effective and promising method of treatment for post-palatoplasty fistula and VPIin a low-resource country such as Bangladesh.
Buccinator Myomucosal, VPI, Palatal Fistula

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Study of VPI after maxillary advancement due to osteogenic distraction in patients with cleft lip and palate.

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

AIMS:
Cleft lip and palate is one of the most common birth defects. Depending on the type of cleft , multiple surgeries may be required across the growth. Osteodistraction is a surgical choice to treat severe midface retrusion that require maxillary advancement and to perform it, a serie of factors must be considered and studied, one of them is VPI.

METHODS
A retrospective analysis was made of patients with cleft lip and palate who were evaluates , diagnosed and treated at the maxillofacial surgery unit at Luis Calvo Mackenna Hospital in Santiago de Chile between 2010 and 2020. All patients had severe midface retrusion and required maxillary distraction , and all were operated by the same team and evaluated by the same speech language therapist .
The presurgical study include the study of velopharyngeal insufficiency according to the protocol of Hospital Luis Calvo Mackenna previous surgery and between 6 and 12 month after surgery. The exclusion criteria included patients over the age of 22 or not cleft patients.

A descriptive statistical analysis was undertaken and the following data was collectes for each patient: age,gender, type of cleft, maxillary advance and VPI score.

RESULTS
20 Patients with different amount of retrusión. The age averege was 15,1 years, 83,2 % were male. Unilateral cleft lip and palate was the most frequent 60%. The mean advancement of the maxila was 16 mm. 80 % patients had changes in VPI score.

CONCLUSIONS
In ten years of experience in midface Osteodistracction we have been taught that every patient is a unique case that requires multidisciplinary approach involving the orthodontist, speech therapist and maxillofacial surgeon to achieve a successful outcome. Distraccion osteogenic technique is a very good choice to treat severe midface retrusion in cleft lip and palate patients

Midface retrusion
Distraction
Velopharyngeal insufficiency

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Longitudinal Outcomes in Midfacial Growth and Speech following Modified Furlow Double-Opposing Z-Palatoplasty.

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction/Aims:
The purpose of this study was to evaluate the long-term outcomes of midfacial growth and speech following modified Furlow palatoplasty.

Methods:
A retrospective review was performed of subjects undergoing modified Furlow palatoplasty between 1990 and 2005 at a single, quaternary care institution. Longitudinal speech and dental records were collected following initial palatoplasty. Speech outcomes were determined using the Pittsburgh Weighted Speech Scores (PWSS). Steiner cephalometric analysis in patients ≥15 years of age was utilized to assess midface growth outcomes.

Results:
In total, 109 subjects met inclusion. The median age at palatoplasty was 10.9 months and age at follow-up was 17.5 years. Most subjects presented with Veau III (47.7) and IV (39.5%) clefts. Syndromic subjects accounted for 15.0% of the cohort. Rates of ONF and VPD in the post-palatoplasty phase were 4.3% and 10.8% in the nonsyndromic cohort, respectively. Competent speech (PWSS 0-2) in nonsyndromic subjects was noted in 96.2% following palatoplasty, 85.7% following orthodontic expansion, and 60.0% following orthognathic surgery. Secondary speech surgery following palatoplasty occurred in 12.9% of nonsyndromic subjects. Steiner analysis at maturity noted a median SNA 78.9°, SNB 80.0°, ANB -1.7°, PNS – ANS 79.0 mm, and overjet -3.0 mm. At skeletal maturity, 62.4% of subjects (Veau III 47.1%, Veau IV 47.1%) demonstrated maxillomandibular discrepancy and 58.7% ultimately underwent orthognathic surgery (III 55.8%, IV 74.4%). Presence of midface hypoplasia correlated with Veau classification ($p<0.05$,) but not with age at repair ($p<0.85$). Neither age at repair ($p<0.98$), surgeon ($p<1.0$), prior lip adhesion ($p<0.56$), nasoalveolar molding ($p<0.06$), nor syndromic status ($p<0.28$) correlated with midface hypoplasia. Veau IV clefts demonstrated the highest rate of orthognathic surgery (74.4%, $p<0.004$).

Conclusions:
Patients with cleft palate undergoing primary modified Furlow palatoplasty demonstrate characteristic effects on midface growth and speech. Veau cleft classification may predict incidence of midface hypoplasia and need for orthognathic surgery.
Palatoplasty, speech, midface growth, orthognathics

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Oncoplastic Reconstruction of Palatal Defects in Children: A Single-Center Experience

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction

Oncoplastic reconstruction of the maxilla is highly challenging given the functional importance of the bone. Presently, there is limited outcomes data for pediatric patients undergoing palatal reconstruction following resection of maxillary tumors.

Aims

The purpose of this study is to assess reconstructive outcomes of patients undergoing oncoplastic reconstruction of the palate following resection of maxillary tumors.

Methods

A retrospective chart review of all patients who underwent palatal reconstruction following resection of maxillary tumors at our institution were analyzed. Variables analyzed included patient demographics, tumor characteristics, instances of neoadjuvant or adjuvant chemotherapy or radiotherapy, defect characteristics, reconstructive modalities performed, and postoperative complications.

Results

A total of 10 patients with a mean follow-up of 25.1 months were included in our study (Table 1). Of included patients, two had defects isolated to the palate. Eight patients had defects involving the maxillary arch and dentition. Primary separation of the oral and sinonasal cavities was achieved using free tissue transfer (FTT) in 8 patients with the remainder undergoing reconstruction with buccal myomucosal flaps. Reconstruction of the maxillary arch using a free fibula flap was performed in two patients. Two microvascular reconstructions were complicated by total flap loss requiring secondary FTT to correct the defect, and one was complicated by the development of an oronasal fistula (ONF) secondary to partial flap necrosis that healed secondarily following debridement of nonviable tissue. One patient required emergent flap debulking due to compression of the globe. Lastly, one patient developed an ONF following locoregional reconstruction of the palate which was repaired with flap revision. All patients achieved satisfactory swallow outcomes following surgery.

Conclusion

Oncoplastic reconstruction of the palate following resection of maxillary tumors often requires the use of FTT given the size of the post-ablative defect. Our sample demonstrates that satisfactory outcomes are attainable; however, further follow-up is needed to definitively assess speech outcomes.

Table 1. Clinical Characteristics, Interventions, and Reconstructive Outcomes of Patients Undergoing Oncoplastic Palatal Reconstruction

Patient Number	Age at First Surgery (Months)	Tumor Diagnosis	Chemotherapy	Radiotherapy	Structure(s) Involved[a]	Reconstructive Procedure(s)	Complications
1	102	Medulloepithelioma	Neoadjuvant Cyclophosphamide, Cisplatin, Vincristine, Etoposide	Adjuvant Proton Radiotherapy	Complete Hemi-maxilla and Orbital Cone	ALT fasciocutaneous flap	Total flap necrosis requiring reconstruction with contralateral VL myocutaneous flap
2	189	Mesenchymal chondrosarcoma	Neoadjuvant Doxorubicin and Ifosfamide	Adjuvant Proton Radiotherapy	Complete Hemi-maxilla	Procedure #1: ALT fasciocutaneous flap Procedure #2: Osseous fibula flap without dental implants	Procedure #2: Complete necrosis of ALT fasciocutaneous and osseous fibula flaps requiring reconstruction with contralateral ALT fasciocutaneous flap
3	6	Neuroectodermal tumor of infancy	-	-	Complete Hemi-maxilla	Procedure #1: Buccal myomucosal flaps Procedure #2: ALT fasciocutaneous flap[b]	Procedure #1: ONF development requiring revision of buccal myomucosal flaps Procedure #2: Postoperative flap swelling with compression of the globe requiring flap debulking
4	17	Desmoid fibromatosis	Neoadjuvant Doxorubicin	-	Complete Hemi-maxilla	ALT fasciocutaneous flap	-
5	171	Osteosarcoma	Neoadjuvant Methotrexate, Doxorubicin, Cisplatin; Adjuvant Ifosfamide	Adjuvant Proton Radiotherapy	Complete Hemi-maxilla	ALT fasciocutaneous flap	-
6	75	Odontogenic myxoma	-	-	Complete Hemi-maxilla	ALT fasciocutaneous flap	-
7	182	Odontogenic myxoma	-	-	Complete Hemi-maxilla	Procedure #1: VL myocutaneous flap Procedure #2: Osseous fibula flap without dental implants	-
8	141	Primitive myxoid mesenchymal tumor of infancy	Neoadjuvant Vincristine, Actinomycin D, and Cyclophosphamide	-	Hard palate (with Maxillary Arch involvement), Lateral Nasal Sidewall	VL myocutaneous flap	-
9	128	Mucoepidermoid carcinoma	-	-	Hard palate (with Maxillary Arch involvement)	ALT fasciocutaneous flap	ONF development secondary to partial necrosis of ALT flap requiring debridement and healing by secondary intention
10	169	Mucoepidermoid carcinoma	-	-	Hard palate (without Maxillary Arch involvement)	Locoregional reconstruction of palatal defect	-

[a]All patients, except for patient 9, had unilateral palatal defects. [b]For separation of oral, sinonasal, and orbital cavities following failed alloplastic reconstruction of the orbital floor.
Abbreviations: ALT = anterolateral thigh; VL = Vastus lateralis; ONF = oronasal fistula.

Reconstruction, Maxillectomy, Palate, Pediatric

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Improved speech outcome at five years with early pharyngeal flap surgery

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1. Introduction

Velopharyngeal dysfunction (VPD) can cause speech sound delay in children born with cleft palate (CP+/-L). VPD often requires secondary speech surgery to overcome the phonological difficulties. In our clinic, age at pharyngeal flap surgery has lowered from average age 7;12 yrs to average 3;4 over the past ten years. In children with CP+/-L with VPD, we investigated the effect of pharyngeal flap surgery on phonological development at five years assessment.

2. Aims

Did pharyngeal flap surgery done before the age of five eliminate speech sound delay at five years of age in children with CP+/-L with VPD compared with peers treated at an older age.

3. Method

A retrospective review of all patients born in 2009 and 2015 with VPD who underwent a pharyngeal flap surgery either before or after five years of age. Children born in 2015 had pharyngeal flap surgery before age five. Children born in 2009 had later surgery. Phonological development was evaluated at the 5 years speech assessment and comparisons of the two groups were made.

4. Results

Preliminary results suggest that delay in speech sound production was predominantly solved in the group of children treated with a pharyngeal flap before the age of five whereas phonological problems still persisted in the group of children with increased age at the time of secondary speech surgery.

5. Conclusion

Pharyngeal flap surgery before the age of five had a positive effect on speech sound development in children with CP+/-L with VPD. In contrast, phonological delay persisted in the group of children not treated with a pharyngeal flap at this age.

Phonological development, secondary speech surgery

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Speech Outcomes following Operative Management of Nonsyndromic Post-Palatoplasty Velopharyngeal Dysfunction (VPD)

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TH3.1 SPEECH SURGERY, Sidlaw, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Patients with repaired cleft palate (CP) may go on to develop velopharyngeal dysfunction (VPD), in which the repaired soft palate cannot close off the velopharyngeal port during speech production. The resultant hypernasality and speech impairment requires further operative management.

Aims: To identify patient and operative characteristics associated with postoperative speech outcomes and complications in nonsyndromic post-palatoplasty CP patients following surgery for VPD.

Methods: This is a retrospective cohort study of nonsyndromic patients with repaired CP who underwent secondary speech surgery between January 1st, 2010 and December 31st, 2020. Preoperative and 1-year postoperative speech outcomes were assessed clinically using the Pittsburgh Weighted Speech Scale (PWSS). VPD was characterized as mild (cumulative PWSS 1-2), moderate (3-6) or severe (7+).

Results: One-hundred two patients (mean age 9.49 +/-4.39 years) had Furlow revision (32.4%), posterior pharyngeal flap (PPF) (27.5%), sphincter pharyngoplasty (SPP) (25.5%), or palatal lengthening with buccal myomucosal flaps (PL) (14.6%). No association between operation type and speech outcomes was identified. Patient characteristics associated with worse preoperative PWSS score were non-Caucasian race and higher Veau type ($p<.05$). Postoperatively, non-Caucasian patients had greater score reductions ($p<.01$); patients with higher Veau type and Asian descent had persistently poorer scores ($p<.05$). Average cohort pre- and postoperative scores were severe (9.59 +/-4.91) and dropped to the moderate range (3.53 +/-4.22), respectively ($p<.001$). This was due to improvements in phonation (-0.46, $p<.01$), hypernasality (-1.53, $p<.001$) and compensatory articulation (-2.09, $p<.001$). Postoperative complication (most notably airway compromise) rate was 5.9% and was highest in SPP (OR 2.43, 95% CI 1.12-4.59). 15.7% of patients required revision.

Conclusion: Patients who were non-Caucasian or with history of greater Veau type represent a more challenging cohort. No one type of operative intervention was found to result in better speech outcomes, although SPP may not be suitable for patients with complicated airways because of potentially increased complications.

	Preop PWSS (+/-SD)	% Severe VPD Preop	Postop PWSS (+/-SD)	% Severe VPD Postop
Procedure Type				
SPP	9.50 (+/-5.08)	60.0%	*2.64 (+/-4.45)*	16.0%
PPF	10.19 (+/-5.27)	63.3%	*3.10 (+/-4.14)*	20.0%
Furlow conversion	10.62 (+/-4.96)	86.7%**	*4.13 (+/-3.64)*	23.3%
PL	7.44 (+/-3.26)**	58.8%	*3.38 (+/-3.87)*	25.0%
Race/Ethnicity				
Caucasian	8.27 (+/-4.08)**	60.7%	*2.61 (+/-3.56)*	13.7%
Black/African American	9.50 (+/-4.32)	66.7%	*2.67 (+/-3.09)*	33.3%
Asian (91.9% foreign adoption)	10.86 (+/-5.22)	76.3%	*4.97 (+/-4.87)***	29.7%
Native American/ Pacific Islander	12.00 (+/-4.00)	100.0%	*0.00 (+/-0)*	0.0%
Other/Unknown	10.67 (+/-5.06)	81.8%	*3.56 (+/-3.92)*	33.3%
Veau Type				
I	9.56 (+/-2.63)	72.7%	*2.11 (+/-3.12)*	18.2%
II	8.36 (+/-3.62)	69.6%	*3.13 (+/-3.18)*	21.7%
III	8.83 (+/-4.54)	67.7%	*2.77 (+/-3.68)*	16.1%
IV	10.72 (+/-5.66)**	73.0%	*4.81 (+/-4.83)***	32.4%**

Values denoted with asterisks (**) indicate statistically significant difference from other subcategories within row on t-test for mean values and Chi-square for categorical variables. Postoperative values italicized indicate statistically significant difference from preoperative values on paired t-test.

Velopharyngeal dysfunction, cleft palate

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Lateral release of lateral crura: Attaining tip symmetry without any tip surgery in primary unilateral cleft lip nose deformity

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction
Lateral crura has firm lateral attachment to piriform bone (Janeke and Wright,1971. Gunter 1987, Adamson 1994, Rohrich2008). Patel and Mulliken in 2014 stated that as the lateral maxillary segment stays posterior, lateral and inferior to its medial counterpart it pulls the lateral crura into the vestibule. Robert J Mann (RJM) has proposed an Anatomic Cleft Restoration Philosophy, he states that cleft is result of tissue deficiency and the nasal deformity results from deformational forces it generates in the form of abnormal muscle pull and bony asymmetry. RJM also believes that once these deformational forces are removed the cartilage will rebound and regain its normal shape.
Aims
This study aims at evaluating a technique of lateral release of lateral crura in its ability to generate symmetrical nasal tip height.
Methods
Fifty-six cases with unilateral complete cleft of lip and palate were operated, lateral attachments of lateral crura were released through an incision at the base of vestibular web, the cartilage was then lifted and fixed in its corrected position with trans-fixation sutures, the resulting raw area was covered with a local flap, no undermining was done. Twenty cases previously operated with wide undermining and use of trans-fixation sutures to retain lower lateral cartilage in corrected position were used as control. Nasal conformers were not used in both groups.
Results
Basal view photographs were analyzed using indirect anthropometry based well established landmarks (Nagy and Mommaerts,2007). Statistical analysis revealed that 94.5% cases had less than 3% difference between the height of the cleft side tip dome as compared with the noncleft side while only 38% cases in the control group could achieve the same.
Conclusion
Lateral crura release using techniques described here results in symmetrical tip height in majority of cases without any open or closed nasal tip surgery.

cleft lip nose deformity

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Aesthetic and psychosocial impact of dentofacial appearance after

primary rhinoplasty for cleft lip and palate

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

AIM: The primary aim of this study was to demonstrate whether primary rhinoplasty shows aesthetic and psychosocial advantages for children with a complete unilateral cleft lip and palate (CLP).
The second aim was to determine the satisfaction levels concerning the dentofacial appearance.

MATERIAL AND METHODS: Two cohorts of patients who had or not undergone primary rhinoplasty at 6 months of age were evaluated at preadolescence. Three French cleft centers, of which only one performs primary rhinoplasty, provided 97 frontal and low-angle facial photographs of 9 to 12 year-old children (mean age: 11.5).
Ten operated noses (A) and ten non-operated noses (B) were randomly selected and assessed by a jury of 305 people made up of 136 health professionals, 57 lay persons and 56 families of CLP patients (56 children and 56 children). Moreover children and their parents filled in a questionnaire about the satisfaction of the children dentofacial appearance and the psychosocial impact of the cleft. Bayesian statistic model was used.

RESULTS: The aesthetic perception test realized on 20 noses revealed that primary-operated noses were statistically significantly more attractive than non-operated ones.
The questionnaire filled in by the patients' families revealed that the children did not rate statistically differently their social relationships and their specific nose teasing if they had primary rhinoplasty or not. Parents however expressed very different views. The parents considered the nasal appearance of the operated children as statistically more attractive and those whose kids had undergone nose surgery evaluated the psychosocial experience of their children as significantly improved. Overall, in both groups, satisfaction levels of dentofacial appearance and psychosocial comfort were good (over 80%).

CONCLUSION: General and families evaluation showed a positive impact of primary rhinoplasty on facial appearance and social life.

Comparison of mean scores attributed by children and parents concerning satisfaction with the appearance of the nose and **psychosocial** disturbances, for groups A and B.

Types of indicators Compared groups	Children		Parents	
	Satisfaction with nose appearance (score over 100)	Psychosocial easiness (score over 100)	Satisfaction with nose appearance (score over 100)	Psychosocial easiness perceived (score over 100)
A Median	90	90	86	90
Standard deviation	25.07	17.43	10.52	16.91
B Median	73	93	69	86
Standard deviation	30.96	22.44	26.66	26.58
Differences in the medians	17	−3	17	4
C.I.* 95%	−7.51–22.51	−11.45–9.88	10.02–30.89	0.91–24.68
Percentage of Likelihood that A > B	83.4%	45.6%	100%	98.3%

cleft lip nose
psychosocial deprivation

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Twenty years surgical Audit of cleft surgery at Peradeniya Sri Lanka by single surgeon

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction
Cleft lip and palate is the commonest head and neck developmental anomaly in human beings. As there are several treatment protocols and claims and counter claims regarding their success, clinical audit of treatment results are of importance not only for its members but also for others involved in treatment of clefts in the world.
Aim
Aim of this study is to assess surgical treatment for cleft lip and palate in one center for 20 years by a single surgeon.

Materials and methods
Patients underwent cleft surgery from 2000 to 2020 (4020 patients)was included in the study.The sample consist of 53% male and 47% females, representing all major ethnic community in the country represented in the sample.
Pre and post operative photos of all the patients were recorded. In the cleft lip patients .In unilateral and bilateral cleft lip patients photos (worms eye and frontal view)ware taken at one month, six month one year and eight year. Photos were assess by independent assessor and parents satisfaction was recorded anonymously using standard patients satisfaction form . in patient who had complete cleft lip and palate compliance after lip surgery for the palate surgery was recorded. In the cleft palate group speech was assess two months and six months after surgery.
Results
Majority of the patients shows satisfactory results after surgery. In the total group 120 (2.98%) shows suture breakdown and none of the unilateral patients had suture break down. Patients compliance after lip surgery to palate surgery was 90%.Majority of patients underwent cleft palate surgery 70% had satisfactory speech after one year and 10% indicated for palatal re repair and palatal lengthen procedures.
Conclusion
Outcome of cleft surgery at our center is quite satisfactory. Many modifications to the surgical technique and treatment protocol was adapted with better out come during the last twenty years.

Cleft lip and palate Surgery

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Photometric Evaluation of Adult Patients With Bilateral Cleft Lip and Palate Treated With Nasoalveolar Molding and Primary Columella Lengthening

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction: The conventional approach for the correction of patients with bilateral cleft lip and palate (BCLP) was hampered by several postoperative stigmata: a noticeably short columella, a flattened tip, and flared nasal alae . Since 1999, in our cleft lip and palate center, the surgical protocol for the treatment of patients with complete BCLP was changed to a primary columella lengthening technique, associated with presurgical nasoalveolar molding (NAM).
Aims: The aim of this study was to assess the nasal shape of young adults with BCLP treated with primary surgical columella lengthening and NAM.
Methods: A group of 30 young adult patients with BCLP (mean age: 19 years) was compared through normalized photogrammetry to a control of 30 age- and sex-matched noncleft young adults.
Results: Nasal protrusion and length of the columella were not different from noncleft young adults. On the other hand, nasolabial angle, columellar width, interalar, and nasal tip width were significantly wider than the noncleft controls. Thus, 37% of the patients have requested at this time secondary correction of the excessive nasal width.
Conclusions: Both NAM and primary rhinoplasty in patients with BCLP resulted in a near normal length of the columella and nasal projection until young adulthood. Nevertheless, width of all nasal features was significantly wider than the noncleft population and required secondary nasal correction in one-third of the sample.
columella lengthening technique, nasoalveolar molding

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Age at Primary Cleft Lip Repair: A Potential Bellwether Indicator for Pediatric Surgery

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction: The bellwether procedures described by the Lancet Commission on Global Surgery represent the ability to deliver adult surgical services after there is a clear and easily made diagnosis. There is a need for pediatric surgery bellwether indicators. A pediatric bellwether indicator would ideally be a routinely performed procedure, for a relatively common condition that, in itself, is rarely lethal at birth, but that should ideally be treated with surgery by a standard age. Additionally, the condition should be easy to diagnose, to minimize the confounding effects of delays or failures in diagnosis.
Aims: In this study, we propose the age at primary cleft lip (CL) repair as a bellwether indicator for pediatric surgery.
Methods: We reviewed the surgical records of 71,346 primary cleft surgery patients and ultimately studied age at CL repair in 40,179 patients from 73 countries, treated by Smile Train partners for 2019. Data from Smile Train's database were correlated with World Bank and WHO indicators.
Results: Countries with a higher average age at CL repair (delayed access to surgery) had higher maternal, infant, and child mortality rates as well as a greater risk of catastrophic health expenditure for surgery. There was also a negative correlation between delayed CL repair and specialist surgical workforce numbers, life expectancy, percentage of deliveries by C-section, total health expenditure per capita, and Lancet Commission on Global Surgery procedure rates.
Conclusions: These findings suggest that age at CL repair has potential to serve as a bellwether indicator for pediatric surgical capacity in Lower- and Middle-income countries.
surgery, surgical capacity, indicator

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Determinants of Early Surgical Outcomes and Complications following Primary Cleft lip and Palate repair in Kenya

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

INTRODUCTION:
Cleft lip and palate is a common congenital craniofacial anomaly. The best approach to cleft management is through a multidisciplinary team approach through a dedicated cleft and craniofacial center. Many developing countries still lack cleft centers making patient follow-up erratic and challenging. In Kenya, several patients undergo cleft surgery each year. The complication rates and the determinants of complications and outcomes following surgical repair are not known in our setting.

AIMS:
To evaluate determinants of early surgical outcomes and complications following primary cleft lip and palate repair in selected Hospitals in Kenya.

METHODS:
This was a descriptive cross-sectional study carried out from November 2019 to June 2020 at teaching hospitals. Hundred and Forty-one (141) participants were included and assessed at 6 weeks postoperatively. Photos were taken preoperatively and postoperatively, analyzed, and scored using the PLAN score by 3 senior plastic surgeons. The outcome of Cleft palate repairs was determined based on the integrity of repair that is, on the presence or absence of fistula. P-value of ≤ 0.05 was considered significant

RESULTS:
Patient age, hemoglobin level, type of cleft had no significant correlation to the outcome. Bardach's two flap palatoplasty was the most common method of repair for Cleft palate. The rate of palate fistula formation was 37%. Surgeons who used vomer flaps had lower fistula rates. The most common complication of cleft lip repair was hypertrophic scarring in 20% of the patients.

CONCLUSION:
This study demonstrated a low complication rate and high patient satisfaction following cleft lip and palate surgery in Kenya. Intra-operative complications occurred more with palate repair and these increased the risk of ICU admission and prolonged hospital stay. The most significant factors determining cleft surgery outcome were the surgical technique and cleft severity. Surgeons with extensive experience in cleft surgery had good outcomes even in the absence of pre-surgical orthodontics.

Presence of fistula	Age grouping(in years)					
		1-3 n=39	3-5 n=11	5-7 n=10	7-9 n=6	>9 n=7
	Yes	14(35))	4(36)	4(40)	2(33)	3(42)
	No	25(65)	7(64)	6(60)	4(67)	4(58)
Significance	P value = 1.0000					

Surgical outcomes, Complications, Primary repair

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“Postoperative nasal conformers in cleft rhinoplasty: Are they efficacious?”

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Background:

Lip and nose symmetry the goal of repair of unilateral cleft lip and different pre and postoperative treatments have been developed with this purpose.
The objective of this study was to compare two techniques used for primary cleft lip nose repair and perform a systematic review of the literature to evaluate the effects of postoperative nasal conformers.

Methods

This is an retrospective study between two groups of patients with unilateral cleft lip and palate who underwent primary nasolabial repair either with or without postoperative nasal conformers by the same surgeon between 2012 and 2016 and were followed through 2021.
Data collection was accomplished by evaluation of nasal symmetry through anthropometric measurements under general anesthesia during primary cleft palate repair.
A systematic review of the literature for studies published until March 2021 to evaluate aesthetic effect using nasal conformers in patients with cleft lip and palate.

Results:

Our comparative study did not find a statistically significant differences regarding percentile indexes of nasal asymmetry between the two groups.
After systematic literature searching, 6 identified studies were qualified for the final analysis, which included 195 patients.
The overall study quality according to Oxford CEBM and Newcastle-Ottawa scale was low.

Conclusions:
The results obtained from this study provides showed that placement of postoperative nasal conformers did not improve nasal symmetry in patients with unilateral cleft lip and palate.
Based on available scientific evidence, definitive conclusions about the effectiveness of these devices on nasal symmetry after unilateral cleft lip nose repair cannot be drawn.

Table 2. Postoperative nasal profiles comparison between groups operated with and without postoperative nasal conformers.

Measurement	Degree of asymmetry	Group A % (CL)	Group B % (CL)	P *
Nostril height	1	61.54 (47.6-73.81)	48.84 (34.25-63.63)	0.214
	2	36.54 (24.53-50.49)	46.51 (32.15-61.47)	0.325
	3	1.92 (0.26-12.71)	4.65 (1.15-17.04)	0.448
Nostril width	1	53.85 (40.18-66.96)	55.81 (40.71-69.92)	0.849
	2	46.15 (33.04-59.82)	44.19 (30.08-59.29)	0.850
Columellar length	1	59.62 (45.72-72.12)	48.84 (34.25-63.63)	0.293
	2	38.46 (26.19-52.4)	46.51 (32.15-61.47)	0.428
	3	1.92 (0.26-12.71)	4.65 (1.15-17.04)	0.448
Alar base width	1	67.31 (53.37-78.74)	62.79 (47.42-75.95)	0.645
	2	32.69 (21.26-46.63)	37.21 (24.05-52.58)	0.640

Group A: With postoperative nasal conformer.
Group B: Without postoperative nasal conformer.
Degree of asymmetry: 1,2 and 3.

Significance level was set as $p< 0,05$.
* Z test of proportions. $P < 0.05$

Cleft rhinoplasty
Conformers
Systematic review

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Efficacy of NAM and Nasal Conformers in Comparison with Primary Rhinoplasty to Achieve Nasal Symmetry in Unilateral Cleft Lip Deformity

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction: Most of the primary cleft lip repair techniques do not primarily address the nasal deformity which may result in poor nasal outcomes leading to nasal asymmetry. Several Techniques and manoeuvres which are employed to minimize this have varying degrees of success.
Objectives: To assess the efficacy of various modalities employed to establish nasal symmetry in unilateral cleft lip.
Methods: 100 patients with complete unilateral cleft lip / palate were operated for primary cheiloplasty with modified Millard's rotation advancement technique. Subjects were divided into 5 groups of 20 each. Group 1 subjects operated employing modified Millard's technique alone. In Group 2, subjects underwent NAM therapy followed by lip repair. Group 3 subjects underwent lip repair followed by placement of nasal conformers for 12 months postoperative. Group 4 patients were treated using NAM therapy followed by lip repair and placement of conformers. Group 5 underwent lip repair with primary Rhinoplasty. All patients were evaluated after minimum period of 12 months post-operatively, except those using conformers were evaluated 12 months after discontinuing the same. Parameters like Alar Inclination angle, Nostril apex overhang, Nostril height and diameter, columellar length and deviation angle were evaluated on 1:1 standard photograph.
Results: All parameters were statistically significant in group 4 and group 5 compared to the other groups.
Conclusions: Manoeuvres like NAM and placement of nasal conformers have a significant influence in establishing nasal symmetry. However, open tip Rhinoplasty establishes better nasal symmetry

Primary Rhinoplasty, Nasal Symmetry, NAM

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STRUCTURAL AND FUNCTIONAL OUTCOMES OF PRIMARY PALATOPLASTY: ANALYSIS FROM A NIGERIAN CLEFT CENTRE

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction
An infant with cleft palate is first challenged by feeding difficulties and subsequently articulation of speech. Repair of cleft palate anomaly has been sponsored in Nigeria by a charity organization for more than a decade. However, published reports on the outcomes of these repairs in Nigeria are sparse. Information on the outcome of repair will aid in auditing the repairs, identifying areas of strengths and weaknesses and, most of all, will guide providers towards improvement in surgical outcomes and overall cleft care.

Aim
This study aims to present the structural and functional outcomes of primary palatal repairs from a Nigerian cleft care centre.

Methods
This is a prospective cohort study of patients who had primary palatal repairs between January 2010 and August 2021. Outcome measures were fistula rate (structural) and perceptual speech assessment (functional) by parent, caregiver or patient. The cleft anomalies were classified according to Veau's classification. Chi-squared test and T-test were performed to explore associations between types of cleft, age at time of surgery and the outcome measures.

Results
Seventy-nine patients who had palatal repairs for clefts of primary and secondary palate or secondary palate alone were studied. Twenty-two patients were excluded and details of 57 patients with a mean age of 6.7 (SD+/- 8.4) years were analyzed. Fistula rate was 5.3% and 54.4% had normal speech. Age at surgery was not associated with structural or functional outcome. Normal speech outcomes were more common among patients with Veau types I (85.7%) and III (66.7%) cleft anomalies.

Conclusion
This study showed a low fistula rate and good functional outcome from a single cleft care centre. More studies are desirable in this aspect of cleft care to enable an appraisal that can lead to improved surgical cleft care especially in low-resource settings.
Cleft, speech, outcome.

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A Single Stage Composite Cleft Septorhinoplasty for Correction of the Mature Unilateral Cleft Nose Deformity - The Gujrat Technique

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction/Aims: The unilateral cleft nose deformity has been described as a reconstructive challenge and can be particularly difficult to correct as a single stage procedure with the optimal balance of aesthetics, function and patient satisfaction. The authors present the results of a composite cleft septorhinoplasty procedure “The Gujrat Technique” that was successfully employed as a single stage operation to correct the exaggerated cleft nose deformity after completion of nasal growth in an adult patient cohort.
Methods: Adult patients with a residual unilateral cleft nasal deformity were deemed eligible for the proposed “The Gujrat Technique”. Over a 10-year period (2007-2017), 96 adult patients underwent this composite cleft septorhinoplasty as a single stage operation. Post-operative nasal symmetry evaluation was undertaken using the validated computer program ‘SymNose’. Functional outcome and patient satisfaction were assessed using Nasal Obstruction Symptom Evaluation scale and Rhinoplasty Outcome Evaluation (ROE) questionnaires respectively. Various statistical analysis methods were used to validate the obtained results.
Results: Due to poor compliance with follow-up, post-operative assessments were undertaken in only 32 patients. The single group study design using the non-parametric matching pairs Wilcoxon Sign test ($p<0.001$) showed overall good to excellent functional and aesthetic outcomes and higher scores of the digital SymNose grading system. There was a significant improvement in ROE scores (from 26.4 ± 2.9 to 85.9 ± 4.7, $p<0.001$). There were no major complications or revisions needed in our series.
Conclusion: The individual components of ‘The Gujrat Technique’ are not novel but their combination in this adult unilateral cleft rhinoplasty cohort has demonstrated a high patient satisfaction with its aesthetic appeal and functional versatility. In the background of limited resources and unpredictable patient follow up, the simplicity, reproducibility and cost effectiveness of this technique make it a practical reconstructive option.

Cleft nose deformity; composite septorhinoplasty

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Factors Associated with Decreased Hospitalization Length After Primary Palatoplasty

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction: Children undergoing primary cleft palate repair usually require hospitalization to promote immediate recovery. Airway swelling, agitation/pain, and poor feeding often prevent rapid discharge. A variety of financial/insurance factors and lack of hospital beds pressures us to find ways to limit peri-operative hospitalization after palatoplasty. Children undergoing primary palatoplasty often are not discharges for at least 24-48 hours post-surgery.

Aims: To identify modifiable factors associated with decreased length of hospitalization after primary cleft palate repair.

Methods: Review of 300 consecutive primary palatoplasties at a single US institution to determine factors associated with hospitalization length including cleft type, surgery method, intra-operative factors, recovery room factors, peri-operative medications, and post-operative oral intake.

Results: Mean post-operative hospitalization was 35.96 hours (SD 14.1). Most (81.3%; n=244) required >23 hours and 17% (n=51) required >48 hours hospitalization before achieving standard discharge criteria. Submucous cleft repairs were performed on significantly older children (median age 57.3m vs 14.9m) with shorter hospitalizations (31.19h vs 36.61h; $p < 0.05$). Presence of g-tube, syndrome, repair type, medication regimen, or concomitant procedures did not predict hospitalization length. Factors predicting <23 hours hospitalization: decreased surgery time (mean 106.7 min vs 126.8 min; $p<0.001$), no intravenous morphine ($p=0.001$); decreased time to 1st feeding (mean 2.9 hours vs 4.6 hours; $p=0.017$); decreased time to large volume intake (>90ml; mean 10.6 hours vs 20.4 hours; $p<0.001$); and increasing volume of 1st large volume intake (mean 148.4mL vs 127.5mL; $p=0.003$). Children discharged in <23hrs averaged 20.5hrs admission; those discharged after 23hrs averaged 39.5 hours hospitalization. Rates of post-operative complications and readmission were the same in both groups.

Conclusions: Most children require >23 hours post-operative hospitalization to meet appropriate discharge criteria. A variety of factors related to surgery length, post-operative medication, and timing/volume of oral intake are helpful predictors of hospitalization time while presence of a syndrome and surgery method were not factors.

palatoplasty, hospitalization, peri-operative recovery

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Application of a novel nasal clip for postoperative nostril retaining after primary unilateral cleft rhinoplasty

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TH3.2 PRIMARY SURGERY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 11:00 - 13:00

Introduction: A novel nasal clip for postoperative nostril retaining after primary unilateral cleft rhinoplasty was designed. It was applied to support the corrected morphology of cleft nasal deformity after rhinoplasty.
Aims: This study was sought to investigate the outcomes resulting from the novel nasal clip application.
Methods: A retrospective study was conducted on 57 patients with a unilateral complete cleft lip without cleft palate subjected to primary surgical repair. The patients were categorized into 3 groups, i.e., the group where the conventional nasal retainer was used, the one that the nasal clip was adopted, and the control group with no postoperative nasal retainer. The nasal retainer or nasal clip was applied 7 days after primary surgical repair, and retained in nostrils of children for 6 to 12 months. Photogrammetry for noses was performed at the preoperative, postoperative, and follow-up; besides, subjective scoring for the nose at the follow-up was conducted.
Results: The two nasal retainers significantly minimized the relapse based on the nasal tip deviation and the nasal base ratio. Moreover, the nasal clip sustained the symmetry based on the ratio of postoperative nostril width better than the conventional retainer. After 6 to 12 months, the nasal clip enabled patients to achieve a better columella morphology and a more symmetric nasal base than that of the conventional nasal retainer.
Conclusion: In summary, the postoperative application of the novel nasal clip after primary unilateral cleft rhinoplasty preserves the nasal morphology and reduces the postoperative relapse without the need for additional adhesive tapes.
Cleft nasal deformity, nasal retainer

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Aesthetic outcomes in unilateral cleft lip and palate treated with and without presurgical nasoalveolar molding: A 5-year follow-up

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Background: The cleft lip-nose deformity in unilateral cleft lip and palate is one of the most challenging problem for surgeons to correct. Although nasoalveo-lar molding has been shown to be effective in improving presurgical symmetry in patients with complete unilateral cleft lip and palate, there is need for better evidence regarding the long-term nasolabial aesthetics of patients who have received this therapy.

Methods: Thirty-eight patients treated with nasoalveolar molding and 48 patients not treated with nasoalveolar molding (but otherwise treated similarly) with unilateral cleft lip and palate were studied to assess and compare the naso-labial aesthetics. The objective evaluation of the nasal symmetry was performed on the basal view of two-dimensional photographs and the subjective nasolabial aesthetic evaluation was performed using the Asher-McDade scale.

Results: At 5-year postoperative follow-up, nasoalveolar molding group patients had better mean values on the objective scores; however, these were not stati-cally significant. The nasoalveolar molding group of patients had a statistically significant improvement in the subjective evaluation in comparison to the non–nasoalveolar molding–treated patients. The number of lip revisions was also statistically higher in the non–nasoalveolar molding–treated group of patients.

Conclusions: In this retrospective, single-center study, the authors found that at 5-year postoperative follow-up, nasoalveolar molding–treated patients had improved nasolabial aesthetics and fewer revision operations. These are, however, preliminary results and the patients will be followed up until the end of growth to assess the longer term effects of nasoalveolar molding on the nasolabial aesthetics in unilateral cleft lip and palate.

Nasoalveolar Molding, NAM, Cleft Lip,

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COMPARATIVE STUDY OF MAXILLARY GROWTH IN CLEFT PATIENTS TREATED WITH AND WITHOUT PREOPERATIVE ORTHOPEDICS.

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction
The treatment of cleft lip and palate was modified after development of nasoalveolar molding. Many good results were presented. However it is not possible to identify comparative studies with natural growth.

Aims
Compare the maxillary growth in patients treated conventionally and others with Functional Maxillary Orthopedics.

Methods
It was a prospective study in which patients were divided into Group 1 (G1), composed of 12 patients from CAIF, Curitiba - Brazil without pre-surgical intervention and Group 2 (G2), with 12 patients from Hospital Vall d'Hebron, Barcelona - Spain using, Functional Maxillary Orthopedics and Nasal Molding. The measurements were made for each patient: before the first month of life, at 6 months and between 9 and 12 months. They were scanned in 3D images and analyzed in Autodesk Inventor Professional software. The anatomical landmarks were obtained based on the method described by Botticelli et al (2018). The cleft distance (anterior, medium and posterior width) Maxilar width (medium and posterior) were analyzed. Statistical analysis was performed with multiple comparisons theory.

Results
The measurements of the cleft width presented a higher reduction in G1 in the anterior distance, of 7.81mm (79.82%), while in G2 the reduction was 5.97mm (52.07%). The posterior distance presented a reduction of 6.15mm (41.77%) in G2, higher than G1, in which the reduction was 3.16mm (24.70%). In both measurements, there was statistical significance ($p<0.05$). The medium distance of the cleft reduced 6.96mm (24.70%) in G1 and 7.96mm (41.77%) in G2, without significance ($p<0.05$).

Conclusions
The anthropometric measurements demonstrated that the use of pre-surgical orthopedics presented similar results in comparison to isolated cheiloplasty. This suggests that cheiloplasty creates a pressure that promotes the natural rapprochement, reducing the cleft width in the anterior part of the maxilla and with Functional Orthopedics can close in the posterior part without maxillary compression.

Table 1. Absolut and relative mean differences between T1-T2, T2-T3 and T1-T3.

	AID		MID		PID		GSW		LSW		ICW		PAW	
	d (mm)	%	d (mm)	%	d (mm)	%	d (mm)	%	d (mm)	%	d (mm)	%	d (mm)	%
G1														
T2-T1	-1,75	-17,88%	-3,22	-22,92%	-2,68	-20,94%	2,38	19,04%	2,10	20,69%	-0,02	-0,06%	1,89	5,63%
T3-T2	-6,07	-75,50%	-3,74	-34,53%	-0,48	-4,74%	1,69	11,36%	1,83	14,94%	-1,61	-5,11%	1,40	3,95%
T3-T1	-7,82	-79,88%	-6,96	-49,54%	-3,16	-24,69%	4,07	32,56%	3,93	38,72%	-1,63	-5,17%	3,29	9,80%
G2														
T2-T1	-4,01	-34,99%	-5,22	-34,05%	-4,73	-32,13%	4,47	38,94%	3,02	29,41%	2,71	9,80%	1,77	5,52%
T3-T2	-1,96	-26,31%	-2,41	-23,84%	-1,42	-14,21%	2,40	15,05%	1,43	10,76%	0,09	0,30%	-0,40	-1,18%
T3-T1	-5,97	-52,09%	-7,63	-49,77%	-6,15	-41,78%	6,87	59,84%	4,45	43,33%	2,80	10,12%	1,37	4,27%

pre-surgical orthodontics, unilateral cleft lip

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UK and Ireland 5-year-old Bilateral Cleft Lip and Palate (BCLP) dental arch relationship outcome: 10 consecutive years

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: BCLP is the least common of all types of clefts. Children with BCLP represent around 11% of all cleft children born in England, Wales and Northern Ireland. There is no national agreed protocol for primary surgery on BCLP. The members of the Orthodontic Clinical Excellence Network of the Craniofacial Society of Great Britain and Ireland have audited the outcome of the 5yr old dental arch relationship since 2010. The results have been reported to the surgeons to inform them on discussing their outcomes on the different protocols that they followed for primary surgery.
Aims: To evaluate the dental arch relationship of 5-year-old children born with complete BCLP in United Kingdom (UK) and Ireland, who had the primary surgery carried out in one of UK/Ireland Cleft Centres.
Methods: Dental casts and photographs of treated 5-year-old non syndromic patients born with BCLP at the 11 Cleft services in the UK and 1 centre in Ireland. The children were born between 2005 and 2014. The records were rated by 2 examiners as per Bauru yardstick for the deciduous dentition group.
Results: The inter-examiner agreement was very high, with weighted kappa values ranging from 0.895 to 0.928. The intra-examiner agreement was also found to be very high, with kappa values between 0.914 and 0.953. A total number of 477 BCLP records were assessed and scored. 42.8% of the patients were rated with a Bauru yardstick score of 1 or 2, 22.9% were rated with a score of 3 and 34.4% with a score of 4 or 5. The overall Bauru yardstick for all centres was 2.86. The only significant pairwise difference was found between units 1 and 12.
Conclusions: The BCLP dental arch relationship outcome of 5-year-old children in the UK and Ireland are comparable amongst most centres.

BCLP, Outcomes, 5-year, dental arch

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A MULTI-DISCIPLINARY STUDY OF THE LONG-TERM EFFECTS OF VOMERINE FLAP CLOSURE OF THE HARD PALATE AT THE TIME OF LIP REPAIR

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Aims: To compare dental arch relationship, maxillary growth, speech and aesthetic and psycho-social outcome in a consecutive series of patients with unilateral complete bony clefts of lip and palate, operated on by the same surgeon, before and after a change of surgical protocol which involved vomerine flap closure of the hard palate at the time of lip repair.
Methods: This is a cohort study of patients who have reached the age of 20 years and are seen for 20 year audit review. Operative and other interventions are reported. Records, including clinical photographs, dental study models, lateral cephalograms, speech recordings and replies to psycho-social questionnaires are obtained.
Results: 62 patients who did not have vomerine flaps have already been reported. The following cohort who did have vomerine flaps at the time of lip repair, a similar number of patients, are currently being reviewed. This review has been delayed by the Covid pandemic but it is intended for this to be completed by July 2022. To date, by the age of 15 years in a smaller group of these patients, there has been no significant detrimental effect on maxillary growth. This needs to be confirmed at 20 years when growth is complete. Differences in speech, aesthetic and psycho-social outcomes will be reported.
Conclusions: Vomerine flap closure of the hard palate at the time of lip repair has many advantages. Fears that this may have a detrimental effect on maxillary growth and other outcomes appear to be unfounded.

vomerine flap vomer occlusion growth

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UK and Ireland 10- year-old Bilateral Cleft Lip and Palate (BCLP) dental arch relationship outcome: 5 consecutive years

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: BCLP is the least common type of all clefts. There is no national agreed protocol for primary surgery on BCLP in the UK. The members of the Orthodontic Clinical Excellence Network of the Craniofacial Society of Great Britain and Ireland have been auditing the 5 and 10-year-old dental arch relationship outcomes since 2010. The results have been reported to the surgeons to discuss their outcomes and the primary surgery protocols that they follow.
Aims: To evaluate the dental arch relationship of 10-year-old patients born with complete BCLP in United Kingdom (UK) and Ireland and to compare with the same cohort at 5 year.
Methods: Dental casts and photographs of 10-year-old patients with non syndromic BCLP born in 5 consecutive years (2005-2009) at the 11 Cleft Services in the UK and 1 centre in Ireland were evaluated. The records were rated by 2 examiners as per Bauru yardstick for the mixed dentition group.
Results: The inter-examiner agreement was very high, with weighted kappa values ranging from 0.895 to 0.928. The intra-examiner agreement was also found to be very high, with kappa values between 0.914 and 0.953. A total number of 178 BCLP 10-year-old records were assessed and scored. 34.3% of the patients were rated with a Bauru yardstick score of 1 or 2, 20.2% were rated with a score of 3 and 45.5% with a score of 4 or 5. The overall Bauru yardstick for all the centres was 3.14. A total number of 119 5-year and 10-year-old scores were compared. The scores at 10-year were significantly higher than at 5-year.
Conclusions: The dental arch relationship outcome for 10-year-old children in the UK and Ireland cleft centres are comparatively worse than at 5-year.

BCLP, Outcomes, 10year, dental arch

971

Comparative evaluation of nasolabial aesthetics in patients with cleft lip and palate anomaly by professionals, patients and laypersons using two scoring systems: A cross sectional study

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction:
Patients with cleft lip and palate anomaly often undergo long treatment right from birth till adulthood. The aesthetic rating scales have been in use for the longest time by healthcare professionals, however, it is through the eyes of the layperson and the patients themselves that the appearance of overall nasolabial region is perceived.

Aim:
To compare the perspective of healthcare providers, cleft patients and laypersons in judging nasolabial aesthetics in patients with complete unilateral cleft lip, with or without cleft palate (UCL±P) using two scoring systems.

Method:
Photographic records of 91 patients with complete UCL±P from the age group of 5-18 years were included. A panel of three orthodontists, five laypersons and five cleft patients rated the nasolabial aesthetics using two scoring systems i.e. Asher Mc-Dade index (AMAI) and Cleft Aesthetic Rating Scale (CARS). ICC and Cronbach's alpha were used to measure the internal consistency and reliability. Time required for assessment of each photograph was compared with ANOVA and Post-hoc correction (Bonferroni test) was applied.

Results:
Both AMAI and CARS showed high reliability and outcome assessment with a good internal consistency when used independently by orthodontists, laypersons and cleft patients. Inter-rater agreement for CARS was observed to be higher than AMAI. Overall, the cleft patients and professionals judged the nasolabial aesthetics more critically as compared to laypersons. Statistically significant difference was noted in time taken for assessment of nasolabial aesthetics with CARS requiring significantly less time as compared to AMAI in all the three groups.

Conclusion:
AMAI and CARS are equally reliable and consistent for the assessment of nasolabial aesthetics in patients with UCL±P. However, CARS index provides a more relatable outcome assessment among the professionals, cleft patients and laypersons in a considerably lesser time as compared to AMAI.
UCLP; Nasolabial aesthetics; Patient perspective

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Scandcleft randomized trial of primary surgery for unilateral cleft lip and palate. Craniofacial cephalometrics at 8 years

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

AIM:
The aim of this study was to describe craniofacial growth and morphology in a large study sample of 8-year-old children with unilateral cleft lip and palate (UCLP); before orthodontic treatment and before secondary alveolar bone grafting; and to compare the cephalometric values with age-matched non-cleft children from previous growth studies in order to identify the differences between untreated cleft- and non-cleft children.
METHODS:
There are 429 8-year old UCLP patients in the Scandcleft study-group. A total of 408 lateral cephalograms with a mean age of 8.1 years were analyzed. Cephalometric analyses were performed digitally. All 8-year-old patients with UCLP from the Scandcleft study were pooled and cephalometric values were compared with age-matched non-cleft children with normal occlusion without orthodontic treatment. The results from three previously published growth-studies on non-cleft children were used for comparison.
RESULTS:
Cephalometric analyses showed a large variation in cranio-facial morphology among the UCLP group. In generel they present with significant maxillary retrusion and reduced intermaxillary relationships compared to the age-matched non-cleft children. In addition, the vertical jaw relationship was decreased, mainly due to decreased maxillary inclination. The upper and lower incisors were retroclined. It can be expected that these differences will increase in significance as the children age.
CONCLUSION:
This cohort of the randomized Scandcleft study consisted of more than 400 Caucasian patients with UCLP who had not had orthodontic treatment or bone grafting of the alveolar cleft and the results provide proposed norms for the young UCLP prior to any orthodontic treatment and can be valuable for the clinician in future treatment planning.

		Scandcleft (262 M, 193 F) MEAN (SD)	**Michigan** (44 M, 36 F) MEAN (SD)	**Nittedal** (35 M, 39 F) MEAN (SD)	**Rostock** (16 M, 16 F) MEAN (SD)
SNA	male	78,01 (3,98)	81 (3,1)*	82,3 (3)*	80,7 (3,7)*
	female	78,07 (4,23)	82,1 (3,3)*	80,8 (3,4)*	79,6 (3,2)
SNB	male	75,0 (3,57)	76,3 (2,8)*	78,9 (3,5)*	77,0 (3,2)*
	female	75,53 (3,77)	76,7 (3,3)	78,0 (3,2)*	75,7 (2,6)
SNPog	male	75,61 (3,63)	76,4(2,7)	n.a.	76,7 (3,3)
	female	76,28 (3,79)	76,8 (3,3)	n.a.	75,5 (2,6)
ANB	male	3,02 (3,39)	4,8 (2,2)*	3,4 (2,1)	3,7 (2,0)
	female	2,54 (3,37)	4,6 (2,4)*	2,8 (2,2)	3,8 (1,8)*
ANPog	male	2,41 (3,62)	9,3 (5,1)*	6,1 (4,9)*	n.a.
	female	1,80 (3,77)	9,0 (5,2)*	5,0 (5,4)*	n.a.
NSL/ML	male	34,67 (5,29)	35,1 (4,5)	33,4 (5,9)	36,3 (4,6)
	female	34,70 (5,42)	35,4 (5,0)	35,0 (4,6)	37,0 (3,2)*
NSL/NL	male	11,14 (4,00)	5,9 (2,6)*	6,1 (2,8)*	7,4 (3,1)*
	female	11,47 (3,92)	7,0 (2,5)*	7,7 (2,5)*	8,2 (3,7)*
NL/ML	male	23,57 (5,73)	29,1 (4,4)*	n.a.	27,5 (5,2)*
	female	23,19 (6,04)	28,4 (4,5)*	n.a.	27,2 (4,0)*
Is/FH	male	93,41 (8,29)	108,2 (6,7)*	114,1 (4,7)*	110,6 (4,9)*
	female	94,84 (8,07)	111,1 (6,0)*	111,1 (5,0)*	107,3 (5,0)*
Is/NL	male	94,91 (7,84)	108,8 (6,7)*	n.a.	n.a.

Cleft, randomised trials, Scandcleft, growth

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Scandcleft randomised trials of primary surgery for unilateral cleft lip and palate. Comparison of dental arch relationships and dental indices at 5, 8, and 10 years

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: The Scandcleft intercentre study evaluates the outcomes of four surgical protocols (common method Arm A, and methods B, C, and D) for treatment of children with with unilateral cleft lip and palate (UCLP) in a set of three randomised trials of primary surgery (Trials 1, 2, and 3).
Aims: To evaluate and compare dental arch relationships of 5-, 8-, and 10-year-old children with UCLP after four different protocols of primary surgery and to compare three dental indices.
Methods: Study models taken at the ages of 5 (n=418), 8 (n=411), and 10 years (n=410) were analysed by a blinded panel of orthodontists using the Eurocran index, the 5-year-olds' (5YO) index, and the GOSLON Yardstick.
Results: The reliability of the dental indices varied between moderate and very good, and those of the Eurocran palatal index varied between fair and very good. Significant correlations existed between the dental indices at all ages. No differences were found in the mean 5-, 8-, and 10-year index scores or their distributions within surgical trials. Comparisons between trials detected significantly better mean index scores in Trial 2 Arm C (at all ages) and in Trial 1 Arm B (at 5 and 10 years of age) than in Trial 3 Arm D. The mean Eurocran dental index scores of the total material at 5, 8, and 10 years of age were 2.50, 2.60, and 2.26, and those of the 5YO index and GOSLON Yardstick were 2.77, 2.90, and 2.54, respectively. At age 10 years, 75.8% of the patients had had orthodontic treatment.
Conclusions: The results of these three trials do not provide evidence that one surgical method is superior to the others. The reliabilities of the dental indices were acceptable, and significant correlations existed between the indices at all ages. The reliability of the Eurocran palatal index was questionable.

RCT, Scandcleft, UCLP, dental index

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Scandcleft randomized trials of primary surgery for unilateral cleft lip and palate: impact of maxillary dental agenesis on craniofacial growth and dental arch relationship in 8 year olds

Dr Sara Rizell[1], Dr Annelise Küseler, Dr Arja Heliövaara, Dr Pål Skaare, Dr Eli Brinck, Dr Haydn Bellardie, Jeanette Mooney, Dr Kirsten Mølsted, Dr Agneta Karsten, Dr Paul Sæle, Dr Midia Najar Chalien, Dr Agneta Marcusson, Phil Eyres, Prof William Shaw, Dr Gunvor Semb
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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Dental agenesis is reported to have an impact maxillary protrusion and dental arch relationship in children with unilateral cleft lip and palate (UCLP) and an association between the need for orthognathic surgery is reported.
Aims: The aim was to study the impact of maxillary dental agenesis on craniofacial growth and dental arch relationship in 8-year-old children with UCLP.
Methods: The sample consisted of individuals with UCLP participating in Scandcleft randomized trials. The participants had data from diagnosis of maxillary dental agenesis and cephalometric measurements (n = 399) together with GOSLON assessment (n = 408) at 8 years of age.
Results: A statistically significant difference was found, as ANB was lower for individuals with agenesis of two or more maxillary teeth (mean 1.52°) compared with those with no or only one missing maxillary tooth (mean 3.30° and 2.70°, respectively). Mean NSL/NL was decreased among individuals with agenesis of two or more maxillary teeth (mean 9.90°), in comparison with individuals with no or one missing maxillary tooth (mean 11.46° and 11.45°, respectively). The number of individuals with GOSLON score 4-5 was 47.2% in the group with two or more missing maxillary teeth and 26.1% respectively 26.3% in the groups with no or one missing maxillary tooth. No statistically significant difference was found in the comparison between individuals with no agenesis or with agenesis solely of the cleft-side lateral.
Conclusions: Maxillary dental agenesis affects craniofacial growth as well as dental arch relationship and should be considered in orthodontic treatment planning.

Scendcleft, agenesis, maxillary growth

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Long-term outcome for two-stage palatal closure with different timing of hard palate closure: Craniofacial growth

Dr Midia Najar Chalien[1], Dr Sara Rizell[1], Dr Hans Mark[1]
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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1. Introduction
No international consensus exists regarding the timing of palatal closure nor the surgical technique on individuals born with cleft lip and palate (CLP) despite the impact the intervention has on craniofacial growth.
2. Aims
The aim of the study was to evaluate long-term and longitudinal outcomes from a consecutive series of individuals born with total unilateral CLP with hard palate closure at 3 years (HPC3) and compare it with consecutive series of individuals who had hard palate closure at 8 years (HPC8), using cephalometric analysis.
3. Methods
The two surgical protocols (HPC3 and HPC8) were evaluated and compared by longitudinal series of lateral cephalograms at 5, 10, 16, and 19 years of age (n=332).
4. Results
Only at 5 years of age a statistically significant difference between the two surgical protocols was found in the cephalometric value SNA, showing a better maxillary growth in the HPC8 group.
5. Conclusions
There is no difference between the two surgical protocols from a maxillofacial growth point of view.
CLP, palatalsurgery, craniofacial growth, outcome

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ICHOM questionnaires : can we do better?

Drs Ietske Siemann[1], Dr Marloes Sparreboom[1], ms Jeann van der Stappen[1]
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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction
The International Consortium of Health Outcomes Measurement (ICHOM) has a mission: to unlock the potential of value-based healthcare by defining global Standard Sets of outcoming measures. In the Radboudumc, the Cleft Lip and Palate outcome set has been introduced and piloted with a number of lists.
Aims
Our aim is to explore the extent of which these data, originally designed to compare Centres for Cleft Lip and Palate, are useful for clinical practice?
Methods
The ICHOM outcome measures of 38 children undergoing treatment in the Radboudumc Cleft lip and palate treatment centre were gathered and analysed. The children had a mean age of 12 years and data comprised of both ratings on speech and questionnaires. For speech rating, the velopharyngeal competence (VPC) and the percentage of correct consonants (PCC) was assessed on words. Intelligibility was evaluated by the parents through the Intelligibility in Context Scale (ICS). Social-emotional well-being was measured with parent-proxy questionnaires on three domains: school, speech and speaking.
Results
Results showed a significant correlation between the rating of the VPC and PCC, indicating that the lower the competence of the velopharyngeal function, the more consonants were affected. Moreover, the domains of speech and speaking and speech and school also correlated significantly.
In contrast to previous research on speech quality and social-emotional well-being in children with cleft palate, the results showed no correlation between the ICHOM data on speech ratings and the results of the questionnaires measuring social-emotional well-being.
Conclusions
Previous research has found correlation between speech quality and the social-emotional wellbeing of children with schisis. Hoek study showed correlations between intelligibility and nasality and well-being. This connection is also seen in daily experiences with these children. From the current study one may conclude that the ICHOM questionnaires are not sensitive enough to be used for clinical practice. Therefore, further research is required.

ICHOM, speech therapy, psychology, wellbeing

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Brazilian national multicenter study – growth outcomes for UCLP

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TH3.3 GROWTH OUTCOMES, Fintry, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction – Several multicenter studies regarding cleft care were conducted around the world during the last decades. This is the first retrospective multicenter growth outcomes study for UCLP held in Brazil.
Aims – To compare maxillo-mandibular relationships in individuals born with non-syndromic unilateral cleft lip and palate in cleft centers in Brazil, by means of GOSLON and ATACK indexes.
Methods – 427 subjects with repaired unilateral cleft lip and palate, consecutively treated in seven Brazilian centers, were included. Dental casts taken at 5 to 10 years of age were assessed by a blinded panel of 5 orthodontists. Weighted kappa statistics were used to assess inter-rater and intra-rater reliabilities, chi-square test was used to compare scores frequency, and analysis of covariance, considering age as covariable to compare scores. Significance levels were set at $p < 0.05$.
Results – Inter-rater and intra-rater had sufficient reliability with k=0.91 (0.85 - 0.98) and k=0.90 (0.73 - 0.97), respectively. The average Goslon and Attack scores from the centers were: center 1: 3.06±0.21, center 2: 2.79±0.17, center 3: 2.59±0.18, center 4a: 2.81±1.16, center 4b: 2.62±0.96, center 5a: 2.70±0.13, center 5b: 2.55±0.16, center 6: 2.95±0.18 and center 7: 2.49±1.10. From the nine different treatment protocols, 2 centers used two stages palatoplasty (center 4b and 5a) and only one center (center 7) used pre-surgical orthopedics in 50 % of its sample, with no statistical difference between the groups considering the orthopedics use (p=0.95). Although no statistical difference was found between the mean scores (p=0.49), when the results were distributed among these scores, differences were found especially for indexes 4 and 5.
Conclusions: No significant difference was found in mean scores for maxillo-mandibular relationship. However, the prognosis of cases with orthognathic surgical needs was different among the evaluated protocols.
"This work was supported by a grant from Smile Train, Inc."

intercentre study, dental arch relationship

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The Cleft Palate and Craniofacial Committee of the International Association of Communication Disorders and Sciences (IALP)

Dr Valerie Pereira[1,11], Dr Triona Sweeney[2,11], Dr Debbie Sell[2,3,11], Prof Kristriane Van Lierde[4,11], Dr Anna Cronin[5], Ms Judith LeDuc[6,11], Dr Alice Lee[7,11], Professor B Subramaniyan[8,11], Ms Yoshiko Takei[9,11], Professor Pam Enderby[10,11]

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction & Aims: The International Association of Communication Sciences and Disorders (IALP) is a non-profit worldwide organization of professionals and scientists in communication, voice, speech-language therapy and pathology, audiology and swallowing. It's global vision is to facilitate better understanding, knowledge and care of all those with communication and swallowing disorders, with a mission to improve the quality of life of individuals with these disorders, and actively collaborates with the World Health Organization. The organization was founded in 1924 and has 14 committees. The aim of this paper is to present an overview of the work programme of the Cleft Palate & Craniofacial Conditions (CPCC) committee to the global Cleft community.

Work Programme: Our work programme adheres closely to the IALP mission and the stated purposes in relation to CPCC: (i) to facilitate science, education, and clinical practice (ii) to create and share knowledge, skills and information (iii) to provide a platform for international networking and advocacy. To-date, the committee has developed a document on Frequently Asked Questions for non-CLP specialist SLTs, and a comprehensive list of resources and links (https://ialpasoc.info/committees/cleft-palate-and-craniofacial-committee/) all of which are freely accessible on the IALP website. The committee has engaged with the IACSD Task Force on Underserved and Unserved Populations in producing a chapter on needs and strategies in CPCC aimed at the general public and government officials. Members are actively involved in the Transforming Faces-IALP SEED Project, mentoring SLTs from Bangladesh, Ghana, Ethiopia, India, Sri Lanka and Uganda. The committee will deliver a 3-part webinar series on Speech Management for Children with CLP in 2022.

Conclusion: Committee Members have very close links with professional and voluntary bodies and NGOs, facilitating networking and collaborative international work. This presentation will highlight the existence of the IALP and CPCC resources, enhance the CPCC's network and build new collaborations.

IALP, cleft palate, committee

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Effectiveness of a 6-day intensive speech therapy camp

Dr Caroline Koenig[1], Ph.D. Peter Schachner[1], Prof. Ph.D. Ph.D. Alexander Gaggl[1], Prof. Ph.D. Sandra Neumann[2]
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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Background
Children with cleft (lip and) palate (CP ± L) or hypernasality often show speech and resonance disorders, which can result in disablements in participation and communication. Intensive and group therapy could be a key for speech therapy interventions, which address not only speech/resonance disorders but also adequately the overall characteristics of CP ± L concerning the ICF-CY.

Objectives
The aim of the present study was to evaluate a 6-day intensive therapy in children (5 - 10 yrs.) with CP ± L/hypernasality, using a combination of group and individual therapy with a phonetic-phonological therapy approach.

Methods
24 children (5.01 - 9.11 yrs.) received 16 hours group therapy and 5 hours individual therapy. Parents were informed about speech and participation in correlation to CP ± L/hypernasality and achieved exercises instructions and consultation to support their children in 3.5 hours.
In a descriptive and dependent study design with an open trial, improvements were examined at four points in time (pre-, post-treatment, follow-up 3 and 6 months later). The changes in articulation (PCC, PICC, PVC, VPC-Sum) and resonance (VPC-Hypernasality, Nasalance Ratio), communicative participation (FBA), intelligibility (ICS-G), as well as in the feeling (ASAP-K) and the attitudes (KiddyCAT-G) towards one's own speaking were measured.

Results
Significant improvements are seen not only in articulation (PCC: $Chi^2 = 25.548$, $p < .001$; PICC: $Chi^2 = 25.331$, $p < .001$; PVC: $Chi^2 = 22.552$, $p < .001$, VPC-Sum: $Chi^2 = 28.289$, $p < .001$) and resonance (VPC-Hypernasalität: $Chi^2 = 17.323$, $p = .001$, Nasalance Ratio: $z = -2.533$, $p = .011$), but also in participation (FBA-score: $Chi2 = 6.083$, $p = .048$) and attitudes towards own speaking ($z = -2.496$, $p = .047$).

Conclusion
Results indicate significant improvements in articulation and resonance. The protected environment and the peer group seem to contribute to improvements in communicative participation.
ICF-CY, intensive group therapy, effectiveness

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IMPACT OF A PROGRAMME FOR QUALIFICATION AND TRAINING OF UNDERGRADUATE SPEECH-LANGUAGE PATHOLOGY STUDENTS ON CLEFT CARE: PRELIMINARY DATA

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: It is believed that the Qualification and Training Programmes in Oral Cleft Treatment (QTCOCT) addressed to undergraduate students can contribute to making them capable of performing assessment, diagnosis and rehabilitation of patients with oral clefts (OC), resulting in the reduction of undertreatment and improvement in the quality of life of patients.

Aim: To analyse the preliminary results of a training programme in cleft care on the learning process of undergraduate Speech-Language Pathology (SLP) students.

Methods: A QTCOCT addressed to 5 SLP undergraduate students is being carried out in a Brazilian Public University aiming to train them to carry out assessments and rehabilitation for patients with OC, as well as to start Craniofacial Outpatient Clinic services in the Institution. Due to the COVID-19 pandemic, the first step of the training was conducted remotely through lectures, clinical case studies, discussion on assessment protocols and training on perceptual speech assessment. A structured multiple-choice questionnaire, with 42 possibilities of correct and 54 incorrect answers, including questions about orofacial, feeding, speech and hearing disorders was provided and answered by the students before and 6 months after the beginning of the programme. Descriptive analysis was used to present the data.

Results: Comparison between the questionnaires before and after the beginning of the QTCOCT showed an increase in the average percentage of correct answers from 52.4% (22/42) to 69% (29/42) and a decrease of the average percentage of incorrect answers from 28% (15/54) to 22% (12/54). The majority of the incorrect answers were related to feeding disorders.

Conclusion: The QTCOCT has shown a positive impact on the learning of students. However, it is necessary to consider the possibilities of supervised face-to-face training in order to optimize the students learning process.

Training Programme, Speech-Language Pathology, Education

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Virtual audiovisual library viewers for speech teletherapy in Spanish-speaking children during the Covid-19 pandemic.

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Due to social and public health conditions associated with the COVID-19 pandemic, telepractice was enhanced as an opportunity to perform synchronous, asynchronous and hybrid speech and language interventions. Therefore, through 2020 and 2021, the Speech Therapy Unit of the Gantz Foundation, along with SmileTrain, developed a YouTube channel, named “Fonoaudiología - Fundación Gantz - Smile Train", with more than 100 publications, including educational videos for parents and interactive videos for children, which address strategies for the proper production of speech and language stimulation. In this regard, it is vital to understand the profile of users who visit the channel, to continue producing adequate audiovisual material.

Aims: To characterise the viewers of a virtual audiovisual library for speech and language teletherapy in Spanish-speaking children with cleft palates.

Methods: The description was made utilizing statistics from YouTube Analytics.

Results: Between April 2020 and December 2021, the channel has had more than 21000 views and over 500 subscribers from Chile, Mexico, Peru, Ecuador, Colombia, Argentina, Costa Rica, Spain, El Salvador and Guatemala. The total viewing time has been 682.6 hours with an average duration of 1:53 minutes. Regarding the age of the viewers, 62.2% were adults ranging from 25 to 34 and 22.4% adults ranging from 35 to 44. In terms of gender, 85.8% of the audience was female, compared to 14.2% of males. When reviewing playback devices, 54% used a cellphone, 36.1% a computer, 6,1% television and 3% a tablet.

Conclusions: Viewers of the virtual audiovisual library are mainly women, aged 25 to 44, from Latin American, Central American and European countries, via their mobile phones.

COVID-19, Speech therapy, Telepractice

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Alveolar consonant articulation and maxillary dental arch dimensions in 5-year-old children with unilateral cleft lip and palate

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Children with nonsyndromic cleft lip and/or palate have smaller consonant inventories, less accurate articulation, and more speech errors than their peers without clefts. Speech and dental arch relationships have widely been the primary outcome measure of palate repair.

Aims: The aim was to evaluate the occurrence of misarticulations of the Finnish alveolar consonants /s/, /l/ and /r/ and their possible relationship with maxillary dental arch dimensions in 5-year-old children with unilateral cleft lip and palate (UCLP).

Materials and methods: Subgroup analysis was conducted within a multicenter controlled trial of primary surgery (Scandcleft project). 46 Caucasian Finnish-speaking patients (29 boys) with non-syndromic complete UCLP were evaluated retrospectively. Production of the Finnish alveolar consonants /s/, /l/ and /r/ was assessed from standardized audio recordings at the mean age of 5.06 years (range 4.82-5.89). Articulation errors were categorized as either correct, distortion, substitution, or omission. Maxillary dental arch measurements were assessed using the technique of Moorrees from plaster casts taken at the same age. Additionally, the anterior and posterior palatal heights were measured. Aspin-Welch Unequal-Variance T-Test, Equal-Variance T-Test and Mann-Whitney U test were used in the statistical analyses. Kappa statistics were calculated to assess reliability.

Results: Only one of the children articulated all the studied sounds correctly. 93.2% misarticulated /r/, 63.0% misarticulated /s/ and 39.1% misarticulated /l/. Distortions and substitutions were common. Omissions were sparse. There was no relationship between the occurrence of alveolar consonant misarticulations the maxillary dental arch dimensions. Intra- and interrater agreements varied between moderate to excellent.

Conclusions: Children with UCLP have a notable amount of alveolar consonant misarticulations. Maxillary dental arch dimensions were not related to the misarticulation of /s/, /l/ or /r/ in 5-year-old children with UCLP.
UCLP, articulation, speech, maxillary dimensions

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SonoSpeech Cleft Pilot: A pilot randomised control trial of ultrasound visual biofeedback versus standard intervention for children with cleft lip and palate.

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1. Introduction

Traditional articulation therapy for children with cleft lip and palate (CLP) may be challenging as large portions of the articulators are hidden from view and may be hard to describe. Ultrasound visual biofeedback (U-VBF) shows real-time high-speed video of tongue movements, from near the tongue tip to the root, including pharyngeal productions, making it a suitable tool for children with CLP. Recent studies using U-VBF in speech therapy have shown promising results, but only one study has focused on children with CLP (Roxburgh et al. 2016).

2. Aims

This single-centre pilot randomised control trial will assess the feasibility of running a large-scale randomised control trial comparing speech therapy involving ultrasound visual biofeedback to traditional articulatory therapy for children with cleft lip and palate. The study aims to determine the recruitment, attrition, and outcome measure completion rates, as well as the acceptability of the new treatment and of randomisation to the children and their families.

3. Methods

Forty children aged 4;6-16 will be randomised to either 6 sessions of ultrasound intervention or articulatory intervention, stratified by age. Their percentage of correct consonants based on target word-lists will be measured by assessors blind to their treatment groups, based on auditory recordings, taken before, during, and at two points after treatment. Patient-reported outcome measures on quality of life, ICS (McLeod et al., 2012) and Cleft-Q (Klassen et al. 2018), and experience of service (Brown et al. 2014) will also be used before and/or after treatment.

4. Results

The study is in its recruitment stage and preliminary results will be presented at the conference, including case studies of children in both groups.

5. Conclusions

Ultrasound visual biofeedback is a potentially useful tool in speech sound therapy of children with cleft lip and palate and more research in required to test its effectiveness.

ultrasound, articulation, intervention

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Speech-language pathology services and cleft palate: A scoping review of the handover process from cleft team speech-language pathologists to community speech-language pathologists

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Children with cleft palate (CP) will require speech-language pathology (SLP) services for their communication and feeding development (ACPA, 2018). For many children with CP this involves attending SLP services delivered by different service providers such as hospital CP teams and a community or school-based service. To ensure high quality of care is provided by the different SLP service providers, it is vital that there are clear processes to transfer and communicate information.
Currently, there is wide variability in speech-language pathologists (SLPS) opinions regarding assessment and treatment recommendations for children with CP (Hardin-Jones & Jones, 2020). Additionally, community SLPs report a lack of competence in treating children with CP (Callahan & Hazelwood, 2004). This suggests a need for improved transfer of information between SLP service providers.

Aims: To investigate the transfer of information between SLP service providers for children with CP this paper presents a scoping review with the aim to identify what is known from the existing literature about handover practices between the CP team and community SLPs working with children with CP.

Methods: Arksey & O'Malley's (2005) methodological framework with Levac et al.'s (2010) suggested advancements were followed. Key search terms and inclusion/exclusion criteria were used across seven relevant databases with 633 initial articles screened using Covidence. Six studies met the inclusion criteria. Thematic analysis was conducted to identify global and subthemes.
Results: Thematic analysis revealed three global themes, "Whose role is it?", "I'm a generalist – help!" and "I'm an expert – help is available." Each of these themes was further divided into subthemes.

Conclusions: This review identified a breakdown in transfer of information between CP team and community SLPs Despite the CP team SLPs reporting they offer information on CP in numerous ways, community SLPs reported poor support. Strategies to improve transfer of information are presented.
handover, information transfer, speech-language pathology

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Treatment of cleft palate speech using usage-based electropalatography: A within-participant case series

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Electropalatography (EPG) is a visual biofeedback therapy used to treat persistent speech sound disorders (SSD) in school-aged children and adults born with cleft palate +/- lip. Findings from within-participant studies and small group studies (e.g. Gibbon et. al., 2001) show that EPG therapy can be effective for this client group with improved speech for many individuals. However, patients commonly have difficulty with generalisation and maintenance of improvements following therapy, suggesting that further development of the EPG treatment technique is needed.
Aim: To investigate whether a novel EPG therapy, underpinned by usage-based phonology (Bybee, 2010), can improve accuracy of target speech sounds for patients with cleft palate speech.
Methods: Six consecutively treated school-aged children and adults (7 – 27 years) with long-standing cleft palate speech enrolled on a multiple baseline (ABA) within-participant case series. The usage-based EPG therapy technique focused on high volume production of words and connected speech. Speech was assessed on three baselines prior to intervention, during weekly intervention, at completion of therapy, and 3-months post-therapy. Accuracy of target phonemes in treated words, untreated words and continuous connected speech was assessed through acoustic phonetic transcription and EPG analysis.
Results: Large treatment effect sizes were shown for all participants following therapy (15 – 33 sessions). Percentage of targets correct for treated and untreated words improved from near 0% per-therapy, to near 100% for most target sounds post-therapy. Generalisation of target sounds to spontaneous connected speech occurred for all participants and ranged from 78.95% - 100% (M = 90.66; SD = 10.14) 3-months post-therapy. Inter- and intra-rater agreement for phonetic transcription of treated and untreated words by independent raters blind to assessment time-point was good (all > 91.09%).
Conclusions: Clinically significant speech change occurred for all participants following intervention. The usage-based EPG technique shows promise and further research is indicated.

Speech; Intervention; Electropalatography; Visual biofeedback

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Outcomes of Tele-Speech Correction versus Community Based Worker Implemented - Supervised Speech Correction Programs implemented with Children with Cleft Of Lip and Palate in Rural South India: a pilot study.

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: In resource deficient regions alternate models of service delivery have been explored to promote speech correction services. There is a need to understand the comparative benefits and challenges that exist in different models of service delivery.

Aim: This study aims to evaluate the outcomes of tele speech correction program (TSCP) and Community Based Worker (CBW) implemented- Supervised Speech Correction Program (CBWI-SSCP) for children with Cleft of Lip and Palate (CLP) in two rural districts of Tamil Nadu, India.

Method: A needs assessment in the two districts, guided the allotment of each program to a particular district. Trained CBWs from both sites were recruited for this study. Participant recruitment process, included assessment of articulation , resonance, language and hearing. Ten children with repaired CLP from each district, in the age range of 5 – 18 years who met the inclusion criteria and exhibiting errors in the production of pressure consonants /p/, /t/, /ʈ/ and /k/ served as participants. Goals for each participant were determined by the Speech Pathologist. Each participant received 12 sessions over 5 weeks based on standard operating protocols. Pre-post speech samples of participants were evaluated by 03 SLPs. Speech outcomes from both models were evaluated statistically and challenges in implementation were analyzed descriptively.

Results: 70% of the participants in both TSCP and CBW-ISSCP completed the program. There was no significant difference (p=0.6372) observed between the outcomes of TSCP and CBW-ISCP. We also identified implementation challenges in each of the models that can be factored by future program implementers to choose one model over the other.

Conclusions: Speech outcomes in both TSCP and CBW-ISSCP models were identified to be equally effective in these two remote sites. This study also highlights the importance of careful assessment of environment and resources at the remote end irrespective of model of delivery.

Tele Rehabilitation, Community Based Rehabilitation

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A Comparative Analysis of Enhanced Milieu Teaching with Phonological Emphasis Between Brazilian Portuguese and American Toddlers with Cleft Lip and Palate

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Purpose: This study investigated the comparison of speech and language outcomes of the Brazilian Portuguese adapted enhanced milieu training with phonological emphasis (EMT + PE) (Kaiser et. al., 2017) and the Standard American English EMT + PE in toddlers with a history of cleft palate with or without cleft lip (CP/L). The Brazilian Portuguese participants differed from the US participants in that the parents underwent training in EMT+PE strategies in order to facilitate carryover of the intervention effects.
Method: Twenty- four children between the ages of 20-34 months (M=25.04 months) with nonsyndromic CP/L who spoke Brazilian Portuguese were randomly assigned to the treatment and comparison group from the Hospital de Reabilitação de Anomalias Craniofaciais – Universidade de São Paulo (HRAC-USP), Fundação para o Estudo e Tratamento das Deformidades Crânio-Faciais (FUNCRAF). Additionally, 29 children between the ages of 13- 35 months (M=23.76) with nonsyndromic CP/L who spoke English were randomly assigned to the treatment and comparison group from East Tennessee State University and Vanderbilt University. Treatment for the children in Brazil was delivered in a hospital-based clinic, whilst the children in the United States received their treatment in a university clinic. The Brazilian and the US participants received their treatment with trained speech- language pathologists.
Results: Children in the Brazilian treatment group presented with improved outcomes in new and different words (NDW) as compared to the US treatment group. All groups demonstrated improvement in percent consonant correct (PCC), the communicative developmental inventories (CDI), receptive language abilities, and expressive language abilities; with the treatment groups demonstrating greater gains than the comparison groups.

Cleft palate, Early Intervention

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Perceptual and temporal characteristics of bilabials in children with repaired cleft lip and palate - pre and post therapy

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Articulatory errors are prominent errors observed in children with repaired and/or cleft lip and palate (R/CLP). Though there are abundant studies on acoustic characteristics of individuals with CLP, there are limited studies are exploring acoustic measures in monitoring the progress of therapy
Aim: To investigate the effect of articulation therapy on perceptual and temporal parameters in bilabials among children with RCLP.
Method: Single-subject with multiple baselines research design was used to investigate changes in bilabials across four-time points. Four participants with RCLP and ten typically developing children (TDC) between 4 and 7.11 years with Kannada language were considered. Pictures of six words were visually presented for assessment; the participants were asked to name them. Three speech-language pathologists carried the perceptual (cleft type error- CTE) and temporal analysis (burst duration, voice onset time and word duration). Participants underwent ten intensive articulation therapy sessions: phase-I focused on auditory discrimination training and phase-II on production training.
Results and discussion: Baseline assessment of all four subjects indicated presence of CTE and varied BD, VOT and WD. Post therapy and subsequent assessments indicated the presence of only weak oral pressure consonants and normal production. When the temporal parameters were compared with TDC, results indicated the values of the BD nearing the TDC values. Whereas the VOT and WD were increased. Presence of BD post-therapy indicates the articulator contact for the target sound; increased WD may be on purpose to compensate for damped sound energy and prolonged VOT, due to increased time to build intra-oral air pressure.
Conclusion: The participants of this study benefited from the intervention program, which resulted in improved articulation placement and oral airflow. The temporal parameter, WD, was consistently prolonged at the end of the multiple assessments after the initial therapy, posing as one of the important correlates in understanding the prognosis of cleft palate speech.

Bilabials, Speech Therapy, RCLP, Temporal-Measures

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Speech pathology telepractice implementation in a craniofacial center during covid-19 pandemic: what have we learned and what's next?

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TH3.4 SPEECH, Kilsyth, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction:
Cleft lip and palate are the most common congenital craniofacial anomalies. Speech management is one of the keystones of ideal interdisciplinary care, but it can also be a challenging and long path. Different treatment methodologies have been described and regular attendance to therapy sessions is required to produce effective outcomes, whereas access to specialized treatment can be difficult in some socioeconomic contexts. In 2020, the pandemic-related disruption of healthcare services also affected patients with craniofacial anomalies. At first, interruption of in-person appointments lead the team face-to-face with the major concern of treatment interruption, but telehealthcare emerged as a new and important tool.
Aim:
To share the experience acquired when implementing teleservices and discuss the next steps for augmenting and enhancing speech teleservices in the post-pandemic scenario.
Methods:
Description of the telehealth practice in a major craniofacial center, with a Speech and Language Pathology Team composed of 12 SLPs specialized in craniofacial anomalies management, as well as the presentation of a related case study.
Results:
In the first 4 months, the SLP team was exclusively working from home and a total of 210 online sessions were performed from April 8th to July 15th 2020 including: speech therapy sessions; speech assessment; speech and feeding follow-up consultations; family orientation regarding speech, hearing and feeding. Online therapy has promoted a lot of interest and motivation, especially when strategies were stimulating, interactive and age-appropriated. There are limitations, mainly regarding quality of the internet connection, availability of electronic devices and understanding of the virtual platform.
Conclusion:
Traditional in-person healthcare service delivery has currently been reestablished for speech and hearing assessment and feeding management, while speech therapy is still offered by telepractice. Finding the best way to combine in-person and telehealth approaches will probably optimize patients' access and engagement in the treatment.

Supported by Smile Train.

Cleft palate, Speech, Telehealth, Covid-19.

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Intraoral maxillary distraction osteogenesis in adolescent cleft patients

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction
The upper jaw in many cleft patients does not develop completely. Maxillary distraction osteogenesis (MDO) is an option to gradually lengthen the bone by mechanical distraction, especially in class III patients with a severe anterior crossbite.

Aims
We present our center's protocol on maxillary distraction in cleft patients before complete bone growth, either as a final procedure, or as an intermediate procedure before orthognathic surgery.

Methods
In our center in Madrid (Hospital Universitario Infantil Niño Jesus), MDO is indicated in patients with cleft palate who have not reached complete bone development and have an anterior crossbite of more than 1 cm. A presurgical 3D planning is carried out to design the intraoral distraction device, its placement location (in areas of higher bone density) and the vector of distraction (less than 5º from Frankfort plane, except for extreme anatomical variations). At the time of device removal, anchorage miniplates are placed on the maxilla and/or mandible to maintain advancement with elastics.

Results
In our center in Madrid (Hospital Universitario Infantil Niño Jesus), a total of 9 patients (5 male, 4 female; age range 12-16 y/o) with complete or incomplete cleft palate were operated on between 2020 and 2021. Average distraction was 13.2 mm (range 12-16mm). One patient required an early removal of the device due to instability (device showed to have broken during distraction phase), and another presented with limited mouth opening after distraction, which resolved with physiotherapy. Three patients had partial relapse, maintaining an edge-to-edge bite, and one patient had a complete relapse of anterior crossbite.

Conclusions
Even though MDO can be a definitive procedure, in cleft patients it is usually an intermediate procedure before orthognathic surgery, diminishing the amount of maxillary advancement necessary in the future, and avoid a posterior relapse, thanks to a lengthening as well of the soft tissue and palate.

distraction osteogenesis, maxillary hypoplasia, intraoral

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Lessons from management of craniofacial clefts in Bangladesh

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Complex craniofacial clefts are challenging in any setting but especially in low-resource countries.
Aims: To learn lessons from 20 years experience of seeing and treating patients with complex craniofacial clefts in a resource-poor country.
Methods: This is a review of 95 patients seen with complex craniofacial clefts over a 20 year period with information obtained from case notes, operation notes and photographic records
Results: Some of the key surgical lessons learned were:

- Patients with complex craniofacial clefts can be safely managed in a country with limited medical resources
- Early protection of the eye is vital
- Choanal atresia should always be considered
- Primary skeletal reconstruction is not essential and may not be appropriate in this setting
- Mobilisation involves sub-periosteal dissection and then release. This may result in a degree of bony restoration
- Although tissue expansion may be helpful, patients can be effectively managed where it is not available
- Although the aim should be to leave scars in anatomical sub-units this may not always be possible or produce optimal functional outcomes – especially for eyelid reconstruction in Tessier 4 clefts
- V to Y advancement is effective in bringing down the alar base in Tessier 3 clefts but may need to be repeated
- Staged reconstruction, such as extended lip adhesion as the first procedure, may produce the best results
- Palatal defects may be large and reconstruction very challenging
- Long-term follow-up is important

Conclusions: Comprehensive management including surgical reconstruction of patients with complex craniofacial clefts in low-resource countries is possible in appropriate multi-disciplinary centres.

complex craniofacial facial clefts Tessier

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MANDIBULAR RECONSTRUCTION WITH COSTOCHONDRAL GRAFT IN PATIENTS WITH SEVERE MANDIBULAR HYPOPLASIA IN CRANIOFACIAL MICROSOMIA

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1. Introduction: Craniofacial microsomia is the second most common congenital facial anomaly, and mandibular hypoplasia is a landmark of the deformity, resulting in facial asymmetry. Pruzansky grade III represents around 10% of these patients, and ramus reconstruction is necessary, using a bone grafting, free flap and/or distraction.

2. Aims: Present our experience on mandibular reconstruction with costochondral graft in patients with severe mandibular hypoplasia at a referral center.

3. Methods: Retrospective medical record's analysis of patients diagnosed with mandibular hipoplasia, treated by the plastic surgery team of CAIF-CHT-UFPR, between 1996 and 2018. The aspects evaluated were surgical and orthodontics procedures, complications, as well the subjective perception of patients and sponsors. Photographic registers and image exams review.
4. Results: Sixteen patients with Pruzansky hemifacial microsomia type 2B and 3 were selected, four patients had Goldenhar Syndrome, who underwent mandibular reconstruction with a costochondral graft. All individuals had unilateral involvement and underwent surgical treatment. The immediate postoperative complication observed was respiratory distress in approximately 18% of cases. There was no case of ankylosis in our sample, one patient evolved with poor graft positioning and subsequently underwent surgical reintervention with good results. Half of the sample required complementary treatment with mandibular distraction osteogenesis due to lack of graft growth. To improve facial symmetry, autologous fat grafting was performed in about 55% of patients.

5. Conclusions: Reconstruction with costochondral graft in severe cases, combined with distraction osteogenesis and/or dermal-fat grafting and orthognathic treatment, has shown to obtain good functional and aesthetic results.

microsomia, mandibular hypoplasia, costochondral graft

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Lessons Learned In 15 Years of Digital Orthognathic Surgery: A Tale about Precision, Accuracy and Tolerance

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction
We present our long-term experience with orthognathic surgery in nearly 350 cases using computer aided surgical planning (CASP) integrated with 3D patient specific titanium printed skeletal fixation. While advances in orthognathic surgery (OGS) focused on surgical planning, we developed an electron-beam melting (EBM) fixation plate designed integral to the virtual planning and occlusal biomechanics - the 'smart-plate', vector guided 3D printed titanium fixation system.

Aims:
We answer the following questions: does CASP improve skeletal stability, reduce planning-operative time, is CASP more precise and accurate and when does the benefits of CASP outweigh the expense. We will present our experience within the context of precision, accuracy and tolerance.

Methods:
We reviewed 347 OGS (168 Developmental, 129 Cleft, 33 HFM and 17 Monobloc/LeFort III cases). We longitudinally assessed skeletal stability with established methodology, occlusal outcome using PAR/ABO index, planning-operative efficiency, and complications. We compared expense data between CASP and conventional approaches.

Results:
We found a difference of ~1.5mm in the maximal displacement at the osteotomy level at one year. There was no statistical difference when comparing the occlusal PAR/ABO Index with the exception of segmental cases. The LeFort I operative time was significantly reduced; however, BSSO procedure time was significantly increased when printed titanium plates were used. Further details of outcomes and subgroups to be presented.

Conclusion:
1. We found significant reduction in the operative time with maxillary surgery, less displacement at the osteotomy level, and improved skeletal stability in comparison to the conventional fixation system. 2. There is no difference in the occlusal outcome except for the segmental cases. 3. There is a definite benefit in correcting skeletal asymmetry (developmental, hemifacial microsomia, cleft), LeFort III and monobloc advancement procedures. 4. In single jaw cases the benefit of CASP is surgeon dependent. 5. In select cases the benefits of CASP outweighs its expense.

virtual-surgical-planning, 3d-printed plates, orthognathic surgery

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CLEFT PALATE CHALLENGING, SECONDARY ORTHOGNATIC AND LIPS SURGERY AESTHETIC RESULTS: A MONOCENTRIC EXPERIENCE

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1.INTRODUCTION:

Our center has an hystorical experience of secondary cleft correction, worth to be analyzed standing the suboptimal surgical anamnesis that caracterized most of our patient.

2.AIMS:

The goal of this study is the evaluation of the aesthetic result and the social impact related to heavy surgical outcomes in cleft palate patients.

3.METHODS:

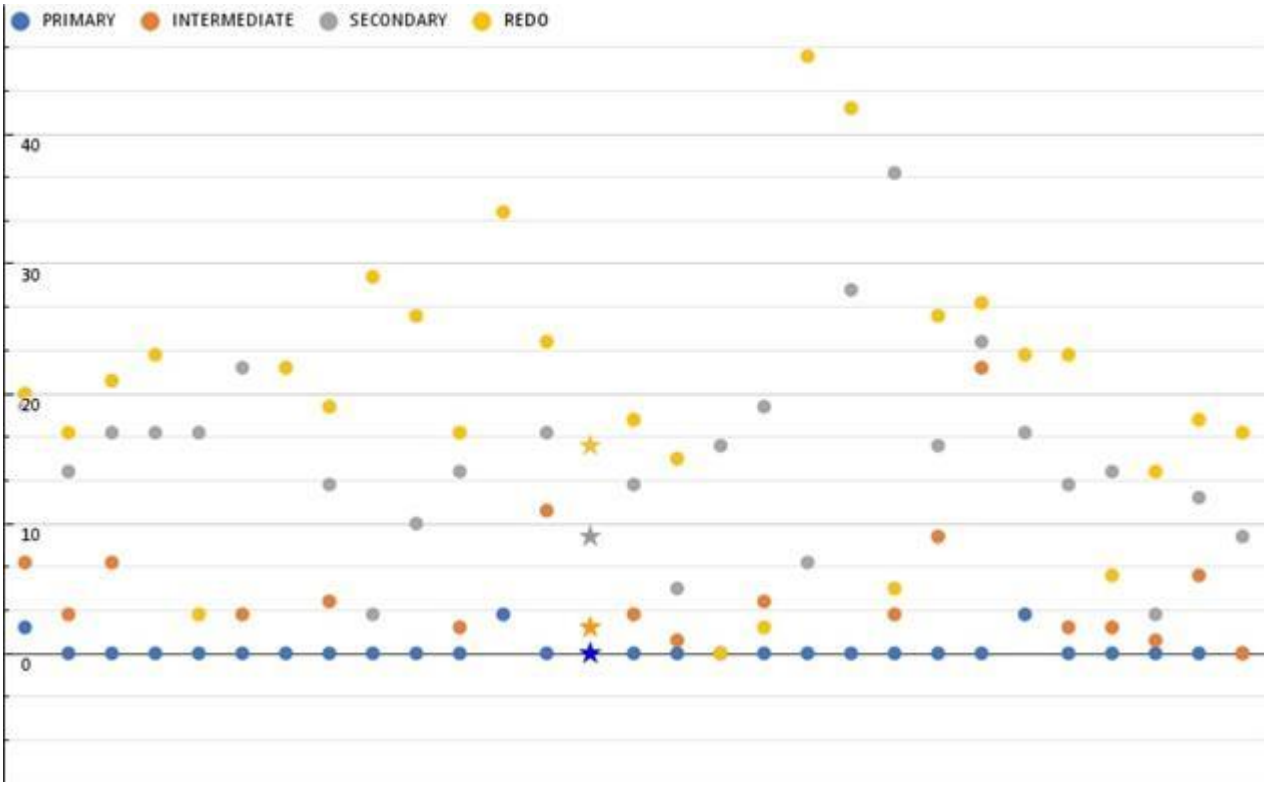
We have retrospectively analyzed a cohort of 118 patients that underwent occlusal correction and labioplasty at “Città della Salute e della Scienza di Torino” Hospital, Torino, Italia between the period 2010-2020, presenting mono or bilateral cleft palate, any Veau grade, aged 18+, that had concluded primary correc-tion procedures with unsatisfying results. Between these patients, 43, judged as poor surgical results, underwent secondary surgery.
The surgical outcome has been evaluated by 5 clever surgeons, using the MiRa scale adapted version, evaluated on the basis of pre surgery pictures and patients’ clinical analysis at least a year post surgery. In order to evaluate the social impact and patients’ satisfaction, a version of Face-Q form has been submit-ted to our sample. We submitted a picture evaluating form, based on a rating scale growing from 1 to 5, to both professional (n=10) and non professional population(n=10). Pre and post surgical pictures were ran-domly disposed in order to reduce preconceptions.

4.RESULTS:

MiRa like” data showed a statistically signifiant improvement from pre to post surgical procedures, and social and patients’ satisfaction improvement, where Face-q and our form highlighted a huge difference in pre/post appearance and confidence.

5.CONCLUSION:

Standing the general challenge of cleft palate anatomic alteration, and the pathological complexity of the population coming to our center, reached outcomes have been surgically satisfying, and most important the patients’ quality of life has been concretely improved. The fight against congenital malformation should be won a battle at a time.



Cleft, Aesthetic, Correction, Secondary, Challange

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Long Term Assessment Of A Novel Le Fort I Distractor - The Trans-nasal Device

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction:
Le Fort I distraction is indicated in the severely midface-deficient patient when the bony movement is deemed likely to be unstable using conventional orthognathic surgery. While external halo devices are popular among operators, patient ambivalence has prompted a better internal device design.
Aims:
It is the purpose here to analyze long term results of a novel internal trans-nasal Le Fort I distractor.
Methods:
An internal Le Fort I distractor, designed to fit in the nose, was utilized to advance the maxilla in 5 patients with bilateral cleft lip and palate (ages 12- 15). Patients were followed to skeletal maturity. Patient acceptance, complications, and repeat orthognathic surgery were outcomes analyzed.
Results:
Average SNA before surgery was 73 and after surgery, 81 (normal - 82). There was an overall clockwise rotation of the maxilla with distraction. All had positive overjet at five months. Two patients developed localized pin site infections, responding to antibiotics. Two patients with borderline velopharyngeal function preoperatively developed insufficiency postoperatively, necessitating further surgery. Patient acceptance of the device was high. At long term f/u (longest 6 years), 2 have had recurrence of negative overjet necessitating definitive orthognathic surgery.
Conclusions:
The trans-nasal Le Fort I distractor can be an effective device to advance the deficient maxilla in the adolescent, is well tolerated, and may preclude the need for definitive orthognathic surgery at skeletal maturity.

distraction osteogenesis, orthognathic surgery

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Treatment Sequence in Congenital Nasal Pyriform Aperture Stenosis

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: Congenital nasal piriform aperture stenosis (CNPAS) is a rare condition associated with narrowed piriform aperture and nasal obstruction. Children with CNPAS has bony ridge on the under surface of the secondary adult palate, solitary central incisor, and a triangular shape palate. Due to its rarity few studies have been published and management remains difficult with no specific treatment protocol, especially in the context of craniofacial treatment and follow-up in these children during growth.
Aims: The purpose of this study was to build a treatment protocol based on long-term follow up focus on treatment of maxillofacial deformity, dental considerations, and upper airway assessment.
Methods: A retrospective study was conducted on three CNPAS patients which were treated in our institute between 2000-2019. Clinical presentation including signs and symptoms, radiographic imaging, treatment procedure, and clinical results were reported and reviewed.
Results: During the first year of life, the children are closely monitored and assessed for respiratory distress. Children with evidence of cyclic cyanosis treated surgically with widening of pyriform aperture by removal of the bony excess and nasal tubing insertion to establish airway patency. In cases where there is no evidence of respiratory stress, conservative treatment using nasal decongestants and steroids, and follow-up was performed. Next, at the age of 10-12 years old, additional airway evaluation is performed using polysomnography and orthodontic evaluation is also undertaken. Based on the clinical and radiographic findings, patients were treated with surgically assisted rapid palatal expansion and additional surgical widening of pyriform aperture in case there is evidence of OSA. Subsequently, the patients undergo further orthodontic treatment and restoration of the upper central missing tooth.
Conclusions: Our suggested protocol is chronologically-based treatment sequence for management of CNPAS allowing tailored to meet their individual needs.

Piriform aperture stenosis, nasal obstruction

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CAD/CAM ASSISTED MAXILLARY DISTRACTION OSTEOGENESIS FOR CLEFT LIP AND PALATE PATIENTS

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1.INTRODUCTION:

This study reports outcome and accuracy of a new protocol based on the use of virtual surgical planning, CAD/CAM generated surgical splints, cutting guides, prebent internal maxillary distractors and early removal of distractors in the treatment of cleft-related maxillary hypoplasia.

2.AIMS
The aim of this prospective study was to report the experience with guided distraction protocol for the treatment of CLP patients.

3.MATERALS AND METHODS:
From January 2015 to January 2020 9 consecutive cleft lip and palate patients with maxillary hypoplasia underwent the guided distraction protocol. 3D virtual planning was performed with Proplan 2.0 (Materialize, Leuven , Belgium) allowing ideal choice of maxillary osteotomy site and vector of distraction. The planning was transferred in the operating room via computer generated patient specific cutting guides and patient specific splints (PROPLAN CMF, Depuy Synthes) . Internal maxillary distractors (Depuy Synthes) footplates were prebent on 3Dprinted patient specific stereolitographic model. Patient specific surgical tools guided osteotomies and devices placement. Distraction was initiated after seven days at a rate 0.5mmx2 /day and stopped when the planned maxillary advancement was achieved. The distractors were removed after 1 month in general anesthesia. Care was taken not to disrupt the regenerated callus, manual gentle callus moulding to refine the occlusion was performed. Stability was achieved with 4 L plates at the maxillary buttresses.
Clinical outcomes and surgical records were collected. STL files of VSP, obtained from DICOM data of multislice CT scan taken preoperatively(T0) ,post distraction(T1) and one year post surgery (T2) were superimposed with ICP method to evaluate accuracy of maxillary repositioning.

4.Results
No intraoperative complications were encountered. Cosmetic and occlusal results were stable. Accuracy was within 2mm range.

5.Conclusion
This protocol is effective and accurate in correction of maxillary hypoplasia in cleft patients. Early removal of distractor and stabilization with plates reduce patient discomfort and does not jeopadize stability.

Cleft, Orthognatic, CAD/CAM, virtual planning

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Surgical Management of the Tessier 7 Craniofacial Cleft

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: The incidence of the rare facial cleft is between 1.43 and 4.85 per 100,000 births. In most reported series, the Tessier No. 7 craniofacial cleft is the most common of the rare craniofacial clefts. Several variations on the surgical technique for macrostomia repair have been described in the literature. There has been controversy regarding the preferred method for commissuroplasty and skin closure for optimal functional and aesthetic results.
Methods: A retrospective review of records of patients having surgery for craniofacial clefts from January 2017-December2019 was undertaken.
Result: A total of 25 patients with transverse facial cleft underwent repair. Among them 16 (64%) were female and 9 (36%) were male. The lowest age at operation was 5 months and the oldest at operation was 17 years. 19 patients (76%) were unilateral Tessier 7 and the rest were bilateral. Among the 19 unilateral patients, 12 were right sided and 7 were left sided. Out of 25 patients, 22 (88%) were incomplete Tessier 7 and 3 were complete. Pre auricular skin tags were found in 16 patients (64%). Microtia was present in 3 patients. 5 underwent repair with linear skin closure and 20 with Z-plasty. The follow-up period at analysis was an average of 6 months after the repair. 22 patients were satisfied about their outcome. 3 patients were not satisfied.
Conclusion: We believe that each case of macrostomia needs to be assessed with a tailored surgical plan to create the best result. A combination of different techniques is believed to give satisfactory functional and aesthetic results.
Tessier7, Macrostomia, Transverse Facial Cleft

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Tessier #0-14 cleft: lessons learned with a large series.

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

1. Introduction: Tessier #0-14 craniofacial clefts are rare congenital anomalies with midline compromising, including median cleft lip, hypertelorism, bifid nose, and encephalocele.
2. Aims: this study focuses on bringing to the literature the proposition of a surgical treatment protocol for the Tessier #0-14 cleft, including its most varied spectrums of presentation.
3. Methods: retrospective medical record's analysis of the patients diagnosed with Tessier 0-14 craniofacial cleft, treated by the plastic surgery team of CAIF-CHT-UFPR, between 1997 and 2020. The clinical aspects evaluated were lip malformation, alveolar cleft, nasal appearance, septal involvement, associated deformities, and surgical procedures. Cases with computerized tomography had this exam reviewed.
4. Results: Eighty-three patients with number 0 cleft were treated during the study period. Twenty-six false #0 clefts were holoprosencephalic patients. Only 3 patients presented adequate clinical conditions for surgical treatment, characterized by zetaplasty of the labial mucosa, two lateral oral incisions to bring the segments together, muscle repair and midline skin closure. Including a small skin flap from the inner portion of the nose to create the columella. Of the fifty-seven cleft patients with true #0 cleft lip, fifteen were treated with labiaplasty. Bifid labial frenulum was treated with frenulotomy. Patients with isolated bifid nose underwent through rhinoplasty. One patient required orthognathic surgery before rhinoplasty. Median alveolar cleft alone was observed in 7 patients. Two patients maintained the cleft after orthodontic follow-up and was necessary palatoplasty and bone grafting. Hypertelorism was treated with craniofacial reconstructive procedures, orbital decompression, and rhinoplasty.
5. Conclusions: this article presents a large series of Tessier number 0-14 cleft, describing its varied types of involvement, and the standard surgical technique that provide the best outcomes.

median cleft, cleft lip, holoprosencephaly

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Anterior Maxillary Distraction for Cleft Maxillary Hypoplasia : Our experience of 518 cases

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Maxillary hypoplasia is an inevitable sequelae in cleft lip and palate patients owing to the early surgical intervention. Anterior maxillary distraction (AMD) using a tooth-borne distractor is a novel surgical technique that brings about improvement in facial balance and esthetics and provides stable occlusion without any detrimental effect on speech and velopharyngeal function.

This study focuses on our experience of AMD spanning across 14 years, the rationale, the various modifications, the cephalometric co relation, the amount of advancement achieved and the complications encountered during the technique.

518 patients with cleft maxillary hypoplasia treated between June 2007 to May 2021 were evaluated retrospectively. Full surgical and medical records including clinical notes, photographs, and radiographs, which included lateral cephalograms taken at 3 different intervals, namely, before the procedure (P1), immediately after the procedure (P2), and at the last follow-up visit, corresponding to at least 1 year post-operatively (P3).

There were 278 males (57.33%) and 240 (46.33%) females in the study. They were aged 10 years and above. 68 patients (13.12%) had undergone presurgical orthodontics and 450 patients (86.87%) had undergone surgery first approach. The ANS-PNS values were tabulated andanalyzed. A significant amount of maxillary advancement ranging from 7mm to 20 mm. A complication rate of 5. 59% was noted.

The author concludes that anterior maxillary distraction should be the preferred line of treatment for cleft maxillary hypoplasia keeping in mind the effect on velopharyngeal component. Our study is an effort to consolidate the knowledge gathered from our vast experience.

Anterior maxillary distraction
maxillary hypoplasia

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The Spectrum of Complex Craniofacial Clefts in Bangladesh

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TH3.5 CRANIOMAXILLOFACIAL, Moorfoot, EICC - Streamed, July 14, 2022, 11:00 - 13:00

Introduction: The true incidence and prevalence of craniofacial clefts are unknown. Estimates ranges from 1.43 to 4.84 per 10,000 live births.
Aim: Aim of this study was to identify the types of complex craniofacial clefts in Bangladesh.
Methods: A total of 95 patients with craniofacial clefts were included in this study.
Results: Among them 56 (42.57%) patients are male and 39(57.42%) patients are female. Ring constrictions were present in 9(9.4%), choanal atresia was present in 6 (6.32%) patients and eye involvement present in 27(28.42%) patients. Craniofacial clefts were unilateral in 48 (50.5%) patients and bilateral in 38(40.0%) patients, midline in 6 patients (6.325%), unclassifiable in 2 (2.11%) patients and circumferential in 1(1.05%) patient. Among unilateral craniofacial cleft patients, 24 patients (50%) were right sided and 24 patients (50%) were left sided. Tessier classifications were: Tessier0 (1.05 %), Tessier 1 (7.37%), Tessier 2 (11.6 %), Tessier 3 (27.4%), Tessier 4 (16.8%), Tessier 5(1.05%), Tessier 7(13.7%), Tessier 3,5(2.11%), Tessier 4,5(3.16%), Tessier 3,2(1.05% patients, Tessier 7,5(1.05%), Tessier 4,4 (1.05%), Tessier 6,7(1.05%), Tessier 5,6(1.05%), Tessier 5,7(1.05%), Tessier 2,12(1.05%) , Tessier 3,7(1.05%), Tessier 1,3 (1.05%), type 3,4 in(1.05 %) patient, Tessier 3,4(3.16 %), unclassifiable (3.16%).
Conclusion: Tessier 3 (27.4%) was the commonest form of complex craniofacial cleft in this series. The incidence of Tessier 7 clefts may be under-represented as they may be treated in less specialist settings or not seek treatment. Craniofacial cleft is associated with ring constriction (9.20%), choanal atresia (6.32%) and eye defects in (28. 42%) of patients in this series of 95 patients.
Tessier, Ring constrictions, Choanal atresia

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Range and frequency of additional congenital malformations in children born with cleft lip and/or palate

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: The reported frequency of additional malformations occurring alongside an orofacial cleft varies widely and is currently unknown for the English population. Identifying the range and frequency of additional malformations is important for counselling parents and for planning and commissioning cleft services.

Aims: To assess the range and frequency of additional congenital malformations identified among children born alive with an orofacial cleft.

Methods: An analysis of patient-level data from a national registry of cleft births (the CRANE Database) linked to national administrative data of hospital admissions (Hospital Episode Statistics) was performed. Children born between 2000 and 2012 receiving cleft care in English NHS hospitals were included. The proportion of children with ICD-10 codes for additional congenital malformations was calculated according to cleft type. Malformations were also categorised according to the organ or body system they affected.

Results: The study included 9,403 children. Of these 2,114 (22.5%) had cleft lip (CL), 4,509 (48.0%) had cleft palate (CP), 1,896 (20.2%) had unilateral cleft lip and palate (UCLP) and 884 (9.4%) had bilateral cleft lip and palate (BCLP). A total of 3,653 (38.8%) children had additional congenital malformations documented in their hospital admission records. The prevalence of additional congenital malformations was greatest among children with CP (53.0%), followed by those with BCLP (33.5%), UCLP (26.3%), and then CL (22.2%) ($p<0.001$). Malformations of the skeletal system and circulatory system were most common, affecting 10.5% and 10.2% of the included children, respectively. 16.8% of children had additional congenital malformations affecting two or more structural systems.

Conclusions: Congenital malformations are common among children born alive with a cleft, affecting over half of some cleft subgroups. Given the frequency of certain structural malformations, clinicians should consider standardised screening for these children. Establishing good links with paediatric and genetic services is recommended.

congenital, malformation, anomaly, abnormality, syndrome

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Orofacial Clefts with novel phenotypic presentations and their genetics

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

1. Introduction: The present study reports four novel clinical phenotypes of cleft lip and palate along with their underlying genetics.
2. Aim: Identification of the genetic factors and the description of four novel clinical phenotypes of cleft lip and palate.
3. Methods: karyotyping, cytogenetic microarray, sequencing.
4. Results and conclusion:

The first case is novel clinical variant of frontonasal dysplasia (FND). The patient had severe and multiple abnormality in face and eyes, and absence of testis. The karyotype was normal. No mutation was identified in ALX1, ALX3 and ALX4 genes. Cytogenetic microarray revealed a gene deletion (1p). We report this novel case as FND4.

The second case is a submucous cleft palate with Robertsonian translocation Rob 13/14 in a male child as well as in his father.

The third case is a novel clinical variant 'ectrodactyly and cleft lip and palate' (ECLP) with TP63 c.953G>A (p.R318H) variant. So far 'ectrodactyly, ectodermal dysplasia and cleft lip and palate' (EEC), and 'ectodermal dysplasia and cleft palate' (ECP) were reported but 'ectrodactyly with cleft lip and palate' (ECLP) was not reported. The present case had bilateral ectrodactyly of the hands and feet along with syndactyly, and cleft lip and palate, and low set ears. The ectodermal features of skin, hair, and nails were normal. Since ectodermal dysplasia was absent we named this novel TP63 associated clinical variant as 'ectrodactyly and cleft lip and palate' (ECLP) syndrome instead of EEC syndrome. In this case, the identified TP63 variant TP63c.953G>A (p.R318H) was anticipated to be pathogenic by a variety of in silico prediction algorithms and this this site was substantially conserved across species during evolution.

The fourth case had cleft lip and palate with left hand syndactyly 3/4 and right foot ectrodactyly with incomplete soft tissue syndactyly of 1st/2nd toes. This case had a heterozygous HOXD13c.500 A>G (p.Y167C) variant.

cleft genetics, India, ectrodactyly, FND

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Familial Cleft Lip and Palate: Frequency and Anatomic aspects in University Hospital of Treichville(Abidjan-Côte d'Ivoire)

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

FAMILIAL CLEFT LIP AND PALATE: FREQUENCY AND ANATOMIC ASPECTS IN UNIVERSITY HOSPITAL OF TREICHVILLE (ABIDJAN –CÔTE D'IVOIRE)

Rouma Bankolé, Helen Audrey Thomas, Olivier Moulot, Manuela Ehua, Kouame Agbara, Jean-Marie Konan

Abstract

Background :
The cleft lip and palate are the most common malformation among facial developmental anomalies. The cause of this anomaly has been assumed to be multifactorial. it depends on genetic and environmental factors. The aim of this study was to identify the family frequency of cleft lip and palate and their anatomic aspects in our country.

Material and Methods :
It was a retrospective study, we have collected all data of patients operated on, at the department of pediatric surgery in University Hospital of Treichville since 10 years. Detailed histories were collected regarding the family cases of cleft. Chi-square was significant for $p < 0.05$.

Results:
Among 909 patients operated for clefts, we collected 96 patients with history of familial cases. The rate of familial cases was 10.56%.The father, the mother and the siblings were concerned in 48% of cases (46 cases).
The relatives were concerned in 52% of cases (50 cases). The consanguinity was found in 26% of cases. The patients had unilateral cleft in 39 cases (40.6 %). Bilateral cleft was present in 33 cases (34.3 %). Bilateral clefts were statistically strongly correlated to familial clefts with p value of 0.000075. We had 24 cases (25 %) of cleft palate. We have observed one patient with associated anomalies (anomalies of the hands, feet and penis) (1%).

Conclusion:The frequency of familial cleft seems low in this series contrary to the data of the literature and to what we might expect due to consanguinity. Bilateral cleft lip and palate are more common in these familial forms than in all cleft's series. Associative malformation was rare.

Keywords : Cleft, Family, lip, palate

cleft, family, lip, palate

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Poverty and Risk of Cleft Lip and Palate: An Analysis of United States Birth Data

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: Children with cleft lip/palate whose families face socioeconomic barriers often receive delayed cleft care, and tend to have poorer outcomes from the care they receive. However, the relationship between poverty and incidence of cleft lip/palate remains unclear.

Aims: We investigate potential association between socioeconomic status (SES) and incidence of cleft lip with/without cleft palate (CLP) and cleft palate only (CPO) in the U.S. after controlling for demographic and environmental risk factors.

Methods: The U.S. 2016 and 2017 Natality Data were utilized (n=7,820,866). Births with missing data or simultaneous diagnoses of both CLP and CPO were excluded. Proxies for SES included maternal education, use of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and payment source for delivery. Multiple logistic regression controlled for household demographics, prenatal care, maternal health, and infant characteristics.

Results: Of 6,251,308 live births included, 2,984 (0.05%) had CLP and 1,180 (0.02%) had CPO. Maternal education of bachelor's degree or higher was protective against CLP (AOR=0.73 [0.63, 0.85]; p<0.001). Receiving WIC was associated with CPO (AOR=1.25 [1.08, 1.46]; p=0.003). Delayed prenatal care until second or third trimester – compared with first trimester – was associated with CLP (AOR=1.14 [1.04, 1.26], AOR=1.23 [1.03, 1.47]; p=0.004 and 0.023, respectively). Male sex, first-trimester tobacco smoking, and maternal gestational diabetes were also associated with CLP (AORs=1.60 [1.48, 1.72], 1.01 [1.00, 1.03], 1.19 [1.03, 1.39]; p<0.05). Female sex, pre-pregnancy tobacco smoking, and maternal infections during pregnancy were associated with CPO (AORs=0.74 [0.66, 0.83], 1.02 [1.00, 1.03], 1.60 [1.16, 2.21]; p<0.05).

Conclusions: Increased incidence of orofacial clefts was associated with indicators of lower SES, with different indicators associated with different cleft phenotypes. Notably, early prenatal care was protective against the development of CLP. Our model also confirmed known risk factors for CLP and CPO.

epidemiology, socioeconomic status, poverty, cleft

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A triangulated approach to understanding the role of cigarette smoking in orofacial cleft aetiology

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

1. Introduction

Identifying the cause of orofacial clefts is important yet complex, and likely involves multiple genetic and environmental influences. Exposure to cigarette smoking during pregnancy has been associated with orofacial cleft and is a modifiable risk factor, although its role in cleft causality has yet to be determined.

2. Aims

To investigate the role of cigarette smoking in orofacial cleft aetiology.

3. Methods

A triangulation of three methodologies was used to enhance scientific robustness. First, a systematic review of analytical studies comparing smoking habits in mothers giving birth to babies with cleft. Second, an ecological study using national administrative data in the UK between 2000-2018 to assess the relationship between active and passive smoking and cleft incidence. Third, a two-sample Mendelian Randomisation using genetic data from the Cleft Collective to mirror the biological effect of smoking in a cohort of mothers of children with cleft.

4. Results

The systematic review included 44 studies and found strong evidence of a moderate association between smoking and orofacial cleft (OR 1.42, 95%CI 1.27 to 1.59). The proportional attributable fraction for smoking was 4% (95%CI 3-5%). The ecological study did not demonstrate a corelation between the reducing trend of active female smoking in the UK and the incidence of cleft, but the study was underpowered. The data in England, Wales and Northern Ireland did show moderate evidence of an 8% reduction in cleft incidence following the implementation of the 2007 smoking ban (RR 0.92, 95%CI 0.85 to 0.99; P = 0.024), although this was not replicated in Scotland (RR 1.16, 95%CI 0.94 to 1.44; P = 0.173). The results of the Mendelian Randomisation will be presented at conference.

5. Conclusions

We have established strong evidence of a moderate association between smoking and cleft. The likelihood of smoking playing causative role in orofacial cleft aetiology will be demonstrated.

Smoking, Cleft Collective, Mendelian Randomisation

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A Genome-Wide Association Study and Genome-Wide Interaction Scan with exposure to smoke from cooking and the risk of nonsyndromic orofacial cleft in a Vietnamese population

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Background: Cleft is one of the most common birth defects globally and gene- environment interactions have been discussed as a possible explanation for the lack of understanding around risk factors for nonsyndromic occurrence of the disease.

Aims: In this analysis, we explore potential genetic variants associated with nonsyndromic orofacial clefts (NSOFC) as well as gene- cook smoke interactions in an entirely Vietnamese population.

Methods: We conducted a population-sampled case-control study of children with NSOFC and healthy newborns from Vietnam. Saliva samples were collected from the child and pertinent environmental information was self-reported by the mother. Exposure was defined as exposure to smoke from cooking indoors over an open flame. A genome-wide association study (GWAS) using both imputed and non-imputed data as well as a genome- wide interaction scan (GWIS) using traditional GxE analyses, two-step methods, and statistically efficient one- step tests were conducted.

Results: 589 cases and 715 controls were available for analysis post QC measures (N= 1304). No SNPs reached genome-wide significance from the GWAS or GWIS analyses. The tests produced multiple highly suggestive findings that warrant further exploration including: rs871570 (OR=1.47, p=6.7E-6), rs113296466 (OR=3.29, p=1.7E-5), rs10834414 (OR= 2.36, p=7.6E-8), and rs576853071 (OR= 0.57, p=1.3E-6) from the GWAS; and rs1459270985 (OR=0.43, p=2.8E-7) and rs1254772630 (OR= 0.60, p=1.5E-6) from the GWIS.

Conclusions: This study is a promising exploratory and hypothesis generating analysis to understand the genetic risk factors for NSOFC in a novel Vietnamese population, as well as the potential interaction effects with a minimally studied, but highly prevalent, environmental risk factor- cook smoke exposure. The continued use of novel, statistically efficient methods to understand these relationships will be essential in the study of rare diseases, such as NSOFC, especially for individuals that reside in under-represented regions of the world and are at highest risk of living with disease.
GWAS, GWIS, Vietnam, GxE

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Analysis of Clinical Data of 9720 Patients with Cleft lip and Palate

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

1.Introduction:Cleft lip and palate is the most common congenital malformation in oral and maxillofacial region. The incidence rate is about 1 / 1000~1 / 2000. There are racial differences and regional differences. It will not only affect the patient's face, voice, swallowing, occlusion, jaw growth and development and other oral and maxillofacial functions, but also affect the patient's mental health and hinder their social communication, study, work and life. Therefore, the epidemiological investigation of cleft lip and palate is of great significance to reveal the cause of cleft lip and palate and prevent its occurrence.
2.Aims: To acknowledge the general conditions and characteristics of cleft lip and palate in Gansu province, and to investigate incentive factors associated with the incidence of the disease.
3.Methods: Retrospective analysis was made on 9720 cases of cleft lip and palate patients who had received operation from March/2005 to March 2013.
4.Results: Simple cleft lip was 3546 cases, combination of cleft lip and palate was 3888 cases, and simple cleft palate was 2286 cases. The sex ratio of males and females was 1.62:1, the ratio of unilateral clefts and bilateral ones was 4.44:1, the ratio of the left lip and the right was 2.07:1, the ratio between rural areas and the urban was 5.04:1. Patients from Longnan city accounted for 40.78 percentage of total patients. Level of education of patients mother under junior high accounted for 85.05%.
5.Conclusion: Longnan region dominant the cleft lip and cleft palate cases in Gansu province. The geographical environment, and genetic factors may be the risk factors of congenital cleft lip and palate. No relationship between mother's education and the occurrence of cleft lip and palate was found.

表3 唇腭裂的类型及构成比

Table 3 The classification and constituent ratio of patients

项目	单侧唇裂			双侧唇裂			单侧唇裂伴腭裂	双侧唇裂伴腭裂	不完全腭裂	完全腭裂	合计
	Ⅰ度	Ⅱ度	Ⅲ度	不全	混合	完全					
例数(例)	124	1 712	1 292	90	36	292	2 520	1 368	1 968	318	9 720
构成比(%)	1.28	17.61	13.29	0.93	0.37	3.00	25.93	14.07	20.25	3.27	100.00

Cleft palate; Surgery; Comparative study.

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Parental agricultural work and chemical exposures on the risk of orofacial clefts: A case-control study in seven low- and middle-income countries

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: Global disparities in access to medical care have left millions of orofacial cleft patients without treatment (Poenaru 2013). Prevention is the ultimate goal, yet little is known about the risk factors specific to the regions of the world where surgical care is most scarce. Previous studies on parental agricultural work, agricultural chemical exposures, and industrial chemical exposures as risk factors for cleft are inconclusive — and the majority were conducted in high-income countries.

Aims: We explore the associations between risk of orofacial clefts and parental agricultural work, agricultural chemical exposure, and industrial chemical exposure in geographically diverse low- and middle-income countries.

Methods: This population-sampled case-control study uses interview-administered questionnaires of mothers of children with orofacial cleft and population- matched mothers of healthy newborns from the Democratic Republic of the Congo, Honduras, Madagascar, Morocco, Nicaragua, the Republic of the Philippines, and Vietnam. Binary logistic regression was used to calculate odds ratios.

Results: 2955 cases and 2775 controls recruited 2012–2017 were included. After covariate adjustments, maternal (OR=5.03 (3.8, 6.7)) and paternal (OR=2.89 (2.3, 3.6)) reported agricultural work were significantly associated with orofacial cleft risk. Maternal reported agricultural chemical exposure during pregnancy was also significantly associated with an increased risk of cleft (OR=3.13 (2.0, 4.9)). The associations between orofacial clefts and parental agricultural work and agricultural chemical exposure were more pronounced in the subgroup of urban pregnancies compared to rural pregnancies.

Conclusions: Our results suggest that parental agricultural work and maternal agricultural chemical exposure during pregnancy may be risk factors for orofacial clefts. Further research is needed to explore specific agricultural chemicals that may contribute to cleft formation in these regions, and in-depth country-specific analyses would allow for tailored public health interventions.
agrochemical exposure, industrial chemical exposure

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Epidemiological Patterns of Patients Managed For Cleft Lip and Palate during Free Outreach Camps at A Peripheral Hospital In Kenya

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TH3.6 EPIDEMIOLOGY, Tinto, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introductiont: Clefts involving lip and palate are the most common craniofacial anomalies. The prevalence varies widely according to various factors. There is a paucity of epidemiological data on cleft deformities in African populations

Aims:Determine the epidemiological patterns of patients managed for cleft lip and palate during free outreach camps in Kenya and subsequently compare it with other studies done nationally, regionally and internationally.

Methods: This was a Prospective Cohort study. Data was collected during five cleft surgery outreach camps at Kitale County Referral Hospital in Trans-Nzoia County Kenya between January 2016 to January 2018.

Results: A total of 84 patients were reviewed, of which 74 underwent surgical management. The study population included nine different counties in Kenya(with one patient from Uganda) and were reported to have travelled between 3 and 450 KM to seek treatment. The age range was from 5 weeks to to 35 years with patients below 2 years making up the majority(58.3%). There was a male preponderance(61.9%). The most common Cleft deformities were cleft lip(46.4%), cleft lip and palate(34.6%) and cleft palate(15.5%). Unilateral clefts were commonly left sided(62%). Sex distribution varied with clinical diagnosis, and familial and syndromic association was rare with one patient presenting with Van der woude syndrome.

Conclusion:More Initiative programs are recommended to address the unmet medical and surgical needs of the cleft deformities in various parts of the region
Free Cleft Outreach Camp

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Reporting clinical and patient-reported outcomes of pharyngeal flap pharyngoplasty using the Core Outcomes Set for Velopharyngeal Dysfunction (COS-VPD)

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

INTRODUCTION
No one procedure for managing velopharyngeal dysfunction (VPD) has emerged as superior to another. Comparison of results between studies has been limited by variation in outcomes reporting.
AIM
To review clinical and patient-reported outcomes in a consecutive series of patients, who underwent a midline pharyngeal flap with simultaneous dissection and repositioning of the velar muscles and to report outcomes using the COS-VPD.
METHODOLOGY
A consecutive series of patients who underwent pharyngeal flap pharyngoplasty was examined. No patients were excluded on the basis of comorbidity or a syndrome diagnosis. A retrospective chart review was carried out, recording surgical, speech and airway outcomes. Patient-reported outcomes were investigated using the Velopharyngeal Effects on Life Outcome (VELO) instrument. Results were reported using the Core Outcome Set for Velopharyngeal Dysfunction (COS-VPD).
RESULTS
One hundred and nine patients were included in the study, 16.5% of whom had non-cleft VPD. Thirty percent of patients had a syndrome, with 19% having a diagnosis of 22q11.2 microdeletion. The overall 30-day postoperative complication rate was 3.6% (4 out of 109 patients). At 12-month follow-up, 79.3% of patients experienced a statistically significant improvement in hypernasality, with 40.2% achieving completely normal resonance. Regarding articulation, 51.8% had no passive consonant errors. Eight patients (7.3%) required further surgery for speech. Seven patients (6.4%) developed obstructive sleep apnoea (OSA) postoperatively, with 4 (3.6%) patients requiring take-down of the pharyngeal flap. With 100 corresponding to best possible quality of life (or no limitation), a mean total VELO score of 74.5 was recorded.
CONCLUSIONS
Satisfactory speech outcomes were recorded, with a low rate of further surgery for speech. Historical concerns about high rates of perioperative complications and OSA were not borne out in this series. Reporting outcomes using the COS-VPD will allow our results to be meaningfully compared to those from other centres

Table 8. Summary of results, recorded using the COS-VPD

Domain	Outcome	Result
PRO	Patient and/or caregiver reported speech	65.5 Mean VELO speech limitation score
PRO	Patient and/or caregiver reported sleep disordered breathing	16.6% snoring 6.4% daytime somnolence
PRO	Patient and/or caregiver reported nasal symptoms	90.2 Mean VELO score for oronasal regurgitation
Speech	Resonance	57.5% absent hypernasality 77.0% absent hyponasality
Speech	Nasal airflow	59.3% absent nasal emission 73.1% absent nasal turbulence
Speech	Passive consonant errors	51.8% no passive consonant errors
Speech	Acceptability of speech	NR
Speech	Synthesis rating of perceived velopharyngeal function	1.21
Surgical	Postoperative complications	3.6%
Airway	Obstructive sleep apnea	6.4%

PRO = Patient-reported outcome; OSA = Obstructive sleep apnoea; VELO = Velopharyngeal Insufficiency Effects on Life Outcome; NR = Not recorded.

Pharyngeal flap, patient reported outcome

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Does moderate-to-severe velopharyngeal insufficiency in yhree-year-old cleft palate patients predict the need for VPI surgery?

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction

Some patients with cleft palate suffer from velopharyngeal insufficiency (VPI), which effects communication and speech development. Treatment of VPI may be conservative (speech therapy or prosthetic devices), surgical, or a combination of both. In VPI, if the abnormal speech is due to abnormal structure, surgical correction of the anatomy is indicated. Nevertheless, conservative management is frequently attempted prior to surgical intervention.

Aims

The aim of this study was to evaluate if moderate-to-severe VPI in three-year-old cleft palate patients predicts the need for VPI surgery and to clarify if speech therapy is beneficial for VPI speech characteristics.

Methods

Based on the national cleft register, 959 patients with cleft palate were treated by the Craniofacial Team at Helsinki University Hospital, Finland between 2000 and 2014. We included 90 of the 959 children with moderate-to-severe VPI at age three years who did not undergo VPI surgery before age five years. The speech pathologist evaluated velopharyngeal function at age three, five, and eight years.

Results

Of the 90 children presenting with moderate-to-severe VPI at age three, 92% underwent VPI surgery and 78% received speech therapy prior VPI surgery. Ninety-five percent at age five and 24% at age eight still had moderate-to-severe VPI; 84% underwent VPI surgery between five and eight years. Of those 5 patients whose VPI improved by age five, VPI relapsed back to moderate-to-severe among those with follow-up data. Speech therapy alone did not improve VPI characteristics. The presence of a syndrome or Pierre Robin sequence had no effect on VPI at five or eight years.

Conclusion

Moderate-to-severe VPI in three-year-old cleft palate patients predicts the need for VPI surgery: all children's moderate-to-severe VPI did not improve from three to five years or improved but subsequently relapsed. Speech therapy alone did not seem to improve VPI characteristics.

Table 3. Secondary surgeries of the 90 patients.

Surgery	No. (%)
VPI surgery	83 (92)
DOZ	76 (92)
Pharyngeal flap	7 (8)
No surgery	7 (8)
Mean age at VPI surgery	5.8 (SD 1.3, range 4.7-12.1)
Age 5 to 8	76 (84)
Age >8	7 (8)
No surgery	7 (8)
Secondary VPI surgery	11 (12)
Fistula repair	15 (17)
Mean age at fistula repair	3.5 (SD 2.6, range 1.6-10.6)

VPI, Velopharyngeal insufficiency

DOZ, Double-opposing Z-plasty with palatal re-repair

Cleft speech, VPI, velopharyngeal insufficiency

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Incidence of New On-Set Obstructive Sleep Apnoea Post Posterior Pharyngeal Flap and Dynamic Sphincter Pharyngoplasty for Velopharyngeal Insufficiency in Cleft and Non-Cleft Patients

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction:

Pharyngoplasty is a common surgical intervention to improve velopharyngeal insufficiency (VPI) in both cleft and non-cleft patients. Throughout the literature there is concern regarding the incidence of post-operative Obstructive Sleep Apnoea (OSA), with wide variation in quoted rates (0 – 93%) and variable diagnostic criteria. OSA has been demonstrated with both posterior pharyngeal flap Pharyngoplasty (PFF/Midline Flap) and dynamic sphincter type Pharyngoplasty (DSP/Ortichochea).

Aims:

The primary aim of our study was to determine OSA incidence following Pharyngoplasty in our patient cohort. The secondary aim was to identify any differences in OSA incidence dependent upon Pharyngoplasty type (DSP versus PFF).

Methods:

59 patients who underwent a Pharyngoplasty, between January 2013 and July 2021 in our unit, had pre- and post-operative respiratory polygraphy sleep studies to identify any evidence of sleep disordered breathing/OSA. Our sleep physiologists' diagnostic criteria for OSA, is based on that of the American Academy of Sleep Medicine, 2017. An apnoea-hypopnoea index (AHI) of ≤1.5 events/hour, an obstructive AHI (OAHI) ≤1 event/hour, and a central AI ≤5 events/hour, were considered normal.

Results:

Median age at surgery was 6 years (range 3–33), with a median follow-up sleep study at 16 months post-operatively (range 2-96). 12 patients underwent PFF, 46 DSP and one a DSP revision. 31 patients had either an isolated cleft palate or UCLP, two had submucous clefts, 26 had non-cleft VPI of which 13 also had 22q11 deletion syndrome. Two patients (3.4%) had evidence of mild OSA (OAHI>1) post-operatively compared to a normal pre-operative study as assessed by the Consultant Sleep Physician.

Conclusion:

No patients required a Pharyngoplasty revision nor CPAP intervention. There were no differences in OSA incidence dependent upon Pharyngoplasty type. Our reported incidence seems lower than similar papers, which we find very reassuring on the background of favourable speech outcomes.
Pharyngoplasty, Obstructive Sleep Apnoea, Polygraphy

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Speech outcomes following Orticochea pharyngoplasty in patients with cleft and non-cleft velopharyngeal dysfunction

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction:
Surgical treatment of VPD is a combination of procedures to maximize palate function, and pharyngoplasty. The senior author's opinion is that pharyngoplasty should be reserved for circumstances where no further improvement can be made to palate function. There are several pharyngoplasty techniques and due to individual surgeon preferences and the variety of underlying causes for VPD there is currently no robust scientific evidence of which technique(s) are superior and in which circumstances to use them.

Aim:
To assess the speech outcomes after Orticochea pharyngoplasty in patients with cleft and non-cleft velopharyngeal dysfunction (VPD).

Methods:
Retrospective case note review of patients with cleft and non-cleft velopharyngeal dysfunction treated by Orticochea pharyngoplasty by a single surgeon in the West Midlands and North Thames Cleft Services. 103 patients between both centers operated on between 2008 and 2021, with a minimum of 6 month follow up. A high proportion of the patients have a diagnosis of 22q11 microdeletion syndrome. The primary outcome is speech, Speech samples were rated on the following parameters: hypernasality, hyponasality, audible nasal emission, nasal,
turbulence. Moreover, patients' demographics, underlying diagnoses, number and types of surgical treatments prior to the Orticochea pharyngoplasty and postoperative morbidity were identified.
Pre- and postoperative speech results analyzed using the Cleft Audit Protocol for Speech-Augmented (CAPS-A) by specialist cleft speech and language therapists from the institutes.

Results:
Whole group: A statistically significant difference in pre- and postoperative scores for hypernasality ($P < .05$), hyponasality ($P < .05$), nasal emission ($P < .05$)

Conclusions:
Orticochea pharyngoplasty is a successful surgical procedure in treating velopharyngeal dysfunction in both the cleft and noncleft populations and could be the first surgical option in patients with a diagnosis of 22q11 microdeletion syndrome.
pharyngoplasty, velopharyngeal disfunction, speech disorders

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Stability of Irradiated Homologous Rib Cartilage Graft in Cleft Rhinoplasty

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: The cleft nasal deformity is a significant challenge due to the abnormal and deficient anatomy and scarring from previous surgeries. For cleft nasal reconstruction requiring cartilage grafts, options include autologous and allograft cartilage. The advantages of allograft cartilage's long-term aesthetic and functional outcomes in cleft rhinoplasty are not well described.
Aims: Assess the stability of irradiated homologous rib cartilage (MTF homograft) compared to autologous grafts to reconstruct the cleft nasal deformity.
Methods: A retrospective review of patients with cleft rhinoplasty was performed, and two-dimensional photographs were collected preoperatively and at 6-weeks, 6-months, and 1-year postoperatively. Stability ratings ranged from 1, indicating completely stable, to 5, indicating regression to preoperative appearance. Categories were rated by two cleft surgeons and included nasal symmetry, nasal tip definition, alar rim symmetry, alar base symmetry, tip projection, dorsal contour, nasolabial angle, ala-columellar relationship, columellar axis, and overall aesthetic appearance of the nose.
Results: Twenty-eight patients were included, with 16 unilateral and 12 bilateral cleft patients. MTF homograft was used in 13 unilateral cleft and 6 bilateral cleft patients. Patients with unilateral clefts and MTF homograft had an average stability rating of 1.62 for nasal tip definition and 1.40 for tip projection compared to autologous reconstruction, which had 1.83 for nasal tip definition and 1.50 for tip projection. Patients with bilateral clefts and MTF homograft had an average stability rating of 1.25 for the nasal tip definition and 1.42 for overall aesthetics compared to autologous reconstruction with an average of 2.00 and 1.92, respectively.
Conclusions: MTF homograft or irradiated homologous rib cartilage graft has proven a beneficial and stable alternative to autologous reconstruction for cleft rhinoplasty. In addition to avoiding donor site morbidity, allograft also helps improve nasal tip definition and projection for patients with unilateral clefts and improves the overall aesthetics for patients with bilateral clefts.
Cleft rhinoplasty, Cartilage Graft, Allograft

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Abbes flap: the solution for tight upper lip in adolescent patients with bilateral cleft lip

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: Tight upper lip in patients with cleft lip with or without cleft palate (CL/P) occurs as a result of factors related to primary surgery. Its occurrence leads to many problems in dental condition, growth of the upper arch, position of teeth, speech and final patient appearance. It interferes with the multidisciplinary care of patients with CL\P. Tight lip is a problem that should be solved in a timely manner. Unfortunately, Abbes flap is the only feasible solution that can solve this issue.
Aim: The aim of this presentation is to elaborate on the reasons behind tight upper lip, its negative consequences, and our approach for management of this problem through the use of Abbes flap.
Methods: Abbes flap is adopted at our cleft care center in different occasions in cases with bilateral CL/P. Six cases were operated from 2020 till 2022, surgery was performed in two stages, three weeks apart before the pedicle was divided. Indications for this technique will be high lightened, patient pre-preparation as well as tips related to the technique and follow-up. A case is considered successful when treatment objectives were met and patient is satisfied by the outcomes.
Results and conclusions: Abbes flap was successful in all cases both from the technical part as well as patient satisfaction. It is recommended to exert every effort to avoid the occurrence of tight upper lip from the beginning in patients with BCL/P. However, in case we are faced with this incidence, it is advisable to meticulously execute Abbes flap in the proper timing with proper patient pre-preparation.

Abbes flap, Bilateral cleft lip

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A Sutural FixationTechnique for Preschool and Adult Cleft Rhinoplasties with long term follow up

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction
The repair of Cleft Lip nasal deformities has always been a challenge.While there is often an improvement at the end of the procedure ,stable long term results are difficult to achieve .
Aim
To describe our technique of Sutural fixation of cartilages in rhinoplasties involving cleft lip patients and demonstrate the long term stability of the results.
Technique
At the age of 5 1/2 to six years ,if there is a noticeable blemish in the appearance of the nose , we offer an open rhinoplasty. Over the years ,we have realised that only such a procedure will produce stable results in the long term . Our previous attempts to perform other manoeuvres like the crescentic inroll, onlay alar cartilage grafts etc did not fare well over time..
We use a sutural fixation technique in our open rhinoplasties. The key suture anchors the cleft side lower lateral cartilage to the non cleft side upper lateral through the septum .This is like a mattress suture and the septal anchoring lends it the required stability .We also strengthen the columella by hitching the medial crura together .Tip aesthetics is addressed by trans- and interdomal sutures.
When we are presented with adult cleft patients with nasal deformities we perform a similar open rhinoplasty. The septum ,when deviated, is repositioned and strengthened by using appropriate grafts .The mainstay of the technique to elevate the cleft side lower lateral cartilage is a key suture similar to the one described above for children .We avoid onlay alar cartilage grafts.
Results
We shall be pleased to present our long term results both in children and in adults using this technique .
Conclusion
We believe that our simple sutural fixation technique produces aesthetically acceptable results that remain stable after many years .
Sutural Fixation, open cleft rhinoplasty

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Nasal Septal Flaps for Repair of Large or Recurrent Palatal Fistula: Report of Technique and Five Year Experience

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Background: Large or multiply recurrent oronasal fistulas following cleft palate repair present an extremely challenging problem. Nasal septal mucoperichondrial flaps have been widely used for repair of skull base defects, however, their use in the repair of oronasal cleft palate fistulas has not previously been described.

Methods: In this pilot study, we describe the surgical technique anterior palatal fistula repair using a nasal septal flap and review our experience with this technique over five years.

Results: Fourteen patients with anterior palatal fistulas not amenable to repair using local palatal flaps were included for analysis. The mean size of the fistula was 12mm in maximum dimension. Flap healing with complete or near-complete closure of fistula was achieved in 13 patients (93%). Five of these patients had a small, slit-like residual fistula that was asymptomatic.

Conclusions: Nasal septal flaps are a new technique for repair of large or recurrent palatal fistulas. The procedure is well tolerated with minimal side effects, high success rate, and low incidence of recurrence.

Patient No.	Age at Operation	Diagnosis	Previous Fistula Repair	Pittsburgh Classification *	Fistula Size	Complication	Healed**	Pre-op Nasal Regurgitation #	Post-op Nasal Regurgitation #
1	13	BCLP	1	V	10-15mm	Nil	0	3	0
2	10	BCLP	0	V	10-15mm	Nil	1	2	0
3	9	UCLP	1	VI	10-15mm	Subtle nasal deformity	0	3	0
4	6	BCLP	0	V	>15mm	Epistaxis requiring readmission	1	1	0
5	4	UCLP	1	VI	>15mm	Nil	1	4	1
6	13	BCLP	0	VI	10-15mm	Nil	1	0	0
7	15	CPO	0	V	10-15mm	Nil	1	2	0
8	10	BCLP	1	IV/V	10-15mm	Nil	0	1	0
9	11	UCLP	1	V	10-15mm	Nil	1	3	0
10	9	UCLP	0	VI	10-15mm	Nil	0	2	1
11	4	UCLP	0	VI	10-15mm	Nil	0	4	3
12	7	UCLP	0	V/VI	10-15mm	Nil	0	4	0
13	11	CPO	1	V	<5mm	Nil	0	2	0
14	23	CPO	~6	V	10-15mm	Recurrence of fistula	3	4	4

Palatal fistula
Cleft palate

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Long-term stability of preschool rhinoplasty with columellar strut graft from rib cartilage in cleft lip patients.

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: Traditionally, early intermediate rhinoplasty in cleft patients involves camouflage techniques and the repositioning of cartilaginous structures without restoring adequate support to the nasal tip. This often leads to the relapse of nasal deformities or undesirable changes with growth.
Aim: The aim of our study was to investigate long-term outcomes of open rhinoplasty using a columellar strut graft harvested from costal cartilage to improve nasal tip projection in cleft lip patients at an early age.
Methods: A single institution, retrospective study on 111 cleft lip patients who underwent rhinoplasty between 4 and 7 years of age from May 1988 to March 2000 was conducted. Photomorphometric analyses of those who received a columellar strut graft harvested from the rib (n=40) were evaluated preoperatively (time 0) and postoperatively at 1 year (time 1), 5 years (time 2) and 10 years (time 3). Preoperative and postoperative nasal relationships (tip projection-to-alar base width, tip projection-to-nasal height, tip projection-to-nasal length, nasolabial angle and lobule portion index) were compared over time using a paired t-test and referred to age-matched normal values reviewed from the literature.
Results: All nasal relationships showed significant improvement after surgery that was maintained at all postoperative time points ($p<0.05$) with the exception of the nasolabial angle mean that decreased over time to the preoperative value. Results after puberty, at time 4, were similar to standard parameters in the normal population.
Conclusions: Adding a columellar strut from costal cartilage to support the tip in preschool cleft rhinoplasty allows to obtain stable results in tip projection until growth completion. A structural approach to tip rhinoplasty with cartilaginous grafts may be recommended in cleft patients at preschool age to prevent relapse of the deformity and changes with growth.

Cleft group / Normal population	T0 (5y)	T1 (6y)	T2 (10y)	T3 (15y)
P-W ratio (sn-prn/al-al)	0.39(0.05)/0.46	0.48(0.04)†/0.53	0.51(0.04)†/0.55	0.55(0.05)†/0.57
P-H ratio (sn-prn/n-sn)	0.32(0.03)/0.34	0.37(0.03)†/0.34	0.37(0.03)†/0.37	0.38(0.03)†/0.37
P-L ratio (al-prn/n-prn)	0.41(0.06)	0.49(0.05)†	0.50(0.04)†	0.53(0.05)†/ 0.55-0.60
N-L angle	106.50(18.82)/ 90-115	114.13(13.15)†/ 90-115	110.88(14.93)†/ 90-115	104.13(14.23)/ 90-115
L index (l/sn-prn)	0.68(0.09)	0.56(0.09)†	0.57(0.09)†	0.58(0.09)†

t0, time 0; t1, time 1; t2, time 2; t3, time 3.
sn, subnasale; pm, pronasale; al, alare; l, lobular portion of columella.
*Time points correspond to mean age at the time the photograph was obtained.
Values are mean(SD)/normal value
†Statistically significant ($p < 0.05$).

Table 1.
Nasal relationships over time in preschool cleft tip rhinoplasty. Mean nasal relationships (tip protrusion/alar base width; tip protrusion/nasal height, tip protrusion/nasal length, nasolabial angle, lobule portion index) assessed by photomorphometric analyses of intermediate cleft tip rhinoplasty at time 0, time 1, time 2, and time 3 and age-matched control patients in the normal population adapted from measurements reported in the literature.

cleft nose deformity
intermediate rhinoplasty

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A new technique for reconstruction of posterior and mid palatal fistulae: a proposal for the association of buccal musculomucosal flap and buccal fat pad flap techniques

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

INTRODUCTION
Achieving complete separation between the oral and nasal cavity is the corner stone of palatal repair. Palatal fistula is a common postoperative complication after cleft palate repair. Unfortunately, Fistula repair is a difficult procedure and has a high rate of recurrence. Excessive scarring in the tissues around the fistula as a result of previous palatoplasty makes the surgical repair of palatal fistulas using local flaps technically difficult.
In this presentation, we present our experience with the use of posteriorly based buccal musculomucosal flap in repair of palatal fistulae. Its blood supply comes from buccal artery (a branch of maxillary artery), and it is a neurovascular axial pattern flap, so the return of sensibility in the flap is anticipated.
AIM
The purpose of this study was to present our experience with the closure of palatal fistulae using the buccal musculomucosal flap with buccal fat pad flap as an enforcement layer.
METHODS
After de-epithelisation of the fistulous margins, the defect was covered with buccal fat pad flap and then by another layer utilising the posteriorly based buccal musculomucosal flap for reconstruction of a total of 44 patients with posterior and mid palatal fistulae after a previous cleft palate
RESULTS
Patients were followed up over a mean period of 13.8 months to check flap viability, competent repair, and donor site function and aesthetics. All patients showed uneventful healing without complications.
CONCLUSIONS
This technique offered a secure method of palatal fistulae reconstruction.
Further research is needed to show this technique’s advantages and drawbacks.

buccal flap, palatal fistulae, reconstruction

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The Step Rhinoplasty: an important piece of the puzzle that is the Bilateral Cleft Lip Nasal Deformity

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction
Pre-teen and teenage children face ever increasing social pressures, made more difficult by the presence of a facial cleft. Bilateral nasal defects are one of the most difficult to repair satisfactorily.

The bilateral cleft nasal defect is a complex mélange, including displaced nasal cartilages, drooping dorsum, and short columella. Treatment approaches tend toward two options:
1) early and aggressive soft tissue and cartilage work to shape a perfect infant nose that we hope will grow normally, and
2) waiting until maturity to perform one definitive rhinoplasty, avoiding early scarring and the creation of deforming stresses.
In both options, the child is often left socially vulnerable during delicate, formative years, due to facial disfigurement.
The Step Rhinoplasty is a new treatment that, without the use of septal cartilage, achieves markedly improved nasal-lip balance, superior nasal shape, and improved the lip/tooth relation. It allows teenage patients to blend with peers, leaving precious tissues unscarred for a later, definitive, rhinoplasty.

Aims
Delegates will be able to describe;
- the tissue deficiency seen in the bilateral lip defect.
- how to perform a Step Rhinoplasty.
- the difference between the Step and Traditional Rhinoplasties.

Content
Lecture format, including photo, diagram, and video instruction.
Photo review of patient results.

Conclusions
Historically, columellar lengthening procedures do not look natural. The Step Rhinoplasty achieves a scarless columellar lengthening. For patients who by nature have a less projecting nose at maturity, the Step Rhinoplasty may function as their definitive nasal reconstruction. For other patients who naturally have a more projecting nose at maturity, the improvement seen from the Step Rhinoplasty functions as a bridge to maturity. The Step Rhinoplasty is well tolerated with minimal complications. The Step Rhinoplasty adds another dimension to bilateral cleft lip/nose reconstruction.

Secondary Rhinoplasty, Cleft Nasal Deformity

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Designing the Prolabial Flap in Revisional Bilateral Cleft Lip Surgery: Clinical and Quantitative Analysis Of Post-Operative Widening/Stretch with Longer-Term Follow-up

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TH3.7 SECONDARY SURGERY, Carrick, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

INTRODUCTION/AIMS: One of the hallmarks of contemporary primary bilateral cleft lip repair is the emphasis on designing a narrow prolabial segment due to subsequent stretch. Yet literature is lacking on prolabial growth and stretch after a total secondary bilateral cleft lip revisional surgery. This information is critical to surgical design. The aim of this study is to present a consecutive series of patients who underwent secondary bilateral cleft lip revision and quantify and characterize the post-operative prolabial changes with follow-up of at least 2 years.

METHODS: 19 consecutive patients were identified retrospectively from our institutional database. All patients were examined, measured, and photographed preoperatively, intraoperatively and postoperatively at 1, 3 and 6 months, 1 year, and then yearly in multidisciplinary clinic. Measurements of prolabial width were made cephalically at the columellar-philtral junction and caudally at the level of Cupid's peak. Chart review with data acquisition was achieved.

RESULTS: The age at revisional surgery ranged from 3.91 to 18.83 years old (mean of 10.44). Of the 19 patients, 4 were syndromic with 1 other having genetic variants of unknown significance. The indication for revision were overwhelmingly whistle-tip deformities. From immediately postoperative to 1 months postoperative, the prolabium widened 20% cephalically and 23% caudally. From immediately postoperative to 3 months postoperative, the prolabium widened 35% cephalically and 37% caudally. At 6 months postoperative, the widening was 44% cephalically and 44% caudally. At 12 months postoperative, the prolabial widening was 40% cephalically and 41% caudally. At 2 years postoperative, the prolabial widening was 41% cephalically and 48% caudally from the immediate postoperative measurements.
CONCLUSIONS: In secondary bilateral cleft lip revision, the prolabial segment widens significantly (mean 44%) in the first 6 months postoperatively and then stabilizes. As in primary repair, this philtral widening should be considered and anticipated when designing prolabial flaps intraooperatively.
cleft lip revision, prolabial design

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WHAT IS THE OPTIMAL TIMING OF PALATE REPAIR FOR SPEECH OUTCOMES? ANALYSIS OF TWO LINKED NATIONAL DATABASES IN ENGLAND

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

INTRODUCTION
Optimal timing for cleft palate repair is a topic of continued debate. Evidence available indicates earlier operations result in better speech outcomes. However, the optimal temporal window for repair is yet to be accurately defined.

AIM
To explore the relationship between timing of palate repair and speech outcomes among children born with palatal clefts in England.

METHODS
Data from The CRANE Database and NHS England's Hospital Episode Statistics (HES) database were linked at an individual level for 1,688 non-syndromic children born with a cleft (782 CP, 632 UCLP, 274 BCLP) in England from 2006-2012. Using codes from the Classification of Surgical Operations and Procedures 4th Revision (OPCS-4) in HES, children were grouped according to timing of their last primary palate repair: <6months, 6 to <13 months, and 13 to <36 months. Speech at 5 years was evaluated according to the percentage of children meeting UK cleft speech standards: 1-speech within normal range, 2a-speech without difficulties from existing or previous structural anomalies, and 3-speech without cleft-related articulation difficulties. Logistic regression was used for analyses.

RESULTS
Compared to children undergoing complete palate repair from 6 to <13 months, those having their repair completed beyond 12 months were significantly less likely to meet standard 1 (OR 0.66 CI 0.48-0.89 p=0.008) and 3 (OR 0.53 CI 0.39-0.73, p<0.001) but not standard 2a (OR 0.74 CI 0.53-01.02, p=0.073). There was no difference in the proportion meeting each standard between those with repairs performed <6 months and those repaired 6 to <13 months. Sub-analysis of outcomes of CP repair completed between 6 and 13 months also revealed no difference.

CONCLUSION
The most favourable speech outcomes are observed in children whose palate repair was completed before 13 months of age. Further investigation should be undertaken to determine if these findings remain after risk adjustment for known patient-related determinants of speech outcomes.

Timing of Surgery, Speech Outcomes

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A new method of palate repair for speaking un-repaired clefts ‘Suspension Palatoplasty’. Analysis of 81 cases with minimum of 5years follow-up.

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Title:
A new method of palate repair for speaking un-repaired clefts ‘Suspension Palatoplasty’. Analysis of 81 cases with minimum of 5years follow-up.

Introduction:
Results of conventional palatopalsty in speaking unrepaired clefts (>6years) have been disappointing.

Aims:
To evolve a method of palate repair with predictable VP closure and normal speech.

Methods:
‘Suspension palatoplasty’ is a technique which utilizes a primary midline narrow (1cm) pharyngeal flap to suspend a palate repaired by Modified Furlow’s technique. The pedicle of the flap is designed to be at the lower one third of the adenoids This technique aims to position the soft palate as close to the posterior-superior nasopharynx as a possible. The concept of this procedure was developed based on our previously published work which showed that the velopharyngeal closure is most likely if the resting gap seen on lateral Videofluroscopy is less than 7mm

Results:
138 cases of speaking unrepaired clefts ranging from age 6 to 45 were operated. 5year low-up studies showed normal speech in 56 out of 81 cases where complete speech records were available. Of the remaing 25 majority had glottals and / or residual VPI. Majority of these patients did not undergo formal institutional speech therapy. Normal speech was possible at whatever be the age at primary surgery. None of these complained of any difficulty in breathing and 3 had snoring. Those in whom endoscopic evaluation has been performed postoperatively, confirmed this to be a dynamic procedure with the lateral ports opening and closing effortlessly during speech.

Conclusion:
Suspension Palatoplasty is an easy and predictable operation with few side effects. Following the preliminary results presented by me at ICCPA meeting in Chennai, India, this has become our go to procedure for all speaking unrepaired clefts and 236cases underwent this procedure till December 2021.

Suspension Palatoplasty-Primary Pharyngoplasty with Furlow's

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A comparative study of three palatoplasty techniques in wide cleft palates

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

1.Introduction:Many surgical interventions have been described for primary cleft palate closure.Despite the multitude of techniques, no single surgery is ideal for all patients.Thus, controversy remains regarding the most effective surgical technique in different cleft palate patterns. Accordingly, this prospective study was performed to compare the clinical outcomes of the modified palatoplasty with FZP (MPFZP), von Langenbeck repair,and 2FP techniques in cleft palates wider than 8 mm, by analysing the respective rates of postoperative complications and patient functional outcomes.
2.Aims:The aim of this study was to clinically evaluate the effectiveness of various palatoplasty techniques for the repair of cleft palates greater than 8 mm in width.
3.Methods:This prospective cohort study included 142 patients with complete cleft palate between September 2017 and January 2019. Among the patients, 60 underwent a modified palatoplasty with Furlow Z-plasty (MPFZP), 51 underwent a von Langenbeck (VL) repair, and 31 underwent a two-flap palatoplasty (2FP). The MPFZP technique was modified with bilateral relaxing incisions and a radical intravelar veloplasty. Descriptive statistics and the χ2 test were used to explore and compare the rates of complications among the three surgical techniques. No statistically significant difference in sex, age at repair, cleft width, or cleft Veau type was found among the three groups.
4.Results:Rates of wound dehiscence at 1 week and fistula formation at 3 months after the surgery also did not differ significantly among the three techniques. However, velopharyngeal function for speech was better inpatients who underwent MPFZP compared to the other two techniques ($P < 0.05$).
5.Conclusion:The repair of a wide cleft palate can be difficult due to the tension at closure.Although the study findings did not demonstrate a difference in complication ratesamong the three techniques, MPFZP appears to have the best functional outcomes inpatients with a cleft palate wider than 8 mm.

Table 1. Characteristics of patients and differences among the repair procedures.

	Modified palatoplasty with FZP	von Langenbeck repair	Two-flap palatoplasty	Total	*P*-value
Sex, *n*					0.723
Male	28	24	12	64	
Female	32	27	19	78	
Age at repair (years), mean ± SD	1.4 ± 0.6	1.5 ± 0.6	1.6 ± 0.6	1.5 ± 0.6	0.386
Cleft width (mm), mean ± SD	13.3 ± 3.6	13.7 ± 3.8	14.2 ± 3.6	13.6 ± 3.7	0.497
Veau type, *n*					0.365
Type II	36	26	14	76	
Type III	24	25	17	66	
Total cases, *n*	60	51	31	142	

FZP, Furlow Z-plasty; SD, standard deviation. $P < 0.05$ is a significant value.

Cleft palate,Surgery,Comparative study, Fistula,Speech, Complications

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Benchmarking fistula-free operating: the “inside out” sequence for cleft lip, palate and nose repair; 20-year results of primary cleft palate repair in 678 cases

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction

The “inside out” cleft lip, palate and nose repair sequence is a two-step technique, key steps are comprehensive nasal floor repair and integration of vomer into the palate (vomeropalatoplasty). It comprises first, palate and alveolar repair and, subsequently, lip and nose repair. Technique and sequence were developed in the timeline of the 1960s to the 1990s by Prof Koch based on the experience of Prof Rosenthal at the world’s first multidisciplinary cleft-centre in Thallwitz/Eastern-Germany.

Aims
Aim of the study was to analyse the 20-year results as single center retrospective analysis.

Methods

All primary complete cleft lip and palate and isolated cleft palate repairs between November 2001 and December 2021 by a single surgeon (H.K.) were included. Primary outcome measures were operating time, any fistula formation (Pittsburgh I-VII), follow-up data, 5-year speech outcome, 5-year index and additional or corrective surgery.

Results

A total of 678 children undergoing cleft palate repair were included. The overall fistula formation was 0.44%. In isolated cleft palate (I-CP) repair, the fistula rate was 0%, in unilateral cleft lip and palate (UCLP) repair, it was 0.35%, and in bilateral cleft lip and palate (BCLP) repair, 1.4%. Alveolar bone graft was required in 18% in UCLP and 23% in BCLP. The 5-year speech results show normal or minimal hypernasality in 79% in I-CP, 58% in UCLP, and 55% in BCLP. Speech Surgery was required in 4.4%, 9% and 11% respectively. 5-year Index in UCLP was 54% for good facial growth (score 1 or 2). Poor facial growth was 20.3% (Score 4 and 5). The average score was 2.49.

Conclusions

The “inside out” sequence for cleft lip, palate and nose repair is a safe and reliable technique with almost no fistula formation, creating normal anatomy. Speech results and midfacial growth are similar and well comparable with the literature and recognized standard techniques.
fistula-free
vomeropalatoplasty
inside-out sequence

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Evaluating the use of 3D exoscopes to improve ergonomics in cleft surgery

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction:
The limited visual fields of cleft surgery have presented ergonomic and educational obstacles to surgeons as well as putting them at risk of developing cervical spine disorders. Exoscopes are recently introduced high-definition digital imaging systems that are able to provide surgeons with magnified, three-dimensional (3D) images of the surgical field whilst improving surgeon ergonomics.

Aims:
The aim of this study was to investigate and compare the technical feasibility, ergonomics and educational value of the 3D exoscope in comparison with traditional loupes, prismatic loupes, and microscope in cleft surgery.

Methods:
A variety of primary cleft operations were performed with the VITOM 3D exoscope (Karl Storz GmbH, Tuttlingen, Germany), traditional and prismatic loupes, and the operating microscope. The cervical neck angulation of the operating surgeon was recorded in real-time with an inertia measurement unit system (Mbient, San Francisco, USA) and experiences of the surgeon and assistant were prospectively evaluated with 5-point Likert scales in regards to ease of preparation and use, image quality in terms of magnification, field of view, and illumination and ergonomics, and educational value.

Results:
Use of the 3D exoscope in cleft surgery yielded improved experiences for both surgeons and assistants in comparison with loupes and microscopes without significantly increasing operating time. The system improved surgeon ergonomics with reduced procedure time in cervical flexion and reduced musculoskeletal strain. A short learning curve is predicted with the system due to the ease of set-up and improved visual fields. Additionally, the system improved the educational value and involvement of the procedures as it provided complete visualisation for all theatre team members.

Conclusions:
Use of the 3D exoscope is technically feasible in the paediatric cleft population with the possibility of improved surgeon and assistant experiences and ergonomics in comparison with loupes and the operating microscope.

Cleft, Three-dimensional exoscope, ergonomics

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Reduced Socioeconomic Inequities in Cleft Care After Implementing a Cleft Nurse Navigator Program

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction
Patients from historically marginalized groups—including non-white race, lower socioeconomic class, those utilizing public insurance, and/or non-English primary language speakers—face systemic barriers to timely cleft care leading to higher rates of missed clinic appointments and delays in cleft repair. Nurse Navigation is a well-documented intervention to improve education, communication, and care delivery within various medical specialties and has not yet been tested as a means of delivering more equitable cleft care.

Aim
To evaluate the impact of a Cleft Nurse Navigator (CNN) on cleft care timing and delivery for historically underserved patient groups.

Methods
Patients born between May 2009 and November 2019 who presented for cleft care before 250 days of life were reviewed. Using a retrospective cohort design, eligible patients who were born before (n=454) and after (n=285) the initiation of the CNN were compared. Demographic variables were abstracted from the EHR and median income was assigned from US Census Bureau zip-code tabulations. Feeding was assessed through reported family concerns and average weight-for-age Z-scores.

Results
Prior to CNN implementation, white patients were seen an average 12 days earlier than non-white patients for first outpatient appointment ($p < 0.001$) which decreased to 4 days post-CNN ($p=0.183$). Pre-CNN, nonwhite and publicly insured patients experienced delays in cleft lip and palate repair ($p=0.025$), compared to white and privately insured patients. These differences were not present post-CNN ($p=0.05$). Mean age-interval Z-scores improved from pre-CNN to post-CNN cohorts among publicly insured patients (-1.14 to -0.85; $p=0.031$) and black patients (-1.31 to -0.57, $p =0.002$). Prior to CNN implementation there were more communications with white patients than non-white patients from nursing staff ($p=0.020$) which became equivalent post-CNN ($p=0.682$).

Conclusions
The CNN is an effective intervention to reduce inequities in cleft care timing, communication, and feeding for nonwhite and publicly insured patients.

Table 2. Communications, Feeding Issues, Feeding Method, FTT, and Average Weight Z-Scores in the Pre-CNN and Post-CNN Cohorts.[a]

	Pre-CNN	Post-CNN	*P*
Communications with NP, μ ± SD	1.5 ± 1.9	0.8 ± 1.3	**<.001**
Range	0-13	0-12	
Communications with CNN, μ ± SD	0.0 ± 0.0	2.0 ± 2.1	**<.001**
Range	0	0-12	
Total communications, μ ± SD	1.5 ± 1.9	2.8 ± 2.7	**<.001**
Range	0-13	0-14	
Feeding issues reported at first apt, %	206 (50.0)	97 (35.0)	**<.001**
White	137 (49.1)	67 (34.5)	**.002**
Non-white	69 (51.9)	30 (36.1)	**.034**
Publicly insured	76 (51.0)	36 (34.0)	**.010**
Privately insured	130 (49.8)	61 (35.7)	**.006**
Feed, %			
Breast milk	128 (36.8)	85 (31.0)	.527
Formula	125 (35.9)	98 (35.8)	.176
Combination	93 (26.7)	82 (29.9)	.143
Other/unknown	2 (0.6)	9 (3.3)	**.010**
Feeding method, %			.090
Breast	40 (9.9)	24 (8.7)	.693
Bottle	53 (13.1)	45 (16.3)	.294
Special bottle	225 (55.7)	156 (56.5)	.893
Tube	36 (8.9)	10 (3.6)	**.011**
Tube and bottle	13 (3.2)	8 (2.9)	.992
Breast and bottle	37 (9.2)	33 (12.0)	.293
FTT, %	91 (20.0)	56 (19.8)	>.999
White	49 (16.2)	34 (17.1)	.896
Non-white	42 (27.6)	22 (26.2)	.932
Publicly insured	45 (26.9)	23 (20.9)	.318
Privately insured	46 (16.0)	33 (19.1)	.477
Average weight Z-score, μ ± SD	−0.88 ± 1.14	−0.76 ± 0.97	.117
White	−0.79 ± 1.11	−0.73 ± 0.94	.551
Non-white	−1.08 ± 1.18	−0.82 ± 1.02	.090
Publicly insured	−1.14 ± 1.20	−0.85 ± 0.98	**.031**
Privately insured	−0.73 ± 1.08	−0.69 ± 0.95	.721
2-Week Z-score, μ ± SD	−0.99 ± 0.86	−0.83 ± 0.95	.067
4-Week Z-score, μ ± SD	−0.97 ± 1.06	−0.87 ± 0.99	.368
6-Week Z-score, μ ± SD	−1.16 ± 1.18	−1.00 ± 0.99	.211
8-Week Z-score, μ ± SD	−1.11 ± 1.35	−0.75 ± 1.01	**.005**
10-Week Z-score, μ ± SD	−1.06 ± 1.46	−0.80 ± .123	.146
12-Week Z-score, μ ± SD	−0.85 ± 1.35	−0.66 ± 1.18	.118
1-Year Z-score, μ ± SD	−1.17 ± 1.45	−0.95 ± 1.27	.134

Abbreviations: apt, appointment; CNN, Cleft Nurse Navigator; FTT, failure to thrive; NP, Nurse Practitioner; SD, standard deviation.

[a]Feeding issues, FTT, and average Z-scores are presented by racial/ethnic group as well as insurance type. Weight Z-score represents the average of Z-scores taken every other week for the first 3 months of life in addition to Z-score at 1 year of life. Statistically significant *P* values are bolded.

nursing, social support, health equity

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Feeding challenges in the newborn babies with cleft palate deformity and a novel approach for enhancing nutritional delivery in these children: A prospective clinical study

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: In children born with cleft palate deformities, the baby fails to create the negative pressure necessary for drawing the feed and also limits the use of the tongue to compress the nipple to squeeze out the feed. Hence various special feeders have been advised in these children.
Aims: To fabricate a customized feeder to aide in intra-oral nutrition delivery in cleft palate children and evaluate its mechanism of action; efficacy and parental acceptance.
Methodology: Twenty three babies of two to three weeks old, borne with complete unilateral or bilateral cleft palate (non-syndromic) were given a customized feeder and its mechanism of action was evaluated. The parents were given a questionnaire (ten questions) related to the feeder and their response was evaluated along with the growth parameters like weight and height till the babies were eight weeks old.
Fabrication of feeder: An elastomeric impression of the cleft palate is taken and on its cast, a 1.5mm thick BIOPLAST® flexible sheet is adapted using MINISTAR S® pressure molding machine. Similarly, another 1mm BIOPLAST® sheet is adapted on the cast of a nipple and then both are correctly positioned and joined together in the external heating chamber of the MINISTAR S® machine. This custom made nipple with lateral wings is fitted to the bottle for self-feeding by the baby.
Results: The lateral wings bridge the palatal defect and help the baby to take support from the palatal shelf on either side of the cleft and compress the nipple with the tongue to discharge milk or milk substitutes intra-orally. It has an excellent parental acceptance in terms of its efficacy and simple design.
Conclusions: This novel feeder is a good aide for nutritional intervention in cleft palate children. It can be fabricated with an universal design for mass use.

cleft palate, special winged nipple

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Implementation and Evaluation of the Glasgow Children's Cleft Clinic

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction

The Children's Cleft Clinic (CCC) was established in November 2020 at the Royal Hospital for Children, Glasgow. The multidisciplinary team on the CCC comprises audiology, paediatric dentistry and speech and language therapy (SLT). The aims of the CCC were to reduce the burden of multiple appointments and increase targeted clinical cleft care. Multiple appointments lead to increased absence from education and work for caregivers resulting in adverse effects on educational attainment, social equalities and quality of life.

Previously, patients were regularly seen by paediatric dentistry and SLT however only seen by audiology on an ad hoc basis. There was no structured screening.

Aims

A service evaluation to determine whether the CCC was able to:

1. Reduce the number of hospital appointments for cleft care families.

2. Identify healthcare problems in cleft care children more quickly resulting in expedient treatment, reduced healthcare inequalities and improved quality of life.

Methods

Retrospective analysis of clinical notes and interrogation of the appointment system for each patient attending between November 2020 and October 2021.

Results

124 patients, under the age of 5, attended a total of 276 appointments. There was a 23% (n=1.42) decrease in cleft related appointments per patient and 20% increase in attendance. 22% of children (n=38) were identified for onward referral from the clinic, mostly to Ear Nose and Throat (ENT) and to community services to provide more local audiology, dental and SLT care.

Conclusions

The CCC has reduced the appointment burden for cleft care families and reduced dental treatment need due to effective enhanced prevention. Screening from the CCC may improve speech outcomes due to the early identification and intervention for hearing difficulties which have enabled timely intervention with

amplification and treatment by ENT. Close liaison and early problem identification have facilitated the combination of procedures under one general anaesthetic as required.
Multidisciplinary, Preventive Care, Appointment Burden

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Revisiting Pediatric Cranioplasty: Success and Failures in Two Decades in over 500 Cases

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction:
For many surgeons, alloplastic bone substitute to solve structural contour defects in the pediatric skull remains an interest as an alternative to autogenous reconstruction.

Aims:
We review our two-decade experience with autogenous cranioplasty in the context of complications from alloplastic cranioplasty.

Method:
This is retrospective review of our experience from January 1995 to December 2015 which resulted in 648 cranioplasty procedures performed between the ages of 5 and 24. We developed a 3-dimensional Finite Element Model(FEA) to understand material failure.

Results: Of the 564 autogenous bone reconstruction, 511 were with split cranial bone graft and 53 were with rib graft. Complications included removal of fixation hardware in 12 patients that ranged from 2 to 11 years after the surgery. In all 78 cases the alloplastic complications, the implant was removed, and salvaged by an autogenous bone graft. The alloplastic complications ranged from frontal sinusitis, foreign body reaction, fractured implants and non-healing chronic scalp wounds. Complications developed 3 months to 14 years following the procedure. Among the factors leading to alloplastic implant failure in the pediatric population was continued growth and development of the cranial vault, development of the frontal sinus and the physical activity (sports) of this population. The FEA model predicted zone of high strain occurred at the interface bone/alloplastic that propagated throughout the implant.

Conclusions: The unproven, long-term record of alloplastic materials in pediatric cranioplasty with low complication rate of autogenous cranioplasty compel us to recommend autogenous bone grafts for primary and revision cranioplasty in children. Alloplastic material should be limited to resurfacing small defects and contour irregularities, after skeletal maturity. The growth and remodeling of the pediatric cranium and physical activity in children contribute to implant failures. Biomechanical analysis demonstrated that traumatic loads at implant/bone interface led to failure of the implant because of discontinuity of the load transfer.

cranioplasty; complications

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Modified Le Fort I Maxillary Osteotomy in Patients with Cleft Lip and Palate

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: Many factors affect the growth of individuals with cleft lip and palate defects (CL/P), whether intrinsic, surgical/iatrogenic, or functional factors. CL/P adults usually have Angle class III relation due to a decrease in horizontal and anteroposterior dimensions of the maxilla, and posterior crossbite, in addition to a possible persistent alveolar bone defect due to either failure or skipping of its treatment. About 15% of CL/P patients are faced by dysfunction of velopharyngeal mechanism, leading to hypernasality in their speech, along with other problems.

Aim: It was aimed to evaluate the use of modified Le Fort I (LF-I) osteotomy to correct the maxillomandibular relationship and persistent alveolar bone defects, and to study the effect of maxillary advancement on speech.

Methods: Patients with Angle class III relation and persistent alveolar bone defect due to a CL/P deformity were included. LF-I segmental maxillary advancement, suggested by Posnick (1), with or without mandibular setback was performed. Lateral profile analysis and measurement of the alveolar bone defect volume was done before and after surgery, along with analysis of the speech characteristics via perceptual speech assessment, nasometry, nasoendoscopy, and videofluorscopy.

Results: The study included eight patients, mean age was 19 years old. The mean amount of maxillary advancement was 7.5 mm, which was stable throughout the six months post-operative evaluation. Alveolar defect gaps were reduced. Difficulties were found intraoperative, including presence of a tight lip hindering maxillary movement, and presence of palatal scar. Speech characteristics of most of the patients were not affected.

Conclusion: Segmental LF-I maxillary advancement is a viable treatment option for retruded maxillas in CL/P, but requires modifications to overcome intraoperative difficulties.

cleft palate, orthognathic, segmental maxilla

1132

Evidence-based approach for correction of asymmetry associated with hemifacial microsomia.

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Introduction: The facial asymmetry is usually the main chief complaint of patients suffering from HemiFacial Microsomia (HFM). Aims: The current study presents an algorithm for management of facial asymmetry associated with HFM. Methods: In the last ten years 20 patient suffering from HFM (average age 14 years old, ranging from 5-22 years old age) presented to the Cleft and Craniofacial Anomalies Clinic of the Faculty of Dentistry Ain Shams University; patients were referred primarily to the orthodontic department to do orthodontic assessment; if the patient was young and prepubertal he/she were encouraged to do functional orthodontics to aid in correction of asymmetry. Post Pubertal and functional appliance resistant patients were encouraged to perform computer planned distraction osteogenesis to correct asymmetry. After finishing the distraction osteogenesis consolidation, the patients had fat injection to correct the soft tissue asymmetry. Resistant asymmetries and adult patients presenting to the clinic were treated by computer planned orthognathic surgeries and genioplasties. Results: orthodontic appliance was successful in correction of smile deviation by 62% ±19% and chin deviation by 10.5% ±1% in young growing patients. Computer planned distraction osteogenesis was successful in correction of smile orientation by 63.7% ±19% and chin deviation 42% ±26%. Computer planned genioplasty and orthognathic surgeries were successful in correction of chin deviation by 70%± 10 %. Fat injection was successful in achievement of a moderate soft tissue gain with more than 50% patient satisfaction. In addition to the previously mentioned cosmetic parameters; parallel research was conducted to assess the effect of Bone Marrow Mesenchymal Stem Cells (BMMSCs) on the distracted bone radiographic quality and found that the bone quality improved radiographically after injection of BMMSCs by 117HU± 4HU compared to the non-injected patients. Conclusions: This algorithm appears to be accurate, simple, cost efficient and patient tailored in achieving satisfactory correction of asymmetry.

Hemifacial Microsomia, Distraction, Genioplasty, Fat-injection

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Bespoke nasal obturators: An additional prosthetic treatment for velopharyngeal dysfunction for speech in patients with cleft palate and non-cleft diagnoses - A preliminary speech outcome study.

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TH3.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 11:00 - 13:00

Aim: To assess the effectiveness of bespoke nasal obturators in reducing features of velopharyngeal dysfunction (VPD) for speech in 22 patients with cleft and non-cleft diagnoses. The use and effect of bespoke nasal obturators for VPD has not been reported in the literature and is not routinely used as a prosthetic treatment in UK Cleft Care.
Method: 22 patients were fitted with bespoke nasal obturators at Evelina London Cleft Service between 2017- 2019. The group included 11 patients with cleft palate diagnoses and 11 patients with non-cleft diagnoses. Patients' speech with and without the obturators were recorded. A Specialist Cleft & VPD Speech and Language Therapist, blinded to the procedure and external to the Evelina London Cleft Service, assessed randomised, audio speech samples using the CAPS-A Audit Tool. Speech parameters assessed included: hypernasality, hyponasality, audible nasal emission, nasal turbulence, non-oral cleft speech characteristics and passive cleft speech characteristics. Questionnaire data was collated 6-8 weeks post fit and included: patients' opinion of speech with nasal obturators, use, comfort and appearance.
Results: Wilcoxen signed ranks test indicated statistically significant differences in CAPS-A scores for: hypernasality ($p<.05$), hyponasality ($p<.05$), nasal emission ($p<.05$) and passive cleft speech characteristics ($p<.05$) for patients wearing bespoke nasal obturators. No statistically significant differences were noted for nasal turbulence ($p>.05$) and non-oral cleft speech characteristics ($p>.05$) Questionnaire results indicated 73% of patients reported improved speech clarity when wearing the device, 68% reported it comfortable, and 84% were happy with its appearance.
Conclusions: Bespoke nasal obturators improve features of VPD in patients with cleft and non-cleft diagnoses. When further speech surgery is not possible, customized nasal obturators provide an additional prosthetic treatment option for patients presenting with VPD. Use of the device as a diagnostic speech therapy tool targeting compensatory speech patterns could also be considered in future studies.

bespoke nasal obturator, velopharyngeal dysfunction

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Identifying the impact of patient factors on dental health outcomes of cleft care at 5 years of age.

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TH4.1 Task Force Cleft without Caries, Sidlaw, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction
Children with an orofacial cleft are recognised to be at increased risk of developing caries. Evidence is limited on the patient factors associated with caries risk and treatment among children with a cleft.

Aim
Explore the association between patient factors and dental health outcomes at 5-years of age in children born with an orofacial cleft.

Methods
This retrospective cohort study used linked data from the CRANE Database and Hospital Episode Statistics (HES) hospital admissions data (for births 2004-2012, N=7,755). Data on decayed (d), missing (m), and filled (f) teeth were used to calculate dmft scores, and treatment/care indices. The associations between poor dental health (dmft >0 – experience of dental decay and dmft>5 – extensive dental decay) and the following patient factors were explored using Chi-Squared analysis: socio-economic deprivation, cleft type, ethnicity and sex.

Results
Poor dental health was most prevalent among children living in the most deprived areas (dmft >0: 57.2% (most deprived quintile) vs 24.2% (least deprived); dmft >5: 25.7% (most deprived) vs 14.72% (least deprived), $p<0.001$ for both). Children living in the most deprived areas were less likely to receive treatment for dental disease (Treatment Index) and less likely to receive early appropriate care (Care Index) ($p<0.001$ for both). Significant variation in dental health outcomes by cleft type and ethnicity were also identified ($p<0.05$)). Having more complex clefting such as bilateral cleft lip and palate, and being of an other-than-white ethnicity, was associated with greater dental disease burden and receive less treatment/care. No association was found between sex and dental health outcomes.

Conclusion
Negative dental health outcomes at 5-years are associated with living in the most deprived areas, more complex clefts and being of an other-than-white ethnicity. Further exploration of the impact of patient factors on outcomes of cleft care will allow resources/efforts to be focussed on those with greatest need.
orofacial cleft
dental health
outcomes

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Caries in children with and without orofacial clefting; Systematic Review and Meta-Analysis

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TH4.1 Task Force Cleft without Caries, Sidlaw, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Abstract:

Background: As well as the aesthetic and functional problems they cause, there has been recent evidence that there are wider aspects of health and wellbeing that affect those with CL/P. One of these is the experience of dental caries which seems to be higher in those with CL/P than those without. Early childhood caries carries with it a burden that can have significant and wide-ranging consequences for the health and quality of life of children, including impaired cognitive development, poor school attendance, and difficulty with schoolwork.

Aim: This systematic review compared children's primary dentition caries experience for those with cleft lip and/or palate (CL/P) and without.

Methods: Four databases were searched without date restriction for; cross-sectional studies comparing caries experience for children with CL/P to those without. Screening, data extraction and risk-assessment were carried out independently (in duplicate). Meta-analyses used a random effects model.

Results: Twenty studies (21 reports) fitting the inclusion criteria, comprised 4,647 children in primary dentition from 12 countries. For dmft (n=3016 children; 15 groups); CL/P mean=3.2; standard deviation (SD)=2.22 and no CL/P mean dmft=2.5; SD 1.53. For dmfs (n=1095 children; 6 groups) CL/P mean=4; SD=3.5 and no CL/P mean=3; SD=2.8. For % caries experience (n=1094 children; 7 groups) CL/P mean=65%; SD=20.8 and no CL/P mean=52%; SD=28.1. Meta-analysis showed higher caries experience in children with CL/P, standardised mean difference=0.46; 95%CI=0.15, 0.77. Studies' risk of bias was high (n=7), medium (n-10) and low (n=3).

Conclusion: In studies from both high and low income countries, children with CL/P had higher caries experience compared to those without CLP.

Keywords: OFC, children, caries, meta-analysis

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Level of knowledge in oral health prevention of caregivers of Cleft Lip/palate patients of a CCC in Lima-Peru in the year 2021

Nivel de conocimiento en prevención de la salud bucal de los cuidadores de pacientes con labio hendido/paladar hendido de un Ccc en Lima-perú en el año 2021. María del Rocío Lu Chang Say[1]
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TH4.1 Task Force Cleft without Caries, Sidlaw, EICC - Streamed, July 14, 2022, 14:00 - 15:00

The oral health of Cleft patients with has generated alert in Dentistry due to the great importance of various problems that have as a result functional, aesthetic and emotional impact on the lives of people with this condition. Aims: The objective of this study was to determine the level of knowledge in oral health prevention (NCPSO) in parents and caregivers of patients with FLAP of the Programa Creciendo in 2021 Methods: Observational, descriptive, cross-sectional, and not experimental study. 142 parents and caregivers were surveyed to measure their NCPSO. Results: 57.75% of the parents and caregivers had a good NCPSO, 26.06%, regular. 14.08% excellent and 2.11%. poor. 90% of caregivers were female, 46% were between 31-40 years of age, 28.87% between 20-30 years of age and 21.13% between 41-50 years of age and almost all age groups showed good NCPSO. According education level, all groups showed good NCPSO except for those who had no instruction, who showed regular NCPSO. According to the occupation, 56.34% were housewives and almost all occupations showed good NCPSO. According to the socioeconomic level of the surveyed families, the majority belonged to the lower-income group (66%), however, almost all S/E groups showed good NCPSO, with the exception of level C, who showed excellent NCPSO. For most respondents, the NCPSO for diet was excellent, good for oral hygiene and prevention, and fair for dental caries. Conclusions: Most of the caregivers of the children of the Creciendo Program showed good NCPSO, they were housewives mothers of the 3rd decade of life, with secondary education and belonged to the group of scarcer resources for all levels S/E they had good NCPSO .

ORAL HEALTH PREVENTION
CLEFT
CAREGIVERS

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Classification of Cleft Lip and Palate in Scientific Manuscripts: a Literature Review

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TH4.2 Task Force Epidemiology, Aetiology and Prevention, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 14:00 - 15:00

Introduction

In order to investigate the burden of orofacial clefts (OFCs) properly, it is essential that those who play a role in the care process of diseases speak the same language when creating datasets. Therefore, it is necessary that classification and registration will be done uniformly. As of today, a great variety in systems is being used by clinicians and reported in scientific literature.

Aims

The aim of this article is to describe which classification systems regarding OFCs are used in scientific literature.

Methods

All articles published in the Cleft-Palate and Craniofacial Journal between January 2015 and December 2020 were analyzed. Included studies were of epidemiological and/or surgical nature. Studies concerning other cleft subjects, systematic reviews or meta-analyses and studies with less than 20 cases were excluded. For all the included articles, the classification systems or description methods of OFCs were noted.

Results

A total of 119 out of 803 articles were included in the study. Overall, 49 distinctive description methods or classification systems were used in these articles. “Unilateral cleft lip and palate (UCLP)” was the most often used description (n=16, 13.4%), followed by the “cleft lip (CL)/cleft lip and palate (CLP)/cleft palate (CP)” description (n=9; 7.6%) and the “unilateral cleft lip and palate/bilateral cleft lip and palate (BCLP)/isolated cleft palate description” (n=9; 7.6%). Of those 49, 44 descriptions or classification systems were used in less than five articles.

Conclusion

A great variety exists regarding cleft classification systems used in scientific literature. Most often, a description of different OFC groups was made instead of a predesigned system like the Veau or LAHSHAL classification system. This hampers treatment outcome comparison due to incomparable datasets. Therefore, homogenous classification would enhance audit, research and treatment of OFCs.

Cleft Classification System; Literature Review

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Genomics of oral Clefts in India

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TH4.2 Task Force Epidemiology, Aetiology and Prevention, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 14:00 - 15:00

1. Introduction: Cleft lip and palate is one of the most common malformations worldwide. Its etiology is highly complex with the involvement of more than one genes and extrinsic factors, which is yet is poorly known.
2. Aims: Identification of candidate genes and risk factors for cleft lip and palate in Indian populations
3. Methods: Genome-wide linkage scans, direct resequencing of genes, case-control association tests, and cytogenetic analysis were performed.
4. Results: Genome-wide linkage revealed novel loci including 16q12.1-q12.3, 6q24, and 19q31. No mutation was identified in sequencing of IRF6 gene multiplex families of VWS. Linkage scans from two of these families have suggested a novel gene NOL4 and a haplotype in a non-coding region of IRF6 respectively. TGFB3 sequencing identified a heterozygous C to T change in the promoter region near TATA box at 188th bp downstream from 3'UTR.
Significant associations were found with IRF6820G, MTHFR677T, and combined genotypes of these alleles, and also with G allele of RFC1G80A. MTHFRA1298C, and TCN2G776G were not associated.
MMP3promoter variant -1171:5A/6A was a risk. Analysis of dietary and plasma folate, B-12, and homocysteine (hcy) revealed normal level of folate, significantly deficient B12 and very high levels of hcy, in cases compared to controls. Interestingly in cases, the hcy was significantly high in cleft-females compared to cleft-males, suggesting hcy as a higher risk in males than in females, probably due a higher threshold level of hcy in females.
5. Conclusions: Multiple factors are identified as risk factors in Indian population for CL/P, from gene mutations to biochemical variations. Our studies suggest that the combinations of several of these risk factors are major contributors in CL/P compared to individual factors. From our studies it is also evident that Indian population is markedly different than other western populations, in terms of major contributing risk factors for CL/Ps.
Cleft genetics, Cleft, cleft etiology

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The user experience of a mobile application for congenital anomalies surveillance.

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TH4.2 Task Force Epidemiology, Aetiology and Prevention, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 14, 2022, 14:00 - 15:00

Congenital anomalies (CA) surveillance systems are necessary to register cases efficiently, which requires an efficient method of collecting CA data using current information and communications technology (ICT).
The aim is to examine user experience (UX) with the global genetic surveillance mobile app.
A study was conducted to capture birth anomalies using global genetic surveillance (GGS). Participants with experience with the genetic register were invited to participate in the study. The users experienced the GGS app by capturing the participants' data at a facial cleft anomalies (FCA) clinic. They used two methods to capture the data: (i) using a provided tablet device, preloaded and registered with the GGS app; and (ii) using a web link that can be used on a mobile device or a desktop. In addition, a WhatsApp group was created to communicate with the users regarding technical support and relevant improvements. After capturing the data over five months, the users shared their UX during an online meeting with the principal investigator. A structured interview took place, using descriptive data analysis to describe the UX of the GGS app.
Results
The GGS smart mobile application was shown to be simple and efficient to capture data. Participants agreed that the user interface (UI) including the visual design, layout, and interactive design, was sufficient. Their UX of the GGS app regarding the objective, usability, and flexibility exceeded their expectations.
Conclusion
The GGS smart mobile application UI and UX meet the need to capture and report the birth anomalies data efficiently. In addition, the GGS app is ready to be used on a larger scale as a hospital- and/or population-based birth anomalies surveillance tool.

Cleft epidemiology, congenital anomalies surveillance

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Overcoming accessibility-limitation of Comprehensive and Holistic cleft care at Thai-Lao-Myanmar borders: Lesson-learned of a social worker in Thailand

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TH4.3 LMIC Theme, Fintry, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction: Patients with cleft lip and palate in poor families located in remote area lack of access to medical care, surgery expertise, psychological support and struggle with worries on what causes of cleft while cleft team in upcountry lack certain of required disciplinary and relevant cleft care skills/ techniques to fully provide the patients to complete comprehensive and holistic cleft care.
Aim: Promoting motivation for cleft-teams to go beyond existing resource and limitation to increase accessibility of both the cleft-team and the patients to develop needy services of comprehensive and holistic cleft care.
Methods: Sharing experience and highlight key points on how to start a cleft-team in upcountry and gradually develop multidisciplinary cleft care-team to increase accessibility for the patients to needed intervention of comprehensive and holistic cleft care. Explaining how to successfully mobilizing available resources and recruiting needed disciplinary members. Raising major programmes, process, innovations and policy involved to overcome accessibility-limitation of the respective cleft-team in enabling the team to provide complete process of comprehensive and holistic cleft care.
Conclusion: Patient-centered and continuing initiatives to go beyond existing resource and limitation with effective collaboration of available expertise network, medical and non-medical, contribute to develop cleft-team and increased accessibility of the clefts in remote area to complete process of comprehensive and holistic cleft care.

overcoming accessibility-limitation of cleft care

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An important thing to help improve equality of care is…

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TH4.3 LMIC Theme, Fintry, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction

It is well established that disparities and inequalities exist within healthcare in Europe and subsist within cleft and craniofacial care. Therefore, it is essential to provide an understanding from individuals involved in cleft care and their thoughts about how we can improve equality of care in Europe.

Aim

To elucidate prerequisites for improved equality of cleft and craniofacial care in Europe

Methods

Group Concept Mapping (GCM) is a mixed qualitative and quantitative participant-driven method that aims to facilitate the understanding of complex phenomena. The methodology comprises the generation of ideas (statements) through focus group brainstorming guided by a study-specific prompt. This is followed by conceptual sorting and importance rating of the statements. Sorted data are then analysed using multidimensional scaling to map out relationships among individual statements. Cluster analysis is used to identify clusters of statements representing common aspects of the studied area. The participants rated the importance (1= Relatively low importance, 4= Extremely Important) and ease of implementation (1= Very easy to implement, 4= Very difficult to implement) of these clusters.

Results

Fifty-six participants (62,50% females, 37,50% males) from 25 European countries contributed to the GCM, with 61% of the participants having more than ten years of experience in cleft care. The GCM analysis generated six clusters across three levels with the following ratings:

Micro

1. Facilitating person-centred care: importance 3.34 and implementation 2.01
2. Healthcare Professionals development, knowledge, and awareness: importance 3.39 and implementation 2.08

Meso

3. Resources & availability: importance 3.23 and implementation 2.57
4. Inclusiveness & support strategies: importance 3.26 and implementation 2.33

Macro

5. European standardisation: importance 3.37 and implementation 2.68
6. Governmental health policies: importance 3.35 and implementation 2.80

Conclusion

The outcome of the study identifies six clusters distributed across three levels that should be taken into consideration when generating a more equitable provision of care throughout Europe.

Provision of care, equality, Europe,

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Cleft Team Care in Sub-Saharan Africa: Perspectives on Development and Sustainability

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TH4.3 LMIC Theme, Fintry, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction

Partners in African Cleft Training (PACT) is a collaborative program between multidisciplinary providers on cleft teams in Africa and USA. Since 2008, over 140 providers from teams in Ghana, Ethiopia, Nigeria, Liberia, and Kenya have participated in 14 educational workshops. Developed through collaboration among team leaders, workshops include didactics and shared learning experiences with a goal to train regional cleft providers in multidisciplinary team care. This abstract aims to present themes from PACT workshop discussions on challenges to developing and sustaining team care in Sub-Saharan Africa (SSA).

Methods

In 2019, the PACT workshop focused on barriers to providing team care for children with clefts in SSA. PACT team members shared their perspectives in full group and breakout sessions. In 2021, virtual seminars addressed interim progress in team building. Session notes and recordings were reviewed for common themes.

Results

In 2019, challenges to develop and sustain cleft team care were grouped into the following categories: awareness of team care concept, trained providers, education, infrastructure, and funding. Many sites lacked infrastructure to provide cleft team care, and training opportunities and funding to support team members were limited. Team members stressed that improving awareness of the value of cleft team care to hospital and governing agencies, families, and community members was key to addressing challenges. In 2021, although significant challenges remain, team members shared resources and solutions that have become available recently and emphasized ongoing need to improve cleft team care awareness in SSA.

Conclusion

Many challenges impact the development and sustainability of multidisciplinary cleft teams in SSA. While discussing the barriers, PACT participants were also able to share ideas for solutions. We will present details of the barriers and potential solutions discussed by PACT team members. Ongoing discussions and collaboration may help providers improve access to team care for children with clefts in SSA.

multidisciplinary team care, Sub-Saharan Africa

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Barriers and resources for cleft lip and palate speech services globally

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TH4.3 LMIC Theme, Fintry, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction: While a number of international cleft organizations and cleft professionals in low- and middle-income countries (LMICs) have built and supported comprehensive cleft care and speech therapy models to address the shortage of speech services in LMICs, the specific speech needs of individuals with cleft lip and palate (CLP) in such countries remain unknown.
Aims: The objective of this study was to evaluate the barriers to accessing speech services for patients with CLP as well as the resources and models of speech services that are currently available for individuals with CLP in LMICs, with the goal of better understanding the needs of this population.
Methods: Qualitative and quantitative methods consisted of Smile Train partner surveys that were distributed June 25th - July 31st 2018 worldwide. Surveys were distributed through Smile Train's online medical database, Smile Train Express, which every Smile Train partner uses to report their Smile Train sponsored treatment outcomes. A total of 658 Smile Train partners responded to the surveys. Respondents included surgeons, speech therapists, orthodontists, administrators and nurses who represented NGOs, hospitals (private or public), hospital groups, and private clinics.
Results: Results indicated that lack of resources, including access to local speech providers and language materials, as well as financial constraints such as patient travel and speech treatment costs, are the most commonly reported barriers to accessing speech services across all geographic regions surveyed.
Conclusion: Improving access to CLP speech services in LMICs may require strategies that address lack of speech providers, language materials, and financial constraints.

international, Smile Train, speech therapy

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Barriers to early cleft care provision in a limited-resource setting: A qualitative study of community members' and health managers' views in Bungoma County, Western Kenya.

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TH4.3 LMIC Theme, Fintry, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction: Bungoma County is a primarily rural setting in Kenya with a high burden of neonatal mortality and low levels of perinatal care. Prevalence estimates of cleft cases are based on surgical records from Dreamland Hospital, the only cleft care provider in Western Kenya. About 100 patients undergo cleft surgery every year, of whom only 5.3% have an isolated cleft palate. The prevalence of underweight at surgery is three times higher in under-5 children with cleft than in children without cleft (34.5% vs. 11.0%).
Aim: To explore community and healthcare system-related barriers and opportunities to identify every cleft case and provide early cleft care.
Methods: Four focus groups including a total of 46 mothers of young children (without cleft) were conducted across Bungoma County. Five semi-structured interviews of health managers were conducted at Bungoma County Ministry of Health. All interviews were digitally recorded, transcribed verbatim, and analysed thematically.
Results: Unskilled delivery and stigma associated with the presence of a cleft lip remain major barriers to accessing care. Awareness-raising efforts are necessary to further promote facility-based deliveries and dispel false beliefs in communities about the causation of cleft. In health facilities, immediate care provision is also hindered for children born with the less obvious isolated cleft palate by the lack of palate examination at birth. Several factors, including lack of staff knowledge, experience, and workload also affect the quality of immediate post-partum care. A strengthening of skills through formal training, re-training on-the-job, and mentorship were cited as ways to ensure that newborns with cleft are identified and provided care in a timely manner.
Conclusions: The identification of barriers and opportunities in early cleft care provision should help devise the most appropriate strategy to ensure that every child born with a cleft in Bungoma County is identified and provided with the care needed to survive and thrive.
neonatal safety
limited-resource setting

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Expanding the Surgical Capacity Within a State-of-the-Art Mobile Hospital Facility PART I: The Implementation of the Diagonal Model to Address the surgical Needs of Neglected Primary and Secondary Cleft Lip and Palate Patients in the State of Oaxaca-Mexico

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TH4.3 LMIC Theme, Fintry, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction

CLP patients and families living in Oaxaca-México face several barriers to access adequate care leading to disability, social exclusion and major financial stress. As a low resourced region; most primary patients receive delayed, suboptimal and/or incomplete surgical and clinical care, and most secondary CLP patients display severe aesthetic and/or functional stigmata. More recently, the COVID-19 pandemic has made access to care even more difficult.

Aims

To introduce a new model of Humanitarian cleft care and to describe the evolution of the Mobile Surgery International (MSI) initiative as an innovative model to expand the capacity for the provision of sustainable, timely, safe, quality, accountable, comprehensive and cost-efficient surgical and clinical care for CLP patients.

Methods

The fast deployment and activation of a State-of-the-art Mobile Hospital is the result of coordinated efforts by humanitarian, public and private parties. Strategic planning and execution was based on a 5-S´s approach (Space, Staff, Supplies, Systems, Social Support).

Results

Since its arrival in 2019 in Oaxaca, the MSI Mobile Hospital has been able to significantly expand surgical capacity of the region. Over 3000 clinical interventions, 285 surgical interventions and 454 surgical procedures have been performed in 213 CLP patients with ages from 6m to 48yo. Primary 36% vs. Secondary 64%. A mean of 2.3 surgical procedures/intervention are performed in secondary CLP patients. Ongoing follow-up has been documented for 97% of patients. Surgical complications (infection, bleeding, dehiscence, necrosis, fistula) remain under 5%.

Additionally, the Mobile Hospital was temporarily repurposed in 2019 to provide Earthquake disaster relief and again in 2020 for COVID-19 pandemic specific actions, providing critical surgical capacity during these emergency situations.

Conclusions

The MSI initiative has largely and rapidly expanded the surgical capacity of the region to address the needs of neglected primary and secondary CLP patients, as well as, disaster relief and COVID-19 specific actions.

Global-cleft-care, Neglected-surgical-conditions, Surgical-capacity, Mobile-Hospital

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Velopharyngeal Dimensions in 22q 11.2 Deletion Syndrome Using Magnetic Resonance Imaging (MRI)

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TH4.4 MRI/SPEECH SURGERY, Kilsyth, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction: Velopharyngeal (VP) alterations are a common finding in individuals with 22q 11.2 Deletion Syndrome (22q). These alterations impact on the adequacy of the VP mechanism. This study will investigate how VP dimensions vary in individuals with 22q compared with controls.
Aims: 1) Assess VP structure in individuals with 22q compared to age and sex matched controls using measurements from MRI. 2) Examine which dimensions are significantly different between the 22q group and controls.
Methods: 10 individuals with genetically confirmed 22q and a MRI, were identified from our patient cohort at The Spires Cleft Centre, Oxford. A further 10 age and sex matched controls were identified by a Paediatric Consultant Radiologist. Available data allowed for the following measurements: Velar length/hard palate length/anterior and posterior cranial base angle/osseous pharyngeal depth and atlanto dental angle from the mid sagittal view and pharyngeal width from the axial view. Two Consultant Radiologists independently completed manual linear and angular measurements on the anonymised study/control group for statistical analysis.
Results: Velar length was significantly shorter in the 22q group (p=0.431). Pharyngeal width (p=0.037) and the anterior cranial base angle (p= 0.025) was significantly greater in the 22q group (unpaired t test). There was no statistical difference between the 22q group and controls on the other measurements.
Conclusions: This study contributes to the evidence that individuals with 22q demonstrate VP alterations when compared with controls.

22q11.2 DS; MRI; Velopharyngeal dimensions

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Objective measurement of the changes in velar length and levator veli palatini muscle position following Furlow double-opposing Z-plasty using velopharyngeal MRI performed pre- and post-operatively

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TH4.4 MRI/SPEECH SURGERY, Kilsyth, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction:
Furlow double-opposing Z-plasty lengthens the velum and restores normal position of the levator veli palatini muscles. While these changes are evident during the procedure, there is limited objective evidence that these changes are maintained post-operatively.

Aims:
To describe changes in velar length and levator veli palatini position following Furlow double-opposing Z-plasty in children with VPI.

Methods:
MRI of the velopharynx was performed pre-operatively and at least 5 months post-operatively on patients with a history of cleft palate +/- cleft lip who underwent Furlow double-opposing Z-plasty for treatment of VPI. The MRI used a fully awake, non-sedated, non-contrast protocol that included a high-resolution T2-weighted turbo-spin-echo 3D sequence obtained at rest, followed by sagittal and oblique coronal T2 images obtained during sustained /i/ phonation and then sustained /s/ phonation. Quantitative measures of the velum, levator veli palatini, and pharynx were obtained. Pre- and post-operative measurements were compared using paired t-tests.

Results: Six patients met inclusion criteria. Post-operative MRI was performed at an average of 17 months after Furlow double-opposing Z-plasty (range 5-36 months). On the postoperative MRI, total velar length increased 8.4mm mm (p=.001), velar thickness increased 2.1 mm (p=.033), distance from posterior bony hard palate to levator veli palatini muscle (e.g. effective velar length) increased 6.9 mm (p=.001). The distance from the velar knee to the posterior wall during sustained /i/ phonation (e.g. velopharyngeal gap) decreased 2.2 mm (p=.035).

Conclusions:
The velar lengthening and posterior positioning of levator veli palatini muscle achieved intraoperatively during Furlow double-opposing Z-plasty persist post-operatively, as evidenced by objective measurements made on MRI. The reduction in velopharyngeal gap following Furlow double-opposing Z-plasty appears to be substantially less that the gains in velar length and posterior positioning of levator veli palatini.
magnetic resonance imaging, assessment

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Velopharyngeal MRI Findings in Patients with VPI

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TH4.4 MRI/SPEECH SURGERY, Kilsyth, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction: There is limited experience with use of velopharyngeal MRI in the evaluation of patients with velopharyngeal insufficiency (VPI).

Aims: To describe velopharyngeal MRI findings in patients with VPI.

Methods: MRI of the velopharynx was obtained on all patients presenting for VPI management. The MRI used a fully awake, non-sedated, non-contrast protocol that included a high-resolution T2-weighted turbo-spin-echo 3D sequence obtained at rest, followed by sagittal and oblique coronal T2 images obtained during sustained /i/ phonation and then sustained /s/ phonation. Quantitative and qualitative measures of the velum, levator veli palatini, and pharynx were obtained. Length measurements for each patient were categorized as abnormal when they were >1 standard deviation (SD) beyond age- and gender- matched normative values. LVP muscles were classified as anteriorly positioned when they were located entirely within the anterior half of the palate.

Results: Velopharyngeal MRI was successfully completed in 73 of 78 patients (94%). Among patients with a repaired CP+/-L and no prior VPI surgery (n=32) common MRI findings included a short velum (78%), anterior LVP muscle position (55%), LVP muscle discontinuity (52%), and deep pharynx (38%). Among patients with persistent VPI after pharyngeal flap placement (n=20), common MRI findings included a pharyngeal flap base located inferior to the palatal plane (75%), LVP muscle discontinuity (47%) and anterior LVP muscle position (32%). Among patients with no history of cleft palate or VPI surgery (n=17) common MRI findings included a short velum (60%), deep pharynx (59%), anterior LVP muscle position (59%), and LVP muscle discontinuity (29%).

Conclusions – The use of velopharyngeal MRI during VPI evaluation provides direct evidence of LVP muscle anomalies and quantitative evaluation of palate length and pharyngeal depth. These findings may be useful in selecting surgical procedures to address patient-specific anatomy.

velopharyngeal insufficiency, MRI, VPI, palate

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Study Design and Methodology of the Velopharyngeal Insufficiency Outcomes Prediction Study (VPI-OPS)

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TH4.4 MRI/SPEECH SURGERY, Kilsyth, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction: Existing studies of velopharyngeal insufficiency (VPI) surgery are difficult to compare due to variation in patient populations, study methods, and outcome measures. In addition, most studies lack blinded outcome evaluations and equivalent comparison groups.

Aims: We present the design and methodology for the Velopharyngeal Insufficiency Outcomes Prediction Study (VPI-OPS), an actively enrolling prospective, observational multi-center study comparing palate re-repair to pharyngoplasty for treatment of VPI.

Methods: The study consortium includes 14 cleft centers across the United States and Canada. Individuals who are 3–23 years of age with a history of repaired cleft palate and a diagnosis of VPI are enrolled prior to VPI surgery. A standardized pre-operative evaluation is performed at all sites including collection of a video-recorded speech sample, nasometry, velopharyngeal imaging, and sleep symptom questionnaire. Participants then undergo VPI surgery, with the type of surgery based on the existing treatment protocols at their center. Participants return 6- and 12-months after surgery for repeat collection of video-recorded speech samples, nasometry, and questionnaires. The study will enroll 528 participants. Speech video recordings will be rated using the CAPS-A-AM scale by speech-language pathologists blinded to treatment history. The primary outcome is resolution of hypernasality, defined as absence of consistent hypernasality at 12-months after surgery. The secondary outcome is incidence of new onset obstructive sleep apnea. Analyses will adjust for demographics, medical history, pre-operative severity of hypernasality, and pre-operative imaging findings.

Results – Study enrollment began in March 2021. As of December 2021, 72 participants are enrolled and 30 have undergone VPI surgery. Enrollment is projected to continue through 2024. Collection of post-operative evaluations should be completed by the end of 2025, with dissemination of results soon thereafter.

Conclusions – We are actively enrolling participants into a prospective observational study of VPI surgical outcomes. This will be the largest study of VPI surgery outcomes to date.
velopharyngeal insufficiency, re-repair, pharyngoplasty,

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Objective measurement of the changes in velar length and levator veli palatini muscle position following buccal myomucosal flap lengthening of the palate, assessed using pre- and post-operative velopharyngeal MRI

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TH4.4 MRI/SPEECH SURGERY, Kilsyth, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction:
Buccal myomucosal flaps can significantly lengthen the velum and retroposition the levator veli palatini muscles. While these changes are evident during the procedure, there is limited objective evidence that these changes are maintained post-operatively.

Aims:
To describe changes in velar length and levator veli palatini position following buccal myomucosal flap lengthening of the palate in children with VPI.

Methods:
MRI of the velopharynx was performed pre-operatively and at least 5 months post-operatively on patients with a history of cleft palate +/- cleft lip who underwent buccal myomucosal flap lengthening of the palate for treatment of VPI. The MRI used a fully awake, non-sedated, non-contrast protocol that included a high-resolution T2-weighted turbo-spin-echo 3D sequence obtained at rest, followed by sagittal and oblique coronal T2 images obtained during sustained /i/ phonation and then sustained /s/ phonation. Quantitative measures of the velum, levator veli palatini, and pharynx were obtained. Pre- and post-operative measurements were compared using paired t-tests.

Results:
Nine patients met inclusion criteria. Post-operative MRI was performed at an average of 12 months after buccal myomucosal flap lengthening (range 8-17 months). On the postoperative MRI, total velar length increased 6.1 mm (p=.01), velar thickness increased 2.5 mm (p=.017), distance from posterior hard palate to levator veli palatini muscle (e.g. effective velar length) increased 5.4 mm (p=.001). The distance from the velar knee to the posterior wall during sustained /i/ phonation (e.g. velopharyngeal gap) decreased 2.7 mm (p=.069). With the exception of one patient, individuals with an initial velopharyngeal gap during phonation less than 12.2 mm achieved complete velopharyngeal closure on their post-operative MRI.

Conclusions:
Buccal myomucosal flap lengthening significantly increases the velar length, velar thickness, and distance of the levator sling relative to the posterior bony hard palate. These changes persist one year after surgery, based on objective measurements with MRI.
magnetic resonance imaging, assessment

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Velopharyngeal MRI: Experiences from Launching a Multisite Velopharyngeal MRI Protocol

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TH4.4 MRI/SPEECH SURGERY, Kilsyth, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction:
Magnetic resonance imaging (MRI) can provide direct visualization of velopharyngeal muscle anatomy and function. While used extensively in research, there is growing interest in the clinical application of velopharyngeal MRI for patients with velopharyngeal insufficiency (VPI). This transition to clinical care comes with a steep learning curve, as imaging centers have limited experience collecting and analyzing images of VP anatomy, particularly during phonation.

Aims:
(1) To describe a comprehensive educational program developed to help imaging centers initiate the use of velopharyngeal MRI, and (2) to describe the experiences at centers that completed this program and began performing velopharyngeal MRI in patients with VPI.

Methods:
A comprehensive educational program was developed and subsequently delivered at eight MRI facilities. The program included including a detailed manual with extensive illustrations and examples, didactic instruction, and hands-on experience. MRI personnel at each facility then completed individual interviews following the first and third velopharyngeal MRIs they performed. Detailed interview notes were maintained and common themes identified.

Results:
All eight MRI facilities completed the educational program. As of January 2021, six facilities had successfully performed their first velopharyngeal MRI; the two remaining centers were awaiting eligible patients. All MRI personnel stressed the value of hands-on training and access to quick, in-the-moment refreshers. Interviews identified common challenges related to patient positioning, orienting the imaging plane parallel to the levator veli palatini muscle, and confirming adequate scan quality. This led to the development of quick-reference sheets that enumerated the key components of the imaging protocol and provided examples of correct imaging planes. Brief instructional videos were also developed focused to MRI technicians and made available on the internet.

Conclusions:
MRI facilities welcomed the opportunity to perform velopharyngeal MRI. Hands-on training coupled with access to succinct reference materials were greatly appreciated by MRI personnel.

magnetic resonance imagining, velopharyngeal function

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Scoping review of outcome measures in cleft care used in research and reports: a pilot study for standardization

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TH4.5 REGISTRIES, Moorfoot, EICC - Streamed, July 14, 2022, 14:00 - 15:00

The global consensus in establishing a standardized of outcome measures should alleviate the burden of question regarding the effectiveness of one particular intervention in cleft care. However, the utilization of such recommendations varied in cleft treatment centers. Therefore, a strategic approach in implementing such protocol throughout the CLP treatment centers globally is the next concern after setting the standard set of treatment outcome.

This paper conducted a structured review covering multidisciplinary fields to observe the instruments used in monitoring the treatment outcome. A set of predefined keywords were employed in the search strategy utilizing several literature databases. No time limit was set to see the trends in CLP treatment evaluation tools. Irrelevant topic, non English abstract, animal studies, and review articles were excluded. Full-text papers were sought to gather the expected variables in a coded spreadsheet. Seven hundred eighty seven articles collected from the database search engines. After duplication reduction and inclusion-exclusion criteria screening, 367 papers were included in the final selection.

The papers were classified into 8 domains: appearance, breathing, burden of care, dental and oral health, eating and drinking, otologic health, psychosocial development, and speech/communication. The subdomains of each category were also noted including the instruments used to assess the variability. Majority of the identified outcomes focusing in dental and oral health, appearance, and speech outcomes.

Standardization of the outcome measure is vital for both research and treatment evaluation. The instruments used in assessing the treatments varied from one center to another, which will create irregularities in outcome comparison for cleft care improvement.
orofacial cleft, treatment outcome, review

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Nigeria's cleft and Surgery e-Registry: Leveraging surgical plans to enhance cleft Research and Patient Centered Outcomes

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TH4.5 REGISTRIES, Moorfoot, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Aims: Lack of reliable high-quality data poses significant challenge to advancing cleft and surgical care and strengthening surgical systems in low- and middle-income countries (LMIC). There is therefore an urgent need to develop effective and easily implementable mechanisms for obtaining cleft and surgery specific data in LMICS and expedite cleft surveillance and referral system for patient management.
We detail the development of Nigeria's National Clefts and Surgery E-Registry in partnership with Smile Train leveraging on the National Surgical Obstetric Anaesthesia and Nursing Plan (NSOANP) and outline a template for developing similar registries in LMICs.

Methods: Leveraging on the pilot implementation of Nigeria's NSOANP, Smile Train signed a memorandum of understanding with the Federal Ministry of Health of Nigeria and engaged key cleft care providers and stakeholders to ensure buy-in and get real time feedback at the development phase of the registry. Seam Health, a private IT firm developed the mobile and web-based application with ongoing technical support. IDN technologies recruited and are managing the registry staff.

Results: Following a 1-month test run, pilot implementation commenced in 1 cleft care facility in each of the Nigeria's six geopolitical zones, followed by a phased scale-up to involve other cleft care facilities. There are currently 25 cleft care facilities active on the registry with a total of 366 patients already captured. Of these, 72 are pre-surgery patients, 37 in-surgery, 159 post surgery and 98 discharged. Complete details are available on patient demographics, all aspects of comprehensive cleft care received as well as outcomes and rehabilitation.

Conclusions
This registry when fully implemented will enhance comprehensive cleft care, research and outcomes in Nigeria. Scaled Inclusion of all cleft care centres, other birth defects and population-based surveillance will further strengthen the registry. Support of development partners like Smile Train is invaluable in achieving and ensuring sustainability.

cleft and surgery e-registry, research,

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Brazilian national multicenter study – Evaluation of comprehensive cleft care for UCLP.

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TH4.5 REGISTRIES, Moorfoot, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction – Several multicenter studies regarding cleft care and growth outcomes were conducted around the world during the last decades, aiming to propose the first national evaluation of cleft care among the reference cleft center in Brazil.
Aims – To propose a retrospective national evaluation of cleft care, describe and compare treatment protocols in Brazilian reference centers, in individuals born with non-syndromic UCLP.
Methods – From all the Brazilian reference centers invited to participate, only seven met all the inclusion criteria. 427 subjects with repaired UCLP, consecutively treated, were included. Surgical protocols, techniques and age of primary surgeries and dental casts were collected. Descriptive statistics and analysis of variance were used to compare scores. Significance levels were set at $p < 0.05$.
Results – The number of surgeons varied from one to four between the protocols defined for each center with high variety of techniques performed in primary cleft surgeries. From the nine different treatment protocols, two centers used two stages palatoplasty (center 4b and 5a). Palatoplasty techniques and its modifications varied from 1 (centers 3, 4a, 5a and 5b) to 5 (center 6). Considering lip repair, the number of techniques and its variations ranged from 1 (center 3, 4b, and 5b) to 8 (center 7). Difference was found in the age of surgeries between the centers ($p<0.001$). Cheiloplasty ranged from 3.46 to 6.29 months, and palatoplasty, from 12.5 to 22 months for one stage, and from 18.5 (center 5a) to 37.5(center 4a) for the second stage of palatoplasty. Only center 7 (n=49) used pre-surgical orthopedics in about half of its sample (n=25), with no statistical difference between the groups considering the orthopedics use ($p=0.95$).
Conclusions: only seven centers filled all the inclusion criteria for the evaluation of treatment protocols. Results were very similar.
"This work was supported by a grant from Smile Train, Inc."

cleft lip and palate, multicenter

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Importance of Information Registries of Patients With Cleft Lip and Palate in Making Decisions for their Treatment

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TH4.5 REGISTRIES, Moorfoot, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction. SUMA is a non-profit civil association whose mission is to provide comprehensive care to patients with cleft lip and palate (CLP) in conditions of vulnerability and poverty, through a multidisciplinary team made up of sixteen specialties in health areas. Likewise, SUMA is the first Cleft Leadership Center in Mexico endorsed by the Smile Train Foundation, an international humanitarian organization focused on solving the cleft lip and palate problem in a sustainable way.

Aim. The objective of this work is to show the importance of the registration of general and clinical information related to patients and its systematization in making decisions about the diagnosis, treatment, and evolution of patients with CLP.

Methods. In 2017, a modular Information System was developed. One of the 45 active modules corresponds to demographic data of the patient and general characteristics of the fissure (date of birth, gender, characteristics and severity of the fissure, number of surgeries, among others). These data allow to have an epidemiological panorama of the patients that SUMA Center cares for.

Results. Currently there are 832 patients registered in the System. Some results obtained from the information show, for example, that during the 2017-2021 period 10,946 consultations and 853 surgeries were performed.

Conclusions. The processing of the data registered in the SUMA Information System allows generating information for the efficient administration of resources (human, material, physical and financial), providing auxiliary criteria for medical decision making and contributing significantly to the development of the line of research on cleft lip and palate, whose objective is to generate evidence-based knowledge that supports the care of patients with cleft lip and palate who are cared for at SUMA.

Patient registries, medical decision making

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Cleft Surgery Workforce in Bolivia

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TH4.5 REGISTRIES, Moorfoot, EICC - Streamed, July 14, 2022, 14:00 - 15:00

Introduction. The significant contribution of orofacial clefts to DALYs can be averted with timely interventions by cleft surgeons. Cleft lip and/or palate (CLP) prevalence varies between 1-in-1000 live births in high-income countries and 1-in-730 in low- and middle-income countries. The highest reported prevalence of cleft disease worldwide is in Bolivia, up to 1-in-373 in certain regions. The burden of cleft disease is amplified by the fact that there are only 120 plastic surgeons and 10 cleft specialists that practice in Bolivia, all internationally trained due to the lack of a Bolivian program.

Aim: To elucidate the current cleft surgeon workforce in Bolivia and identify future candidates for cleft surgery training.

Methods: An electronic survey was distributed to 83 accredited plastic surgeon members of the Bolivian Society of Plastic Surgeons (BSPS). Investigated variables included: ability to perform cleft surgery, past training, cleft surgical volume, and interest in additional cleft surgery training.

Results: Thirty-six surgeons responded (43% response rate) and 61% reported having more than 10 years of experience in practice. Surgeons were trained in Mexico (12), Argentina (11), Brazil (10), Colombia (2), and Italy (1). Twenty-seven surgeons (75%) achieved cleft surgery competency during residency, but of them only 35% were currently performing cleft surgery. Of those who reported doing cleft surgery, 36% operated in a private setting, 50% at public hospitals, and 54% of them operated additionally with non-profit surgical organizations (NGO). The NGO with the most affiliated surgeons was Operation Smile Bolivia. Twenty-eight surgeons (78%) showed an interest in pursuing additional cleft training.

Conclusions: Bolivia has a significant burden of unmet CLP care due to a disproportionately high disease prevalence and significant deficit in cleft-trained surgical providers. Strategic solutions addressing the lack of Bolivian training programs, high training costs, and insufficient surgical mentors will significantly help overcome this surgeon deficit to increase cleft care capacity.
Cleft surgeon, workforce, Bolivia

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Indicators of Quality of Care and Best Practices in Cleft Lip and Palate. Sistematic Review

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TH4.5 REGISTRIES, Moorfoot, EICC - Streamed, July 14, 2022, 14:00 - 15:00

1. Introduction

Many authors talk about quality of cleft lip and palate care; however, the health professional wonders about a checklist that addresses the multiple dimensions that quality implies, including other key concepts, such as the best clinical practices in the multidisciplinary treatment of fissured patients.

2. Aims

Carry out a systematic review about indicators of quality of care and best practices in the management of cleft lip and palate (CLP) that allows us to generate a checklist susceptible to validation by consensus.

3. Methods

The methodology recommended by Cochrane for sistematic review was applied. We conducted a search in MEDLINE (1965-2021), EMBASE (1980-2021), the Cochrane Library (2000-2021), the BVS (1980-2021), the EBSCO Library (1995-2021), the ARTEMIS database (1995-2021), the SCIELO database (1995-2021), in 42 technology assessment agencies, the websites: http://www.fda.gov, ICHOM Connect and http://www.controlled-trials.com, following keywords: 1. Cleft lip (20,601), 2. Cleft palate (29,961), 3. Best Clinical Practices (44,551), 4. Quality (1,439,140), 5. Quality improvement (171,497), 6. Quality of care indicators (1,038,066). We also did our search under the following methodological gradient: 1. Randomized controlled trial, clinical 2. Controlled trial, 3. Clinical studies, meta-analyzes 4. Systematic reviews, 5. Cohort, and 6. Observational studies. The search was conducted from January to December 2021.

4. Results

We found 2428 citations, reviewed by two evaluators, excluding unrelated studies. Of the relevant abstracts, the extensive review was performed regardless of the original language (n=336). The qualitative analysis was performed by Quality of Evidence (Oxford) and risk of bias. Meanwhile, the analysis was conducted by obtaining quality indicators in cleft lip and palate care, which will be presented during the congress.

5. Conclusions

We have generated a quality checklist will be submitted to validation by consensus, which provide the basis for clinical practice in centers in Mexico.

MEXICLEFT

INDICATORS OF QUALITY OF CARE AND BEST PRACTICES IN CLEFT LIP AND PALATE

SISTEMATIC REVIEW

Indicators	Minimum Standards	Best Practice
Security Surgical	Preoperative evaluation Surgical and anesthetic safety Emergency protocols in anesthetic complications Surgical Safety List	Every effort must be made for the benefit of patient safety in all aspects of their medical care.
Control of Quality	Review and analysis of outcomes Complication documentation and event reporting Complete registration	Routine evaluation of outcomes and complicationsImprovement analysis and recommendationsProtocols available to maximize security and optimize results
Education of Patient	Educated and informed parents in: diet, language, orthodontics, dental care, psychological needs, surgery, postoperative care, long-term follow-up and complications. Culturally adapted informed consent.	Patients have clear information about all healthcare and care professionals provided.
Patient Selection	Surgical and anesthetic safety standards applied to reduce patient risks and ensure patient safety	Screening systems to ensure patient safety.
Patient Follow-up	Provisions for the postoperative follow-up of the patient and the management of complications included within the treatment plan. Clear information on follow-up and any subsequent plans or needs anticipated for the patient.	Clinical follow-up by the different specialists involved in the multidisciplinary care of CLP

Quality standars, best practice

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Does Mandibular Distraction Vector influence the rate of TMJ ankylosis?

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TH4.6 ROBIN SEQUENCE, Tinto, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction:
Mandibular distraction has become the primary choice for treatment of patients with moderate to severe Robin Sequence. Despite its effectiveness, a potential yet problematic complication of mandibular distraction is TMJ ankylosis. Previous studies report TMJ ankylosis rates of from 0 to 10%. A theory on this difference relates to distraction vector; a vertical vector is more likely to lead to TMJ ankylosis because of the cranially directed pressure withstood by the TMJ during activation, as compared to a horizontally or obliquely directed vector. Historically, our center has used a vertical distraction vector with a more recent conversion to an obliquely oriented vector.
Aims:
The purpose of this presentation is to discern if there is difference in rates of TMJ ankylosis between vertical and oblique distraction groups.
Methods:
After IRB approval, a retrospective chart review was performed of all patients who underwent mandibular distraction at Children's Mercy Hospital from 1997 to 2015. All operations were performed by 3 surgeons. Ankylosis rates were compared between the two groups.
Results:
94 patients were reviewed. The average age of presentation was 103 days. 70 underwent vertical distraction, while 24 underwent oblique distraction. TMJ ankylosis was recorded in 12 cases, all in the vertical vector group, a 17% rate of ankylosis. There were no cases of ankylosis in the oblique vector group. The average age at diagnosis of TMJ ankylosis was 6.5 years. When excluding all syndromic patients in both groups, 48 patients remained. 34 underwent vertical distraction versus 12 for the oblique group. There still was a 12% rate of ankylosis, all in the vertical group.
Conclusion:
Vertical mandibular distraction carries a significantly increased risk of TMJ ankylosis and should be avoided.

mandibular distraction, TMJ ankylosis

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Mandibular Distraction Osteogenesis for Tongue-Based Airway Obstruction without Micrognathia

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TH4.6 ROBIN SEQUENCE, Tinto, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Purpose: Mandibular distraction osteogenesis (MDO) effectively treats tongue-based airway obstruction (TBAO) in micrognathic patients with Robin Sequence. This study describes outcomes of MDO in patients with TBAO without micrognathia.

Methods: Patients who underwent MDO for TBAO from 2013-20 were reviewed, and patients with micrognathia were excluded. Study subjects received baseline/follow up polysomnography. Obstructive Apnea Hypopnea Index, oxyhemoglobin saturation nadir (SpO2 nadir), percent sleep time end tidal CO2 greater than 50 mm Hg (%ETCO2 > 50), and respiratory-related arousals were compared before and after MDO.

Results: 144 patients underwent MDO during this period; 5 were nonmicrognathic and included in analysis. 60% (n = 3) of the cohort was syndromic: 1 patient each had Trisomy 9, Beckwith Wiedemann syndrome, and duplicated pituitary gland plus syndrome. 40% (n = 2) of patients had a cleft palate, 60% (n = 3) had laryngomalacia, and 40% had tracheomalacia. Median (range) age at MDO was 53 days (47-167 days), and median length of distraction was 16 mm (14-20 mm). After MDO, median Obstructive Apnea Hypopnea Index decreased from $\tilde{x}$ = 60.7/h (11.6-109.4) to $\tilde{x}$ = 5.3/h (3.5-19.3) (P = 0.034). SpO2 nadir increased (69% [58-74] to 85% [80-88], P = 0.011), and median %ETCO2 > 50 mm Hg decreased (5.8% [5.2-30.1] to 0.0% [0.0-1.3], P ≤ 0.043). Continuous positive airway pressure was used by all patients immediately after MDO, and at 6 months postoperatively, 1 patient remained on continuous positive airway pressure and 1 patient required supplemental oxygen. At last follow up, no patients had residual airway obstruction or required a tracheostomy.

Conclusions: MDO can effectively treat severe TBAO in some patients without micrognathia that would otherwise be candidates for tracheostomy. When used in select patients, MDO significantly improves obstructive sleep apnea and reduces need for ventilatory support.Further study in a larger cohort will help identify appropriate candidates for MDO.
mandibular distraction osteogenesis, nonmicrognathia, polysomnography,

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Growth of the mandible in patients with Pierre Robin sequence

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TH4.6 ROBIN SEQUENCE, Tinto, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction: Pierre Robin sequence (PRS) is a rare congenital birth defect characterized by a mandible hypoplasia, backward displacement of the tongue and upper airway obstruction, often accompanied by cleft palate. The concept of mandibular catch-up growth is often quoted in the literature.
Aim: The aim of the study was to compare the differences of the length and intensity of mandibular growth in patients with PRS and patients with isolated cleft palate (ICP).
Methods: Growth changes of mandible were measured in 40 patients with ICP (19 males; 21 females) and in 20 patients with PRS and cleft palate (10 males; 10 females) on 2 cephalograms taken two years apart. The first cephalograms (T1) were taken before the growth spurt (average age 10.2 years; SD 0.8), growth stage was determined according to the lower canine root developmental stage on OPG. The second cephalograms (T2) were taken more than 2 years apart (average age 13.5 years; SD 0.8). The measured values in mm were: total length of the mandible between Co-Gn points, ramus length between Co-Go points, and body length between Go-Gn points. All measurements were repeated after one month and the Intraclass correlation coefficients were proved to be in the range of 0.999 to 1.000. A parametric two-sample t-test was used to compare the measured parameters/groups.
Results: At T1 the mandible in individuals with PRS reached 93% of the average mandibular length of ICP group (difference=7.8mm; p=0.001), at T1 92% (difference= 9.5mm; p=0.0002). The most significant disproportion was noted in mandibular body length. Similar results were found in males and females when assessed separately.
Conclusion: In patients with PRS the mandible is hypoplastic before and after the growth spurt compared to patients with ICP. The increase in mandible length in PRS appears constant, the growth spurt does not accelerate or slow down the growth.

Pierre Robin sequence, mandibular growth

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Upper airways differences between Pierre Robin sequence and Treacher Collins syndrome.

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TH4.6 ROBIN SEQUENCE, Tinto, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Objectives: The goal of this study was to compare the morphology pharynx taking account of volumes of segments of upper airway and minimum sectional area of patients with TCS and non-syndromic PRS.
Design: Retrospective study.
Setting: Patients regularly attended to in an orofacial rehabilitation hospital.
Patients, Participants: PRS group were composed by 14 patients (5 male, 9 female) and TCS group formed by 14 patients (6 male, 8 female).
Intervention: Pre-orthodontic cone-beam computed tomography (CBCT) exams of all individuals were evaluated using Mimics Innovation Suite 21.0 (Materialize, Leuven, Belgium).
Main Outcome Measurements(s): Volumes of upper airway segments and minimum sectional area were determined of patients with PRS and TCS. Wilcoxon test were used to compares data. Values of $p < 0.05$ were considered significant in all cases.
Results: The age of PRS group range from 6 to 23 years old with a mean of 11.07±5.12 years, and at TCS group age were between 6 to 20 years with a mean of 12.00±4.50 years. Significant differences were observed in total volume (p=0.0494), in nasal cavity volume (p=0.0085), in nasopharynx volume (p=0.0166) and in the minimum section area (p=0.0166) comparing PRS and TCS. No difference was observed in the oropharynx volume (p = 0.8077). Total volume, nasal cavity volume, nasopharynx volume and minimum sectional area were higher in patients with PRS than in patients with TCS.
Conclusion: Patients with TCS have greater involvement of the upper airways with significant loss of total, nasal cavity and nasopharynx volumes compared to patients with non-syndromic PRS.

TABLE 1) Summary of measurements performed using the MIMICS software.

Age		Gender		Total volume (mm^3)		Nasal cavity volume (mm^3)		Nasopharynx volume (mm^3)		Oropharynx volume (mm^3)		Minimum section area (mm^2)	
PRS	TCS	PRS	TCS	PRS	TCS	PRS	TCS	PRS	TCS	PRS	TCS	PRS	TCS
6	6	M	F	33596,80	22010,07	13027,63	9372,72	3448,92	2034,14	12479,34	9250,93	93,33	34,88
7	8	M	F	20714,63	13790,24	11333,01	7285,96	1432,10	1243,88	5843,55	3338,18	54,56	10,72
7	8	F	M	21028,12	11062,17	9019,40	6179,23	4142,41	179,06	5685,25	4926,45	76,05	44,8
8	9	F	F	37441,22	14776,06	18218,60	7672,71	8730,04	2726,03	10416,16	3988,73	160,48	28,32
8	9	F	F	24111,63	22814,4	12609,66	8482,87	3422,73	2283,93	1794,60	10256,86	102,08	201,44
8	10	F	M	23878,7	25061,25	12306,41	5360,68	2679,03	2242,39	5761,85	6133,53	93,54	26,24
9	10	F	F	23261,34	14476,48	8653,11	9820,90	6063,52	2658,26	7021,76	10184,22	71,52	101,28
10	10	F	M	19156,14	27075,42	8120,75	8720,57	3137,30	3829,89	5993,14	13417,71	61,85	63,81
10	12	M	M	47870,21	14310,47	13547,77	6205,85	3858,85	1057,84	20493,53	6646,87	320,60	49,44
11	14	M	F	19940,05	24186,85	9944,873	11730,44	1751,26	3845,89	6500,63	6823,64	61,44	46,4
12	15	F	F	44050,69	20572,85	18722,29	10948,88	10051,94	703,92	9440,76	6853,52	161,19	31,84
15	17	M	M	37836,35	23736,13	18208,23	10065,38	7542,15	1994,78	9079,09	5671,84	48,80	46,88
21	20	F	M	33598,5	34555,96	19585,23	13582,96	3325,17	2554,26	9202,74	14161,06	68,71	77,76
23	20	F	F	42072,96	30744,28	22432,23	11058	8047,81	2484,5	8473,91	20137,16	112,00	93,92

Robin Sequence, Treacher Collins, Airway.

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Three-dimensional analysis and airflow simulation using computational fluid dynamics of the upper airways in Treacher-Collins Syndrome

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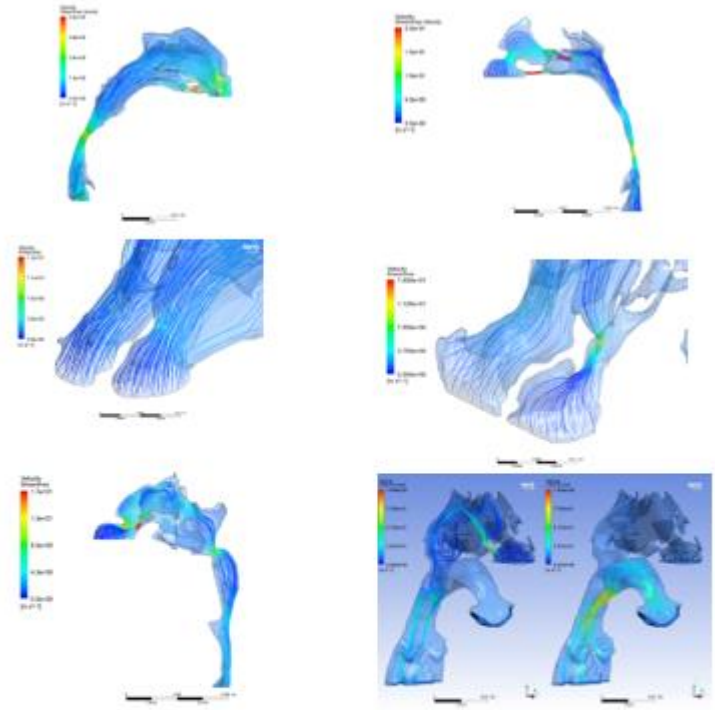
TH4.6 ROBIN SEQUENCE, Tinto, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction: Treacher-Collins syndrome is often associated with upper airway obstruction and respiratory impairment. Aima: The objective of the study is to evaluate the upper airways of patients with the syndrome in three dimensions and to analyze the respiratory dynamics through simulations with computational fluid dynamics. Methods: The sample consisted of 14 cone beam computed tomographies from the HRAC-USP file; 6 male and 8 female, aged 6-20 years. The tomographic data were exported in DICOM (Digital Imaging and Communications in Medicine) to the software MIMICS 21.0 (Materialism's Software Interactive Medical Image Control System) and realistic models of the upper airways were generated and analyzed. Then, the models were exported as stereolithography (STL) files to the ANSYS worbench and simulations were performed using the FLUENT solver. Results: The minimum sectional area of the oropharynx presents values between 10.72-201.44 mm2. The angles formed between the nasal cavity / nasopharynx and the oropharynx vary between 107.65 º-153.56º. The volume of the nasal cavity varies between 5360.68-13582.96 mm3, the volume of nasopharynx between 179.06-3845.89 mm3 and the volume of the oropharynx between 3338.18-20137.16 mm3. The fluid dynamics simulation revealed areas of increased air velocity and dynamic pressure in the oropharynx, great differences between the flow of the nostrils in 7 of the 9 fluid dynamics analyzes performed, an important area of constriction in the nasopharynx in one case and oral breathing tendency in another analysis. Conclusion: Data from volumetry and computational fluid dynamics suggest that in Treacher-Collins syndrome is common the reduction in volume and obstruction of the nasal cavity/nasopharynx, which can induce the patient to mouth breathing and contribute to the collapse of the airways and worsening of facial deformities.

Fluid dynamics simulation of the upper airways



Line 1 – Area of increased speed in the retroglossal region of the oropharynx. Line 2 – Right nostril represents 43.58% of the nasal cavity flow and left nostril 56.42% of the nasal cavity flow. Line 3 – There is a difference in nasal flow and an important area of constriction in the nasopharynx with increased air velocity and dynamic pressure.

Line 1 – Area of increased speed in the retroglossal region of the oropharynx. Line 2 – Right nostril represents 70% of the nasal cavity flow and left nostril 30% of the nasal cavity flow. Line 3 – Representation of nasal and oral breathing. The fluid dynamics simulation demonstrates increased air velocity and dynamic pressure in oral breathing.

Airway, Volumetry, Computational fluid dynamics.

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The Surgical Treatment of Robin Sequence: Neonatal Mandibular Distraction Osteogenesis in the Unfavorable Patient

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TH4.6 ROBIN SEQUENCE, Tinto, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction: Neonates with severe Pierre Robin sequence (PRS) can be treated by mandibular distraction osteogenesis (MDO), tongue-lip adhesion, or tracheostomy. Published algorithms identify tracheomalacia, bronchomalacia, laryngomalacia, hypotonia, and central sleep apnea as indications tracheostomy. However, these comorbidities are expressed along a spectrum of severity and their presence may not necessarily preclude the success of MDO. The authors propose that experienced interdisciplinary airway assessment can appropriately select neonates with PRS and one or more of these traditional contraindications and successfully avoid tracheostomy using MDO.

Aims: To report clinical outcomes in MDO applied to neonates with severe PRS and traditional indications for tracheostomy

Methods: A 5-year retrospective review of all neonates who underwent MDO for treatment of severe PRS who expressed one or more traditional indications for tracheostomy. Severe PRS was defined as an apnea/hypopnea index (AHI) of 20 or greater. Clinical outcomes are reported including: preoperative and postoperative AHI and need for tracheostomy.

Results: 12 consecutive patients with severe PRS and traditional indications for tracheostomy: 9 (75.0%) patients had laryngomalacia, 6 (50.0%) patients had tracheomalacia, 2 (16.6%) patients had bronchomalacia, 1 (8.3%) patient had central sleep apnea, and 3 (25.0%) patients had hypotonia. Five (41.7%) patients underwent concurrent gastrostomy tube placement due to feeding insufficiency. Average birthweight was 3.0 kg. Average pre-op AHI was 34.8. Average post-op AHI was 7.3. All patients successfully underwent MDO with avoidance of tracheostomy.

Conclusions: By employing an interdisciplinary evaluation of patient candidacy, MDO can effectively treat airway obstruction and avoid tracheostomy in select higher-risk neonates with PRS and traditional indications for tracheostomy.

Robin Sequence, Neonate, Mandibular Distraction

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DIGITAL CURATORY AND SOCIAL MEDIA IN THE CONVERGENCE OF KNOWLEDGE ABOUT CRANIOFACIAL ANOMALIES

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TH4.7 TELEHEALTH, Carrick, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction: The horizontality of sharing is the result of digital culture, coming from digital media, which already play a leading role in the production of content, however, social networks are questioned as tools in the promotion of permanent education in health, especially when focused on health problems. Brazilian public health, such as Craniofacial Anomalies. In this sense, the curation of digital information works as a tool that provides subsidies to improve the processes that involve life cycles.

Objective: To describe the powers of the Social Network Instagram as in the process of convergence and sharing of knowledge in the support of health education, the Craniofacial Anomalies.
Methodology: The methodological approach is of a multiple character of qualitative and quantitative nature. Initially, a research was carried out on the academic production that allowed the next step, where a dialogue was initiated between the data obtained in the proportion of creation of scenarios and narratives on the social network Instagram referring to Craniofacial Anomalies, finally, the concept of digital curation was elaborated. in health in Craniofacial Anomalies.
Results: The research allowed us to affirm that strategies such as the use of Instagram enable the convergence of knowledge, encouraging the construction and sharing of perspectives, especially scientific ones. This convergence involves each one, and emerges to the surface giving voice, but also listening, welcoming and integrating knowledge at its various levels.
Conclusion: This study points out elements for the visibility of the use of social networks, such as Instagram in the promotion of scientific knowledge, since digital curation brings another look to the promotion and learning of knowledge that, even when converging with common sense and popular truths, remain an important tool in learning, knowing, sharing. This work was supported at least in part by the Smile Train, Inc.

Health Education; Telemedicine; Craniofacial Abnormalities

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Remote Access Medicine in Cleft Care- How resource limited countries can benefit from it.

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TH4.7 TELEHEALTH, Carrick, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction:
In a huge, resource limited country, like India, it is still not possible to provide specialized care to the people living in underdeveloped or remote areas. Even providing speech therapy to all cleft patients is not possible. Cost of the visit to a hospital and wages losses can be prohibitive for a large population .

Methods:

With a thorough evaluation of our patient's database, unrepresented areas,
feasibility studies, and inputs from BCG and Slone School of Management, we started 9 centers in 3 states with the Base Center in Varanasi in 2014. We now have 12 stand- alone centers across 4 states that provide free services and assistance .

These centers are essentially basic telemedicine centers with a single staff and basic equipment, but high on technology and provide effective services to our target group.

Results:
We provide more than 6000 teleconsultation every year now to cleft patients and recruit more than 400 new cleft patients primarily through our telemedicine network.

The centers are used to recruit new patients, provide follow-up services, provide assistance and help in cases of an emergency and complications and more importantly-provide speech therapy. Patients with poor education, living in poverty, in areas where there is scarce medical facility and no expert medical care available benefit most from it.

An important mission was to catch the patients soon after the birth and provide them nutritional counselling and support to prevent malnourishment and death amongst cleft children

We could reclaim many patients who were lost to follow- up, and could reach out to many more patients.

Conclusions:
Center and app based Telemedicine has proven to be a boon for cleft patient's care especially in a resource limited country with large poor population and can immensely help in cleft nutrition, recruitments and follow-ups, without causing burden to their parents.

Telemedicine ,Remote Access Medicine, Cleft

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Telemedicine and Cleft Care in the UK: adequacy and appropriateness

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TH4.7 TELEHEALTH, Carrick, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction & Aims
The efficacy of teleconsultations for cleft lip/palate (CLP) patients is not established. Accurate speech assessment and intraoral examinations pose unique challenges. This study evaluates the adequacy, benefits, and limitations of video-consultation for CLP patients.

Methods
Due to COVID-19 all cleft multidisciplinary team (MDT) clinics 05/2020-03/2021 in East Anglia were performed remotely. Each of these were reviewed retrospectively and teleconsultations were deemed adequate if there were no documented difficulties, conversion to telephone was not required, and additional face-to-face (F2F) appointments were not generated. MDT members were surveyed to identify benefits of teleconsultation, and appointments deemed most suitable. The environmental benefit of teleconsultations was evaluated through calculated commute-related carbon emission savings.

Results
Of 353 cleft MDT clinic appointments, 90% were by video and 10% by telephone. 75% of video consultations were considered adequate. Most common reasons for inadequacy were technical factors (70/90 cases). Child (e.g., shyness) and carer (e.g., digital literacy) factors accounted for 8 and 4 cases respectively. Three- and five-year reviews, and those requiring formal speech assessment, generated most additional F2F appointments, followed by surgical reviews requiring intraoral examination. Staff survey revealed reduced travel, flexibility, and increased accessibility for regular follow-up as most frequently reported benefits. Concerns were raised over the loss of the 'human touch'. A mean reduction of 1187.7 patient road miles per month was estimated, equating to 271.0 KgCO2.
Overall, respondents agreed that teleconsultation is suitable for select patients, and as a screening tool to identify those who require further F2F evaluation.

Conclusions
The majority of Cleft MDT consultations can be adequately performed using telemedicine. However, it is not suitable in all cases and selective use of teleconsultations that considers patient preference, age, and clinical factors is necessary. Our findings highlight those cases with anticipated surgical examination, speech assessment, and younger patients should be scheduled for F2F appointments.
Telemedicine, teleconsultation, paediatric plastic surgery

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Smile Finder: An Innovative App to Educate and Connect Cleft Patients to Treatment Centers

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TH4.7 TELEHEALTH, Carrick, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Background
Cleft lip and/or palate (CLP) affects around 1 in 700 births globally with the burden disproportionately placed on low-and-middle-income-countries (LMICs), where there are many barriers to accessing care. Smile Train has developed an innovative app designed to expand the reach of global cleft treatment, free of charge, further than ever.

Description
The Smile Finder mobile application was developed recognizing the need to increase access to CLP treatment while generating awareness of this treatable condition.
Smile Finder is a two-part application:
One section includes frequently asked questions, milestones and timelines for CLP treatment at various ages, an interactive map system providing contact info to the closest treatment centers, and pictures of cleft repairs.
The second section is a referral system which aims to have community workers and healthcare providers document and refer cases to place them in contact with a treatment center that may provide treatment.
Smile Finder serves as an education tool for patients and their families for identifying clefts, managing and feeding a child with a cleft, reducing stigma through education, and most importantly, connecting CLP patients to treatment centers near them. Its unique referral system for healthcare providers and community workers to refer patients, upload referral pictures, and connect candidates affected by CLP to treatment centers.

Conclusions:
Smile Finder uses a robust analytics system which allows for data analysis and the expansion of future research regarding application use, cleft geolocation, and as an assistant to LMIC healthcare workers. Future direction of the app aims to educate on isolated cleft palate identification, as well as utilize pilot data to optimize the use of Smile Finder among social workers.
Smile Finder applies modern technology to increase accessibility to life-changing CLP treatment within LMICs. As a first of its kind, it is designed to reach the farthest mile within LMICs.

mobile application, cleft lip palate

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Social Media and Instant Messaging: An Excellent Online Platform for the Treatment of Cleft Lip and Palate Patients; Taipei Medical University Hospital Experience

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TH4.7 TELEHEALTH, Carrick, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction
Social media and instant messaging can improve patient education, follow-up and outcome. The utilization of these modalities in cleft lip/palate care is not fully described. We formed an online platform consisting of a dedicated website, Facebook group and LINE group through which we provide information and counseling to our patient population. Our objective is to evaluate the impact and patient satisfaction of our online platform.

Methods
In this retrospective study we designed a questionnaire aimed at evaluating the quality of information and patient satisfaction of the online platform. The questionnaire was distributed online to 732 cases connected to us through the LINE application.

Results
The response rate was 26%. Website information was found very necessary and sufficient by 75%, 46% of cases respectively. Regarding Facebook, the medical team's response was found very professional and practical by 81%, 68% of cases respectively. Patient-patient interaction was helpful to 96% of cases. Regarding the LINE application, the medical team's response was found very immediate and helpful in 73% of cases, and 91% felt that LINE saved them time from returning to the clinic on unscheduled occasions. The website, Facebook and LINE were used over 10 times per month by 17%, 32% and 50% of cases respectively. A decrease in unscheduled "pop-up" visits to the clinic (from 25 to 6 per month) was registered.

Conclusions
Adapting social media and instant messaging into our cleft lip/palate care has been welcomed with high satisfaction among our patient population, increasing their knowledge, saving them time from returning to the clinic, and allowing them beneficial interaction with other families coping with similar conditions.

Table 1. Patient population included in the study at The Craniofacial Unit, Taipei Medical University Hospital, 2017-2020.

Patient age	number	percent
<1yr	275	37.6%
1-5yr	130	17.6%
5-11yr	44	6.1%
11-18yr	4	0.6%
>18yr	279	38.1%
Surgical procedure		
Unilateral cleft lip repair	185	25.4%
Bilateral cleft lip repair	31	4.2%
Cleft palate repair	197	26.9%
Gingivoperiosteoplasty / alveolar bone graft	44	6%
Macrostomia repair	3	0.4%
Facial cleft repair	2	0.3%
Orthognathic surgery	63	8.6%
Lower lip sinus-plasty (Van der Woude syndrome)	3	0.4%
Congenital ptosis	1	0.1%
Revisions	203	27.7%

Cleft, Social Media, Facebook, LINE.

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Interactive iPad-based education for parents of children with cleft lip/palate

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TH4.7 TELEHEALTH, Carrick, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction: Consultation for cleft lip/palate (CLP) must inform parents of their child's diagnosis, expected management, and need for longitudinal multidisciplinary care. Innovative platforms can facilitate these goals prior to specialist engagement. Studies show interactive and multimodal formats are best for transferring and retaining information.

Aims: We developed a dynamic iPad-based education module (cleft iBook) that provides information on cleft lip/palate diagnosis, management, and longitudinal care. We hypothesized this would enhance patient/family education.

Methods: Prior to surgical consultation, all parents were provided an interactive cleft iBook with unlimited time for review. Before engaging the iBook, parents completed a survey to measure both baseline understanding of CLP diagnosis/management and anxiety about the clinic visit. Parents completed another survey after interacting with the iBook and prior to surgical consultation. The cleft iBook was developed for iPad using iBooks Author (Mac OS) and translated into Spanish. Survey data was collected and assessed using REDCAP software.

Results: 21 parents (13 mothers, 7 fathers, and 1 legal guardian) were evaluated during a four-month period. 17 (81%) had previously spoken to a healthcare provider about their child's diagnosis and all but one had done individual prior research. Interacting with the cleft iBook significant increased understanding in 6 of 8 facets of cleft diagnosis/management ($p<0.001$, Table 1): Cleft anatomy/development, purpose of dentofacial molding, understanding goals of surgery, immediate next steps, expectations following surgery, and need for specialized multidisciplinary care. Summed scores from eight questions (max 40) increased from 26.6±7.1 to 34.9±5.9 ($p<0.001$). There was no statistically significant decrease in anxiety (2.0±1.1 to 1.8±1.1, $p=0.502$).

Conclusion: An interactive iPad-based cleft education module improves parents' overall knowledge of CLP diagnosis and management. Improved understanding aids specialist consultation and manages patient expectations. Cleft teams can develop institution-specific resources; parents have free access to our resource in English or Spanish throughout their child's cleft journey.

Table 1. Patient Comprehension and Anxiety Before and After Cleft iBook Module: 5-Point Likert Scale

	Before	After	p
Purpose of appointment	4.48 ± 0.60	4.67 ± 0.73	0.362
Difference between cleft lip and palate	4.43 ± 0.75	4.71 ± 0.56	0.169
Cleft anatomy and development	3.29 ± 1.00	4.38 ± 0.81	<0.001
Purpose of dentofacial molding	3.29 ± 1.15	4.38 ± 0.92	0.001
Different surgical techniques	2.57 ± 1.29	4.14 ± 0.96	<0.001
Next steps after appointment	2.95 ± 1.28	4.43 ± 0.87	<0.001
Expectations after surgery	2.71 ± 1.27	4.14 ± 1.01	<0.001
Multidisciplinary longitudinal care	2.90 ± 1.14	4.05 ± 1.02	0.001
Total Score (out of 40)	**26.62 ± 7.10**	**34.90 ± 5.94**	**<0.001**
Anxiety	2.00 ± 1.14	1.76 ± 1.14	0.502

Cleft iBook, parent education, interactive

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Effect of articulation training on speech deviances in children born with cleft palate

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TH4.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction: A surgical closure of the cleft palate is prerequisite to be able to develop normal speech. Even though surgical skills are constantly evolving, persistent articulation deviances remain a problem for many children born with cleft palate. Articulation deviances are treated with speech therapy, but studies evaluating the treatment of cleft related speech deviances are still few. Children with persistent cleft related speech deviances are a heterogeneous group regarding e.g. age, specific speech problem, and occurrence of additional problems which makes it difficult to carry out randomized and descriptive group studies with sufficient group sizes. Therefore, repeated single subject cases with experimental control should be a more suitable study design to evaluate effect of speech therapy.
Aim: The aim of this study was to evaluate effect of individual articulation training on persistent cleft related speech deviances.
Methods: Articulation training was evaluated in seven case studies using a single-subject design with experimental control. The participants were boys between 5:5 and 10:4 years of age. Individual training programs were created based on each participant´s articulatory difficulty. Each case study included three phases: Baseline, Training, and Follow up. Individually designed probes-measures, including one target sound, one generalization sound, and one control sound were measured continuously across all three phases to observe progress in treatment over time. In addition, general articulation proficiency and intelligibility was assessed during Baseline and Follow up.
Result: Participants exhibited individual patterns of progress which highlight the need for single case studies. Six out of seven participants improved their production of target sound to a clinically relevant degree. Two participants had a speech at the same level as peers at follow up.
Conclusion: Articulation training seems to have generally positive effects on targeted sounds even though patterns of progress is individual.

Cleft palate, Speech therapy, intervention

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INTENSIVE SPEECH THERAPY ASSOCIATED WITH PHARYNGEAL BULB PROSTHESIS FOR THE REHABILITATION OF CLEFT PALATE SPEECH

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TH4.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction/Aims: Compare the speech outcome of patients with cleft lip and palate before and after an intensive speech therapy program (ISTP) associated to the use of a pharyngeal bulb prosthesis.
Methods: Twenty operated cleft lip and palate subjects (8 males and 12 females) presenting with velopharyngeal insufficiency and hypodynamic velopharynx were selected to this study. All of them had hypernasality and/or compensatory articulations (CAs). Due to hypodynamic velopharynx, a pharyngeal bulb (in steady of secondary surgery) combined with an ISTP was indicated. The ISTP had 45 sessions of therapy (3 sessions a day) during 3 weeks. All subjects had their speech evaluated before the ISTP and immediately after the ISTP. Perceptual-auditory evaluation of the occurrence of hypernasality and CAs was performed by 3 experienced speech pathologists, upon the recordings of 12 sentences with recurrent high-pressure consonants, 3 sentences with recurrent low-pressure consonants (Brasil Cleft protocol), counting of 1 to 20, and spontaneous speech; b) nasometry during the reading of a short text, consisting only of oral sounds (Oral Text), and 15 sentences with recurrent high and low pressure consonants (BrasilCleft protocol).
Results: The results of perceptual evaluation and nasometry showed that most subjects improved their speech after ISTP.
Conclusions: A structured ISTP, combined with the use of a pharyngeal bulb, is a fast and efficient method for correcting speech disorders of patients with cleft lip and palate/velopharyngeal dysfunction.

speech, therapy, palatal prostheses

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A Trend Analysis of Audiometry and Tympanometry Results from the Five-Year Cleft Assessment, Stratified by Cleft-Type and Aetiology

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TH4.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

OBJECTIVE The aim of this study was review existing audiology provision within the UK cleft pathway.
DESIGN 5-year audit data was reviewed from subjects with cleft palate (CP) under the care of Cleft.NET.East. The audiology assessments included pure-tone audiometry and tympanometry. All children were then assessed as a part of the cleft UK pathway.
SAMPLE Results from 192 children were included in this analysis, 98 boys and 94 girls.
RESULTS Of the cases reviewed, 50% had isolated CP, 32% had unilateral CP, 16% bilateral CP and 3% had submucous CP. Data analysis showed that children with orofacial clefts (OFCs), especially syndromic CP, are significantly (p= 0.006) more prone to glue ear than their peers. The time of year at which the child is tested significantly impacts tests of the middle ear, with the highest percentage of otitis media with effusion (OME) diagnoses occurring between October and December each year.
The importance of aetiology in regards to susceptibility to and types of hearing loss cannot be overstated. Analyses showed significant p-value scores that illustrated the extent to which Syndromatic and Pierre Robin Sequence (PRS) cases of OFC are currently in need of additional audiological monitoring within the over-arching protocols for the larger cleft community.
CONCLUSIONS This audit highlights room for beneficial individualisation of the audiology monitoring practices for specific aetiologies within the wider cleft spectrum. Further review research and data monitoring is required to understand these insights within the national framework and to widen the existing base of evidence.

Cleft, PRS, hearing loss, OFC

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Using artificial intelligence and augmented reality 3D projection to remotely guide cleft surgery

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TH4.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

Introduction: Anthropometric understanding is paramount to cleft repair. Our team previously developed an artificial intelligence (AI) algorithm that accurately identifies 2D cleft anatomy and precisely marks 21 nasolabial landmarks important for operative design.

Aims: We integrated projection-based augmented reality (AR) into our intraoperative technology platform in order to digitally capture and remotely mark a patient's 3D surface anatomy. This facilitates real-time intraoperative guidance from remote experts. Here, we aim to assess the usability, accuracy, and efficacy of our AI/AR platform in facilitating knowledge and skill transfer.

Methods: We projected structured light onto a 3D cleft model ("patient") to create a virtual patient image that could be remotely accessed and digitally marked . Visual input was computed to detect surface anatomy, correct optical aberrations, de-skew output projection, and predict landmarks for cleft repair. 21 AI-generated cleft landmarks were projected onto the patient. Remote experts could manipulate AI-projected markings and add additional AR markings that were projected onto the patient in real time.

Results: AI-projected points were compared to ground truths hand-marked by a craniofacial surgeon. Normalized mean error was calculated for 21 landmarks and was between 0.035 and 0.044. Accuracy of AR-projected markings was compared to hand-marked patterns and error was <1 mm at 3 feet.

Conclusions: Our prototype successfully detects cleft anatomy and accurately automates projection of anatomic landmarks onto 3D surface anatomy. A remote expert's AR additions are projected in real time. By connecting experts and learners, our technology can facilitate knowledge/skill transfer during surgical training, overseas outreach, and virtual consultations. This proof-of-concept navigates an infant's detailed cleft anatomy; we are currently expanding indications for several additional cleft/craniofacial procedures.
Artificial Intelligence, Augmented Reality, Projection

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Digital Solutions for Burden-Reduced 3D Cleft Diagnosis and Presurgical Therapy

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TH4.8 AUDIT PRIZE, Harris, EICC - Onsite Only, July 14, 2022, 14:00 - 15:00

1. Introduction

Presurgical orthopedic treatment at the earliest stage of care is found to convert the severely displaced anatomical subunits of the cleft lip and palate malformation into closer proximity, thus reducing the necessary extent of subsequent surgical repair and facilitating it. Fabrication and implementation of palatal plates commonly used is however resource intensive involving highly skilled multi-disciplinary teams. We develop automated digital methods to simplify the design and fabrication of personalized palatal plates, which could hence improve accessibility of presurgical orthopedic treatment.

2. Aims

Our goal is to facilitate integration of presurgical orthopedic therapy by developing a comprehensive, versatile and accessible digital solutions that allow (1) reconstruction of 3-dimenstional (3D) palatal morphology based on images captured by modalities readily available (2) automated individualized plate design (3) plate fabrication by 3D printers.

3. Methods

We develop 3D geometry processing and machine learning methods to achieve our aims. We use intraoral scans, digitized plaster casts, 2D photos, and videos captured from the patients to accurately reconstruct 3D intraoral morphology.

4. Results

Our methods allow automated and digital design of plates based on the individual morphology with minimal manual inputs. We have successfully fabricated plates suitable for implementation in patients using a 3D printer with medical grade material at the point-of-care in our hospital. Several patients who are treated at centers which previously did not provide presurgical treatment start to benefit from 3D printed plates using our methods.

5. Conclusions

The automated methods we develop can increase feasibility of presurgical therapy in centers with various conditions, eliminating elaborate procedures required in designing and fabricating the appliances at each center. It obviates airway endangering physical impressions. We aim to contribute in reducing the burden associated with the treatment of these patients during their first years of life.

presurgical appliance, intraoral, automated, cleft

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Implementation of an Ambulatory Cleft Lip Repair Protocol

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FR2.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction

Cleft lip is the most common congenital condition affecting the face. Consistent with recent focus on reducing healthcare costs, there is growing interest in ambulatory cleft lip repair. Retrospective reviews have reported comparable outcomes between inpatient and outpatient cleft lip repair, but only based on pooled data without protocol-driven care.

Aims

To report surgical outcomes following implementation of an ambulatory cleft lip repair protocol.

Methods

A single-institution retrospective all of patients undergoing primary unilateral cleft lip repair between 2012-2021. An ambulatory surgery protocol was implemented in 2016. The ambulatory protocol selected non-syndromic patients without airway or cardiac abnormalities and involved morning surgery, long-lasting local anesthesia, and parental education with direct access to the clinical team. Outcome variables included patient demographics, operative details, length of stay, surgical outcomes including 30-day readmission and 30-day reoperation.

Results

226 patients met study criteria. The pre-protocol and post-protocol groups contained 82 and 144 patients, respectively, with no differences in rates of 30-day readmission, reoperation, or wound complications. Following protocol implementation, 116 (80%) patients underwent ambulatory surgery, and average length of stay decreased from 27 to 7 hours ($p<0.05$). The 32 patients staying overnight had higher rates of other congenital abnormalities (42.9%) than the ambulatory group (8.8%), with higher ASA class ($p<0.05$). Ambulatory and overnight stay patients had no differences in surgical outcomes. One patient in each group followed up in an emergency department following discharge prior to their follow up appointments for respiratory complaints. No patients required admission.

Conclusions

An ambulatory cleft lip repair protocol incorporating morning surgery, patient stratification, and parental education allows for safe ambulatory surgery, reducing length of stay without adversely affecting surgical outcomes.

Cleft lip, ambulatory surgery, outpatient

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Suprazygomatic maxillary nerve blocks for analgesia and opioid reduction after cleft palate repair

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FR2.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction
Pain control is essential after cleft palate repair, but strategies for opioid use reduction are needed to limit the adverse effects of opioid administration in children. Suprazygomatic maxillary nerve blocks are an important component of a multimodal perioperative analgesia protocol.

Aims
To determine the effect of preoperative suprazygomatic maxillary nerve blocks on postoperative opioid use and patient pain scores after cleft palate repair.

Methods
We retrospectively reviewed all patients under age two years undergoing primary cleft palate repair between February 2014 and September 2019 at a single institution. Patients given suprazygomatic maxillary nerve blocks were compared to those without blocks. Blocks were administered after induction of general anesthesia and prior to surgical incision. All patients received scheduled nonopioid medications postoperatively; oral oxycodone was the first-line opioid analgesic. The primary outcome was total opioid consumption in oral morphine milligram equivalents per kg (MME/kg) intraoperatively and on postoperative days (POD) 0 and 1. The secondary outcome was patient pain on the revised FLACC (rFLACC) scale. Differences between groups were analyzed with Mann-Whitney U tests.

Results
26 patients received blocks and 87 did not. Mean opioid consumption was significantly lower in the suprazygomatic block group both intraoperatively (0.61 ± 0.52 vs. 1.62 ± 1.02 MME/kg, $p < 0.001$) and postoperatively (0.40 ± 0.42 vs. 0.91 ± 0.58 MME/kg, $p < 0.001$). Median pain scores were lower in patients with suprazygomatic blocks on each postoperative day (POD 0, 2.7 vs. 3.4; POD 1, 1.3 vs. 1.9), but these differences were not statistically significant ($p = 0.094$). Median length of stay was equivalent (1 day) in both groups.

Conclusions
Patients given suprazygomatic maxillary nerve blocks prior to cleft palate repair had lower intraoperative and postoperative total opioid consumption. Regional anesthesia is a useful tool for reducing opioid use after cleft palate repair.

Cleft palate, suprazygomatic block, opioid

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Comparison of Gabapentin and Clonidine Use in Peri-Operative Recovery Protocol after Primary Palatoplasty

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FR2.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction: Increasing patient misuse/dependence on opioids has forced physicians to find alternatives to opioids for peri-operative pain management. Multimodal 'enhanced recovery' protocols are designed to help improve surgery outcomes with standardized regimens. Developing such protocols could help improve recovery of infants after palatoplasty who are typically agitated and remain in the hospital with presumed pain and poor feeding.

Aims: To identify an effective adjunctive non-narcotic agent to promote recovery after palatoplasty.

Methods: Two experimental cohorts, using scheduled doses of either oral clonidine or gabapentin, were evaluated serially over consecutive 14-month periods from 2019 to 2021. These cohorts were retrospectively compared to a control group to assess outcomes after primary palatoplasty. Experimental cohorts using oral clonidine or gabapentin as independent pain modulators were compared to determine if opioid requirement or hospitalization length were decreased over the control group data.

Results: The clonidine and gabapentin cohorts had 27 and 22 patients, respectively. The control cohort included 30 infants who did not receive clonidine or gabapentin. Post-operative medications included a combination of intravenous fentanyl, intravenous or oral acetaminophen, ibuprofen, and oxycodone, +/- oral clonidine and/or oral gabapentin. Oxycodone was provided as needed for moderate-severe pain not responding to other oral measures. 78 of 79 total patients received post-operative oxycodone. The control cohort used a mean 4.5 doses of oxycodone over 19.2 hours. The clonidine cohort used 4.4 doses over 23.5 hours. The gabapentin cohort used 4.0 doses over 17.5 hours. Hospitalization length was lowest in the gabapentin cohort at 1.09 days. The control cohort remained 1.30 days; the clonidine cohort remained 1.37 days.

Conclusions: Use of oral gabapentin as a non-narcotic perioperative pain adjunct was associated with reductions in oxycodone use and hospitalization length compared with clonidine and control cohorts. The clonidine cohort showed similar perioperative oxycodone use and increased hospitalization time compared with controls.
opioids, palatoplasty, gabapentin, clonidine, ERAS

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How many speech and jaw surgeries do we really need?
A review of 167 patients with Veau 3&4 clefts followed to maturity; comparing results of repairs based on the Anatomic Cleft Restoration Philosophy (ACRP) with Traditional/Hybrid repairs.

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FR2.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction
Traditional cleft repair pulls together existing tissue, leading to difficulty in wider and more complex clefts. Modern embryology sees the cleft as a developmental error causing a literal absence of tissue, not as a gap. The obvious solution is to replace the missing tissue.

This straightforward insight was the basis for the Anatomic Cleft Restoration Philosophy (ACRP), which is an additive, tissue replacement approach to cleft reconstruction. The ACRP combines cleft embryology with modern reconstructive principles to dramatically change cleft care.

The success of any cleft approach is only as good as the results obtained for the most severe clefts. In this study, patients with Veau 3-4 clefts were treated and followed to maturity, to answer 3 questions;
1. How often do patients require speech and/or jaw surgery?
2. How do ACRP repairs compare to patients the author treated with Traditional and hybrid repairs (ex. Ian Jackson type)?
3. How does the ACRP compare with Traditional results in the literature?

Aims
The delegates will be able to describe;
- how the ACRP developed.
- how the ACRP improves results in wider clefts.
- the difference between Traditional and ACRP philosophies.

Methods/Results
A review of 662 of the author's patients produced 164 cases of Veau 3-4, non-syndromic clefts with >17 years follow-up. The need for speech and/or jaw surgery was tabulated.
1. 48 Traditional and Hybrid repairs (Hybrids have some but not all ACRP concepts). 42% needed speech surgery, 58% needed jaw surgery (my results were consistent with Traditional rates in literature)
2. 116 ACRP repairs (Z-Plasty +/- buccal flaps without relaxing incisions or gingivoplasy). 8% needed speech surgery, 9% needed jaw surgery. 83% did not require speech or jaw surgery.

Conclusion
Patients with Veau 3&4 clefts require significantly less speech/jaw surgeries when treated with ACRP based primary repairs then when treated with Traditional repairs.

Speech/Growth study, ACRP, Veau 3&4

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Nuisances or Nightmares: an analysis of surgical complications and the safety of the cleft repair over time; a review of 505 patients treated with the DOZP +/- BF, an Anatomic Cleft Restoration Philosophy based procedure.

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FR2.1 PRIMARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction
The Double Opposing Z-Plasty +/- Buccal Flap repair (DOZP+/-BF) is a proven alternative to traditional palatoplasty. Published results show excellent speech outcomes regardless of cleft width or classification and a low need for jaw surgery.
To be useful, safety analysis must be accumulative, adding initial surgical safety, to the safety of complication repairs and secondary surgeries. Considering any ONE phase alone is misleading.
Complications are not created equal, ranging from easily managed nuisances to major "nightmares" requiring multiple operations. Avoiding nightmares is key to improving safety.
The DOZP+/- BF is core to the Anatomic Cleft Restoration Philosophy (ACRP), an additive approach that replaces tissue missing from the cleft defect. ACRP reconstructions have greater tissue availability than any repair in history; a built-in redundancy available to address initial and later tissue needs, including complications.
Aims
Learners will be able to describe;
- the difference among complications.
- how procedures with low primary complication rates are not necessarily the safest path to maturity.
- how the ACRP reduces nightmare complications.

Methods/Results
A analysis of 505 patients from one surgeon's 29-year experience using DOZP+/-BF, included Veau classification, syndrome/sequence status, post-operative trauma history, fistula size and location, and surgeries required.
- In 505 total cases, 30 fistulae occurred (5.6%), and only 2.5% > 2mm.
- only one fistulae in 29 years required more than one repair.
- 100% were nuisances, with ZERO nightmares.
- only simple two-layer local tissue closure was required. No external flaps were needed.
- 333 non-syndromic, non-sequence cases, 16 fistulae occurred (4.8%), with 1.8% >2mm.
- Of Veau 3-4 to maturity, 9% recommended for jaw surgery.

Conclusion
With the risks associated with the few easily managed complications and the low need for speech and jaw surgeries, it is clear the ACRP-based DOZP+/- BF is a safe operation.

complications, safety, ACRP, Buccal Flap

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Application of Artificial Intelligence (AI) to develop globally applicable algorithms for evaluation of unilateral cleft lip (UCL) from non-standardised 2d photographs

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FR2.2 ARTIFICIAL INTELLIGENCE, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 09:30 - 10:30

Introduction/Aims

Robust, reproducible cleft surgery outcome measures that are globally applicable to big data sets are essential. The application of artificial intelligence(AI) has changed aspects of medical practice and has the potential to address this unmet need in cleft outcome evaluation. However, a key first step is developing algorithms to evaluate preoperative cleft images.

Aims: 1)develop algorithms to detect the presence of unilateral cleft lip+/-cleft palate (UCL) in non-standardised, ethnically diverse 2d-photos 2) investigate semi-supervised and 3)unsupervised approaches to UCL severity grading.

Methods

Data:non-standardised photographs of patients under 3-years old with UCL (isolated cleft palate(CP) images served as controls), from the Smile Train dataset. A subset of images with human rated 5-point severity (Hubli) scores were used for semi-supervised learning. Images with medical artifacts (eg eye tapes and endotracheal tubes) were included.

We incorporated Convolutional Neural Networks(CNNs) along with a preprocessing technique to extract key regions of interest from images. To understand what the algorithm was learning in order to detect the UCL we employed saliency techniques to improve interpretability. We studied the patterns of cleft lip learnt by the AI algorithm using a dimensionality reduction technique, Principal Component Analysis and Variational Autoencoder.

Results

The results establish the possibility of building robust DL models for UCL identification and diagnosis. A saliency map shows the model learned the visual differences of UCL and non-cleft lip images. Limitations with Hubli scored images meant we were unable to use them successfully for semi-supervised learning. The unsupervised algorithm indicated ability to differentiate between complete and incomplete UCL.

Conclusions

It is possible to train explainable AI algorithms on real-world, non-standardised images.

The algorithm was able to distinguish between UCL and non-cleft lip images. Our findings that unsupervised learning can differentiate between complete and incomplete UCL is being used to develop additional algorithms to further grade cleft severity.

Artificial Intelligence, unilateral cleft lip

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Machine Learning-based Classification of Cleft Speech: CLeft-Associated Resonance Imitation Study (CLARIS)

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FR2.2 ARTIFICIAL INTELLIGENCE, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 09:30 - 10:30

Introduction

Cleft palate (CP) with or without cleft lip can produce hypernasal speech due to velopharyngeal insufficiency. The gold standard for speech evaluation is perceptual judgement by speech and language pathologists/therapists (SLTs). However, particularly for hypernasality, these methods are prone to intra- and inter-rater variability, can be time-consuming, and due to a shortage of SLTs, are not scalable. Machine learning-based (ML) classification of cleft speech offers an opportunity to develop a more accurate, scalable and affordable method for speech evaluation.

Aims & Methods

In this exploratory work, we propose a novel method for generating ML training data by utilising experienced Brazilian, British and Swedish (n = 22) SLTs' ability to imitate hypernasal speech. Speech recordings with hypo-, hyper-nasal and normal resonance were collected using standardised recording equipment, to minimise variation in audio recordings. This approach ensured that most signals from the participants' speech remained relatively unaltered except for signals related to resonance. These audio data, which consist of sustained vowels, and other tasks validated for hypernasality detection were analysed in the time, frequency and spectral domains using signal processing approaches.

Results

Our early work shows that measures of shimmer(local) may prove useful in classifying sustained vowel /a/ sounds into oral and hypernasal resonance. We derive Mel-spectrograms and use these as an input layer for several convolutional neural networks (CNN) and recurrent neural network (RNN) models. Long-short-term-memory (LSTM), an RNN outperformed other models – yielding up to 92.61% validation accuracy.

Conclusions

Utilising experienced SLTs to imitate cleft-like speech may serve as a feasible and scalable method of generating training data for cleft speech classification tasks using ML with the ability to control for confounding clinical speech variables, enabling identification of unique "signatures" for hypernasality. Further work will study other cleft speech characteristics and will test these models on clinical data.

Machine Learning, Hypernasality, Assessment

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Using Artificial Intelligence to Evaluate Velopharyngeal Competence in Cleft Lip and Palate Children

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FR2.2 ARTIFICIAL INTELLIGENCE, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 09:30 - 10:30

Introduction: The use of artificial intelligence in cleft lip and palate (CLP) care could greatly improve and facilitate speech evaluation, which currently requires highly competent speech-language pathologists and is both time and resource consuming. In the present study, we have started the development of an artificial neural network (ANN) for speech evaluation in CLP care.

Methods: Evaluations of velopharyngeal competence (VPC) from the Swedish National CLP Registry were used together with their corresponding audio recordings. In total, 141 evaluations and recordings from 5 and 10-year-olds were included. After pre-processing of the data, 3 different deep learning models were used to develop an ANN capable of determining VPC on a 3-point scale. The models used were a bidirectional long-short term memory layer (BiLSTM), convolutional neural network (CNN), and a network based on the pre-trained model VGGish. Seventy and 30 percent of data was used for training and testing of the ANN, respectively. Ten-fold cross-validation was performed. Features affecting the performance of the ANNs were identified. The performance of the ANNs was expressed as a percentage of correct VPC classifications based on entire audio files or specific audio frames in the recordings.

Results: The best performing ANN was the CNN model, giving the correct VPC score to 90 percent of files and 74 percent of frames. It outperformed the other models particularly when it comes to differentiating between adequate VPC and slight velopharyngeal incompetence.

Conclusion: This relatively small study using non-standardized speech recordings shows promising results that warrant further investigations of the possible use of ANNs for speech evaluations in CLP care. We are planning a larger study with more homogenous speech material as to further investigate this and develop the ANN that has been produced in this study.

AI, speech, evaluation, automatic, velopharynx

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Prospective validation of AI-based algorithms for assessment of hypernasality and speech acceptability in children with cleft and lip palate

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FR2.2 ARTIFICIAL INTELLIGENCE, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 09:30 - 10:30

Introduction: Perceptual assessment of hypernasality and speech acceptability are considered within the gold standard measures for analysis of speech outcomes for children with cleft palate +/- lip (CP). While reliability for perceptual judgements is high for expert Americleft trained clinicians, it is a challenge for community speech-language pathologists. Hypernasality judgements are particularly problematic.

Aims: To establish the validity of an objective artificial intelligence (AI)-based algorithm for assessment of hypernasality and speech acceptability in 5–7-year-old children with CP.

Methods/Procedures:
Algorithms were developed including an objective hypernasality measure (OHM) and an objective speech acceptability measure (OAM). The OHM and OAM are objective tools trained on a large corpus of (~100 hours) of healthy speech and the Utah Americleft sample of 5–7-year-old children with CP.

Validation of the OHM and OAM was conducted on a prospective sample of thirty 5–7-year-old children with nonsyndromic CP using the Americleft Speech Protocol. The samples were collected at a large metropolitan cleft clinic and rated by two Americleft trained SLPs from other centers in the US. Validation compared the OHM and OAM measures to the clinical ratings for hypernasality and speech acceptability. Sensitivity analysis of the OHM and OAM measures was conducted and will be described.

Results:
Clinical evaluation indicated a significant moderate to high correlation between the OHM scores and clinical rating of hypernasality ($r=0.54$, $p<0.001$) and OAM scores and clinical ratings of acceptability ($r=-0.771$, $p<0.001$). Sensitivity analysis showed that the OHM and OAM measures could small differences between cleft and noncleft speakers.

Conclusions: This study provides evidence that the AI algorithms have the potential to provide reliable and valid measures that correlate with expert clinical raters.

Automated speech analysis

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CLEFT OUTCOME STUDIES IN SUB-SAHARAN AFRICA, A CALL FOR REGIONAL COLLABORATION IN REPORTING TREATMENT OUTCOMES: THE AFRICLEFT PROJECTD

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FR2.3 LMIC Theme, Fintry, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction: Cleft outcome studies form an important part of the feedback process in improving the quality of cleft-care provided to patients. Both clinician and patient reported outcome measures, have been found to be very effective in this regard. Several outcome studies have been carried out in developed climes such as the Eurocleft, Scandicleft and Americleft studies. However, there are limited reports on outcome studies carried out in underserved populations such as in Sub-Saharan Africa.
Aim: To propose a possible collaboration between countries in Sub-Saharan Africa to carry out cleft outcome studies, for patients seen in our environment.
Methodology: This presentation will discuss the development of an AFRI-Cleft initiative which will seek to see countries in Sub-Saharan Africa setting up a task force with the aim of collaborating to report cleft treatment outcomes from the different countries. This taskforce would also set-up standard reporting guidelines bearing in mind the global standards developed by ICOHM, while also putting into consideration the peculiarities of the African environment.
Results: The proposal will seek to identify a few African countries who are willing to participate in an initial phase of the project. The specific treatment outcomes, which should encompass both clinician and patient reported outcome measures will also be determined.
Conclusion: This presentation will present an opportunity for African countries to collaborate on a common project. The collective outcome of this would present an opportunity for cleft outcomes from this continent to be compared to those reported for other climes. It would provide learning opportunities for cleft care providers from across the world. Most importantly, the results obtained will be used to improve on the quality of cleft care provided in Sub-Saharan Africa.

Cleft Outcome study, Afri-cleft initiative.

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Lost in Translation: A caution against translational tools for medical communication

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FR2.3 LMIC Theme, Fintry, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Background/Purpose:

Medical terminology is evolving. In the field of orofacial clefts, the terms 'lagocheilos', 'bec-de-lievre' and 'harelip' were historically used to describe 'cleft lip'. These terms were associated with flawed aetiology and social stigma. The use of harelip was abandoned in 1922 and cleft lip and cleft palate are accepted modern terms. Despite this change, social stigma attached to craniofacial deformities is still significant.

Methods/Description:
In a recent global research exercise that required the use of Google Translate to translate to translate documents into Spanish and French, the direct translation of cleft lip was to harelip ('labio leporino'). The translated text was proofread by native speakers who highlighted the error and recommended the use of labio/paladar hendido/fisurado.

Results:
Google Translate uses statistical matching and cannot incorporate context and grammar. In medical communications, this tool may produce translations that are outdated or offensive. This can have great consequences and lead to miscommunication among researchers and healthcare staff. As a result, the two largest defence unions in the UK issued a caution against using Google Translate as it would fail to meet the standards required for medical terminology.

Conclusions:
With decades of effort to remove 'harelip' from everyday discourse and reduce the associated stigma of craniofacial abnormalities, individuals using online translation tools should be mindful not to reverse this progress.
translation, medical terminology, cleft lip

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Quality Assurance Guidelines for Mission-Based Cleft Care in Underserved Settings: An Evolving Three Decade Experience

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FR2.3 LMIC Theme, Fintry, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction:
Clefts of the lip and palate are among the most common congenital craniofacial anomalies. Surgical outreach programs provide short-term surgical care services for underserved patients in poor communities. These surgical initiatives have been criticized for lack of clear guidelines and appropriate measures, raising ethical concerns around standards of care. Global Smile Foundation (GSF) synthesized ten axes for safe, sustainable, and multidisciplinary cleft care delivery in Low- and- Middle- Income countries (LMICs).
Aims:
In this abstract, we provide updated quality assurance guidelines for mission-based cleft care by integrating our on-field experience with the current patient safety and surgical quality literature.
Methods:
The ten axes generated for effective and sustainable cleft care delivery in the outreach settings include: 1) site assessment, 2) team selection and recruitment, 3) establishment of local partnerships, 4) volunteers training and preparation, 5) implementation of quality assurance guidelines, safety checklists, and emergency response measures, 6) postoperative follow-up, 7) medical record keeping, 8) outcomes assessment, 9) education, and 10) capacity building and sustainability.
Detailed analysis for each of the above-mentioned components is generated to delineate experience-derived and evidence-based guidelines.
Conclusion:
Development, implementation, and continuous modification of quality assurance guidelines ensure reproducible and safe processes and outcomes. We hope that these guidelines will promote further discussion toward delivery of optimal and sustainable interdisciplinary cleft care.

Quality assurance, Surgical Outreach, Cleft

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Cleft lip and palate research in low- and middle-income countries: a scientometric analysis of academic productivity, actors, and themes

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FR2.3 LMIC Theme, Fintry, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction:
Research can help inform strategies aimed at reducing disparities related to accessing CLP care.

Aims:
We performed a scientometric analysis of research on CLP in LMICs to identify influential authors, institutions, and themes.

Materials and Methods:
The authors searched seven citation databases accessed via Web of Science. The search spanned from inception to March 02, 2021, and included synonyms of “cleft lip,” “cleft palate,” and “low- and middle-income countries.” After screening, the articles’ metadata were exported as text files and uploaded to VOSviewer (Leiden, Netherlands), where citation and network metrics were generated. The Kruskal-Wallis test and linear regression were used for bivariable and multivariable analysis.

Results:
We included 1561 articles authored by 6414 researchers affiliated with 2113 organizations in 119 countries. Authors affiliated with institutions in the following countries contributed the most to CLP research in LMICs: USA (454 articles), Brazil (211 articles), China (175 articles), and India (127 articles). The most prolific institutions were: The University of Sao Paulo (94 articles), the University of Pittsburgh (57 articles), and the University of Iowa (55 articles). In addition, researchers at the following universities had the most collaborations with colleagues at other institutions: The University of Pittsburgh (151 total link strength), the University of Iowa (137 total link strength), and Federal University of Rio de Janeiro (75 total link strength). Five hundred and ten articles (32.7%) were focused on epidemiology, 240 (15.4%) on management, and 54 (3.5%) on global plastic surgery for CLP.

Conclusion:
This study elucidates areas of the world where further partnership and health system strengthening opportunities exist to improve local research capacity and ultimately inform the management and outcomes for patients with CLP.

Bibliometrics; developing countries; cleft

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The World Cleft Coalition and the development of international programme standards in cleft care - global NGOs joining forces to set out a ‘bill of rights’ for patients

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FR2.3 LMIC Theme, Fintry, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction

The World Cleft Coalition (WCC) is an alliance of international NGO’s that support cleft lip and palate care and engage in capacity-building partnerships. The WCC was initiated at the 13th Congress of Cleft Lip and Palate and Related Craniofacial Anomalies in Chennai, India in 2017. The task set out by delegates at the conference NGO day was to encourage collaboration in the development of globally-recognized guidelines for safe and comprehensive cleft care

Methods

Through collaboration among participating organizations (American Cleft Palate Craniofacial Association, European Cleft Organization, Global Smile Foundation, Operation Smile, Smile Train, and Transforming Faces) and consultations with outside constituents and partnerships, the WCC drafted an "International Treatment Program Standards” document. This exchange was built on sharing experiences between the NGOs on the key factors involved in the delivery of high-quality cleft care, taking into account existing guidelines. The focus was on ethical, safe, accessible, and patient-centred care, rather than clinical techniques and timing. Attention for wording was focused on being inclusive and encouraging while limiting mandates and prescriptive language.

Results

Following the launch of the guidelines at the 76th ACPA Conference in 2019 the team has been encouraging feedback with a view to compiling a document that global bodies can sign up to. Dissemination has been hampered during Covid 19 but a website inviting feedback was established (http//worldcleftcoalition.org). The team is seeking input from professional associations and parent groups, with a special focus on LMICs.

Conclusions

Ultimately we hope the guidelines will bring about safe, ethical, high quality care by providing governments, professional bodies, hospitals and patient groups with a check list of what must be expected in the delivery of cleft care – a kind of ‘bill of rights’ for patients.

An unexpected strength of this initiative has been the close collaborative process between NGOs working towards enhancement of cleft care.

ethical, safe, international, standards, guidelines,

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Access to Cleft Surgical Care in Low- and Middle-Income Countries: A Geospatial Analysis of 27 Countries

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FR2.3 LMIC Theme, Fintry, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Background: Access to essential surgical care is an indicator of the strength of a health system, as defined by the Lancet Commission on Global Surgery. Cleft surgery is one of the 44 essential surgical procedures, yet access to cleft care is limited in many low- and middle-income countries.

Aims:

To map the number and types of existing cleft care providers in 27 countries where Operation Smile operates.

To estimate the proportion of the population within 100km radius of cleft care providers.

Methods:

This was a cross-sectional descriptive analysis conducted from April 2020 to October 2020. State (private or public) and NGO cleft care providers in 27 countries where Operation Smile is active were identified through online databases, geocoded, and verified by local Operation Smile staff. Geospatial analyses were performed on ArcGIS. Population density per administrative level 1 (region) was mapped, buffers for 100km radius were used per site. Averages were reported as medians (with ranges).

Results:

The average number of cleft care providers per country was 26 (range 11-107) with 0.09 providers per 100,000 population (0.01 - 0.1); 37% of providers (0 – 88%) were state and 61% (13 – 100%) were NGOs. Median percentage of the population that had access to safe surgical care within 100km radius was 37% (range: 13% - 90%).

Conclusion:

Nearly two-thirds of the population in countries where Operation Smile works lacked access to cleft surgical care within 100km radius. The majority of care is provided by NGOs. Despite limitations, this is the first study to describe access to cleft surgical care. This research been used by Operation Smile to inform strategic planning of programs to increase access to cleft care in regions where care is limited.

global surgery, cleft surgery access

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Perioperative Outcomes in Cleft Palate Repair Using Suprazygomatic Maxillary Nerve Blocks

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FR2.4 SURGERY, Kilsyth, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Background: Cleft palate is a common congenital abnormality requiring surgical repair. Palatoplasty is commonly associated with postoperative pain, which can require narcotics, limit oral intake, and extend length of stay. Regional anesthetic blocks have been utilized to improve pain outcomes, yet additional data is needed to fully explore the utility of regional anesthesia in this setting.

Aim: To explore whether ultrasound guided suprazygomatic maxillary blocks (SMB) improve postoperative pain, postoperative opioid use, time to oral feeding, and length of stay compared to palatal field block in cleft palate repair.

Methods: In this retrospective chart review, 48 patients aged 9-25 months who received a cleft palate repair between 2013-2020 were allocated into two groups: Control group (N=29) where patients received palatal local anesthetic in a field block fashion, and Maxillary block group (N=19) where patients received ultrasound-guided SMB. Patients were matched by age and cleft Veau type. The primary outcomes were total postoperative morphine equivalent consumption, average pain scores, length of stay, and time to first oral feed.

Results: The overall dose of postoperative morphine equivalent opioid administration were similar between the field block and maxillary block groups (12.86 vs. 11.72 mg). Average pain scores (5.26 vs. 5.78), average time to first oral feed (14.48 vs. 17.21 hrs) and average length of stay (29.05 – 50.53 vs. 30.62-53.79 hrs) also showed no difference.

Conclusion: In this study, the use of ultrasound guided suprazygomatic maxillary blocks was not shown to improve perioperative pain outcomes. Further study is needed to define the utility of this adjunctive procedure and its use in cleft palate repair.

Maxillary Block, Pain, Cleft Palate

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VIDEOASSISTED CLEFT PALATE SURGERY: A PRECLINICAL COMPARISON BETWEEN EXOSCOPE AND ENDOSCOPE

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FR2.4 SURGERY, Kilsyth, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction
Cleft palate surgery presents criticalities linked to the difficult magnification of a narrow operating field, the limited involvement of surgical team and trainees during the procedure and the musculoskeletal overload for the cleft surgeon due to the kyphotic posture performing the repair. Although video-assisted cleft palate repair techniques can overcome these problems, they have only been reported in a very limited number of studies in the literature.
Aims
The aim of the study is to validate and compare the use of exoscope (Karl Storz Vitom 3D) and endoscope (Olympus Visera 4k) for cleft soft palate repair and to identify which of them offers the best experience and the least workload for the surgeon.
Methods
A preclinical study was set up using a formalin-fixed specimen with an iatrogenic cleft of the soft palate. Head and neck surgeons were asked to perform 4 exercises to be repeated with the video assistance of the exoscope and endoscope. The tasks were as follows: 1) setting of the device, 2) isolation of the levator veli palatini muscle, 3) 5/0 stitch on the muscle plane, 4) 5/0 stitch on the oral mucosal layer. Exercises were objectively by the time spent to complete them and subjectively evaluated through the compilation of 2 NASA Task Load System (TLS) and VAS questionnaires by the participants.
Results
10 surgeons participated in the study. All of them successfully completed the tasks. The execution times were comparable for both exoscope and endoscope, with the exception of the setting which was faster for exoscope. The exoscope was more appreciated by participants than the endoscope at both NASA TLS and VAS.
Conclusions
The study carried out demonstrated the validity and usefulness of the two video systems evaluated for cleft palate repair. The exoscope proved to be more appreciated by the participants than the endoscope.

Cleft Palate Repair, Exoscope, Endoscope.

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Interest surgical glue in the cutaneous closure of cheiloplasties for cleft lip

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FR2.4 SURGERY, Kilsyth, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction
A residual scarring of a cleft lip may be responsible for a psychological impact. Primary repair must guarantee the less visible healing.

Aims
The aim of this study was to present our experience concerning the use of surgical glue in the cutaneous closure of primary cheilorhinoplasty for cleft lip +/- palate.

Methods
Single-center retrospective study between 2005 and 2021, included patients with cleft lip +/- palate operated by two surgeons of one primary cheilorhinoplasty.
A muscle suture was performed with non-resorbable sutures. The mucosa closure was made by absorbable sutures. The subcutaneous plane was performed with 6/0 absorbable sutures. There was no skin sutures. Liquiband® surgical glue was applied on the wound after the suturing of the subcutaneous plan. The dried scar is pressured between thumb and forefinger to confront the edges of the wound.
The glue was widely applied on either side of the scar.
The drying time varied from thirty seconds to one minute.
A simple washing with sterile water helped to remove the remaining glue with a complete healing of the wound, in consultation at D10 post- operatively.
Results
147 patients were included. No postoperative care was needed on the glued area. The length of hospital stay was on average 24 hours postoperatively. No infection, and no allergic reaction has been reported. 4 severe bilateral cleft lip and palate presented small unilateral disunity postoperatively including two patients required secondary cheiloplasty.

Conclusion
The benefit of this closure technique was the promotion of healing by limitated the inflammatory and tension phenomenon. The absence of skin threads limited the presence of pro-inflammatory foreign bodies at the dermal level. The presence of a hermetic barrier played a role in limiting bacterial contamination of the wound via nasal discharge or feeding. Furthermore, the management of the surgical outcomes was easier.

surgical glue; cleft lip;
cicatrization

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A Statistical Shape Model of the Orbits in Unilateral Coronal Synostosis

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FR2.4 SURGERY, Kilsyth, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction: Orbital anomalies are important components of the phenotype of unicoronal synostosis (UCS). Detailed knowledge of ipsi- (IL) and contralateral (CL) orbital malforations in UCS is limited.
Aims: To develop and validate a 3D model of orbital shape and use it to describe morphological characteristics of UCS orbits compared to a control group.
Methods: 81 preoperative CT-scans of 56 females and 25 males (mean age 9.73 ± 6.83 months) with isolated UCS were analyzed. 46 age-matched CT-scans of normal individuals (28 females, 18 males) served as controls. Semi-automatic segmentation of all 254 orbits was performed and a shape model based on principal components analysis (PCA) was created. Differences between mean values were tested (5% level) by Student's t and Wilcoxon rank-sum tests.
Results: PC1 of a shape model with size correction showed no significant differences between genders in either group. Data for both genders was pooled. No significant orbital shape differences were observed between the two sides in the control group. Consequently, control data was pooled after mirroring. The shape of IL and CL orbit in the UCS group differed markedly ($p<0.001$); being fully separated in PC1 space. The IL orbit was also fully separated from controls being posteriorly shallower, laterally compressed and tilted towards the midline and taller. The CL orbit was shallower than the controls and slightly tilted downward posteriorly but otherwise similar in shape. Mean shapes of IL, CL and control orbits were created and differences between them spatially mapped. Validation was done by correlating PC values to width, height and depth of orbits; R ranging between 0.5 and 0.7.
Conclusions: A model of orbital shape in UCS was successfully developed and validated, providing insight into the shape differences. The shape of IL and CL was abnormal. The model is anticipated to be a valuable tool for treatment planning and outcome evaluation.

ucs, orbits, morphology, midface

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Smart Glasses in Pediatric Plastic Surgery during the COVID-19 Pandemic

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FR2.4 SURGERY, Kilsyth, EICC - Streamed, July 15, 2022, 09:30 - 10:30

INTRODUCTION
Experience with smart glasses for remote surgical assistance is limited. The coronavirus 2019 (COVID-19) pandemic urges for alternative possibilities in remote proctoring. Remote surgical assistance glasses could enable remote surgical assistance and training. Consequently, aiding in establishing sustainable collaboration practices.

AIMS
The aim of this study was to assess virtual glasses in order to test their future potential for medical education, remote support during difficult cases and sustainable medical meetings for the enhancement of healthcare worldwide.

METHODS
A 23-point questionnaire was sent to a plastic surgeon, a plastic surgery resident and two researchers to critically appraise both video and audio quality of the smart surgical glasses for remote assistance. Five surgical cases were randomly selected and recorded with the Rods&Cones glasses in 4K (3,840 x 2,160 p). An encrypted video connection allowed residents and researchers to attend surgery.

RESULTS
In general, all participants appreciated the use of the smart glasses for remote education. Audio quality was excellent and video quality was dependent on the strength of the Wi-Fi connection. The main limitations were image stabilization and loss of video connection due to a weak Wi-Fi connection. Participants indicated that the smart glasses had several significant advantages over conventional on-site education.

CONCLUSIONS
COVID-19 necessitates technological advances in medicine and expedites improvement of education in the OR when physical presence for medical education was not allowed. Moreover, the smart glasses can be used for international peer consultation e.g., for 'low-income countries'. Main limitations of the smart glasses (i.e., image stabilization and loss of video connection) can be fixed through updates and an improved digital infrastructure. Smart surgical glasses for remote surgical assistance have an important role in medical education of the future.
camera glasses, remote surgical assistance

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COVID Cleft: A national evaluation of cleft care operating through the COVID-19 Pandemic in the United Kingdom

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FR2.5 COVID issues, Moorfoot, EICC - Streamed, July 15, 2022, 09:30 - 10:30

INTRODUCTION/AIMS
COVID-19 fundamentally changed cleft teams' ability to care for their patients. This project aims to study; 1) the effect of COVID-19 on elective surgery timings and outcomes; 2) preoperative screening and isolation protocols; 3) impact of operating with personal protective equipment(PPE).

METHODS
Between the start of the first UK lockdown in March 2020 and April 2021 operative details from cleft procedures performed in eight centres were entered into a secure REDCap database.

RESULTS
651 records were entered (59% male, 41% female).

39% of surgical cases were deemed delayed compared to normal protocol timings, with 80% of the delays attributable to COVID. Mean age at initial cleft lip repair was 230 days compared to an expected national standard of 183 days (pre-COVID representative mean= 137 days. Mean age at cleft palate repair was 387 days compared to an expected national standard of 396 days (pre-COVID representative mean= 320 days).

81% of patients undertook some form of pre-operative isolation; 47% isolated for two weeks. COVID screening was performed in the 72 hrs prior to surgery in 89% of patients and 13% of parents/carers. Only one patient had a positive test ?and surgery was ?postponed?.

69% surgeons wore an FFP3 mask to operate, and 64% of cases involved difficulty during the operation as a result of the PPE; most commonly communication difficulties (45%). No patients developed COVID in the early post-operative period.

CONCLUSIONS

Initial(primary) cleft lip/palate repair in the UK was delayed as a direct result of the pandemic. Secondary surgery has been significantly affected and efforts will need to be made at national level to provide capacity to catch up. Isolation and testing protocols for COVID-19 vary, but appear safe.

There is no evidence in this data to prevent routine cleft surgery continuing through the pandemic, as long as resources allow.
Surgery, Outcomes, COVID, PPE

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Safety Protocols for surgical resolution in patients with cleft lip and palate during the COVID-19 Pandemic.

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FR2.5 COVID issues, Moorfoot, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction :
The coronavirus pandemic declared by the WHO since march 11, 2020 has generated profound changes in the global health system, which had to adapt in order to prioritize care and redistribution of resources to those affected by the virus. Surgical procedures related to cleft lip and palate (CLP) were postponed.

Aims: To present our surgical experience applying a COVID protocol in patients with CLP.

Methods: This is a descriptive study in patients with CLP operated between march 2020 to may 2021 at Luis Calvo Mackenna Hospital, Chile.
Prior to surgery, a telephone survey was applied to the patients tutor, in order to investigate symptoms suggestive of COVID and a history of possible exposure to the virus. Patients with a negative survey received a nasopharyngeal swab test for COVID (PCR) 48 hrs before the surgical intervention, routine blood tests were also taken.

Results: 109 surgeries were performed in a total of 98 (60 male , 38 female) patients with CLP, with a mean age of 65 months , ranging from 7 to 225 months. 65 primary and 43 secondary surgeries were undertaken .
Pre operative screening: One patient with a negative survey prior to the procedure had a positive COVID-PCR, due to which the intervention was rescheduled 4 weeks later.
In the postoperative period: 2 patients had a positive COVID-PCR with no comorbility due to COVID 19Epidemiological follow up of staff and patients who were in contact with these 2 cases was carried out. There was no new report after a 14 days follow up.

Conclusions: When strict safety protocols are carried out before, during and after surgical intervention during the COVID-19 pandemic, the risk of intrahospitalary infection can be minimized and age critical CLP surgeries can be performed safely.
COVID pandemic, Surgical protocols, cleft

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Cleft Surgical Procedures During COVID-19: Strategies Employed to Maintain Timely and Safe Care

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FR2.5 COVID issues, Moorfoot, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction:
The COVID-19 pandemic has greatly impacted pediatric surgical care at hospitals globally. At our institution, non-urgent surgical procedures were canceled in March 2020 secondary to governmental mandates. Despite this, perioperative leaders employed various strategies upon resuming elective procedures resulting in no changes to the timing and provision of cleft surgeries when compared to patients treated one year prior (Table 1). Furthermore, no iatrogenic COVID-19 infections occurred in patients or surgical staff during cleft surgeries.

Aims:
Our aim is to outline strategies employed by perioperative leadership to provide timely and safe cleft surgical care despite procedural disruptions caused by the COVID-19 pandemic.

Timely Surgery:
Cancellation of non-urgent surgical procedures provided leadership time to overhaul our institution's case scheduling process. Upon resumption of non-urgent surgeries, open block times were introduced to allow prompt rescheduling of relatively time-sensitive cases, such as primary cleft lip and palate repairs, by the craniofacial team.

Surgical Safety:
Centers that encountered the pandemic in previous months employed rigorous personal protective equipment (PPE) protocols to protect patients and staff from aerosolization during surgery. As an understanding of the pathogen's transmission increased and reliable testing modalities became abundant, our institution elected to instead rely on aggressive presurgical patient screening and to simplify PPE protocols. This initiative preserved PPE supplies and prevented increases in patient exposure to anesthesia secondary to cumbersome donning and doffing procedures. Additionally, temperature checks and symptom questionnaires were utilized to screen hospital staff and patients' families to further reduce the risk of transmission during surgery.

Conclusion:
The presented operational strategies to surgical care, along with strong representation of the plastic surgery service in hospital leadership, were essential to providing timely and safe cleft surgical care at our institution. While surgical logistics vary institution-to-institution, we believe our experiences are of value to other centers should they experience mandatory shutdowns in the future.

	Total	Central & South Asia	East & Southeast Asia	Europe & North America	Latin America & Caribbean	North Africa & West Asia	Sub-Saharan Africa	
	Value (%)	Value (%)	Value (%)	Value (%)	Value (%)	Value (%)	Value (%)	*p*
Internet Connectivity (n=160)								0.33
Good most of the time	55 (34.4%)	21 (42.9%)	11 (26.8%)	1 (50.0%)	10 (35.7%)	4 (80.0%)	8 (22.9%)	
Good sometimes	77 (48.1%)	22 (44.9%)	22 (53.7%)	1 (50.0%)	14 (50.0%)	1 (20.0%)	17 (48.6%)	
Limited/unreliable	23 (14.4%)	4 (8.2%)	6 (14.6%)	0 (0%)	3 (10.7%)	0 (0%)	10 (28.6%)	
No access	5 (3.1%)	2 (4.1%)	2 (4.9%)	0 (0%)	1 (3.6%)	0 (0%)	0 (0%)	
Entry Method: During Patient Encounter (n=162)†								
Paper	104 (64.2%)	34 (69.4%)	23 (54.8%)	2 (100%)	18 (64.3%)	1 (20.0%)	26 (72.2%)	0.13
Offline software	14 (8.6%)	4 (8.2%)	5 (11.9%)	0 (0%)	2 (7.1%)	0 (0%)	3 (8.3%)	0.93
STX (online)	18 (11.1%)	2 (4.1%)	6 (14.3%)	0 (0%)	3 (10.7%)	0 (0%)	7 (19.4%)	0.28
Institutional EHR	42 (25.9%)	13 (26.5%)	12 (28.6%)	0 (0%)	10 (35.7%)	4 (80.0%)	3 (8.3%)	**0.01**
Entry Method: Cloud-Based Storage (n=160)†								**0.02**
STX	95 (59.4%)	29 (59.2%)	30 (73.2%)	0 (0%)	12 (42.9%)	1 (20%)	23 (65.7%)	
STX + Other EHR	65 (40.6%)	20 (40.8%)	11 (26.8%)	2 (100%)	16 (57.1%)	4 (80%)	12 (34.3%)	

† = Only responses stating that an institution used the selected entry method are shown. STX = Smile Train Express; EHR = Electronic Health Record.

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Application of Safety Protocols for International Cleft Outreach Programs During the COVID-19 Pandemic: Global Smile Foundation Precaution Guidelines and Implications

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FR2.5 COVID issues, Moorfoot, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction: Since COVID-19 was declared a worldwide pandemic by the World Health Organization (WHO) in March of 2020, foundation-based cleft outreach programs to Low- and Middle-Income Countries (LMICs) were halted considering global public health challenges, scarcity of capacity and resources, as well as travel restrictions. This led to an increase in the backlog of untreated patients with cleft lip and/or palate, with novel challenges to providing comprehensive care in those regions. Resumption of international outreach programs requires a modified course of action to incorporate necessary safety measures in the face of the ongoing pandemic.
Aim: The authors outline safety protocols, guidelines, and recommendations implemented in Global Smile Foundation's (GSF) most recent outreach trip to Beirut, Lebanon.
Methods: COVID-19 safety protocols for outreach cleft care and an Action Response Plan were developed by the GSF team based on the published literature and recommendations from acclaimed international organizations.
Results: GSF conducted a 1-week surgical outreach program in Beirut, Lebanon, performing 13 primary cleft lip repairs, 7 cleft palate repairs, and 1 alveolar bone grafting procedure. Safety protocols were implemented at all stages of the outreach program, including patient pre-selection and education, hospital admission and screening, intraoperative care, and post-operative monitoring and follow-up.
Conclusion: Organizing outreach programs in the setting of infectious diseases outbreaks should set the safety and welfare of patients and team members within the program's local community as top priority. The COVID-19 protocols and guidelines described may represent a reproducible framework for planning future similar outreach initiatives in high-risk conditions.

Global health
Quality of Life

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Emergency Response Protocols for Overseas Outreach Settings: Global Smile Foundation Strategy

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FR2.5 COVID issues, Moorfoot, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction

In an effort to accommodate the growing discrepancies in global health, the number of Non-Governmental Organizations conducting surgical outreach programs has been markedly increasing. To maximize individual safety and ensure optimal quality control, standardization of safety protocols for team members, volunteers and patients is needed. In 2012, Global Smile Foundation (GSF) developed an emergency response protocol, based on the senior author's 35 years of outreach cleft care experience.
We present an updated protocol adjusted with supplemental guides, and we introduce crisis management during high-risk situations.

Aims

This protocol describes a standardized emergency response protocol for overseas outreach settings, tailored based on the Global Smile Foundation strategy.

Methods

The GSF response protocol was developed in conjunction with surgeons, anesthesiologists, nurses, and administrators to ensure all team members are adequately prepared to respond to emergency situations in global outreach. We detail pre-trip preparation, onsite setup, debriefing meetings, site-specific adjustments, safety checklists, operating room protocols and individual responsibilities. The protocol also entails anticipatory assistance for unexpected circumstances, such as infectious disease outbreaks and natural disasters.

Results

The GSF emergency response protocol includes: 1) Recruitment of Volunteers, 2) Consistent Care, 3) Site Selection, 3) Patient and Team Safety, 4) Safety Measures, 5) Resources and Infrastructure Assessment, 6) Initial Setup, 7) Unpacking, 8) Simulation Sessions, 9) Prevention of Emergencies, 10) Measures to Avoid OR and Airway Fires, 11) Daily Meetings, 12) Improving Host Capacity and Sustainability, 13) Surgical Safety Checklist, 14) Emergency Operations Plan (EOP), 15) Crisis Management, 16) Response to Acts of Terrorism, 17) Appropriate Measures to be Taken during Infectious Diseases Outbreaks.

Conclusion

GSF developed an emergency response protocol that is reproducible, standardized, and well-defined. We hope the protocol will accommodate the needs of other organizations during their outreach trips.

Outreach, Emergency, Policies, Safety protocols

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Sustaining mission-based cleft care during the COVID-19 pandemic:

the Operation Smile experience

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FR2.5 COVID issues, Moorfoot, EICC - Streamed, July 15, 2022, 09:30 - 10:30

Introduction: Travel restrictions related to the COVID-19 pandemic impose a challenging limit on the reach and impact of traditional mission-based surgical aid. Operation Smile (OS), one of the longest running international providers of mission-based cleft care, has supported the transition from internationally-directed to locally-driven models of cleft care delivery. This purposeful, ongoing evolution has helped to mitigate the deleterious impact of COVID-19 on OS productivity worldwide.

Aims: To characterize the role of a locally-based mission model in sustaining surgical cleft care during the pandemic

Methods: A retrospective review of OS missions held between January 2010 and July 2021 was done. Local missions were defined as those in which a majority of providers lived within the host country. Host countries were classified as “prioritizing local missions” if the majority of their missions before pandemic onset were local. Host countries were classified as “active” if they continued conducting missions after pandemic onset. Host countries were further stratified by income level and SAO density. Pandemic onset was defined as March 2020. Associations were evaluated using t-tests and univariate logistic regression.

Results: Overall mission frequency underwent a 45% decline after pandemic onset (36.2 to 19.8 per quarter, $p<0.001$). Local mission frequency did not undergo a statistically significant decline after pandemic onset (23.6 to 19.8 per quarter, $p=0.345$). Among 34 host countries, 76.5% remained clinically active after pandemic onset. Prioritization of local missions prior to pandemic onset was associated with sustained clinical activity after pandemic onset ($p=0.028$). Country income level and SAO density were not associated with sustained clinical activity after pandemic onset.

Conclusion: Development of a locally-driven model of cleft care delivery has allowed for continuity of care during the pandemic-era. International humanitarian surgical organizations that prioritize local capacity are likely to achieve greater sustainability.

global surgery, COVID-19, sustainability

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Establishing alveolar bone graft clinics in the Northern Cleft Lip & Palate Service: an assessment of radiograph availability

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FR2.6 RESTORATIVE DENTISTRY, Tinto, EICC - Onsite Only, July 15, 2022, 09:30 - 10:30

Introduction
In the UK, alveolar bone graft (ABG) surgery is undertaken before eruption of the upper permanent canine tooth. Pre-operative assessment often includes dental radiographs. Dental treatment, distant or around the cleft site, may be completed at ABG surgery to streamline the patient pathway. Having contemporary radiographs is essential for planning. We report our experiences establishing a specific multi-disciplinary ABG clinic for the Northern Cleft Lip & Palate Service in Newcastle, England, and the impact this has had on patient care.
Aims
To determine the availability of dental radiographs at the time of alveolar bone graft surgery. To compare data from before and after the introduction of ABG clinics.
Methods
Patients undergoing ABG surgery were identified from a database and medical records were reviewed retrospectively across three audit cycles in a 2 year period (2019-2021). Data were collected across a number of domains using a standardised pro-forma.
Results
86 patients were identified; 18 of these were still awaiting surgery and 3 adults were discounted. Of the 65 children who underwent surgery, 22 were added to the waiting list before the inception of the ABG clinic (cycle 1). Dental treatment was carried out at 73.8% of all surgeries.
Dental radiographs were available at 56 surgeries (86.1%). They were not available 6 times during cycle 1 (27.3%) compared to 3 times after ABG clinic inception (6.7%). Of the radiographs available at surgery, 31.3% from cycle 1 were older than 12 months compared to 2.4% of those seen at ABG clinics.
Conclusions
The introduction of ABG clinics has increased the availability of contemporaneous dental radiographs at the time of surgery. Dental outcomes for patients have improved and pathways to surgery have been streamlined. Further data collection cycles will continue to assess long term impact. Other UK centres have shown interest in comparing data.

Graft, Radiographs, Paediatric, Dentistry, Surgery

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Service evaluation to assess spontaneous eruption of Maxillary permanent canines following alveolar bone graft.

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FR2.6 RESTORATIVE DENTISTRY, Tinto, EICC - Onsite Only, July 15, 2022, 09:30 - 10:30

Introduction:
Cleft lip/palate is the most common congenital facial anomaly in the U.K. For patients with alveolar clefts, one of the key surgical interventions is a secondary alveolar bone graft (SABG) which is usually performed between the ages of 8-9 years, before the eruption of the maxillary permnanet canine. National Guidance recommends this procedure be carried out before the age of 11 to achieve favourable outcome. A number of advantages of SABG has been reported: creation of bony support, closure of the oro-antral fistula and improving facial aesthetics. The success of the SABG is assessed clinically, primarily through the eruption of the canine tooth. Success is also assessed radiographically using the Kindelan and modified Bergland indices.
Aim:
To assess the number of patients who underwent spontaneous eruption of their maxillary permanent canines on the cleft side following SABG with the standard being 70% of canines will undergo spontaneous eruption without the need for any additional intervention, based on a review of relevant literature
Methods:
Analysis of the Cleft database for patients born during the specified birth cohorts who had undergone an SABG.
Retrospective examination of paper medical notes and case notes on EPIC & PACS systems.
Data collection and analysis on EXCEL.
Results:
53 patients born between 2003-2006 were identified as having undergone a SABG at Cambridge University Hospitals NHS trust. n=33 (62.3%) with an average age of 10.33 years were included in the analysis. A total of 38 grafted cleft sites were assessed for spontaneous eruption of the permanent canine following SABG. Out of the 38 grafted sites, 28 met the standard.
Conclusions:
In our sample, 73.7% of the permanent canines on the cleft side spontaneously erupted by the age of 15 following SABG. This is in agreement with the literature; however, this percentage should be interpreted with caution given the small sample size.

Standard	**Fraction ?/n** (Where n = numerator)	**Percentage Compliance %**
70% of canines will undergo spontaneous eruption without the need for any additional intervention.	28/38	73.7%
Secondary findings	**Fraction/(%Value)**	
% of grafted sites requiring extractions on the cleft side pre-SABG	**3/38 (7.89%)**	
% of patients who underwent pre-SABG expansion	**9/33 (27.3%)**	
% of grafted sites requiring extractions on the cleft side at the time of the SABG Of which: - Primary - Permanent teeth (including supernumeraries.)	**31/38 (81.6%)** **27/38 (71.1%)** **15/38 (39.5%)**	
% of canines that required an extraction on the cleft side	**8/38 (21.1%)**	
% of canines that required the exposure on the cleft side	**2/38 (5.3%)**	
% of grafted sites requiring extractions other than canines post SABG:	**4/38 (10.5%)**	
% of patients who had a dental anomaly Hypodontia – 18/31 (58.1%) Supernumerary – 13/31 (41.9%) Other (transposition, microdont upper laterals, MIH) – 10/31 (32.3%)	**31/33 (93.9%)**	
% of patients requiring repeat SABG	**5/33 (15.2%)**	

Cleft lip/Palate
canines
secondary ABG

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The challenge of restoring the lateral incisor in patients with cleft lip and palate

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FR2.6 RESTORATIVE DENTISTRY, Tinto, EICC - Onsite Only, July 15, 2022, 09:30 - 10:30

Introduction: Patients with cleft lip and palate present at least one dental anomaly in 96.7% of the cases. The lateral incisor can be missing, have a peg shape, or present abnormalities in tooth morphology requiring its extraction. Restoring the esthetic zone represents a major challenge when the teeth in the area are missing, or are irregular in shape and size. Scaring tissue and abnormal frenum attachments can also be seen.
Aims: Demonstrate the significance of the interdisciplinary care to overcome the challenges involved in the restoration of the esthetic zone (lateral incisor region), in patients with cleft lip and palate. Recognize the essential steps in the diagnosis and treatment planning in orthodontic-prosthodontic cases, and illustrate diverse advanced restorative techniques and clinical tips in the prosthodontic management of these patients.
Methods: Three different clinical scenarios will be described, including the prosthodontic rehabilitation of the lateral incisor area after opening the restorative space, canine substitution of the missing tooth, and maintenance of the permanent lateral incisor in patients with cleft lip and palate. Description of the circumstances that lead to the decision making process in each case will be discussed, with emphasis in diagnosis, treatment planning and sequencing.
Results: Harmonious smile restoration, positive impact in self-esteem and patient satisfaction following interdisciplinary treatment, after the restoration of the missing or defective lateral incisor was achieved.
Conclusions: A multidisciplinary approach involving orthodontics, periodontics and prosthodontic rehabilitation, are the key to address hard and soft tissue deficiencies presented in patients with cleft lip and palate.

Orthodontics, Prosthodontics Interdisciplinary care

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Retrospective 7-year single centre cohort study on the speed of delivery and associated complications of maxillary prostheses in partially dentate adults with congenital unilateral cleft lip and palate.

Miss Rosemarie Jane[1], Mr Shivakar Mehrotra[1], Mr David Green[1], Ms Despoina Chatzistaviranou[2], Mr Khalid Malik[1]

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FR2.6 RESTORATIVE DENTISTRY, Tinto, EICC - Onsite Only, July 15, 2022, 09:30 - 10:30

Introduction/Aims

This study aimed to reveal the burden of restoring edentulous spaces in adult patients with unilateral cleft lip and palate (UCLP) within the West Midlands region Cleft Service. With the aspiration of providing novel guidance to improve evidenced-based patient education and care. The objectives were to determine the timescales and associated complications of different treatment modalities.

Methods

Four data collectors reviewed 82 UCLP patient records from the restorative department (2015-2022). Of the maxillary prosthodontic rehabilitations, descriptive statistics and statistical tests scrutinised several outcome measures: total clinical appointments, and the type, frequency, and time elapsed of minor and major complications.

Results

Fixed prostheses [n(FP)=24] and removable prostheses [n(RP)=14] were provided to UCLP patients within, on average, 8.5 and 15 clinical appointments, respectively. Mann-Whitney U test found a significant difference in appointments required between these two groups (p=0.006) with a rank-biserial correlation reporting a large effect size [rrb(38)=0.442]. Tooth-borne FPs(n=17) required on average, the fewest appointments (7 appointments). On average, RPs functioning as obturators(n=8) needed 7 additional appointments to the 13 appointments required of non-obturating RPs(n=6).

Minor complications arose in 30% of FPs and 43.8% of RPs. Major complications arose in 10% of FPs and 12.5% of RPs. Fisher's Exact test demonstrated no significant difference between frequency of minor (p=0.229) nor major (p=1.000) complications between these groups. Mann-Whitney U test revealed no significant difference between these groups and time elapsed before minor complications (p=0.786). Prosthesis fracture was the most common minor complication for both groups [n(FP)=2), n(RP)=3].

Conclusions

Literature on the burden of dental restorative rehabilitation of adult patients with UCLP that would drastically influence patient education and potentially their choice of restorative treatment is limited. This study established FPs as frequently the quickest treatment modality and provides reassurance to patients that neither FPs nor RPs were more associated with complications.

Restorative Dentistry

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Obturators and Speech Prostheses – where are we now?

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FR2.6 RESTORATIVE DENTISTRY, Tinto, EICC - Onsite Only, July 15, 2022, 09:30 - 10:30

Introduction

Despite advances in surgical techniques, management of both hard and soft palate defects with obturator and speech prosthesis remains a mainstay of the management of a small number of cleft cases. Obturation of hard palate defects can reduce nasal regurgitation and improve comfort and posterior extension into the soft palate region can improve nasal turbulence and velopharyngeal function, either diagnostically or definitively. These prostheses can also be used to enhance oral function if they replace natural teeth and improve the aesthetics of the smile. The principles can also be applied to patients who have hard and soft tissue defects that have resulted from acquired pathologies e.g. tumours

Aims

The aim of this presentation is to give a modern clinical overview of the role of obturator and speech prostheses including indications, clinical techniques, optimal care pathway, outcomes and long-term maintenance implications. The importance of the restorative dentist being embedded in the multi-disciplinary team and how close team interaction leads to optimal outcomes will be discussed in detail.

Conclusions

Obturator prostheses remain a key part of the management of a small number of cleft patients for whom surgery cannot be used to fully correct either their hard and soft tissues or speech defects.

Note to Assessors: as this is a clinical presentation aimed at prosthodontists and restorative dentists who see and treat cleft patients and not original research, I have not included a “Method” or “Results” section

Speech Prosthetics, Obturators, Prosthodontics, Multidisciplinary

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Retrospective 7-year single centre cohort study of the restorative rehabilitation of adult cleft lip and palate patients.

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FR2.6 RESTORATIVE DENTISTRY, Tinto, EICC - Onsite Only, July 15, 2022, 09:30 - 10:30

Introduction/Aims

This study aimed to illustrate the restorative treatment modalities required in the rehabilitation of adult patients with a congenital cleft lip and palate referred to the West Midlands regional Cleft Service. The objectives were to determine the breadth and frequencies of restorative treatment modalities provided and whether this was associated with the type of cleft lip and palate diagnosis. This knowledge would help shape the provision of dental rehabilitation services for cleft and palate patients.

Methods

Four data collectors retrospectively reviewed the clinical records of all patients with a cleft lip and/or palate diagnosis (n=274) referred to the restorative department of a single centre (2015-2022). Descriptive statistics and the Chi-Squared statistical test with Yates' correction were used to analyse the outcome measures.

Results

100 unilateral cleft lip and palate (UCLP) and 48 bilateral cleft lip and palate (BCLP) patients required restorative rehabilitation. Tooth and/or mucosal borne removable prostheses (RPs) [n= 49, 33.1%] and resin bonded bridges [n=34, 23.0%] were more commonly prescribed than implant retained fixed prostheses (FPs) [n=16, 10.8%] or implant supported RPs [n=9, 6.1%]. 45.8% of BLCP patients were rehabilitated with FPs (n=22), whilst 54.2% were rehabilitated with RPs (n=26). 68.7% of UCLP patients were rehabilitated with FPs (n=68), whilst 31.3% were rehabilitated with RPs (n=31). Chi-square statistics with Yates correction comparing FP and RP treatment for BCLP and UCLP patients found a statistically significant difference between the modalities of treatment ($\chi 2$ (1) =35.732, $p < 0.001$). Demonstrating that UCLP patients were more likely to have restorative rehabilitation with a FP than a RP when compared to BCLP patients.

Conclusion

Despite our best intentions a FP is less likely to be a viable option for a BCLP patient when compared to a UCLP patients. These findings should benefit patient care.

Restorative Dentistry, Prosthodontics

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Myomucosal resection and direct closure of the posterior pharyngeal wall as a novel technique for surgical correction of patients having velopharyngeal disorders { MAHROUS TECHNIQUE}

Professor Ahmed Mahrous, Professor Haytham Mamdoh, Ass Professor Effat Zaki, Lecturer Marwa Abd El Wahab, Lecturer Doaa Mousa, Lecturer Zeinab Khalaf
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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

INTRODUCTION: Different surgical techniques have been described for surgical correction of patients having velopharyngeal disorders according to the pattern of closure of the velopharyngeal sphincter.A new technique is described that is suitable for all patterns of closure.
AIM : The aim was to evaluate the efficacy of myomucosal resection and direct closure of the posterior pharyngeal wall, in surgical management of patients having velopharyngeal insufficiency (VPI) and/or incompetence {Mahrous technique}
METHODS : Thirty patients of both sex had velopharyngeal insufficiency (24) and /or incompetence (6) were selected for this study. Their age ranged from 4 to 10 years with a mean age of 6.5years. They were surgical corrected by mere myomucosal resection and direct closure of the posterior pharyngeal wall. They were phoniatrically evaluated preoperatively , 3 months and 6 months post operatively by auiditory perceptual assessment , videonasoendoscopy and Kay nasometer model 6200.
RESULTS : Statistical analysis of the results documented a significant reduction in the velopharyngeal gap dimensions , a significant reduction in the degree of open nasality, glottal articulation and pharyngalization of fricatives. A significant improvement of the overall intelligibility of speech and audible nasal air emission was delineated postoperatively regardless of the pattern of velopharyngeal closure.
CONCLUSIONS: The results of this study demonstrated that myomucosal resection and direct closure of the posterior pharyngeal wall could be applied as a novel technique effectively in patients with velopharyngeal insufficiency and or incompetence.

velopharyngeal insufficiency, Hypernasality,velopharyngeal incompetence

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Autologous fat injection for treatment of mild to moderate velopharyngeal insufficiency

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

1. Introduction
Management of Velopharyngeal insufficiency (VPI) involved surgical repair to improve speech, with multiple surgery techniques described. Considering the morbidity of these techniques, seems attractive to use a less invasive technique such as fat injection in mild to moderate cases. The augmentation of posterior and lateral pharyngeal walls, and/or soft palate with fat graft reduce velopharyngeal gap, but sometimes needs more than one procedure to correct VPI.
2. Aims
Determinate the impact of surgical management with autologous fat graft in mild to moderate VPI, related to improve speech and associated morbidity.
3. Methods
Review of clinical records of patients with VPI treated with surgery between the years 2018 -2021 at Calvo Mackenna Hospital. Inclusion criteria was VPI patients with preoperative perceptual speech evaluation, nasoendoscopy or videofluoroscopy, with 1 year postoperative follow up at least. Syndromic cases were excluded.
4. Results
In the period studied, 58 patients with VPI received surgical treatment. In 15 cases (25.86%) we performed autologous fat injection. Of these pacients, 6 were female and 9 males, with a median age of 11 years (5-17) at the surgery. 9 patients developed VPI after cleft palate repair, 5 patients had persistent VPI (> 1 year) after adenoidectomy, and 1 patient present a persistent mild VPI after pharyngeal flap. VPI was mild in 9(60%) patients and moderate in 6(40%). The median volume of lipoinjection was 10cc (3-16.5). The overall complete correction of VPI was 93% (14), with single procedure in 73% (11) and 2 procedures in 26.6% (4). One patient persists with VPI after 2 procedures. No complications were reported.
5. Conclusions
In this study, autologous fat injection presents high efficiency without morbidity to correct mild to moderate VPI in a single or two -stage procedure.

VPI, speech, lipoinjection

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The Functional Palate Suspension: What to do when the first speech surgery leaves the patient short of normal resonance; The Functional Palate Suspension, a second step procedure that still maintains normal velar function without the airway restriction of classic pharyngeal flaps

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction
The goal in Velopharyngeal Dysfunction (VPD) surgery is to achieve normal resonance while retaining near normal pharyngeal anatomy. The Double Opposing Buccal Flap Procedure for Palatal Lengthening (DOBFPPL) is a proven alternative to pharyngeal flaps (PF) and sphincteroplasties. To maintain near normal anatomy, the DOBFPPL lengthens the velum and repositions the muscles deeper, maximizing efficiency.

There are cases where a DOBFPPL leaves the velar contact too low and/or the velar length remains insufficient. In these cases, a Functional Palate Suspension (FPS) is the next step and addresses both concerns.

The classic PF is a lined flap designed to achieve controlled width creating stable lateral ports. The FPS, however, is a narrow, unlined, pharyngeal suspension flap. The FPS uses the inevitable contracting force of the unlined flap to create a pulling cord. This cord lengthens the anterior half of the palate while simultaneously elevating the point of velar pharyngeal contact. The width of the FPS flap naturally narrows to approximately 3mm, about the width of the posterior septum, minimizing the risk of airway compromise.

Aims
Delegates will be able to describe;
- when to use the FPS.
- how the FPS works.
- how and why the FPS is different from the classic PF.

Method/Results
This study reviews results of 17 patients (11 non-syndromic, 6 syndromic). 90.9% of patients without syndromes and 66.7% with syndromes achieved normal resonance. There were zero complications, and no sleep apnea symptoms were reported at > 2 years of follow-up.
This presentation will teach how to perform and use the FPS and includes a review of the author's experience with it.

Conclusion
Adding the FPS to the VPD algorithm expands the effectiveness of the DOBFPPL, making it the first line treatment, with the PF becoming a last resort.

Velocardiofacial syndrome, pharyngeal flap, ACRP

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Furlow palatoplasty as a secondary procedure

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction:
In our center, primary palatoplasties are operated using the intravelar veloplasty a.m. Sommerlad, and often with the lateral release of the oral mucosa (a.m. Langenbeck) when the cleft palate is wide. We have a moderately high frequency (approx. 20%) of velopharyngeal insuffiency (VPI).
Our standard speech improving procedure is the superiorly based pharyngeal flap. The pharyngeal flap is associated with changes in the normal anatomy and makes it difficult to add anymore speech improving procedures when the pharyngeal flap is not sufficient.
Aims:
We wanted to investigate if the Furlow palatoplasty could have a role as a speech improving therapy in some selected subgroups of cleft palate patients with VPI.
Methods:
Retrospective study of the first 50 consecutively patients we operated with the Furlow palatoplasty (from April 2019 to October 2021). Two surgeons performed the operations.
All the patients were evaluated by speech therapists to have VPI prior to the operation and postoperatively as a follow-up after 3 months and 1 year.
The subgroups were:
1) patients who had been operated for a cleft palate or a submucous cleft palate earlier,
2) patients with non-operated submucous cleft palate and
3) a small group of patients were found eligible for a modified Furlow palatoplasty performed in the palate anteriorly of the insertion of a pharyngeal flap.
Results:
Almost 90% of the patients obtained a normal resonance, or improvement 3 months to 1 year postoperatively.
We will focus on the results in more details in the subgroups and the timeline for the improvements. These analyses are still pending but will be available for the congress in July 2022.
Conclusions:
Furlow palatoplasty were in this retrospective study found to be efficient as a speech improving procedure in subgroups of cleft palate patients.

VPI, Furlow palatoplasty, cleft palate

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Changes in Lateral Pharyngeal Wall Motion Following Secondary Palatoplasty

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Velopharyngeal dysfunction (VPD) is defined by the failure of velopharyngeal sphincter closure during speech, resulting in hypernasality and/or nasal air emission (NAE). Patients with VPD require secondary procedures to correct structural defects inhibiting complete velopharyngeal closure.

Aims: There is a paucity of information evaluating changes in lateral pharyngeal wall motion (LWM) following these secondary palatoplasties. The purpose of this study is to evaluate this relationship.

Methods: A retrospective analysis of patients who underwent secondary palatoplasty was performed. Type of palatoplasty was categorized into three groups: re-repair with buccal flaps (WBF), re-repair without buccal flaps (WOBF), and pharyngeal flap (PF). LWM and speech resonance outcomes were assessed pre- and postoperatively using videofluoroscopy and perceptual speech evaluations, respectively. Speech resonance outcomes were defined as normal (normal resonance and absent NAE); sufficient (inconsistent mild hypernasality, and/or occasional NAE); borderline insufficient (consistent mild hypernasality, and/or audible NAE); and insufficient (moderate or severe hypernasality, and/or audible NAE). Successful outcomes were categorized as normal or sufficient. Paired sample t-tests and one-way analysis of variance (ANOVA) were performed.

Results: Twenty patients (15M, 5F) were included. The mean ages at time of preoperative evaluation, secondary palatoplasty, and postoperative evaluation were 10.2 ± 5.7, 10.7 ± 5.7, and 11.4 ± 5.8 years, respectively. The mean difference in LWM preoperatively to postoperatively increased by 33.3% ($p < 0.001$). The mean postoperative LWM was 69.5%. ANOVA revealed statistically significant differences between the surgical groups in pre to postoperative improvement of LWM ($p = 0.01$). PF had a greater mean difference than WBF and WOBF ($p <= 0.026$). The mean increase in the PF group was 62.0%.
Postoperative perceptual speech evaluation revealed successful speech resonance outcomes in 95% of patients.

Conclusions: In patients undergoing secondary palatoplasty, LWM improved. This improvement in motion may have a clinically significant impact on postoperative speech outcomes that requires further investigation.
Velopharyngeal, dysfunction, lateral, wall, motion

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A new endoscope-assisted approach for velopharyngeal structure augmentation in treatment for velopharyngeal insufficiency

Dr Emiko Isomura[1,2], Dr Makoto Matsukawa[1,2], Dr Kanji Nohara[1,3], Dr Nobukazu Tanaka[1,3], Dr Chihiro Sugiyama[1,3], Dr Yusuke Yokota[1,2], Prof Takayoshi Sakai[1,3], Prof Susumu Tanaka[1,2], Prof Mikihiko Kogo[1,2]
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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Several articles are reported about velopharyngeal structure augmentation using autogenic fat tissue to improve velopharyngeal insufficiency (VPI). However, it is difficult to inject fat tissue into the nasal side of the levator veli palatine muscle where the velopharynx is most closed during the velopharyngeal closure. Recently, we reported a new endoscope-assisted approach while observing the injection points directly. Aims: We evaluate and report the postoperative effect of the above new method in the medium term.
Methods: This is a case series of five patients aged 8□16 years who underwent endoscopic soft palate augmentation under general anesthesia. Each patient was observed for 12-24months, and we continue to observe the patients. Five patients have mild to moderate VPI who have undergone palatoplasty at our hospital or another hospital. They had undergone follow-up and speech therapy at our hospital, and bone grafting or cleft lip rhinoplasty was planned, and they were agreed to endoscopic soft palate augmentation at the same time as the surgery. We injected autogenic fat tissue into the nasal mucosa of the soft palate using a needle-type device of an endoscope. We evaluated the effects of the treatment by comparing magnetic resonance imaging scans, nasopharyngeal endoscopic observations, nasometry findings, and speech assessment results before and after the operation.
Results: The injections were performed successfully, and velopharyngeal function was restored immediately except for one case. However, the half relapsed VPI in one year after injection, due to absorption of the injected fat or growth of the pharyngeal cavity.
Conclusion: During VPI treatment, augmentation using the endoscope was useful as a new technique, but it is difficult to replace the pharyngeal flap operation. One of the merits of this technique can be performed during childhood, which is important for early speech therapy, even if pharyngeal flap operation is necessary after maturation.

Case No.	Pre-operation		Post-operation	
	Hypernasality	Nasal air leakage	Hypernasality	Nasal air leakage
1	2	++	1	+
3	2	±	2	±
4	2	++	2	+
5	1-2	+〜±	1	+

velopharyngeal insufficiency, velopharyngeal structure augmentation

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Systematic review and a single centre experience: Does tonsillectomy affect speech outcomes in patients with velopharyngeal dysfunction?

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction
Assessing the impact of the palatine tonsils on velopharyngeal port closure and their consequent effect on speech represents a challenge. Both tonsillar hypertrophy and tonsillectomy have been reported to affect velopharyngeal function.

The aim of this study is to review the current literature and analyse the speech outcomes of our cohort of patients with cleft and non-cleft velopharyngeal dysfunction (VPD) who underwent tonsillectomy.

Methods
The study was conducted in two parts:
Part I (Systematic review): This revealed five relevant articles. These were reviewed for study characteristics, number of participants and demographics, indication for tonsillectomy, speech investigation performed, speech related intervention following tonsillectomy (e.g. speech therapy and/or surgery), and speech outcomes.

Part II (Retrospective review): The records of patients with a diagnosis of cleft and/or VPD who had a tonsillectomy performed at the Spires Cleft Service between the 1st Jan 2010 and 1st Jan 2020 were reviewed. Data recorded included diagnosis (cleft Vs non-cleft VPD), tonsillectomy indication, tonsillectomy technique, pre and post-operative speech assessment outcomes, preoperative tonsil grading, whether speech surgery was performed, and the duration of follow up post-tonsillectomy.

Results
Part 1: in all publications identified, tonsillectomy was performed for non-speech related indications. Speech assessment methods and their outcomes were not uniformly reported. The speech of the majority of patients was reported to have not changed or improved following tonsillectomy.

Part II: in our cohort of 38 patients, speech outcomes were largely improved or unchanged following tonsillectomy (both cleft and non-cleft VPD) regardless of the indication for tonsillectomy. Speech deteriorated in only two patients after tonsillectomy.

Conclusion
The precise impact of tonsillectomy on VPD remains unclear, however this study supports the view that performing a tonsillectomy in patients with VPD is unlikely to negatively impact speech. Indeed, the majority of patients are unaffected and, in a small cohort, an improvement in speech is observed.

Velopharyngeal Dysfunction, tonsillectomy, speech

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Is speech better with anterior maxillary distraction compared to conventional Le Fort 1 osteotomy in patients with cleft maxillary hypoplasia? A preliminary study.

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Aims
The study aims to compare speech outcomes of conventional Le Fort 1 advancement versus that of anterior maxillary distraction osteogenesis using perceptual speech assessment and lateral video- fluoroscopy.

Methods
This retrospective study included 19 adult patients with non- syndromic cleft lip and palate who were surgically treated for cleft maxillary hypoplasia at Bhagwan Mahaveer Jain Hospital, Bengaluru between the period September 2018 and June 2019. Based on the type of procedure undertaken, the patients were divided into Group A (conventional Le Fort 1 osteotomy) and Group B (anterior maxillary osteotomy with intra-oral tooth borne distraction). Patients underwent perceptual speech assessment and lateral video-fluoroscopic examinations prior to, and a minimum of 6 months post- operatively.

Results
There was no relevant statistical association found in post- operative perceptual speech analysis between the groups. The video-fluoroscopic parameters such as pre and post- operative values of velar excursion, velar gap, and closure ratio were also not statistically significant. But, raw data seems to suggest that speech outcomes may be marginally better in the anterior maxillary distraction group.

Conclusion
Though the statistical analyses is insignificant, the data seems to suggest that anterior maxillary distraction may have overall better speech outcomes. There is an obvious need for further investigation with a larger sample of patients.

cleft speech, cleft maxillary-hypoplasia, VPD,

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ANLAYSIS OF PHONATORY AND ARTICULATORY RESULTS IN TWO DIFFERENT SURGICAL APPROACHES FOR UNILATERAL CLEFT LIP AND PALATE

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction
Until 2006 at the San Paolo Hospital in Milan, UCLP patients were treated with the “two stages” protocol (Lip and soft palate at 6 months – hard palate at 24 months). Since 2006 UCLP patients with a cleft width narrower than 10-12 mm at the hard palate have been treated according to the "All in one" protocol with simultaneous closure of hard palate together with soft palate.

Aims
The aim of this retrospective study is to compare phono-articular results at 5 years between subjects treated with the two different surgical protocols.

Methods
112 UCLP non-syndromic patients were selected, operated by the same senior surgeon at the San Paolo Hospital.
Speech outcomes were evaluated by three cleft-experienced speech pathologists, using the GOS.SP.ASS '98 protocol modified for the Italian language. The parameters assessed were resonance, nasal emission, turbulence, grimaces, articulation, intelligibility and acceptability.
The two samples consisted of 61 subjects treated with the “All in one” protocol, and 51 subjects treated with the “two-stage” protocol. The perceptual speech evaluation was carried out at the mean age of 5,3 years.

Results
In the two observed groups no statistically significant difference was observed in phonatory and articulatory parameters.
From a qualitative point of view, the amount of VPI was lower in the patients group treated with “all in one” protocol (6,6%) than in the two stage one (13,7%). Both the percentages comply with data in the literature.

Conclusions
This study shows similar results in phonation and articulation in both groups; considering the reduction of burden of care due to a single surgery, the ALL-in -one protocol seems to be recommended. Maxillary growth restriction has to be assessed, because of the possible impairment due to an early closure of the hard palate.

cleft, speech, phonation, articulation, all-in-one

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Outcomes of Secondary Speech Surgery in Children with Cleft Palate: the impact of type of surgery, cleft diagnosis and age at surgery

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Background

There is little evidence regarding the influence of cleft type or optimal timing of secondary speech surgery in patients with a previously repaired cleft palate.

Aim

To explore speech outcomes following secondary surgery performed by a single surgeon in a UK cleft centre.

Methods

A retrospective review of children with previously repaired non-syndromic cleft palate born between 2002-2011. In those undergoing secondary surgery, data on cleft type, timing of speech surgery and presence of satisfactory velopharyngeal function were anaylsed.

Results

Two hundred and seventy-five children underwent initial palatoplasty. Eighty-eight required secondary surgery for speech. Twelve were excluded from analysis due to fistula (n=11) or dehiscence (n=1) only. The need for secondary surgery differed by cleft type with clefts of the soft palate least likely to require surgery (SP 13.6%, HSP 28.4%, UCLP 32.6% and BCLP 31.0%; p = 0.14). Seventy-six (27.5%) had secondary surgery by 10 years of age. Following one secondary speech procedure, 58% children had good palatal function. Those with BCLP had a proportionately poorer outcomes, although there was no significant group difference (SP: 66.7%, HSP: 48.5%, UCLP: 75%, BCLP: 33.3%; p=0.07). There was no effect of age at surgery on outcome; 52% undergoing secondary surgery ≤ 5 years had good palatal function compared to 61% > 5 years (p=0.47).

Conclusion

The need for secondary surgery appears related to cleft type in an expected way. This retrospective review demonstrates that cleft type does not have a statistically significant influence on the outcomes of a single secondary procedure, although proportionately fewer patients with BCLP did well. This data suggests there is no need for an arbitrary age for secondary surgery. More informed and bespoke discussions should be had with children and caregivers regarding potential options for managing post-palatoplasty velopharyngeal insufficiency and their impact on schooling, friendships and intelligibility.
Velopharyngeal insufficiency, secondary speech surgery

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Assessment of Radical Muscle Dissection and Buccal Myomucosal Flaps in Management Of Velopharyngeal Insufficiency in Patients with Cleft Palate

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FR3.1 SECONDARY SURGERY, Sidlaw, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction;
Velopharyngeal incompetence (VPI) is reported to occur in about 20% of previously repaired cleft palates (CP). The deeper understanding of anatomy and physiology of VPI, besides a good multidisciplinary team is a mandatory to provide adequate treatment. The main concern for the surgical treatment of VPI is the elimination of hypernasality while avoiding naso-pharyngeal obstruction. Since surgical techniques differs along the whole cleft centers and between surgeons, it is beneficial to assess different techniques to reach the desired speech outcomes.
Aim: This study is conducted to assess the use of radical muscle re-repair in combination with buccinator myomucosal flaps (BMMF) comparing it with BMMF only in management of VPI secondary to CP repair.
Methodology: Twenty patients with previously repaired CP were recruited according to certain inclusion and exclusion criteria from those attending our cleft care center, diagnosed with VPI not responsive to conservative speech therapy, with age range 4 – 12 years. Ten Patients (Gp-1) received palatal re-repair via radical muscle dissection besides BMMFs for palatal lengthening under high magnification loops or surgical microscope. While the other 10 patients (Gp-2) received BMMF alone for palatal lengthening. All patients undergone pre and post-op assessment for speech using: videofloroscopy, nasal endoscopy, nasometry and clinical assessment.
Results: All patients especially those in (Gp-1) showed adequate palatal lengthening and functionality. Videofloroscopic and nasal endoscopic assessment showed better closure of nasopharyngeal components. Nasometric assessment showed adequate decrease in hypernasality and better pronunciation. Clinical assessment using video-recordings showed enhanced speech and improved facial grimace.
Conclusion: Palatal muscle re-repair accompanied with BMMF improved both function and length of previously repaired short palates. This led to improvement of speech as well as overall patient's wellbeing.

Palatal lengthening, Radical muscle dissection.

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Dental Anomalies in Patients with Cleft Lip and Palate

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Introduction/aims: The aim of this study was to analyze the prevalence of dental anomalies in patients with cleft lip and palate.
Methods: In a retrospective study clinical images and dental radiographs of 663 patients with a non-syndromic cleft were evaluated. Patients with incomplete clinical records were excluded. There were 152 patients with cleft lip (CL) and cleft lip and alveolus (CLA), 165 patients with an isolated cleft of the palate (CP), 342 patients with a cleft lip and palate (CLP) and 4 patients with a rare facial cleft.
Results: In the deciduous dentition patients with CL or CLA had more frequently supernumerary teeth. CL and CLA patients presented in 15.1% of the cases with a supernumerary tooth of the right upper lateral incisor and in 19.7% of the cases of the left upper lateral incisor compared to patients with CLP (4,.7% and 10.5%) or patients with CP (0%) (p=0.0). Absence of the lateral incisor was frequently observed in patients with a left CLP (p=0.008).
In the permanent dentition patients with CLP had a significantly higher rate of a missing upper second premolar on the right (20.5%) and the left side (20.5%) and a missing upper lateral incisor on the right (26.1%) and the left side (36.1%) (each: p=0.0). In contrast, patients with CL/CLA had a significantly higher rate of supernumerary upper lateral incisors on the right (10.8%) (p=0.019) and on the left side (27.5%) (p=0.0). Supernumerary teeth were found more commonly in CLA than in CL. Compared to a non-affected population tooth agenesis was more prevalent in CLP and CP patients.
Conclusion: The knowledge of the frequency and the distribution of dental anomalies in cleft patients is important in counseling and therapy. While patients with CLP suffer more frequently from absent teeth, patients with CL/CLA present more frequently with supernumerary lateral upper incisors.

dental anomalies, cleft, missing teeth

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Dental developmental delay in children born with cleft lip and/or cleft palate

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Abstract
Background / Aim: Accurate research on the type, extent, and differences in developmental paradigms for children presenting with orofacial clefts (OFC) could provide an evidence base for the multi-disciplinary care team in treatment planning. The aim of this study was to determine whether and if so the extent of delayed dental development in a sample of children born with OFC in Scotland, specifically isolated cleft palate (CP) and unilateral cleft lip and palate (UCLP).

Methods: This was a retrospective observational study based on assessment of orthopantomogram's (OPGs) of 106 10-year-old children, 67 of whom born with an orofacial cleft (36 children with UCLP: 27 male, 9 female and 31 with CP: 16 male, 15 female, with 39 controls: 29 male, 10 female). For each subject, Willem's and London Atlas dental age estimation methods were used to assign a 'dental age' and compare with true chronological age based on date of birth. Difference between the two ages gave an indication of delayed or accelerated dental development.

Results: Children with UCLP show delay in dental development by 1.4 years and children with CP show delay by 1.74 years when compared to non-cleft control population. The results were suggestive, but not conclusive, that children with isolated cleft palate show more dental delay compared to children with unilateral cleft lip and palate and females show greater delay than males.

Conclusion: Dental age estimation is an accurate method of assessing dental development in children with an orofacial cleft, and by assessing radiographs the biological as opposed to the environmental causes of delay can be detected. More research is required to underpin the exact extent of, and differences between, dental developmental delays within cleft populations.

Dentopantomogram, biological age, developmental delay

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Facial phenotype and fingerprints on unaffected parents of children with NSCLP: An offspring risk factor?

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Introduction
Genetic contributions to the appearance of NSCLP can be present as minor alterations such as facial asymmetry or changes in fingerprints in unaffected parents.
Aims
Evaluate these phenotypic features in unaffected parents of children with NSCLP as possible risk factors for their offspring.
Methods
60 unaffected parents (43 women and 17 men) of 46 children with NSCLP and a control group with 50 parents (36 women, 14 men) with no history of NSCLP in their family from Bogotá, Colombia were studied and compared.
22 Frontal and 3 lateral antropometric and photographic measurements were taken, compared and statistically correlated. Fingerprints registration from both hands was assisted by professionals from the National Police criminalistic school and classificated according to Frenette J. Fingerprints Patterns. Facial and fingerprints phenotype characteristics were studied and compared.
Results
Phenotypic features in parents of children with NSCLP that demonstrated a risk factor for their offsprings in terms of fluctuating facial asymmetries with a statistically significant difference ($p<0.05$) were:
Asymmetry in the nasion-left/right nostril distance (p:0.001), differences in the total ear length between both sides(p:0.048), asymmetries between right and left side of the distance cupid arch- commissure (p:0.034).
Parents of children with NSCLP showed an increased middle and lower facial height, increased intercanthal and interalar distance and the presence of radial loop in the left index(p:0.029) and of whorl(p:0.022)
Conclusions: Findings suggest there is a statistically significant association between certain fluctuating facial asymmetries founded in non- affected parents and the presence of NSCLP in their offspring.
The dermatoglyphics analysis showed that specific types and differences could be directly related with a higher risk of NSCLP in their children.
Results suggest that these phenotypic features should be taken into account in the study of the the genetic predisposition and etiology of NSCLP.

TABLA 1
ASIMETRÍA DE CARACTERÍSTICAS FENOTÍPICAS FACIALES

Característica	Casos (%)	Controles (%)	p (χ^2/Fisher)	OR crudo	LI IC 95 %	LS IC 95 %	p (Wald)
Relación nasion-ala nasal izq./der.							
Diferencia < 2 %	20 (35,7)*	36 (64,3)	0,001	1,00			0,001
Diferencia 2-5 %	25 (71,4)	10 (28,6)		**4,50**	1,8	11,2	**0,001**
Diferencia > 5 %	15 (78,9)	4 (21,1)		**6,75**	2,0	23,1	**0,002**
Relación subnasal ala nasal izq./der.							
Diferencia < 2 %	12 (46,2)	14 (53,8)	0,045	1,00			0,051
Diferencia 2-5 %	6 (33,3)	12 (66,7)		0,58	0,2	2,0	0,397
Diferencias mayores al 5 %	42 (63,6)	24 (36,4)		2,04	0,8	5,1	0,128
Relación arco Cupido-comisura labial izq./der.							
Diferencia < 2 %	26 (47,3)	29 (52,7)	0,209	1,00			0,215
Diferencia 2-5 %	12 (54,5)	10 (45,5)		1,34	0,5	3,6	0,565
Diferencia > 5 %	22 (66,7)	11 (33,3)		2,23	0,9	5,5	0,079
Relación línea media zigion							

NSCLP; Facial asymmetries, fingerprints

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Epidemiology of cleft lip/palate and cleft palate in Switzerland

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Introduction
A Swiss National Cleft Registry was created in 2011, to collect relevant data on cleft lip/palate.

Aims
Obtain Swiss national epidemiological data on cleft lip and palate (types, incidence, associated anomalies, risk factors).

Methods
Inclusion criteria:
• Children born in Switzerland since 1.1.2011 with cleft lip/palate (CL/P) or cleft palate (CP).
Exclusion criteria:
• Complex facial clefts.
• Children living abroad and whose mother spent the first trimester of pregnancy outside Switzerland.
The study is supported by the Swiss Association for Cleft Lip and Palate and Related Craniofacial Anomalies, with the participation of all treatment centres.
During the pre-operative consultation, parental consent is obtained and the registry form is completed.

Results
From 1.1.2011 to 31.12.2021, 833 patients were included.
In Switzerland, from 2011 to 2020 (852'750 live births), CL/P have an incidence of 0.59/1'000 (95% Confidence interval (CI): 0.54-0.65) and CP 0.44/1'000 (95% CI: 0.4-0.49), with a wide regional variation (CL/P 0-0.81/1'000, CP 0.24-1.14/1'000).
CL/P have a 1.83 M/F sex ratio; cleft laterality is 49% left, 29% right, 22% bilateral.
CP has a 0.87 M/F sex ratio; 63% involve the soft and the hard palate, 37% only the soft palate. A Pierre Robin sequence is present in 17.5% of patients.
Overall, associated congenital anomalies are reported in 19.95% of patients, mostly craniofacial (26%) or cardiovascular (24%), and are more frequent in CP patients (27.4% vs. 14.4% for CL/P).
Syndromes are noted in 9.1% of patients (21% van der Woude, 12.5% 22q11^{-}) and are found in 14.1% of CP and 5.3% of CL/P patients, respectively.
Prenatal ultrasound identified 64% of CL/P but only 5% of CP.
As data collection is ongoing results suffer from underreporting bias.

Conclusions

This study provides important data on the epidemiology of clefts in Switzerland and identifies areas with a higher incidence of this congenital anomaly.

Registry, Cleft Lip/Palate, Epidemiology, Switzerland

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The International Family Study of Nonsyndromic Orofacial Clefts: An ongoing case–control study with supplemental parental trio data in eight LMICs

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Background: Most research to understand risk factors of nonsyndromic orofacial clefts (NSOFCs) has been conducted in high-income populations. Although patients with NSOFCs in LMICs are at elevated risk of not receiving care, they are not adequately represented in existing study populations to explore the etiologic mechanisms of cleft and targets for prevention.

Methods: The International Family Study (IFS) is an ongoing case-control study with supplemental parental trio data designed to examine genetic, environmental, lifestyle, and sociodemographic risk factors for NSOFCs in 8 LMICs. Interview and biological samples are collected for each family. The interview includes demographics, family history of cleft, diet and water sources, pregnancy history, and other lifestyle/ environmental factors.

Results: Across all countries (2012-2021), there are a total of 4583 case and 3194 control families with 17032 unique biological samples from Vietnam, Philippines, Honduras, Madagascar, Morocco, Democratic Republic of the Congo, Guatemala, and Nicaragua. The phenotype distribution is 2142 (46.7%) cases with cleft lip and palate, 1032 (22.5%) with cleft lip, and 566 (12.3%) with cleft palate. The database has been used to explore case-control (environmental, GWAS, and gene-environment interaction) and case-parent trio (whole-exome sequencing) hypotheses.

Conclusion: IFS is the largest case set of NSOFCs with an associated biobank in LMICs currently assembled. The strengths are the ability to reach LMICs that are underrepresented in the literature, an unconventional partnership between a large university and international non-profit, a large volume of cases seen by OS with respect to the rarity of cleft, a sharable database that can be utilized by cleft researchers globally, and the ability to study risk factors that are only prevalent in low-resource settings. This information can inform public health interventions and education to potentially prevent disease in populations where children are most likely to feel the detrimental, lifelong medical and social effects of unrepaired cleft.
case-control, trio, LMICs, genetic, environmental

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Demographic Characteristics and Clinical Manifestations of Labio palato schisis in South East Sulawesi, Indonesia: 4-years data (2018-2021)

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Background : Cleft lip and cleft palate or a combination of both is a form of facial abnormality that has occurred since the embryonic period due to failure of the fusion of the facial processes. Cleft lip is more common in boys than girls.

Aim: The purpose of this research is to find out Demographic Characteristics and Clinical Manifestations of Labio palato schisis in South East Sulawesi, Indonesia

Method: This Research is a retrospection description research for knowning prevalence cleft lip and cleft palate or labiopalatoschisis at South East Sulawesi, Indonesia in January 2018- December 2021.

Result: Prevalence of Labioschisis, Palatoschisis and Labiopalatochisis on January 2018 until December 2021 is 35,6%, 19,1 and 45,3%. Presentation for each of kind unilateral are : unilateral labioschisis is 71,8% and bilateral labioschisis is 28,2%. Presentation according to the place of defect labioschisis : right 24,4%, left 47,4%, bilateral 28,2%. Distribution kind of palatoschizis : complete palatoschizis is 82,1% and Incomplete palatoschizis is 17,9%. Presentation labioschizis according to sex : Male 60,5%%, and women 39,5%. Presentation labioschizis according to maternal age: < 35 years old 74,8% and > 35 years old 25,2%, Presentation labioschizis according to Parents' Job: Unemployment 0,3%, Farm workers 15,5%, private sector worker 75,4%, Civil Servant 8,8%. Presentation labioschizis according to Parents' Educational Level: uneducation 0,3%, Elementry School 12,8%, Junior High School 17,6%, Senior High School 64,4%, College 4,9%. Presentation labioschizis according to gestational age: aterm 95,1% and Preterm 4,9%.

Conclusion: The prevalence of cleft lip and palate has many demographical aspect include maternal age, Parents' Job, Parents' Educational Level, and gestational age. Labiopalatoschisis has many clinical forms, kind of labioschisis that large is unilateral labioschisis and localization defect is often on left edge. Complete labioschizis is large than incomplete palatoschizis. Labioschisis is happen more to man.

Cleft lip and palate, Demographics.

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Trends in cleft palate incidence in the era of obstetric sonography and early detection

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Introduction: Prenatal detection of cleft lip and palate can be achieved using a transabdominal ultrasound (US) examination. In Israel, this examination is routinely offered to pregnant women during the second trimester. Additionally, other screening and complementary tests are performed to rule out as many congenital and syndromic malformations as possible. The effect of improvement in prenatal identification of cleft lip or palate (CL/P) on termination of pregnancy (TOP) worldwide is scarcely reported.
Aims: To assess changes in the prevalence of cleft palate attributed to the high access and availability of prenatal advanced screening and pregnancy termination in Israel.
Methods: A retrospective study was conducted on CL/P patients which were treated in our institute between 2000-2018. Clinical and demographic data were extracted from medical records. Data on TOP was collected based on accessible information from the Ministry of Health. Cleft palate severity was evaluated using the Veau Classification.
Results: The study was conducted on 258 patients. Higher incidence of Veau II and III was evident throughout the examined period (2000-2018). However, when evaluating the incidence per year, we found that the incidence of severe cases (Veau III and IV) decreased every year showing a major decline in the last decade, whereas mild cases (Veau type I and II) demonstrated a marked increase. Regarding the incidence of abortions in Israel, a decrease of 30% was observed in the last two decades, meanwhile a substantial increase was detected in the rate of abortions related to physical malformations of the fetus.
Conclusions: Significant decrease was observed in the incidence of severe cleft palate cases in the last decade. Concurrently, we found a substantial increase in percentage of abortions performed due to physical malformations. We suggest that these changes might be attributed to the accessibility of advanced prenatal screening and pregnancy termination in Israel under the social healthcare system.

Cleft palate, trans-abdominal ultrasound, abortion

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Oro-facial clefts: estimating global birth prevalence, attributable mortality and survival in high and low income settings

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Background: The reported global birth prevalence of non syndromic orofacial clefts (OFC) is approximately 1 per 700 births. The Modell Global Database of Congenital Disorders (MGDb) is an OFC database using global data to develop robust methods for quantifying survival with optimal care, and without care. There is a dearth of data on survival with no care, and data provided by Smile Train (www.smiletrain.org) facilitates this estimate.

Objective: The overall purpose of the paper was to improve estimated birth prevalence of orofacial clefts (OFC) with a particular focus on under-ascertainment, provide baseline data on infant mortality and highlight the value of paediatric surgery.

Methods: Using CP/OFC ratio as an indicator of ascertainment because CP constitutes a standard percentage of total OFC independently of ethnic or inter-country differences using EUROCAT and ICBDSR congenital anomaly registries. Smile Train data was used to provide age at OFC repair and enabled the preparation of survival curves.

Findings: Evidence-based country-specific estimates of the birth prevalence and outcomes of OFC have been developed for inclusion in the MGDb database. Adjustment of reported CP birth prevalence to the expected ratio raises estimated global OFC birth prevalence from the earlier figure of 1.1 /1,000 births to 1.4/1,000 births. The Global Burden of Disease study estimates that a mere 0.024/1,000 attributable under-5 deaths (less than 0.05% of the global total in 2012) are due to OFC. Data provided by Smile Train suggest 66-84% under-5 mortality with untreated OFC.

Conclusions: Under-ascertainment of the birth prevalence of OFC is common in lower resource settings, and their contribution to early mortality has been effectively overlooked globally. Targeted intervention by Smile Train, an international NGO, has greatly reduced associated mortality and disability. It is reasonable to consider how far similar limitations may apply across the full range of congenital malformations.

survival, mortality, paediatric surgery, LMICs

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Establishing the true cleft burden in Malawi through community outreach programs

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Introduction

Estimating the prevalence of cleft lip and/or palate (CL/P) in low and middle-income countries (LMICs) is important for guiding local resource provision and programmatic planning for cleft organisations working in these regions. However, there is scare availability of data to develop epidemiological models for cleft conditions. In 2016, data from Operation Smile surgical programs in twelve LMICs and country-level indicators from the WHO and World Bank were used to develop a model to estimate the cleft burden in LMICs worldwide.

Aims

To determine the true cleft burden in Malawi using the Malawi community outreach program, compared to epidemiological models.

Methods

A community outreach program in Malawi was conducted by Operation Smile in collaboration with hospitals, health centres, dispensaries, clinics, health posts and Traditional Community Leaders around the country. The number of patients with CL/P surrounding each source's respective catchment area was obtained, with data collected by Programme Coordinators.

Results

A total of 1060 hospitals, health centres, dispensaries, clinics, health posts and Traditional Community Leaders around the country were consulted.
These sources collectively covered 100% of the country's geographical catchment, in which a total of 521 patients with unrepaired CL/P were identified. This burden was 79% lower than the previously estimated value of 2472 using the extrapolated modelling method.

Conclusions

Community outreach programs with 100% country coverage provide a closer estimate to the true prevalence of cleft conditions in Malawi. Similar community outreach approaches can be scaled to benefit other LMICs around the world. Further studies using relevant contemporary data would be useful to determine the true burden of cleft conditions in LMICs and assist in the prioritisation of health services.

Malawi, epidemiological modelling, cleft incidence

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Evaluation of the COHO Institute: An Online Training Program in Dental and Craniofacial Clinical Research Methods

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FR3.2 EPIDEMIOLOGY, Pentland (Smile Train Hall), EICC - Streamed/Translated, July 15, 2022, 11:00 - 13:00

Introduction: The COHO Institute offers an introduction to research methods to dental and craniofacial professionals who may not have been exposed to the principles of clinical research during their training. The COHO Institute (aka, the Summer Institute at the University of Washington) has trained over 600 individuals over the past 30 years. The in-person 6-week program transitioned to an 8-week online program during the COVID-19 pandemic.

Aims: To evaluate the new 8-week online COHO Institute to train dentists and craniofacial providers in the basic principles of good clinical research.

Methods: The program introduced 8 domains of clinical research: (1) planning a research project, (2) randomized trials and cohort studies, (3) case control studies, (4) ethics, (5) survey research, (6) biostatistics, (7) interpreting evidence, and (8) scientific writing. Each weekly module included recorded lectures, readings, live Zoom class, homework, and live office hours. The overall program was evaluated as low, average, or high. Knowledge was measured pre- and post-program on each domain to assess increases in self-reported knowledge as none/little, moderate, or a lot/extensive.

Results: Of the 59 participants who completed the pre-program assessment, 54 completed the post-program assessment. Over 94% of participants rated the program as a whole and the content as high. Self-reported knowledge increased substantially. For example, knowledge of considerations in designing a research study increased from 5.3% reporting a lot/extensive knowledge pre-program to 77.4% post-program. Knowledge of how to evaluate the literature increased from 3.5% reporting a lot/extensive knowledge pre-program to 68.5% post-program. Similar self-reported increases in knowledge were observed for other domains (Table 1).

Conclusions: The COHO course provides an effective way to introduce dentists and craniofacial providers in the principles of good clinical research. Future efforts may include the 8-week online training, followed by an in-person hands-on applied learning experience to develop a grant application or manuscript.

Table. Pre-program and post-program self-reported assessments in domains of clinical research methods

	Pre	Post
	%	%
Randomized clinical trial		
None / a little	77.6	7.2
Moderate	17.2	35.7
A lot / extensive	5.2	57.1
Cohort studies		
None / a little	79.0	1.9
Moderate	19.3	37.0
A lot / extensive	1.8	61.1
Case control studies		
None / a little	72.4	5.5
Moderate	22.4	38.2
A lot / extensive	5.2	56.4
Case only studies		
None / a little	50.9	3.6
Moderate	35.1	25.5
A lot / extensive	14.0	70.9
Considerations in designing a project		
None / a little	57.9	0.0
Moderate	36.8	22.6
A lot / extensive	5.3	77.4
How to work with others with different expertise on a research project		
None / a little	48.2	3.7
Moderate	42.6	22.2
A lot / extensive	9.3	74.1
Critically evaluate the literature		
None / a little	43.9	0.0
Moderate	36.8	22.6
A lot / extensive	3.5	61.1
Identifying ethical principles in research		
None / a little	45.5	1.9
Moderate	40.0	29.6
A lot / extensive	14.6	68.5
Pick a survey tool or questions for your study		
None / a little	53.6	11.1
Moderate	37.5	29.6
A lot / extensive	8.9	59.3
Understand different types of survey questions		
None / a little	60.7	11.1
Moderate	28.6	27.8
A lot / extensive	10.7	61.1
Identify measures of association to use in a study		
None / a little	75.0	14.8
Moderate	19.6	42.6
A lot / extensive	5.4	42.6
Understand more than a p-value in statistics		
None / a little	68.4	20.4
Moderate	26.3	35.2
A lot / extensive	5.3	44.5
Write an abstract for a research conference		
None / a little	40.0	5.6
Moderate	49.1	20.4
A lot / extensive	10.9	74.1
Know what to put in a manuscript		
None / a little	50.9	9.3
Moderate	40.0	22.2
A lot / extensive	9.1	68.5

clinical research training, education, epidemiology

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25-year Follow-up of Primary Tibial Periosteal Graft for Hard Palate Repair in Cleft Lip and Palate: Outcomes, Concerns and Controversies

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Reconstruction of hard palate has always been controversial in the surgical treatment of patients with cleft lip and palate (CL/P). While, on the one hand, CL repair presents standardized protocols and surgical procedures, on the other hand, there is no definitive consensus for CP repair.
Aims: The aim of the study is to retrospectively evaluate the long-term outcomes in adults with Unilateral and Bilateral Cleft Lip and Palate (UCLP/BCLP) treated with the tibial periostioplasty protocol used in our Cleft Center until 1995.
Methods: We conducted a retrospective analysis on patients with complete CL/P who underwent tibial periosteal graft as primary surgical repair of the hard palate. 13 BCLP (25%) and 39 UCLP (75%) underwent clinical evaluation performed by a multidisciplinar team (plastic surgeons, maxillofacial surgeons and orthodontists) and instrumental evaluation to investigate maxillary/mandibular growth and lower extremities discrepancy. Over a period of 25 years, we analyzed long-term outcomes on maxillary growth, residual oronasal fistula, leg length discrepancy, and aesthetical results.
Results: No patients showed oral-nasal communication. Mean value of maxillary depth was 86°± 4.5°. The lower value for maxillary retrusion was 76.8° in relation to the Frankfurt plane. At the X-ray control 12.2% showed leg discrepancy with a difference always < 2 cm. According to overall aesthetic evaluation, 85.71% subjects claimed themselves satisfied, 8.16% highly satisfied, 6.12% were not satisfied.
Conclusions: The rate of maxillary retrusion obtained was the same if compared to other techniques. Tibial periosteal graft reduces the risk of fistula and the amount of bone graft reabsorbed during secondary bone graft. The study did not observe negative impact on leg growth after 25 years. Patients are overall satisfied with the morpho-functional outcomes.

Cleft lip/palate, Tibial periosteal graft

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Experience of use of Buccal fat pad and Learning curve in performing palatoplasty

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

OBJECTIVES:
The aim of the study was to assess the influence of the experience of the surgeon on the occurrence of fistulas following palatoplasty and also to highlight the principal and evolution of technique of palatoplasty ;which when practised meticulously gives a fistula free palate repair .

MATERIALS AND METHODS:
A retrospective review of cleft palate surgeries performed by a single surgeon on consecutive children from beginning of 2017 till November 2021 palate was done. Cleft palate repair was performed using the Pinto's modification of Wardill-Kilner palatoplasty, Veau-Wardill-Kilner V-Y Push back. Data was collected for cleft palate type, type of repair, cleft width, length of soft palate, qulatity of muscle, fistula occurrence and location of fistula.

RESULTS:
Retrospective analysis of outcomes of Palatoplasty performed by single surgeon at Charles pinto centre for cleft lip palate and craniofacial analysis (from beginning of 2017 to end of 2019) three years span on 220 cleft palate children which included all variants and dimensions of cleft palates . Postoperatively the incidence of palatal fistulas occurred in 12 patients, 3 patients had bifid uvula, however, out of 12 patients with incidence of fistulas only 4 needed fistula closure and one required a uvula re-repair; rest all healed well. The surgeon also evolved and modified his technique in the last two years (beginning of 2020 till November 2021) and performed 190 cases and didn’t had any fistulas or breakdowns.

CONCLUSION AND CLINICAL RELEVANCE:
Different methods of palate repair are like the different religions of the world. They seem so different in their essentials, but they all promise to lead to the same goal. There is evidence of a learning curve during the first few years of performing cleft palate repair. With experience and principals followed in palatoplasty ; when practised meticulously gives a fistula free palate repair .

cleftpalate,Palatoplasty Technique, learning curve.buccal fatpad

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Speech outcomes audit for unilateral cleft lip and palate after 2-stage palate repair: a preliminary report

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Primary surgeries for cleft lip and palate (CLP) can interfere on speech status, facial appearance, maxillary growth and psychosocial development. Different surgical protocols have been proposed and adequate velopharyngeal function and speech are main goals for the treatment success.

Aim: To evaluate the surgical protocol adopted by a Brazilian cleft center with 2-stage palate repair for children with unilateral CLP (UCLP), reporting preliminary speech outcomes.

Methods: A hundred and seventy patients with UCLP were submitted to a 2-stage palatoplasty protocol, with lip, nasal ala and hard palate repair at 3-6m (stage 1) and soft palate repair at 12-18m (stage 2); 35% were males and 65% females. Speech was recorded between 5 and 10 years of age. Speech material included repetition of standard sentences, defined by a consensus in the SLP meeting, during the BrazilCleft multicenter taskforce. Hypernasality, passive and active errors related to VPD and overall VPC-rate were analyzed by 3 of 14 experienced speech pathologists between 2020 and 2021. When discordant, the mode value was adopted. Online calibration training was performed before audio assessments and hypernasality rating was based on reference samples.

Results: Hypernasality was identified in 27% (71% graduated as mild and 29% as moderate or severe). Obligatory symptoms, mainly manifested as nasal emission and nasal turbulence, were observed in 32%. Active errors related to VPD were present in 25%. Overall VPC-rate was estimated as adequate in 69% and abnormal in 31% (12% marginal and 19% incompetent).

Conclusions: Speech results reflect the outcomes of an interdisciplinary cleft team's work, although facial growth and nasolabial appearance have to be considered altogether when evaluating a surgical protocol. Further analysis and a long-term follow-up are recommended. As a permanent process, outcomes audit can provide solid and updated evidence for optimal cleft care.

Work supported by Smile Train.

Speech, Cleft palate, Primary surgeries

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Minimal Incision Palatoplasty Technique: Clinical follow-up at 18 years

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

1. Introduction
Cleft lip and palate (CLP) are the most frequent craniofacial malformation in Mexico. Dr. Mario Mendoza Arellanes, MD., developed the minimal incision palatopharyngoplasty (MIP) in 1993, based on the following concepts: the closure of three planes (nasal, muscular and oral planes), soft palate muscles alignment and the elongation with minimal scarring.
2. Aims
Describe the long-term effects of MIP technique at the National Institute of Pediatrics in Mexico.

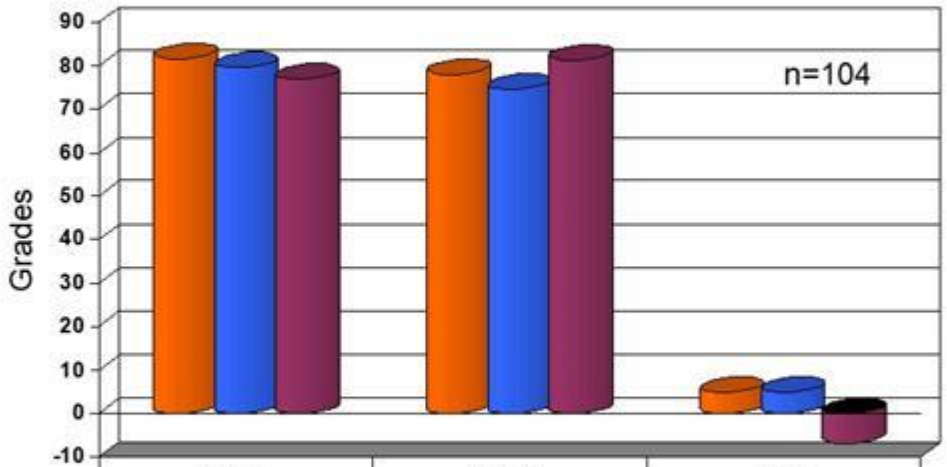
3. Methods
Patients who attended the plastic surgery in National Institute of Pediatrics (2004-2005) with the following requirements: lip closure & anatomical closure nasal floor, hemoglobin> 10gr/dl, 9 to 12 months of age and adequate nutritional status. Steps MIP technique: infiltration, marginal incisions; nasal, muscular and subperiostical dissection, nasal plane closure, intravelar veloplasty, uvuloplasty, hemostasis and oral mucosa closure.

4. Results: MIP technique was performed in 52 patients, 91% grades I and II (n=47) and 9% Grade III (n=5). Minimal trans-surgical and postoperative bleeding, minimal blood transfusion requirements (<0.5%), low hospitalization (3%), Pittsburgh III palatal fistulae (5%) and V (2%). Mid-term results: It was found intelligible speech in 82% of cases, hypernasality in 21% of cases (mild 10%, moderate 9% and severe 2%), 12% presented compensatory articulation and 21% developed articulation errors that were treated with speech therapy, 9% required surgery to resolve VPI. Long-term results: 90% of the patients required minimal orthodontic procedures, 30% presented Class I and 60% Class II occlusion, cephalometric analysis is shown in Table 1. The maxillomandibular relationship found in the series employing the minimal-incision technique shows harmonic growth at 18 years of follow-up.

5. Conclusions
The minimal-incision technique has been proven to be safe and reproducible, has been used by over 32 generations of plastic and reconstructive surgeons in Mexico, getting minimal complications, acceptable speech and language outcomes and adequate long-term facial growth.

Table 1 Minimal Incisions Palathoplasty contrasted with the norm and Wardill-Killner technique

Maxillomandibular relationship



	SNA	SNB	ANB
NORM	81.65	78	4.85
MIP	79.55	74.6	4.84
WK	76.9	81.3	-6.76

Minimal Incision, Palatoplasty, outcomes.

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One-step vs. two-step closure of the palate and its effect on growth in patients with non-syndromic cleft palate: a systematic review and meta-analysis of randomized controlled trials

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction

A systematic review and meta-analysis of randomized controlled trials was conducted to assess whether a two-step or one-step approach is favoured for palatal closure in patients with non-syndromic cleft palates.

Methods

A systematic search of the Medline, EMBASE, Cochrane CENTRAL, EBSCOhost, ScienceDirect, and Web of Science databases was performed to identify appropriate studies. Two independent reviewers extracted data relevant to the comparison of two-stage versus one-stage palatal closure surgical techniques. The risk of bias assessment was assessed using the Cochrane Risk of Bias Tool. The quality of the evidence was assessed using the GRADE approach. The primary outcome evaluated was the growth of the maxilla. Secondary outcomes measured were the incidence of fistula, incidence of velopharyngeal insufficiency, as well as speech development.

Results

Amongst the 5856 studies identified by our search strategy, ten studies were included in the systematic review. There was no significant difference in maxillary growth (SMD 0.53 (95% CI, -0.12 - 1.19); P = 0.07; I2 = 62%; 2 studies, 161 patients), the incidence of fistula (RR 1.01 (95% CI: 0.63 - 1.59); P = 0.23; I2 = 27%; 5 studies, 873 patients) or the incidence of velopharyngeal insufficiency (RR 1.14 (95% CI: 0.92 - 1.42) ; P = 0.37; I2 = 4%; 3 studies, 619 patients) between the two populations studied.

Conclusion

In children with a non-syndromic cleft palate, two-step closure of the palate does not demonstrate a significant difference in maxillary growth, incidence of fistula, or velopharyngeal insufficiency with one-step closure. The heterogeneity of the studies evaluated as well as the limited number of studies available should be considered when interpreting these conclusions. Randomized controlled studies that measure the outcomes using identical methods are needed to establish treatment guidelines for this condition.

Characteristics of included randomized controlled trials

Study	Total (n) (2-step vs. 1-step)	Age at time of evaluation (years)	Cleft palate type	Surgical technique (age at time of palatal closure)	Technique chirurgicale (1-étape - âge chirurgie)	Outcome measured
Botticelli 2019 - 1	57/52	5	Unilateral cleft lip and palate	Modified Von Langenbeck (36 months)	Modified Von Langenbeck (12 months)	Incidence of fistula
Botticelli 2019 - 2	59/57	8	Unilateral cleft lip and palate	Modified Von Langenbeck (36 months)	Modified Von Langenbeck (12 months)	Maxillary growth
Karsten 2020	73/72	8	Unilateral cleft lip and palate	Modified Von Langenbeck (36 months)	Modified Von Langenbeck (12 months)	Maxillary growth
Kuseler 2020	72/74	8	Unilateral cleft lip and palate	Modified Von Langenbeck (36 months)	Modified Von Langenbeck (12 months)	Maxillary growth
Lohmander 2017	71/72	5	Unilateral cleft lip and palate	Modified Von Langenbeck (36 months)	Modified Von Langenbeck (12 months)	Incidence of fistula, hypernasality and language development
Perreira 2018	32/30	5	Unilateral cleft lip and palate	Intravelar veloplasty (38 months)	Modified Von Langenbeck (12 months)	Maxillary growth and incidence of fistula
Reddy 2018	50/50	3	Unilateral cleft lip and palate	Bardach Two-Flap technique (24 months)	Bardach Two-Flap technique (12 months)	Incidence of fistula and hypernasality
Wada 1990	16/14 7/8	10	Unilateral cleft lip and palate Bilateral cleft lip and palate	Double overlapping palatal hingeflap (5 years 10 months)	Pushback (20 months)	Maxillary growth
Willadsen 2019	71/72	5	Unilateral cleft lip and palate	Modified Von Langenbeck (36 months)	Modified Von Langenbeck (12 months)	Language development
Williams 2011	134/135 102/88	N/A	Unilateral cleft lip and palate	Von Langenbeck (15-18 months) Furlow (15-18 months)	Von Langenbeck (9-12 months) Furlow (9-12 months)	Incidence of fistula and hypernasality

Meta-analysis, palatal closure, 1-step, 2-step

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Multidisciplinary Optimal Outcomes Reporting and Team Clinic Retention in Nonsyndromic Isolated Cleft Palate

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction
Optimal Outcomes Reporting has recently been introduced as a metric to categorize outcomes after cleft palate repair. Although multidisciplinary team clinics are essential to cleft care, follow-up rates vary significantly.

Aims
In patients with isolated nonsyndromic cleft palate, we seek to correlate achievement of multidisciplinary optimal outcomes at 5 years of age with frequency of follow-up in the craniofacial team clinic.

Methods
Children with isolated nonsyndromic cleft palate who were initially seen in our team clinic from the years 2001-2012 were identified. Patients were included in the analysis if they had follow-up at team clinic through the year of their fifth birthday. Clinic follow-up frequency prior to age 9 (our protocol calls for 7 visits) was quantified in two groups: those with less than 4 postoperative visits, and those with at least 4 postoperative visits. Optimal outcomes were defined as follows: for cleft surgery - no fistula or velopharyngeal insufficiency; otolaryngology - no obstructive sleep apnea or signs of chronic middle ear disease; audiology - no hearing loss; speech-language pathology - no referral for speech therapy.

Results
A total of 85 patients were identified, 41 of whom were included because they followed-up at age 5. For cleft surgery, 61% had an optimal outcome at 5 years. Similarly, 93% had an optimal outcome for otolaryngology, 61% for audiology, and 46% for speech-language pathology. A total of 24 patients (59%) had at least 4 postoperative visits, and the remaining 17 (41%) had less than 4 visits. Achievement of optimal outcome in any discipline at 5 years of age was not associated with frequency of team clinic follow-up.

Conclusions
Optimal outcomes do not correlate with retention in team clinic. A patient-centered approach, including caregiver education about long-term complications, would allow for improved resource utilization to improve retention for patients of concern. Evaluation of long-term outcomes is necessary.

Table 1. Discipline-specific optimal outcomes and follow-up retention for children with isolated nonsyndromic cleft palate (n = 41). There were no statistically significant differences in follow-up retention.

Discipline	Outcome at Age 5	At Least 4 Postoperative Visits by Age 9 (Retained)	Less Than 4 Postoperative Visits by Age 9 (Lost)
Cleft Surgery	Optimal	15 (60%)	10 (40%)
	Not Optimal	9 (56%)	7 (44%)
Otolaryngology	Optimal	22 (58%)	16 (42%)
	Not Optimal	2 (67%)	1 (33%)
Audiology	Optimal	16 (64%)	9 (36%)
	Not Optimal	8 (50%)	8 (50%)
Speech-Language Pathology	Optimal	14 (74%)	5 (26%)
	Not Optimal	10 (45%)	12 (55%)

$p > 0.05$ for each discipline (Fisher's exact test)

Cleft palate, outcomes, follow-up

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Scar outcomes in Unilateral cleft lip -Embryological unit repair compared to the Rotation advancement repair

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction
The position, shape and the contour of the lip scar plays a crucial role in achieving symmetry and near normal appearance following unilateral cleft lip repair. To be inconspicuous, the scars should be at the borders of the embryological units and not cross them. The Embryological unit repair proposed by Carstens[1] places the scar in a straight-line lateral to the philtral ridge which is an important anatomical landmark. Also unlike the rotation advancement repair, this scar does not violate the philtral ridge resulting in a more naturally looking lip.

In this retrospective/ prospective study we compare our adaptation of this technique for unilateral cleft lip repair with the Rotation advancement method which is presently the most practiced technique.
Both groups were operated by the same surgeon. While the rotation advancement method was done between 2005-2010, children who underwent the embryological unit repair were operated between 2011-2017.
This study compares the two groups using standard photographs. The mean age at operation of both groups was 3.5 months (range: 3 to 6.9 months) and the mean postoperative period for evaluation was at 66 months (range: 31 to 87 months)
No revisions were performed in these patients.

The scars were analysed using the Visual Scar Scale analogue by a three independent observers who were not a part of the operating team. The results were ratified using inter-rater and intra-rater reliability tests.

Results and Conclusion:
The scores for the embryological unit technique were noted to be significantly better than the traditional Rotation Advancement method ($p < 0.001$) in this study .This may be because the technique preserves the natural lines of the philtral ridges leading to better visual appeal and possibly less scar widening/ hypertrophy.

Reference
[1]Carstens, M.H. (2007). Developmental field reassignment in unilateral cleft lip: Reconstruction of the premaxilla. Indian Journal of Plastic Surgery, 40, 75.

Cleft-lip Repair, Embryological units ,Scar

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Cleft, the transverse dimension: CSAG vs CCUK

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction:
Aim: To determine if the transverse dimensions of maxillary unilateral cleft lip and palate affected children has improved since the implementation of the CSAG recommendations.
Objectives: To deduce the quantitative differences in the arch widths, depths and arch angles between the CSAG and CCUK populations.
Design and Setting: A retrospective cohort study using existing records collected by the CSAG and CCUK studies.
Methods: The available maxillary models from both the CSAG (114) and CCUK (175) cohorts were digitally scanned and analysed in OrthoAnalyzerTM. Measurements recorded were; intercanine and intermolar widths, midline to affected and non-affected side canines and molars, arch length, anterior and posterior palatal depths and archform angle were all recorded.
Results: Agreement analysis was good for all measurements. Of the 11 measurements five showed statistically significant differences between the cohorts, where the CSAG measurement was smaller than the CCUK. Those which were clinically significant (>1mm) were the affected side C, affected side E and posterior width.
Conclusions: The null hypotheses are rejected as there was a significant difference between the CSAG and CCUK cohorts for five of the 11 measurements, suggesting that there has been improvement in the maxillary transverse dimension. Changes to surgical protocol, experience and technique may be the reason for this. Where non–cleft norms were available, both the CSAG and CCUK cohorts were reduced for the anterior width, whereas the CCUK cohort was approaching normalisation for the posterior width.

Measurement	Greater Mean	Difference in means /mm or degrees	Statistically Significant (p value)	Clinically significant
Anterior Width	CCUK	0.76	Y (0.044)	N
Anterior Depth	CCUK	0.42	Y (0.029)	N
Affected side C	CCUK	1.04	Y (0.004)	Y
Non-affected side C	CSAG	0.24	N (0.184)	N
Posterior Width	CCUK	1.23	Y (0.003)	Y
Posterior Depth	CCUK	0.55	N (0.073)	N
Affected side E	CCUK	1.03	Y (0.002)	Y
Non-affected side E	CCUK	0.14	N (0.599)	N
Arch length	CSAG	0.19	N (0.485)	N
Affected side angle	CCUK	0.3	N (0.749)	N
Non-affected side angle	CSAG	0.16	N (0.082)	N

Unilateral CLP, Maxilla, CSAG, CCUK

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A Systematic Review of One Versus Two-Stage Palatoplasty in Cleft Lip and Palate Care

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[1]Lund University, Malmo , Sweden, [2]Malmö University, Malmö, Sweden, [3]HTA Skane, Malmö, Sweden

FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Worldwide, a vast number of different techniques for palatoplasty are used in cleft lip and palate (CLP) care, including one and two-stage approaches. Advocates of a staged approach generally claim that a delayed hard palate closure leads to less maxillary hypoplasia, whilst those preferring a one-stage approach suggest that early complete closure benefits speech. This study is a systematic review of the subject.

Methods: An extensive structured search was conducted in relevant databases. Studies comparing one and two-stage palatoplasty in children with unilateral CLP, bilateral CLP and/or isolated cleft palate with outcomes facial growth, speech, hearing, fistulae, surgical complications, health economy and health related quality of life were included. The included studies were systematically reviewed and a narrative analysis was performed.

Results: A total of 486 potentially relevant studies were identified. After evaluation of relevance to the research question and study quality, 10 studies remained for synthesis. No meta-analysis was performed due to the heterogenicity in outcome measures and study designs. A majority of the studies did not find evidence in favor of either of the two surgical approaches, and hence the evidence pointed towards that there are no significant differences between the two approaches pertaining to the studied outcome measures. Fistula occurrence was the outcome measure where evidence was of moderate quality. For facial growth, speech and surgical complications the quality of evidence was considered low, and for the remaining outcomes very low.

Conclusions: The currently available scientific literature does not point toward a clear difference between one and two-stage palatoplasty for any of the outcomes included in this review. However, the quality of the evidence is often poor, mostly due to differences in outcome measures.

Surgery, Outcome, Palatoplasty, Systematic review

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Flap Dehiscence after Furlow Palatoplasty: Occurrence, Fistulae Risk and Impact on Speech Outcome

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FR3.3 PRIMARY SURGERY, Fintry, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction： Furlow palatoplasty lengthens the velum at the expense of increased closure tension, with presumbly higher rates of wound dehiscence and even fistulae. The occurrence, healing and speech prognosis of wound dehiscence after Furlow palatoplasty, however, has not been elaborated.

Aims： To assess the impact of Z-plasty dehiscence on the speech outcome of Furlow palatoplasty.

Methods： We reviewed Furlow palatoplasty performed during 2017 to 2021 in a tertiary hospital-based cleft center, and enrolled patients with at least three-month follow-up on wound healing. The record of flap dehiscence was perfomed during the first month after surgery. The diagnose of fistulae was made at least three months after surgery. The speech outcome was rated at the age of five for patients receiving primary palatoplasty or 6 months after surgery for those receiving secondary palatoplasty for velopharyngeal insufficiency.

Results： The study enrolled a total of 206 patients with healing follow-up records, with 119 primary and 87 secondary cases. Flap dehiscence was observed among 25 patients, but only five of them were diagnosed with concrete fistulae afterwards. The occurrence of flap dehiscence was significantly higher in secondary cases (17.24%) than in primary cases (5%). With fistulae cases excluded, no significant difference was detected in the rate of velopharyngeal competence between patients with or without flap dehiscence.

Conclusions： Most wound dehiscence after Furlow palatoplasty heals with no fistulae formation. Secondary healing after dehiscence exerts no significant adverse effect on speech outcome.

Double-opposing Z-plasty, healing

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COMPARISON OF BONE FORMATION CAPACITY IN STEM CELLS FROM FAT TISSUE AND BONE MARROW IN CHILDREN WITH CLEFT-LIP-AND PALATE (CLP)

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[1]Department of Clinical Dentistry, Faculty of Medicine, University of Bergen, Bergen., Bergen, Norway, [2]Department of Fibre and Polymer Technology, KTH Royal Institute of Technology, Stockholm, Sweden., Stockholm, Sweden, [3]Department of Biomedicine, University of Bergen, Bergen., Bergen, Norway, [4]Department for Plastic, Hand and Reconstructive Surgery, National Fire Damage Center, Haukeland University Hospital, Bergen, Bergen, Norway

FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Clefts in alveolar process need bone grafting.

Aims: The osteogenic capacity of adipose tissue stem cells (ASC) and bone marrow mesenchymal stem cells (BMSC) has been compared, both in vitro and in vivo in many studies, and shows inconclusive results. The aim of this study is to compare in vitro and in vivo osteogenic capacity of equal donors of human ASCs and BMSCs.

Methods: BMCS is harvested from iliac crest and ASC from subcutaneous tissue. Surface marker expression was analyzed by flow cytometry. In vitro growth and osteogenic differentiation on copolymer scaffolding were investigated. Scaffolding / BMSC, scaffolding / ASC and scaffolding without cells (control) were implanted in skull defects in nude rats. The stem cells were inoculated into copolymer scaffolds (lattice) in skull defects in naked rats. Expression of genes related to osteogenesis was examined. Cellular activity was measured and bone formation was evaluated radiologically and histologically.

Results: ASC and BMSC showed immunophenotype corresponding to mesenchymal stem cells. ASC demonstrated a higher degree of spread than BMSC. After 4 weeks of in vivo implantation, osteogenesis-related human genes were upregulated in the scaffold / cell defects, but none expression was detected in the control defects. Higher cellular activity was detected in scaffold/ BMSC defects at weeks 4 and 12. However, microcomputer tomography (μCT) analysis at weeks 12 and 24 revealed comparable new bone formation in the scaffold / BMSC and scaffold / ASC defects which is significantly higher than control results and formation of mature bone structure was confirmed when examined histologically.

Conclusions: ASC and BMSC showed a similar in vitro osteogenic potential and the effect of ASC and BMSC in bone regeneration in vivo was comparable. These results indicate that ASCs have the potential to regenerate bone and can replace BMSC when building bone tissue in the future.

bone, regeneration, stem-cells, adipose-tissue, bone-marrow

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Progressive Comparison of Density Assessment of Alveolar Bone Graft in Patients with Unilateral and Bilateral Cleft

Progressive Comparison Of Density Assessment Of Alveolar Bone Graft In Patients With Unilateral And Bilateral Cleft Pin-Ru Chen[1], Progressive Comparison Of Density Assessment Of Alveolar Bone Graft In Patients With Unilateral And Bilateral Cleft Lun-Jou Lo[1], Progressive Comparison Of Density Assessment Of Alveolar Bone Graft In Patients With Unilateral And Bilateral Cleft Pang-Yun Chou[1]
[1]*Department of Plastic and Reconstructive Surgery and Craniofacial Research Center, Chang Gung Memorial Hospital, Taoyuan, Taiwan*

FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Background: Following the grafted bone mineral density (BMD) is essential to ensure the success of alveolar bone grafting (ABG) in patients with cleft lip and palate. The study elaborated conducting three methods to evaluate the progressive BMD.

Methods: Forty patients with unilateral or bilateral clefts receiving ABG were enrolled. Cone-beam computed tomography (CBCT) scans were taken at 6 months (T1) and 2 years (T2) postoperatively. In CBCT, measurements were obtained on three different planes using the circle located 1 mm from the adjacent teeth (Method A), the largest circle within the defect (Method B), or the central circle with a 2-mm diameter (Method C). BMD was the average density of the three planes and was calibrated by pogonion density. Bland–Altman plots were used to evaluate the agreement of each method. Inter-rater reliability was confirmed by the intraclass correlation coefficient (ICC).

Results: For Methods A, B, and C, the mean calibrated BMD (BMD/pogonion density, BMDc) was 17.44%, 17.88% , and 17.69% respectively at T1 ($p = 0.495$) and 22.51%, 22.87%, and 22.74% respectively at T2 ($p = 0.690$); the density enhancement rates were 40.54%, 38.92% and 43.15% ($p = 0.382$). Significant differences between the BMDc at T1 and T2 were observed ($p < 0.001$, < 0.001, and 0.001, for Methods A, B, and C, respectively).

Conclusion: A significant increase in the BMD of grafted tissue was observed in the 2-year postoperative follow-up. The three methods for measuring BMDc on CBCT can be applied in post-ABG evaluations.

Variables	Method	Overall	Unilateral	Bilateral	p value
BMD_{T1} (HU)					
	A	293.88 ± 135.27	292.62 ± 135.45	299.78 ± 145.08	0.901
	B	300.88 ± 136.77	298.70 ± 137.77	311.14 ± 142.18	0.83
	C	295.84 ± 150.24	295.79 ± 150.20	296.07 ± 162.45	0.996
BMD_{T2} (HU)					
	A	368.53 ± 172.33	367.58 ± 181.01	373.01 ± 135.14	0.941
	B	374.50 ± 175.08	375.37 ± 182.88	370.41 ± 144.32	0.947
	C	371.22 ± 183.29	373.86 ± 192.59	358.78 ± 142.62	0.846
BMD_{cT1} (%)					
	A	17.44 ± 7.74	17.57 ± 7.58	16.82 ± 9.06	0.818
	B	17.88 ± 8.00	17.98 ± 7.91	17.44 ± 9.05	0.875
	C	17.69 ± 9.28	17.92 ± 9.24	16.65 ± 10.15	0.747
BMD_{cT2} (%)					
	A	22.51 ± 9.80	22.40 ± 10.19	23.01 ± 8.42	0.883
	B	22.87 ± 9.96	22.88 ± 10.31	22.82 ± 8.87	0.989
	C	22.74 ± 10.78	22.88 ± 11.28	22.06 ± 8.76	0.858
Density enhancement rate (%)					
	A	40.54 ± 51.46	37.72 ± 51.69	53.81 ± 52.15	0.46
	B	38.92 ± 49.70	37.90 ± 50.46	43.75 ± 49.41	0.782
	C	43.15 ± 57.50	40.58 ± 57.08	55.31 ± 62.48	0.545
Pogonion $density_{T1}$ (HU)		1684.61 ± 213.02			
Pogonion $density_{T2}$ (HU)		1639.67 ± 234.13			

alveolar bone grafting

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Does maxillary expansion prior to alveolar cleft bone grafting affect nasal width more on the cleft side?

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction:
Maxillary expansion before alveolar cleft bone grafting (ABG) aligns the maxillary segments and assists in closure of an oronasal fistula. The purpose of this study was to determine the effects of expansion on the nasal skeleton in patients with unilateral cleft lip and alveolus with our without cleft of the secondary palate (UCLA +/- P).

Aims:
1.Compare changes in nasal width after maxillary expansion between patients with UCLA +/- P to those with UCLA +/- P who did not have expansion. 2. Compare changes following maxillary expansion between cleft and non-cleft sides.

Methods:
Retrospective radiographic study of patients with UCLA +/- P who had available pre- and post-expansion computed tomography (CT) scans between 2015-2020. Patients excluded if CT landmarks were missing or dates of expansion were unknown. Linear measurements at the nasal pyriform, inferior turbinate and alar base were recorded for both cleft and non-cleft sides. Twenty patients with UCLA +/- P who underwent ABG without expansion were included as controls. Differences between groups and sides were calculated using Paired sample T-test and significance was set at $P < 0.05$.

Results:
The study included 40 patients (24 males, mean 10.0 years) and 20 controls (10 males, mean 10.4 years). There was an increase in width after maxillary expansion on the cleft and non-cleft sides compared to non-expanded controls at nasal pyriform (10.9%, p=<.001 and 4.3% non-cleft side, p=<.001), inferior turbinate (8.7%, p=<.001 and 4.5%, p=.01), and alar base (6.69%, P=<0.001 and 0.78% p=0.54). The increase in width was greater on the cleft side than the non-cleft side at the nasal pyriform (7.1%, p=<.001), inferior turbinate (4.3%, p=<.001), and alar base (7.03%, p=<0.001). There was good to excellent intra-rater and inter-rater agreement for measurements.

Conclusions:
Patients with UCLA +/- P who undergo maxillary expansion before ABG exhibit greater nasal widening on the cleft side.

Maxillary expansion, Cleft, nasal width

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New perspective in alveolar cleft bone grafting using Guided Bone Regeneration Technique

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction : Secondary alveolar bone grafting in patient with cleft can stabilze the maxillary segments, provide bony support for permanent tooth eruption, close oronasal fistula , facilitate orthodontic treatment and provide good bony foundation for dental prosthetic rehabilitation. Illiac cancellous bone graft is the most commonly used material for SABG. However using this material has been associated with donor site morbidity in small children and high resorption rate of grafted bone

Aims : Guided bone regeneration has been widely used to reconstruct simple to complex alveolar bone defects. The use of autogenous bone from intraoral donor can reduce donor site morbidity and can reduce resorption rate as bone from mandible has the same ectomesenchymal origin and intramembranous ossification process.

Methods : 10 patients with unilateral and bilateral cleft alveolus were included in this study. Guided bone regeneration using autogenous bone from symphisis and retomolar area in combination with resorbable collagen membrane was used to do alveolar bone grafting. Pre-operative and post-operative cone beam computer tomography was taken .

Results : Good bone regeneration was observed 6 months after surgery in all 10 patients. 1 patient had membrane exposure post operatively that was managed with local antiseptic rinse. All patients stayed in the hospital for 1 night. No bleeding or other major complications observed.

Conclusion : Secondary alveolar bone grafting can be done using guided bone regeneration. The use of autogenous bone from symphisis and retromolar area can reduce donor site morbidity and resorption rate.

Alveolar graft, GBR, cleft alveolus

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Indications and technique of premaxilla surgical reposition before alveolar bone grafting in bilateral cleft lip and palate patients

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction
The displacement of the premaxillary bone in different directions can occur in children with bilateral cleft lip and palate. In most cases, orthodontic treatment is efficient to normalize its position. However, in some cases, osteotomy of the vomer with reposition of the premaxillary bone is required.
Aims
Indications and technique development for vomer osteotomy and reposition of the premaxillary bone in bilateral cleft lip and palate patients before the alveolar bone grafting.
Methods
An analysis of multi-slice helical CT scans of patients with complete bilateral cleft of the upper jaw was carried out. MSCT of 18 patients were considered. The mean age was 9.9±2.2 years. The displacement of the premaxillary bone in the sagittal, frontal and horizontal planes was determined. In order to normalize the obtained results, we took the width of the patient's central incisor as a unit of measurement. The results were expressed as a percentage of this value.
Results
Four patients underwent vomer osteotomy with reposition of the premaxillary bone, 14 underwent orthodontic preparation only. In 3 patients, there was a displacement of the premaxillary bone along 3 axes, in 9 - along two and in 6 - along one axis. In 3 patients who underwent osteotomy of the vomer, the displacement along one of the axes exceeded the width of the central incisor. In patients who didn't require this operation, the displacement of the premaxillary bone didn't exceed 57% in one of the planes.
Conclusions
Surgical reposition of the premaxillary bone is indicated when it is displaced in one of the planes by an amount exceeding the width of the central incisor, or when it is displaced in all planes by a distance exceeding 75%. In other cases, orthodontic treatment is indicated.

Premaxilla reposition, bone grafting

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Maxillary Segmental Distraction to Close Large Alveolar Cleft Defects: A long term follow-up study

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

PURPOSE – Segmental maxillary distraction is a novel technique to close large alveolar cleft gaps in patients with cleft lip and palate. The technique allows for staged alveolar bone grafting. The technique is isolated to case reports with limited follow-up.

AIMS - The purpose of this paper is to review outcomes of a cohort of patients who underwent segmental maxillary distraction in the middle-mixed dentition that were followed to or near skeletal maturity.

METHODS – Records of patients who underwent segmental maxillary distraction in the middle-mixed dentition to close large alveolar cleft defects (>15 mm at the alveolar crest level) were reviewed. Patients with at least five years of follow up were included in the analysis. Endpoints of alveolar bone graft success (radiographic and periodontal health of adjacent teeth) and need for further procedures were studied.

RESULTS – Eight patients (three with bilateral, five with unilateral cleft lip and palate) were available for review. Seven underwent successful closure of the alveolar cleft gaps, allowing for conventional alveolar bone grafting procedures at a second surgery. At long term follow-up, two patients had clinically insignificant damage to tooth roots. One patient developed ankylosis of the maxillary canine, requiring removal. Five of eight patents underwent later orthognathic surgery as a teenager, including one who failed his distraction procedure. Ultimately, all patients had excellent bony union at the alveolar cleft sites with healthy adjacent teeth.

CONCLUSIONS – Segmental maxillary distraction can be useful to close large alveolar cleft defects but is not without risks. Most patients will require additional orthognathic procedures at skeletal maturity.

maxillary distraction; alveolar bone graft

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THE USE OF DENTAL PULP STEM CELLS IN SECONDARY ALVEOLAR BONE GRAFT: A MULTICENTER STUDY

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction and Objectives: To reduce morbidity and pain to cleft lip and patients during the secondary alveolar bone graft , new approaches have been developed and here we compared the results obtained of alveolar cleft bone filling when we used a bone tissue engineering kit (composed of autogenous deciduous dental pulp mesenchymal stem cells and a biomaterial) with the results obtained when we used iliac crest bone to perform the secondary alveolar graft (Clinicaltrials.gov:NCT01932164).
Methodology and Results: This multicenter randomized clinical trial was carried out in seven Brazilian reference services for cleft lip and palate patients and blinded by the outcome evaluators, containing two parallel surgical groups. A total of 62 participants were included (Group 1: tissue engineering Kit, n = 31, and Group 2: iliac crest bone, n = 31). The primary outcomes were the amount of bone tissue formed in the alveolar cleft region assessed by computed tomography performed in the preoperative and postoperative periods of 6 and 12 months. The results demonstrate the non-inferiority of the tissue engineering kit in relation to grafting with bone from the iliac crest, after 6 months (p=0.274) and after 12 months (p=0.217). The secondary outcomes showed a greater global postoperative pain (p = 0.014); a greater number of professionals in the operating room (p=0.046) in patients who received iliac crest bone compared with the group that used the tissue engineered Kit. The length of stay of patients was shorter in the group submitted to bone tissue bioengineered graft (p=0.026) compared to the group submitted to iliac crest bone graft.
Conclusions: the use of the bone tissue engineering kit was as effective in promote the closure of alveolar cleft reducing the morbidity and pain for patients generating great social gain for patients and families, which cannot be priced.

PID (Patients who recived tissue engeneering graft)	alveolar cleft area (cm3)	alveolar cleft area 6 months after the tissue engineering graft (cm3)	alveolar cleft area 12 months after the tissue engineering graft (cm3)
3635670	1,15	0,23	0,23
3621043	0,91	0,43	0,34
3635664	1,65	1,08	0,89
3635668	1,06	0,67	0,63
3661212	1,2	0,57	0,57
3659299	0,83	0,19	0,19
3716620	0,89	0,09	0,04
BIOENG04	1,08	0,26	0,21
BIOENG42	0,69	due to COVID 19 there is no exam	0,02
BIOENG43	0,68	due to COVID 19 there is no exam	0,26
BIOENG44	1,16	0,75	0,51
BIOENG45	0,48	due to COVID 19 there is no exam	0,08
BIOENG46	0,47	0,3	0,3
BIOENG47	0,81	0,14	0,09
BIOENG48	0,4	0,26	0,26
BIOENG28	0,54	0,21	0
BIOENG29	0,44	0,02	0
BIOENG30	0,58	0,07	0
BIOENG31	0,49	0,18	0
BIOENG32	1,4	0,8	0,38
BIOENG07	1,6	0,24	0,08
BIOENG09	0,9	0,15	0,15
BIOENG10	1,43	0,57	0,05
BIOENG11	1,03	0,54	0,54
BIOENG13	1,35	0,67	0,12
BIOENG15	1,2	0,14	0
BIOENG17	1,18	0,04	0
BIOENG18	1	0,08	0
BIOENG19	0,41	due to COVID 19 there is no exam	0
BIOENG20	0,91	0,4	0,4
BIOENG21	0.80	0	0
BIOENG23	0,94	0	0

Bone tissue engineering, stem cells

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Long-term evaluation of bone reconstruction of the maxilla and the nasal floor in alveolar cleft using 3D imaging

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction
Alveolar reconstruction is a major objective of secondary bone grafting (SBG) in alveolar cleft. It is associated with the reconstruction of the nasal floor which is difficult to evaluate in 2D.
Aim
3D evaluation of the bone reconstruction of the alveolar cleft and nasal floor.
Method
This is an observational, retrospective, monocentric study performed on 335 cases with alveolar, unilateral or bilateral cleft who underwent SBG with gingivoperiosteoplasty operated between 1999 and 2018 (IRB n°198711). The study compared 2 groups of children. The 1st group, children aged between 4 and 7 years had early SBG, the 2nd group, aged between 8 and 11 years, had late SBG. Bone height, thickness and nasal floor position at piriform aperture were assessed using the Kamperos 3D score on 3D images (CT or CBCT-scan) taken at least one year after SBG.
Results.
Of the original 335 cases 49 were included, 32 had early SBG and 17 had late SBG. The average delay between SBG and 3D imaging was 4 years for the first group (average age 10) and 6 years for the second group (average age 15). In both groups the reconstruction of the nasal floor was very satisfactory. Bone thickness and height were very good in the late SBG and worse in the early SBG. The final score was higher in the late SBG than in the early SBG (Chi2, $p<0.005$) where 78% of the cleft canines were not on the arch compared to 18% in the late SBG.
Conclusion
The 3D visualization allows a good assessment of the bone reconstruction of the nasal floor. Kamperos score for alveolar bone assessment is more difficult when the canine eruption is incomplete. The outcome of SBG should be reassessed after canine eruption.

Cleft, bone grafting, 3D imaging

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The Clinical Use of Autogenous Bone Marrow Mesenchymal Stem Cells in the Treatment of Secondary Alveolar Cleft

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Alveolar cleft is a congenital anomaly affecting approximately 75% of cleft lip and palate patients. Its reconstruction is well established with autologous bone grafting but with donor site morbidity. The application of stem cells in tissue engineering has developed to improve bone regeneration without donor site morbidity. However, randomized controlled clinical studies are needed to judge its efficiency in reconstruction of alveolar cleft.

Aim: The aim of the study was to compare the outcome of alveolar cleft bone grafting with expanded mesenchymal stem cells (MSCs) seeded into a resorbable matrix to standard iliac cancellous bone graft.

Methods: 15 patients with unilateral alveolar cleft aged 7-12 years old (eight girls and seven boys) were randomly divided, according to grafting technique, into two groups: Group I: Alveolar cleft grafting with expanded autogenous bone marrow stem cells seeded in collagen sponge, platelet rich plasma and nanohydroxyapatite. Group II: Alveolar cleft grafting with cancellous bone harvested from anterior iliac crest. Bone fill was calculated with cone beam CT. on three and six months postoperatively.

Results: There were successful tooth eruption and closure of ONF in both groups. The mean cleft volume was 678 mm3 and 727 mm3 in group I and group II respectively. At three months postoperatively, the percentage of bone fill was 7% in group I and 47% in group II. While its percentage after six months become 16% in group I and 60% in group II.

Conclusions: Stem cell tissue engineering is a reliable technique as a grafting material in the treatment of alveolar cleft. Cancellous bone graft is superior in bone regeneration of alveolar cleft than stem cells in collagen scaffold. Further research on tissue engineering still was needed for improvement of bone regeneration.

Table (2): Percentage of bone fill (BF) in both groups. BF1-3 %: (Preoperative -3 months). BF1-6%: (Preoperative –6months) BF3-6 %:(3 months – 6 months)

	BF 1-3		BF 1-6		BF 3-6	
	Group I	Group II	Group I	Group II	Group I	Group II
1	5%	21%	20%	26%	16%	6%
2	9%	61%	20%	76%	12%	38%
3	8%	42%	12%	69%	4%	65%
4	6%	32%	19%	49%	14%	24%
5	5%	56%	15%	65%	11%	20%
6	7%	65%	14%	69%	8%	11%
7	9%	55%	13%	68%	4%	29%
8	8%		16%		9%	
Mean	7%	47%	16%	60%	10%	28%

(Marrow Stem Cells, Alveolar Cleft)

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Could the application of a compaction force impact the outcome of alveolar bone grafting?

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction : Alveolar cleft bone grafting stands for a major step of cleft surgical treatment. The peculiarity of this graft stands in its particular geometry: bone is placed in between two cortical surfaces. Several factors could influence alveolar bone graft results such as compaction force appliance at the time of the bone graft placement.
Aim: This study aims to set up an experimental protocol to explore the impact of applying a compaction force on alveolar bone graft integration at a single given moment for a limited time.
Material and Methods: Preliminary experiments set up the bone harvesting protocol to be reproducible and as close as possible to the clinical situation, and identified the intensity of compaction force a surgeon could apply on the cancellous bone while performing an alveolar cleft bone grafting procedure (from 0 to 50 N). To ensure regularity of bone supply, fresh femoral neck cancellous bone chips (5mm) are used.
A specific device has been developed to apply a constant compaction force on cancellous bone samples of 0N, 5N, 20N or 50N. Graft architectural and mechanical features are observed using microCT scan (SKYSCAN 1172). Cells are extracted by centrifugation and transferred to CFU-F cultures to highlight cells' proliferation capacity in each sample after 15 days of culture.
Results : The porosity of bone samples decreases from an average of 80% [77;83] with no compaction to 67% [51;76] after 50N-compaction. The distribution of trabeculae according to their thickness remains stable with compaction or not.
When a compaction force is applied, the number of colonies for each sample increases by a multiplying factor of 10 to 30 from 0 to 50N. This augmentation is particularly significant between 0 and 20 N.
Conclusion : This result tends to encourage surgeons to apply a compaction force to cancellous bone during alveolar bone grafting procedures.

alveolar cleft bone grafting

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Is alveolar cleft bone grafting the only solution? Suggesting an algorithm for management of alveolar defects

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FR3.4 ALVEOLAR BONE GRAFTING, Kilsyth, EICC - Streamed, July 15, 2022, 11:00 - 13:00

INTRODUCTION: Secondary alveolar cleft bone grafting (ACG) as described by Philip Boyne is an important step in management of children with cleft lip with or without palate. However, ACG success rate is variable due to many factors related to patient, preparation, technique and follow-up.
AIM: To develop an algorithm for management of alveolar defects including alternatives to standard ACG based on patient's age, presence of absence of tooth to erupt in the cleft region, presence of oronasal fistula, condition of soft tissues, width of the cleft, the number and inclination of teeth, bone support to teeth adjacent to the cleft, type of cleft, maxillomandibular relationship, associated speech defects and patient needs.
METHODS: At our center we adopt the standard ACG for the majority of cases. However, in some cases ACG might have poor prognosis. Hence, ACG can be substituted by another alternative or merged later with other surgical procedures. Thorough examination by the interdisciplinary team is mandatory to decide which patient receives which procedure. As an alternative technique, either interdental distraction osteogenesis (IDO) described by Eric Liou or modified LeFort I (LF-I) osteotomy described by Jeffery Posnick should be considered, besides, prosthetic rehabilitation might be needed in rare cases.
RESULTS and CONCLUSIONS:
IDO or modified (LF-I) techniques are only reserved to a few number of cases based on holistic assessment of associated challenges. This is achieved via cooperation between the cleft surgeon and orthodontist. Surgical outcomes could be greatly improved by integration of these techniques in our practice. Moreover, avoidance of unneeded surgeries that could lead to more tissue scarring and patient burnout is a goal that could be pursued on its own.

Alveolar cleft bone grafting, Algorithm

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TRAINING BIOMEDICAL TECHNICIANS AND OPERATING ROOM STAFF ON SURGICAL INSTRUMENT REPAIR TO SUPPORT CLEFT SURGERY SAFETY: recent experience from Nigeria's National Surgical Plan

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: Faulty surgical instruments prolong operating time with a potential to increase complications and adversely affect outcomes. In low- and middle-income countries (LMIC) there is limited instrument repair expertise and infrastructure with lack of funding for replacement. Nigeria's national surgical, obstetrics, anaesthesia and nursing plan (NSOANP) emphasized surgical instruments maintenance as a key goal.

Aim: This is a report of recent experience to strengthen instrument related cleft surgery safety in Nigeria, through focused training of biomedical technicians and nurses.

Methods: NSOANP partnered with Smile Train and Safe Surgery Initiative to execute a pilot training of biomedical technicians and operating room and sterile supply department nurses in the repair and maintenance of faulty surgical instruments. Twenty-four participants (1 nurse and 1 technician from each hospital) were selected from 12 hospitals across Nigeria's 6 geopolitical zones.

Results: A mandatory initial online theoretical knowledge acquisition with success in the course assessment preceded in the hands-on training. The hands-on training was an intensive 2-week training in 2 batches of 12 each conducted by an experienced trainer and 2 selected previously trained mentors. Post-training, each hospitals received donated Surgical Instrument Repair equipment to enable the participants provide on-site refurbishment and repair services. The participants are being followed up 3 monthly with mentorship support to track the impact of training. Initial feedback indicates the training has been successful, and participants are already implementing the knowledge and skills acquired.

Conclusion: Focused training of locally led biomedical technicians and nurses in surgical instruments repair and maintenance will ensure long-term sustainable solution to maintain functioning and safe surgical instruments inventory to support cleft surgery safety in Nigeria and similar settings.

Safety, surgical instruments, repair, training

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Massive Open Online Course in Cleft Lip and Palate: Lesson Learned from Indonesia

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction

Educating and raising awareness in cleft lip and palate for the young generations is one vital effort to ensure the sustainability of cleft care in the future. Performed amid the pandemic, one higher education institution in Indonesia partnering with an international humanitarian body focusing on cleft and one pioneer cleft center in Indonesia, conducting a massive open online course (MOOC) in Cleft Lip and Palate for students. This program was also supported by the Ministry of Education, Culture, Research and Technology Republic of Indonesia.

Aims

This study reported the overview in organizing and evaluating the MOOC as the alternative way for students' capacity building whilst also earning credits towards their studies.

Methods

Smile Train generously donated 34 recorded lectures from Cleft experts around the world in which each of the experts provided 1 hour live discussion session. The MOOC was delivered in an online and combination of synchronous and asynchronous mode. The learning activities ranging from lectures, pre and post-tests, forum, live discussion sessions, virtual visits to Indonesian Cleft Center, self-reflection assignments, and final project. A survey was released to the participants to collect their feedback.

Results

In total, 732 participants registered for this MOOC, in which 642 were Indonesian participants and 90 were foreign students from 13 countries. The participants were varied in level of education, consisting of 547 undergraduates, 3 master students, 79 dental specialty students, and 4 doctoral students.

Conclusions

MOOC has proven its ability in breaking geographical boundaries, gathering students and lecturers from all over the world in one platform. A collateral benefit is the building of a research network for future

collaborations in the field, and serves as a model for stakeholders who plan to enhance both education and research in order to provide better quality of care in a particular field and promote capacity building using online platforms.

MOOC, cleft lip and palate

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Speech Communication and Resilience training – a multi country project developing a programme to upskill non specialist health professionals

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Background/Aims

The EU-funded Speech, Communication and Resilience project (SCR4Cleft) is a three-year programme developing a short training course to equip non specialist healthcare professionals to provide support around speech, language, communication and resilience. The consortium comprises cleft specialists from nine European countries including speech and language therapists, psychologists, orthodontists and surgeons.

Methods

Six partners (Bulgaria, Romania, Estonia, Malta, Italy, Serbia) assessed the level of support around speech and resilience in their own countries. In parallel a literature review was undertaken examining how speech and psychology can be combined to promote positive adjustment, highlighting key challenges, current provision of care and potential to improve speech, communication and resilience. This informed development of the training materials compiled by partners from Ireland, Netherlands, Norway. The training was piloted amongst mixed audiences and assessed using “before” and “after” tests. Feedback enabled editing to take account of local contexts. A course handbook was developed providing guidance on running the course with details of learning outcomes.

Results

The course comprised the following elements: explanation of speech, language, communication and resilience; impact of cleft; guidance for parents on development of speech, language and communication; promotion of resilience in children and parents. The results of the pilots showed a knowledge increase amongst non-specialists and students and also amongst specialists. Romania recorded a 123% improvement for students and 37% improvement for specialists. Serbia reported statistically significant improvements in all areas with a mixed audience of 56 comprising cleft specialists, including psychologists and speech and language therapists.

Conclusions

The project demonstrates the potential for training non-specialists to take on

important tasks in areas of speech and psychology where specialists do not exist because of resource constraints. When completed, all materials will be freely downloadable from the project website www.scr4cleft.org and may be of particular interest to cleft teams in low to middle income countries.

upskill, speech, language, resilience, training

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SCALING UP CLEFT RESEARCH CAPACITY IN LMICS: A pilot experience from Nigeria

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Background: High quality cleft and surgical research in Africa is presently hampered by several barriers including limited research training and capacity. As part of implementation of Nigeria's National Surgical Obstetrics and Anaesthesia Plan (NSOANP), a cleft and surgery e-registry was developed and deployed to generate high quality cleft data. Scaling-up research capacity is an integral component to the cleft e-registry. Availability of high-quality comprehensive data from the registry necessitates development of cleft research ideas, undertaking high quality research projects, writing fundable and successful grant proposals, and publishing high quality manuscripts. Outputs will influence and change current cleft realities

Methods: Partnering with Smile Train, NSOANP deployed a pilot research capacity training for 13 selected Smile Train cleft partners covering the 6 geopolitical zones of Nigeria. Selection was done using pre-set criteria based on interest in research, possession of proposed research topics and existing research data to be used for hands-on training. The training has been reviewed.

Results: The training was in 2 parts: an initial 2-day virtual training (open to all Smile Train partners in Africa) and an intensive one-week, hands-on training for selected partners. The training focused on research conduct, grants proposal writing and management, manuscript writing and publication. Continuing post training mentoring was provided to each participant by the trainers. Participants are being followed up 6monthly to track their research efforts, grants and publication success. Initial feedback indicates the training increased their understanding of research and skills in research conduct, grants writing and manuscript writing and publication. Five participants applied for the first Smile Train grants request for proposals and three were successful.

Conclusion: Intensive, focused training in research, grants and manuscript writing contributes to scaling-up research capacity in Nigeria and similar settings. Such training should be deployed on a larger scale to address the limited cleft research capacity.

Cleft research, e-registry, surgical plans

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Impact of Orofacial Cleft Community Care and Support Training: A preliminary report from Nigeria

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: The National Surgical Obstetrics, Anesthesia, and Nursing Plan is a Global policy tool used to promote quality surgical care and Optimal Resources for Children's Surgery (OReCS) by Global Initiative for Children's Surgery (GICS) promotes standards of care that improve surgical care of children worldwide. These two strategies have yielded a return on investment but at a slow pace.

Aim: To evaluate the impact of integrating Community Gatekeepers in Orofacial Cleft Care, Support, and Advocacy for optimal access to safe, timely, and affordable surgery.

Methods: Smile Train and MARCH Care Initiative developed a training manual entitled Orofacial Cleft Community Care and Support for the first time in Nigeria. Stakeholders from National Primary Health Care Development Agency, Academia, Surgery, and Paediatric Experts developed the manual. The manual was field-tested in two states through Cleft advocacy to Government and Traditional Leaders for buy-in and followed by a two-day residential didactic session of Community Mobilizers.

Result: Fifty Community Mobilizers were trained on Orofacial Cleft Care and support using the fourteen modular training manuals. The participants agreed that they were hearing about Cleft for the first time. The post-test revealed 65% knowledge gained. There was a report of cleft children referral in 6 communities immediately after the training. Mobilizers have integrated Cleft awareness in their services to the hinterlands.
Conclusion: Only 166/100,000 surgeries are performed each year in Nigeria against the recommended volume of 5,000/100,000 and Community Cleft Care and Support through capacity building is a key element in achieving the vision of enabling all persons, to have access to safe and quality surgical care with financial ease.

Cleft, Community Mobilizers, Stakeholders, Hinterlands

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MEXICLEFT: En route to evaluating Care Outcomes in Mexican Centers.

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction: In 2014, this Workgroup took up the doctor Ortiz Monasterio´s original idea about comparisons of care protocols in Mexico and in 2017 we organized a national consensus of experts where we agreed on methods for evaluating results in the centers. In subsequent years, the concept of measurement has been reinforced.
Objectives: Design an educational intervention about quality standards, best practices in the comprehensive treatment of patients with cleft lip and palate and strengthen the measurement of care protocols in the country.
Methods: The project was divided into 3 stages: I Systematic review of the most efficient international multidisciplinary protocols (Cochrane Methodology), II Expert consensus on minimum standards and best practices in cleft care (Delphi Methodology), III Design of educational intervention on quality standards, best practices and comparison of care protocols in the country (Thomas & Kern Educational Model).
Results: I- 552 articles about protocols about cleft care were reviewed to support the consensus and proposal of quality of care standards (2019-2020). II- Quality standards were defined with the effort of 62 experts: surgical safety, quality control, patient education, patient selection and monitoring, comprehensive care, partnerships with other centers and professionals, sustainability and creative capacity (2021). III Educational intervention (b-learning) was designed in educational platform (LMS), 58 cleft care centers have agreed to participate. They will learn about measurement of surgical results, speech&language, hearing, OHRQoL, facial growth, holistic outcomes (self-esteem and quality of life), quality standards and best practices.
Conclusions: MEXICLEFT's mission has been to share the best practices in the care of the fissure, providing key elements to national leaders, promoting the evaluation and the appropriation of quality standards. This work provides the basis for an educational intervention in benefit of patients with CLP in Mexico.

MEXICLEFT, quality, best practice.

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Evolution of the Partners in African Cleft Training (PACT) program in Sub-Saharan Africa

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Introduction

PACT is a collaborative program between cleft team providers in Africa and USA. Following a three-year needs assessment study, specialized centers of excellence were established in Africa by PACT to train regional cleft providers and serve as models of interdisciplinary team cleft care.

Methods

The 2008 pilot project included reciprocal (Seattle and Kumasi) week-long visits with cleft providers from six African countries. At the conclusion of the study, participants reported that workshops hosted in Kumasi were more valuable than visits to Seattle and solutions to achieve sustainable team cleft care must come from within the African continent. African teams identified need for regional centers to train speech, anesthesiology, and surgical providers in cleft team care and in 2012 PACT training centers were established in Ghana, Ethiopia, and Nigeria.

Results

Since 2008, over 140 providers from teams in Ghana, Ethiopia, Nigeria, Liberia, and Kenya have participated in 14 educational workshops. Trainees representing 8 disciplines (surgery, nursing, speech, orthodontics, anesthesiology, social work, nutrition, and pediatrics) have attended workshops. In 2020 PACT participants attended a virtual workshop. Participation in quarterly seminars and access to virtual cleft team lectures is ongoing. Participating teams report increase in number of team providers and disciplines. A surgical fellowship training program has been established in Kumasi and the Addis Ababa University offers a degree program in Speech Pathology. Two NIH-funded research collaborative programs were established in past 2 years.

Conclusion

The PACT program was established as a collaboration between cleft providers from teams in Sub-Saharan Africa and Seattle to establish regional training centers of excellence for providers in support of interdisciplinary cleft care. The impact of the PACT program includes shared learning and team building through the establishment of regional training programs, research collaboration, with the recognition that solutions to challenges of providing cleft team care must come from African providers.

Interdisciplinary, cleft, team, Africa, training

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Simulation-Based Comprehensive Cleft Care Workshops: A Reproducible Model for Sustainable Education

Dr Robert Younan[1], Dr Omar Al Abyad[1], Dr Antonio Melhem[1], Dr Mario Haddad[1,27], Dr Lucille Ridgell[1], Dr Rami Kantar[1,2,3], Dr Corstiaan Breugem[3,29], Ms Kristen Keith[1], Dr Serena Kassam[1,4,26], Dr Charanya Vijayakumar[5], Ms Mikaela Bow[1], Mr Allyson Alfonso[1,6], Dr Elsa Chahine[1], Dr Krishna Patel[1,7], Dr Pradip Shetye[6], Dr Pedro Santiago[8], Dr Joseph Losee[9], Dr Derek Steinbacher[10], Dr Percy Rossell-Perry[11], Dr Daniela Garib[12], Dr Nivaldo Alonso[13], Dr Robert Mann[14], Dr Jose Rolando Prada-Madrid[15], Dr Elcin Esenlik[16], Dr Maria del Carmen Pamplona[17], Dr Marcus Vinicius Martins Collares[18], Dr Ricardo Bennun[19], Dr Ann Kummer[1,20], Dr Carlos Giugliano[21], Dr Bonnie Padwa[22], Dr Cassio Eduardo Raposo-Amaral[23], Dr Raymond Tse[24], Dr Brian Sommerlad[25], Dr Roberto Flores[6,28], Dr Usama Hamdan[1]

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

1-Introduction:

There are numerous barriers to equitable access for comprehensive cleft care around the world. These barriers are more profound in developing regions. Although foundation-driven surgical initiatives have attempted to alleviate the significant burden of cleft care, their ability to promote long-term sustainable care has been questioned. Simulation-based training has emerged as an essential component of medical and surgical education over the last decade. Similar trends have been observed within the field of cleft surgery.

2-Aim

To evaluate simulation-based comprehensive cleft care workshops (SBCCCWs) as a reproducible model for education with sustained impact.

3-Methods

The workshop took place over the course of 3 days in Lima-Peru, 2019. Hands-on simulation using high-fidelity CLP simulators was provided to participants. Surveys were then handed to participants during the workshop and 6-month later for medium-term follow up. The main outcomes measured were satisfaction with the workshop, satisfaction with simulation-based workshops as educational tools, impact on cleft surgery procedural confidence and short-term and medium-term impact on clinical practice. Attendees were also asked about the obstacles facing cleft care in their countries, and the possible interventions to overcome them.

4-Results:
The workshop included 180 participants from 29 countries. The response rate was 54.5%, with respondents reporting high satisfaction with all aspects of the workshop and with simulation-based workshops as educational tools. Respondents claimed an improvement in their procedural confidence after the simulation sessions as well as a positive short-term and medium-term impact on their clinical practice. The two most common barriers to cleft care in LMICs identified by our participants were the lack of financial support and the absence of multidisciplinary teams.

5-Conclusion:
SBCCCWs are well received by participants, results in improved cleft surgery procedural confidence, and have a sustained positive impact on participants' clinical practice. This study provides evidence of the significance of SBCCCW as a cleft care capacity-building tool.

ethics/health policies, workshop, cleft, simulation

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Team Cleft - Developing a curriculum for effective teamwork in international Cleft care

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FR3.5 LMIC Theme, Moorfoot, EICC - Streamed, July 15, 2022, 11:00 - 13:00

Background: Smile Train supports Cleft surgeries performed by diverse surgical teams in 1,100+ partner hospitals across 70+ low and middle income countries, working in frequently complex and challenging settings. Effective multidisciplinary teamwork is recognised internationally as an essential component of cleft care. Feedback from cleft professionals and sentinel event reviews has emphasized gaps in teamwork and communication which increase the risk of patient complications and negatively impacts professional job satisfaction & development.

Objectives: 1) Create a short course curriculum on multidisciplinary teamwork and communication in the OR for cleft surgical teams.
2) Create a complementary Train the Trainer package to enable course scalability and sustainability.

Stages of development: °Assembly of expert working group - 18 members representing 5 countries with education, clinical & programmatic backgrounds, including anesthesia, surgery and nursing expertise.
°Review and adaptation of existing baseline resources - Sentinel event reports, clinical guidelines, existing SAFEOR curriculum, Checklist strategies workshop, audio-visual aids.
°Monthly review meetings - sharing clinical practice, teaching experiences, gaining consensus on curriculum content, methodology, delivery methods.
°Peer review - course sent to experienced cleft professionals for educational and clinical review.
°Pilot - test course with groups of trainees using M&E tools to gather feedback.
°Post pilot revision - improvement process using M&E findings.

Results: Development of the 'Team-Cleft' core training and ToT package which will be piloted in early 2022 across three cleft teams at facilities in Ethiopia, Uganda and Kenya.

Conclusions: Surgical cleft teams require multidisciplinary teamwork training adapted to suit their caseloads, team dynamics and environments. The findings of the 'Team Cleft' pilot will be assessed to further refine the programme and additionally understand the impact on surgical outcomes and team functioning.
cleft, teamwork, training, international, multidisciplinary

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Circummaxillary sutures maturation: comparison between surgically treated UCLP patients and non-affected subjects

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: The surgical treatment of cleft lip and palate contributes to the impaired growth of the maxilla, thus leading to further orthopedic and/or surgical treatments of maxillary hypoplasia. The correct assessment of the maturational stages of circummaxillary sutures can guide the clinical decisions in this field, avoiding useless treatments and reducing the burden of care of these patients.

Aim: The objective of our study was to compare the patency of circummaxillary sutures (Midpalatal suture, zygomaticomaxillary sutures and pterigomaxillary sutures) in operated cleft patients with non-affected subjects.

Methods: Our sample includes subjects affected by unilateral complete cleft lip and palate: 36 patients underwent early secondary gengivoalveoloplasty (esGap) performed at 2.5 years of age (Average age at CT= 12.8 ± 4,1 years) while 43 patients were treated with alveolar bone graft (Average age = 12 ± 3 years). CT scans performed by the patients were collected, analyzed and compared to age- and sex-matched CTs of non-affected subjects. We classified sutures maturation using three stages (α, β, γ). In cases with mixed stages we assigned the higher stage to sutures when it was identified in 30% of CT images.

Results and conclusions: The Cleft sample showed an earlier ossification of Midpalatal suture than control subjects, before 12 years old of age. In Both groups Zigomaticomaxillary sutures began to show signs of maturation after 13 years old of age.
Complete data and analysis will be presented during the congress.

Suture maturation, alveolar bone graft

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Changes in nostril sill height and upper lip height after secondary ABG

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Title : Changes in nostril sill height and upper lip height after secondary ABG

Author : Thi Ha Myint Wei

Purpose
The purpose of this study was to study the changes of nostrils sill height and upper lip height after secondary alveolar bone grafting (secondary ABG) in patients with repaired unilateral complete cleft lip and palate.

Method
In this study, secondary ABG was done to 30 patients of age between 7 to 15 years of age with alveolar cleft of operated unilateral cleft lip and palate patients. The changes of nostril sill height and upper lip height after secondary ABG were done at postoperative two weeks and determination of postoperative infection and fistulas at bone graft site on postoperative 1st week, 2nd week and 12th week. Success rate of bone graft was assessed by taking periapical, standard occlusal and orthopantomogram X-rays and assess by using modified Bergland Scale and Chelsea Scale on postoperative 12th weeks. All data was collected and imported into a paired t-test with STATA 15.0 statistical software for determination of significant differences.

Results
A total of 30 patients age between 7 to 15 years were included in this study. Measurement of all the proportion indices of nasal sill height and upper lip height were statistically significant ($p<0.0001$) and significantly elevated. All the bone grafts present in the study were successful according to the Modified Bergland Scale and Chelsea scale. There was no cases of postoperative complication of wound dehiscence, wound infection and fistula at grafted site within postoperative 1st week, 2nd week and 12th weeks.
Conclusion
Successful secondary alveolar bone grafting could significantly elevate the nostril sill height and the upper lip height without any complication in patients with repaired unilateral complete cleft lip and palate.
ABG

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Single-shot versus prolonged antibiotic prophylaxis for alveolar bone grafting in cleft children

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction:
Increasing antimicrobial resistances require a critical discussion of antibiotic application in any field. Scientific literature provides some studies dealing with the topic of prophylactic antibiotic use in primary cleft surgery, but no guidelines exist concerning antibiotic application for alveolar bone grafting in cleft patients. Regimes are heterogenous and protracted antibiotic prophylaxis is still common especially for transplantation of bone in a compromised bed.
Aims:
The complication rate between prolonged and single-shot prophylaxis for this procedure was compared in order to find out if reduction of antimicrobial prophylaxis is justified.
Methods
The study included 109 alveolar bone grafting procedures in 94 cleft patients performed by 2 surgeons using the same technique. Patients with protracted antibiotic prophylaxis (group 1) were compared with patients who only got a single-shot preoperatively. The complication rate and duration of hospitalization were statistically compared with SPSS®.
Results:
59 patients (m= 34, f=25) belonged to the group with postoperative antibiotic application (group1) while 35 (m=23, f=12) patients had just a single-shot (group 2). The general complication rate was higher in group 1 compared to the single-shot-group (10.2% vs. 5.7%). 2 relevant surgical site infections were observed among patients with postoperative antibiotic application while no infections occurred in the group of a single-shot prophylaxis (3.4% vs. 0.0%). The differences were not statistically significant (p=0.84). Median age at surgery differed not significantly but hospitalization was longer in group 1.
Conclusion:
Only very few infectious complications were observed in alveolar bone grafting of clefts independently of the duration of antibiotic prophylaxis. The reduction of antibiotic prophylaxis did not increase the complication rate. Factors like age, surgical technique and grafting material as well as surgical experience seem to be more relevant for the outcome than the application of antibiotics. The results strongly encourage to reduce the prophylactic application of antibiotics in alveolar bone grafting of clefts.

antibiotic prophylaxis; alveolar bone grafting

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A Three Dimensional Scale for Qualitative and Quantitative assessment of Secondary Alveolar Bone Grafting (SABG) in Unilateral Cleft lip and Palate patients using Cone Beam Computed Tomography (CBCT)

Professor Puneet Batra[1]
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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: Secondary alveolar bone grafting (SABG) has been a treatment standard for the formation of bone bridge and making the path for spontaneous tooth eruption through the grafted bone. CBCT images provides information about volumetric details of the area which is useful in assessing the quantity and quality of the grafted bone, 3D morphology of the bony architecture formed in the cleft defect, and relationships between the bone bridge and teeth adjacent to the cleft
Aims: To derive an objective assessment scale for 3-Dimensional qualitative and quantitative evaluation of secondary alveolar bone grafting (SABG) using cone bone computed tomography (CBCT) in patients with Cleft lip and palate (UCLP).
Methods: CBCT scans for Pre and 3-month post-SABG were reviewed for bone volume, height, width and density of the bony bridge formed in the cleft defect in 20 patients with UCLP. Basic descriptive and principal component analysis was used to extract the various sub-components of the scale. Spearman's correlation was used to check the validity with the scale, intra-class coefficient (ICC) and Cronbach's alpha established the reliability and retest applicability.
Results: Each CBCT scan was assessed in five areas- Cementoenamel junction (CEJ), root apex, root-midpoint, 3mm and 6 mm below CEJ and tabulated in percentiles of 20, 25, 40, 50, 60, 75 for all the parameters (bone volume, density, and width). These scores were validated when correlated to the scale given by Kamperos G et al. Cronbach's alpha for the domains demonstrated acceptable to excellent internal consistency. The ICC showed good test–retest reliability having a range of scores from 0.89–0.94.
Conclusion: The proposed scale for 3-D assessment of Secondary alveolar bone grafting (SABG) in patients with UCLP provides gradation for objective assessment of the bony bridge. These gradation enables qualitative and quantitative assessment of the bony bridge thus allowing each clinician to judge SABG more conclusively.

Table 1: Outcome evaluation according to new success scale.

SL. NO	RANGE	SCORE
1.	**For Volume (in mm^3)**	
	0-30	TYPE-0
	31-60	TYPE-1
	61-90	TYPE-2
	91-150	TYPE-3
	151-300	TYPE-4
	301-500	TYPE-5
2.	**For Density (in HU)**	
	0-250	TYPE-1
	251-500	TYPE-2
	501-750	TYPE-3
	751-1000	TYPE-4
	1001-1250	TYPE-5
3.	**For Width (in mm)**	
	0-5.5	TYPE-1
	5.5-11.0	TYPE-2

CBCT; 3DImaging; SABG, UCLP,

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Mind the Gap: Alveolar Bone Graft Revision in the Era of Computed Tomography

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction
Evaluation of alveolar bone graft (ABG) success is traditionally done via clinical examination and 2-dimensional dental radiographs, which have been shown to overestimate graft success and underestimate bone resorption relative to 3-dimensional computed tomography (CT). The effect of postoperative CT on the rate of revision bone grafting has not previously been reported.

Aims
We aimed to determine the rate of revision alveolar bone grafting (ABG) in patients with cleft lip and palate (CLP) before and after the introduction of postoperative computed tomography (CT).

Methods
We performed a retrospective case-control study analyzing the incidence of revision alveolar bone grafting in patients with and without postoperative CT scans for graft success evaluation. Eighty-seven patients with CLP or cleft lip and alveolus treated with autologous iliac crest bone grafting for alveolar clefts over a 10-year period (January 2009 to March 2019) were included, with minimum 6-month follow-up. Variables influencing revision requirement were analyzed with logistic regression.

Results
Fifty-eight percent of patients underwent a postoperative CT scan at median interval of 10 months after surgery. Patients with postoperative CT evaluation had a 44% rate of revision ABG (22/50) for inadequate graft take (95% CI 31-58%), compared to 5% (2/37) in patients without postoperative CT (95% CI 1-16%; $p < 0.001$). No other variable was independently associated with revision requirement.

Conclusions
Computed tomography evaluation after ABG is associated with a significantly increased revision rate for inadequate graft take. Lack of standardized dental and orthodontic records complicates the study of ABG outcomes, and presents an area for systems-based improvement.

Alveolar bone graft, cleft palate

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Evaluating SWAG and Its Validity When Compared to 3D Imagery of Secondarily Grafted Cleft Sites

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Aim– The SWAG (Standardized Way to Assess Grafts) is used to rate bone graft outcomes on 2D films. This study was to determine the validity of 2D images when analyzed via SWAG compared to calculated 3D bone volumes of the same grafted cleft sites.
Methods– 47 cleft sites from 43 (9 BCLP, 34 UCLP) patients were bone grafted at mean age 9yrs/3mos. They had post-graft occlusal radiographs and CBCT images taken 6 mos post-graft (mean 4.8yrs post-graft) Occlusals were rated twice using the SWAG method, by 6 raters. CBCT cleft volume was completed using ITK-SNAP. Total bone-fill was expressed as percentage of total cleft site. Reliability was calculated with Weighted Kappa for SWAG ratings and ICC for the CBCT. 2D vs 3D ratings were compared using Paired and Independent samples t-tests, Bland-Altman analysis and Linear Regression. Significance was set at $p<.05$ with 95% CI's.
Results- Weighted Kappa for SWAG was 0.817 intra-rater and 0.646 inter-rater. Intra-rater ICC for 3D calculations was 0.986. Mean % of bone-fill was 64.112% (SD=24.901) with 2D and 69.056% (SD=19.639) with 3D.This was found to be a non-significant difference with both independent samples ($p=0.2884$) and paired ($p=0.074$) t-tests. Bland-Altman plot comparing 2D SWAG to 3D volume calculations showed 45 of 47 were within 2 SD's. Regression statistics showed a significant ($p<0.0001$) correlation ($r=0.675$; $rsq=0.456$).
Conclusions- The difference between methods was systematic but non-significant, with 2D SWAG method underestimating bone-fill compared to 3D volumetric calculations.This along with the strength of the regression correlation suggests that 2D SWAG ratings may be warranted for group comparisons of bone grafting outcomes. However, since individual cases were shown to vary as much as 30-40% in 2D estimates of actual 3D volume, it suggests that for treatment purposes of individual patients, the 2D SWAG method cannot be used as a proxy for 3D images.

SWAG, 2D vs 3D

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Using a Cone Beam Computed Tomographic Analysis the Radiographic Success of 783 Alveolar Bone Grafts is 94%

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: Success of alveolar bone grafting has been estimated using 2-dimensional periapical radiographs that are associated with image distortion. Cone beam computed tomography (CBCT) accurately displays 3-dimensional anatomy.

Aims: The study purpose was to establish a radiographic outcome assessment tool using CBCT and employ it to determine alveolar bone grafting success.

Methods: Retrospective case series of patients with cleft lip/palate who had iliac crest bone grafting by one surgeon between 2005-2020. CBCT scans obtained > 4 months post-graft. Primary outcome variables were vertical bone height on cleft adjacent teeth, labiopalatal thickness, and nasal floor symmetry. Outcomes were scored using an ordinal scale from 1- 4. Vertical height determined by distance from cementoenamel junction to marginal bone level of cleft adjacent teeth (1=≥75% root length, 2=≥50-<75%, 3=≥25-<50%, 4=<25%), labiopalatal thickness scored by comparing graft thickness with root width of cleft adjacent teeth (1=<50%, 2=≥50, 3=≥75%, 4=≥100%), piriform symmetry established by comparing nasal floor height between sides (1=≥6 mm, 2=≥3 and <6 mm, 3= ≥1 and <3 mm, 4= <1 mm). To be considered a successful graft, each dimension had to have a score of 3 or 4. Two independent raters assessed each scan to estimate inter- and intra-rater reliability. Descriptive statistics were computed.

Results: There were 618 patients with 783 alveolar cleft sites. The subject's median age was 10.0 (interquartile range 1.6 years) and 59% were male. CBCT scans were obtained a median of 9.7 months (interquartile range 68.8 months) after grafting. There was good to excellent intra- and inter-rater agreement for measurements. Alveolar bone grafting was successful in 94% of patients.

Conclusions: Inter- and intra-rater reliability testing demonstrated that this is a valid assessment tool and when used in a large cohort found good to excellent outcomes in 94% of patients. Future studies will identify predictor variables associated with bone graft outcomes.

Alveolar bone graft, outcomes,

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LIMITED ACCESS TO ALVEOLAR BONE GRAFT SURGERY FOLLOWING PRIMARY CLEFT LIP AND PALATE REPAIR IN INDONESIA: Questionnaire-Based Qualitative Study

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction. Cleft Lip and Palate (CLP) is the most common craniofacial anomalies and CLP repair surgery is widely performed. Alveolar cleft often accompanies CLP cases and requires additional alveolar bone graft (ABG) surgery when children reach mixed dentition age. However, data showing ABG epidemiology is scarce and only small percentage of patients with complete CLP underwent follow-up ABG surgery.
Objective. The study aimed to show the prevalence of ABG in comparison with cleft lip and palate surgeries in Cleft and Craniofacial Centre (CCC), Cipto Mangunkusumo Hospital, Jakarta, Indonesia.
Method. Total of 753 orofacial cleft surgeries conducted from 2015-2021 were included. Quantitative analysis of labioplasty, palatoplasty, and ABG surgeries was presented. Questionnaire-based qualitative analysis of ABG was obtained from the patient's guardians to evaluate the outcome and experience of conducting the surgery in our institution.
Results. ABG took up only 5.3% of total orofacial cleft surgeries with average age at the time of surgery was 12 years old. We successfully distributed questionnaires to 13 patients with history of ABG. 84.6% of them had access to preoperative and postoperative orthodontic care. Limitation of knowledge, pandemic, and destroyed dentition hindered them from receiving proper orthodontic treatment. 11 patients reported maxillary retrusion however 100% showed satisfactory results regarding the impact of ABG on feeding and occlusion.
Discussion and Conclusion. Orofacial cleft management requires multistage, comprehensive, and multidisciplinary approach. ABG surgeries accounted for less than 10% compared to labioplasty and palatoplasty, highlighting that not all patients in Indonesia have privileged access to ABG and orthodontic care, contributing to the fact that limitations of knowledge, geography, and economy play a big role in Indonesian healthcare.

alveolarbonegraft, cleftlipandpalate, alveolarcleft

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Clinical audit on the success rate of spontaneous canine eruption into grafted alveolar cleft sites, at Evelina London Cleft Services.

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

INTRODUCTION
Canines adjacent to alveolar clefts are often displaced, Secondary Alveolar Bone Graft's (SABG) are placed in the alveolar cleft site to support the eruption of upper permanent canines (or lateral incisors when present).

AIMS
To evaluate the eruption of the permanent canines into the grafted cleft site, in patients treated at Evelina London Cleft Service between 2013-2017. The gold standard was set at 80% should erupt spontaneously through the SABG.

METHOD
Electronic and paper clinical records of all grafted patients (prior to the eruption of the canines) who had had 5 years follow up were identified. Radiographs were evaluated for: cleft diagnosis; pre-surgical orthodontics; SABG date, eruption of canine and if exposure and bonding of impacted canines were required. Patients reviewed at spoke units or incomplete reviews were excluded.

RESULTS
The study identified 194 patients. 6 were lost to follow-up. 89 were treated at spoke units and had incomplete records. The audit had a sample of 99 patients. Cleft types were UCLA(n=27), UCLP(n=50), BCLA(n=1) and BCLP(n=21). 121 ABG sites were identified, 94 canines successfully erupted into the cleft site and 27 remain unerupted. Of the 27 unerupted, 6 canines required surgical exposure and orthodontic treatment and 3 were extracted due to poor prognosis. The remaining 18 canines await review for radiographs and an orthodontic treatment plan, pending further development. Some pateint reviews have been delayed due to either the covid pandemic or patient related factors. From the treated cases, 91% of canines (n=94) spontaneously erupted through the grafted site and 9% were impacted (n=9).

CONCLUSION
SABG at Evelina London Cleft Services is providing successful eruption of canines into the arch through the grafted site; 91% after SABG and this exceeded the audit standard and is comparable to other studies.

CASELOAD	No. of patients		Canine status	SABG sites
Met inclusion criteria	194		Erupted	94
Lost to follow-up	6		B&E	6
Incomplete records	89		GA xla	3
Audit sample	99		Awaiting development/Tx plan	18
			TOTAL	121
Canine status				
Erupted	75 (18 BCLP)			
B&E	6		Spontaneous eruption	94 (91%)
GA xla	3		Impacted	9 (9%)
Await development/Tx plan	15 (BCLP)		SUM	103
SUM	99			

alveolar bone graft, canines, cleft,

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Long term follow up on the treatment of facial clefts number 4: a proposal of a new classification to improve surgical treatment

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: Tessier number 4 cleft is an oblique facial cleft, rare, with variety of clinical findings, which demands individualized approaches. Its surgical management is complex and challenging, requiring a planned, multistage approach. Detailed classification should bring a new horizon to define the treatment protocol for Tessier #4 cleft.
Aims: To propose a classification using the anatomical landmarks: orbital, paranasal and lip deformities, to improve the understanding of the clefts and enhance the surgical management.
Methods: The existing literature in English until 2020 was reviewed, collecting data regarding lip, maxilla, eye, eyelid and other malformations. Our experience with a series of patients formed the basis of this study. The classification is based on three anatomical landmarks – orbital, paranasal and labial deformities. The scores ranged from 1 to 3, from mild to severe (minimum 8, maximum 24). Based on these findings, a clinical classification was created and applied to nine previously treated patients since our last article in 2008.
Results: According to our previous literature review in 2008, 71 cases of facial #4 cleft have been described and we added 21 new cases, adding up to 92 patients. Since then, we reviewed once again and identified 81 new cases published between 2008 and 2020. Fourteen patients were evaluated, including 4 with bilateral involvement, totalizing 18 affected hemifaces. Accordingly to classification: mild deformities (score 8-12) in 7 hemifaces, moderate (score 13-18) in 7, and severe (score 19-24) in 4. The average number of surgeries was in grade I 2.5 operations, grade II 3.8 and grade III 4.3.
Conclusion: This new classification for Tessier #4 cleft needs to be tested. However, It may be utilized to predict the sequence of treatment and prognosis, offering a metric for future papers.

Table 1. Tessier #4 cleft - clinical classification

		score 1	score 2	score 3
Orbital	Medial canthus	Topic	Mild displacement	Dystopic
	Ocular dystopia	Absent	Mild displacement	Dystopic
	Lower eyelid coloboma	Canaliculus exclusively	Lid lengthening > 50%	Lid lengthening < 50%
	Eyeball	Normal	Microphthalmia	Anophthalmia
Paranasal	Soft tissue	normal	Fissure without tissue deficiency	Large tissue deficiency
	Ala distortion	Absent	Mild – No necessity of flap	Severe – Flap is necessary
	Bone Gap	Absent	Incomplete	Complete
Cleft Lip		Absent	Incomplete	Complete

Tessier, Cleft-4, Oblique facial cleft

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Parents' experiences of the transition in cleft lip and palate (IPA)

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: An orthognathic pathway, a combination of orthodontic and surgical treatment, is offered to some young people born with cleft lip and/or palate (CL/P) for functional/aesthetic reasons. This complex elective surgery represents the first time young people themselves are expected to be the main decision-makers and is therefore a significant transition time for the young people as well as their parents who held the responsibility for healthcare decisions until then.
Aims: The current study explored parents' experiences of the transition in cleft care and decision-making about an elective orthognathic surgery.
Methods: A qualitative design was used. Eleven participants took part in semi-structured interviews using online videoconferencing platforms. The data were transcribed and analysed using interpretative phenomenological analysis (IPA). Participants were recruited from a Cleft lip and palate team in the National Health Service (NHS) and Cleft Lip and Palate Association (CLAPA). They were parents of young people who made a decision whether to undergo the surgery and were either awaiting it, or not if they decided against it. Participants were six females and five males, aged 41 to 60 years.
Results: Three main themes were identified with 'Stepping back' capturing the transition in particular. Participants, handing over responsibility for decision-making to their children, shared varied experiences. They reflected on the child's age and developmental stage and their own readiness to step back.
Conclusions: The transition comprised a spectrum of experiences from a relief to a shock and upset. Participants went through sometimes difficult negotiating of their ongoing involvement while supporting their child. The study highlighted the need to explore parents' understanding of the process and forthcoming changes prior to offering the orthognathic pathway. Clinicians can support parents to recognise the complexities involved, especially if young people are making decisions before reaching adulthood.
Cleft, parent, decision-making, orthognathic surgery

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Rhinoplasty and Le Fort I Maxillary Osteotomy in Cleft Patients

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FR3.6 MAXILLOFACIAL, Tinto, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: Cleft patients often need orthognathic surgery to correct maxillary hypoplasia and rhinoplasty to correct nasal deformity. Conventionally, rhinoplasty is performed as a staged procedure after orthognathic surgery. Performing osteotomy and rhinoplasty simultaneously may allow better access during surgery, and reduce the number of operations, whereas staged procedures may have more predictable outcomes.
Aims: To examine the need for rhinoplasty in patients undergoing maxillary osteotomy, and to evaluate whether the rhinoplasties were performed simultaneously with maxillary osteotomy or in a second operation after the osteotomy.
Methods: The current retrospective study examined 99 non-syndromic patients with cleft lip/palate (23 BCLP, 51 UCLP and 25 CP) who had undergone Le Fort I maxillary advancement or bimaxillary osteotomy at Cleft Palate and Craniofacial Center, Helsinki University Hospital, Finland, between 2002 and 2016. Medical charts were accessed through the hospital's archive and database.
Results: 45% (45/99) of the patients who underwent maxillary osteotomy needed rhinoplasty (14 BCLP, 27 UCLP and 4 CP). In twenty patients (20%) rhinoplasty was made simultaneously with maxillary osteotomy at the mean age 18.07 yeas (range 14.82-27.28). In 25 patients (25%) rhinoplasty was done in a second operation on average 23.88 months after osteotomy at the mean age 18.99 years (range 14.93-24.29). 14 patients (10 BCLP, 4 UCLP) had had an earlier rhinoplasty during growth before the osteotomy. All these patients underwent later (bi)maxillary osteotomy.
Conclusions: 45% of the cleft patients who underwent maxillary osteotomy needed rhinoplasty. Staged and simultaneous procedures were almost equally common.

rhinoplasty, maxillary advancement, orthognathic surgery

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Targeting and Timing Information for Cleft Patients and their Families

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

1. Background
Cleft lip and/or palate (CL/P) is one of the most common orofacial abnormalities worldwide. In the United Kingdom, following (often prenatal) diagnosis, children enter the cleft care pathway where they remain for approximately 20 years. Families are provided with a vast amount of information throughout the care pathway.

2. Aims and Objectives
This service evaluation aimed to explore the type, timing and format of information provided to families by the cleft team.
The objective of this service evaluation is to establish whether the information provided is appropriate, sufficient and meets the needs of patients and their families.

3. Methods
Semi-structured qualitative interviews were undertaken with key members of the Evelina London Cleft Service to explore the information provided to patients and their families during the different stages of the care pathway.

4. Results
Analysis suggests that parents receive a large amount of technical information about the treatment of their children. The information is provided in limited formats and participants have highlighted the fact that they would like to provide information in a range of interactive and personalised formats. Participants also shared some issues surrounding access to the service, language barriers and loss of a key contact throughout the pathway. Within the team the clinical nurse specialists play a vital role, forming the main link between consultants and parents, explaining information, and answering questions.

5. Conclusion/Recommendations
Several issues exist in the provision of information in the cleft care pathway and current information is not always easy to understand or to access. The cleft team are very aware of these issues and continue to work through the limitations to deliver the highest level of care. Provision of personalised, diagnosis-specific, accessible information that can be accessed at any time is recommended.

information, timing, format, multidisciplinary, qualitative

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Association of pre-existing behavioural problems with emotional problems during the COVID-19 pandemic in children born with cleft lip and/or palate in the United Kingdom.

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction
Children with cleft lip and/or palate (CL/P) commonly have subclinical mental health and wellbeing needs. These needs are often negatively impacted when additional stresses are present. Existing evidence has shown that children with CL/P at ages 5 and 10 have higher levels of behavioural problems than children within the general population. The events of the COVID-19 pandemic, such as lockdowns, postponement of appointments and online schooling, are likely to have created additional pressures on children with CL/P. Existing evidence suggests children with developmental problems experienced a deterioration in wellbeing during COVID-19.

Aims
To explore the association of pre-existing behavioural problems with emotional problems during the COVID-19.

Methods
Data from the Cleft Collective Cohort Studies, a longitudinal cohort study of children with CL/P and their families (https://www.bristol.ac.uk/cleft-collective/professionals/access/), were used to explore this association. Pre-pandemic behavioural problems were defined through the Strengths and Difficulties (SDQ) total difficulties scale completed by parents when the child was aged 5, 8 or 10. Emotional difficulties were defined using the National Institute of Mental Health (NIMH) Emotions and Worries scale comprising eight domains. NIMH scores were obtained for the first (T1) and second (T2) half of the first UK lockdown. Logistic regression was used to assess the associations (N=161).

Results
Strong evidence was found to suggest children with CL/P who had previously been categorised as ‘borderline’ or ‘abnormal’ on the SDQ were 4.7 times more likely to experience ‘worry’ during T1 (OR 4.68; 95%CIs 2.04-10.70). Strong evidence was also found for T2 although the effect size decreased (OR 2.75; 95%CIs 1.20-6.28). Results for the remaining seven domains, happy/sad, relaxed/nervous, fidgety/restless, fatigue, concentration, irritability and loneliness, will be presented at the conference.

Conclusion
Children with CL/P who have baseline behavioural problems experienced more difficulties during the first and second COVID-19 lockdown periods in terms of emotions and worries than their peers.
Cleft Collective, COVID, behaviour, emotions

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An investigation into quality of life of adolescents with repaired cleft lip and palate living in Sri Lanka

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction
Cleft Lip and Palate (CLP) incidence in Sri Lanka is estimated at 0.83 in 1000. The key treatment involves surgery to repair the lip and/or palate to improve the child's ability to speak, swallow, hear normally and achieve a normal facial appearance. The nature of the lengthy treatment and multiple intervention procedures throughout childhood can result in concerns with physical, mental, emotional and social functioning domains in quality of life (QoL). Therefore, it is vital to investigate the QoL of those children using condition-specific measurements. The Child Oral Health Impact Profile (COHIP) is the most frequently used condition-specific questionnaire to measure QoL in CLP adolescents.

Aims
To translate, culturally adapt and validate COHIP into Sinhala, the principal language spoken in Sri Lanka.

To investigate QoL in adolescents (age 12-15 years) with repaired CLP.

Methods
The COHIP English assessment was translated into Sinhala following the forward - backward - forward method by a bilingual expert panel. Final COHIP – Sinhala (COHIP-S) translation was checked for linguistic and conceptual equivalence to the original before piloting. There were 348 adolescents in total (aged 12-15): 340 typically developing (TD) and 44 with repaired CLP completed the COHIP-S. The PedsQL- Sinhala generic QoL questionnaire was completed by 318 TD and 43 CLP adolescents.

Results
The translation process undertaken will be presented along with the final COHIP-S. The COHIP-S had high reliability with an excellent Cronbach's alpha value of 0.75 for the TD and 0.76 for the CLP group. QoL of the CLP adolescents will be presented compared to the TD adolescents using the PedsQL generic questionnaire data.

Conclusions
QoL in adolescents with CLP was found to be lower than their TD peers. The COHIP-S had good overall psychometric properties and was found to be a more appropriate measure of QoL in CLP adolescents than a generic QoL questionnaire.
cleft, adolescents, quality of life

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EFFECT OF EDUCATIONAL TECHNOLOGY ON THE CONTINUING EDUCATION OF PATIENTS AND FAMILY IN THE TREATMENT OF CRANIOFACIAL ANOMALIES

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: Cleft lip and/or palate is a craniofacial anomaly that requires follow-up from birth to adulthood. The family and the caregiver play a fundamental role in the promotion and rehabilitation of children with Cleft Lip and/or Palate. In this context, offering support to families of children with CLP becomes necessary.

Objective: To develop a multimedia resource for continuing education of patients and their families regarding the treatment of craniofacial anomalies.

Methodology: This study was classified as bibliographic and qualitative-quantitative, in an action research approach. The multimedia resource developed in this research is part of an institutional project called Continuing Education Program of the Center for Attention to Facial Defects of IMIP. The process of developing the final product respected the ethical principles of research in Human and Social Sciences, according to Brazilian Resolution 466/2012 and 510/2016. The media resources were made available for free download in the institutional academic repository.

Results: Studies pointed out advantages in the use of multimedia resources, as was the case of this study, due to the possibility of interaction that the material predisposed, such as: accessibility, usability and retrieval of the content presented at any time, use of texts, images and videos , emphasizing that such resources encourage the target audience to become a protagonist in the learning process.

Conclusion: the development of a multimedia resource presents itself as a facilitating tool of significant quality, using materials and data, although specific, of wide availability that favors the learning of themes related to the treatment of craniofacial anomalies, both for patients and family members as well as health professionals, even working to reduce treatment discontinuity. This work was supported at least in part by the Smile Train, Inc.

Health Education; Telemedicine; Craniofacial Abnormalities

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Health and Psychosocial Outcomes in Young Children with Cleft Palate

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction:
There is limited current data about which children with cleft palate with or without cleft lip (CP±L) are at greatest risk for poor health and psychosocial outcomes and which demographic (e.g., race), medical (e.g., cleft type) and contextual factors (e.g., caregiver stress) contribute to these risks. These knowledge gaps limit provision of timely and effective interventions to support the long-term mental and physical health of children with CP±L.

Aim:
This presentation will describe the interdisciplinary infrastructure and methodology of the Health and Psychosocial Outcomes in Young Children with Cleft Palate (HAPY) project recently funded by NIH-NIDCR (2021-2026).

Methods:
HAPY will align with and extend the reach of The Cleft Outcomes Registry/Research Network (CORNET), the largest U.S. prospective study to evaluate speech and surgical outcomes in over 1,500 children recruited from 16 diverse cleft centers. HAPY was designed to: 1) cross-sectionally evaluate medical and demographic predictors of health and psychosocial outcomes in 500 children ages 2-5 enrolled in CORNET; and 2) longitudinally assess contextual predictors of psychosocial and health outcomes using mixed methods in a sample of 220 children with CP ±L from infancy through age 3. Both studies will utilize CORNET medical and demographic data, and in line with contemporary theoretical frameworks, incorporate nationally and internationally recommended standardized psychosocial outcome measures. Qualitative interviews will also be completed.

Results:
Collaboration with CORNET will facilitate data collection for HAPY while also laying the foundation for future interdisciplinary outcomes analyses (e.g., evaluating psychosocial outcomes of cleft surgery), longitudinal studies of outcomes across developmental stages, and comparisons with other national and international datasets.

Conclusion:
Our model of interdisciplinary research collaboration promises to advance cleft care in the U.S. HAPY studies will leverage CORNET's large, diverse sample to better understand medical, demographic, and contextual factors that impact the health and well-being of young children with CP±L.

interdisciplinary, cleft care, psychosocial, outcomes

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Scores of the Cleft Hearing, Appearance and Speech Questionnaire (CHASQ) in Swedish Participants With Cleft lip and/or Cleft Palate and a Control Population

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: High Health Related Quality of Life (HRQOL) is one of the most important goals in the treatment of cleft lip and/ or cleft palate (CL/P). Incorporating patient perspective and Patient-Reported Outcomes (PROs) into cleft care is recommended. Inclusion of control populations in studies on satisfaction and psychosocial health in patients with a cleft is a prerequisite for being able to draw conclusions about the general level of health within a studied population and where to draw the cutoff for further investigation or intervention.
Aims: The primary aim of this study was to investigate whether there was any difference in scores of the Cleft Hearing, Appearance and Speech Questionnaire (CHASQ) between patients with cleft lip and/or cleft palate (CL/P) and a control population. The second aim was to compare CL/P and control population scores in this study with a British norm CL/P population.
Methods: Sixty-four participants with CL/P (7-19 years of age) and a control population of 56 participants without CL/P (9-20 years of age) answered the CHASQ in the hospital or at home
Results: There was no statistically significant difference in satisfaction with cleft-related features between the CL/P and the control population. Participants with CL/P were significantly more satisfied with non-cleft-related features than the control population. Cleft Hearing, Appearance and Speech Questionnaire scores were also similar to earlier established British normative data of a CL/P population.
Conclusions: The results indicated that children and young people with CL/P were as satisfied with their appearance, hearing, and speech as children and young people without CL/P. Swedish CHASQ scores were also similar to British scores.
PROMs, satisfaction, appearance, control population

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Caregiver Experiences of Craniofacial Microsomia: Understanding Support Needs during the Diagnostic Period

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction:
Craniofacial Microsomia (CFM) is a diagnosis which can affect the ear(s), jaw, facial soft tissue, facial nerves, and orbits with possible multisystem involvement and functional impairments. CFM treatment requires a multidisciplinary team and often multiple surgical and non-surgical interventions. Prior studies have found receiving and adjusting to a child's craniofacial diagnosis can be challenging for caregivers; however, less is known about CFM.
Aim:
As part of the larger Craniofacial microsomia: Accelerating Research and Education (CARE) program, this study aimed to explore the experiences of caregivers of children with CFM during the birth and diagnostic period.
Methods:
Narrative interviews (mean = 81 minutes; range 30-182 minutes) were conducted with 22 mothers and 1 father of 23 children with CFM ages of 4-17 (mean age = 10.1 years). Participants recounted their experiences by generating 'chapters' of content meaningful to them. Transcriptions were analysed for the diagnostic period using inductive thematic analysis by two authors in an iterative process for initial coding with consensus for final themes across four authors.
Results:
Broad themes were: 1) Initial Impressions, including experiences of the birth, first seeing their child, and interactions with healthcare providers; 2) Caregiver Adjustment, such as coping with a range of emotions and receiving support from multiple sources, and 3) Facing the Unknown, with CFM information seeking, concurrent and future concerns for their child, and challenges initiating multidisciplinary treatment.
Conclusion:
Caregivers' experiences of children's diagnosis were heterogeneous and varied largely according to access to knowledgeable, supportive healthcare professionals. The psychological impact of diagnosis included frequent reports of feeling overwhelmed and concerned about their child's future. Caregivers utilized a range of coping skills and sources of support. Healthcare providers should be mindful in their communications that a potential complex diagnosis necessitating multidisciplinary care may cause distress and anxiety for new parents. Early psychological support for caregivers is suggested.
craniofacial microsomia, diagnosis, psychosocial impact

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Who should fill out a pediatric PROM? Psychometric assessment from a clinical perspective in 207 cleft children

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FR3.7 PSYCHOSOCIAL, Carrick, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction
The CLEFT-Q questionnaire is validated to be filled out by cleft patients themselves, however, in clinical practice it was noticed that parents were often involved. Other pediatric Patient-Reported Outcome Measures (PROMs) instruments, such as the PedsQL, have reported discrepancies between patient- and parent-reported outcomes in their studies.
Aims
To promote further standardization of PROMs in pediatric patients by examining the preferences of patients and parents concerning the reporter type. Moreover, possible discrepancies in outcomes between reporter types were explored.

Methods
Data from 207 cleft patients and their parents that filled out scales of the CLEFT-Q questionnaire were collected. Mean outcomes per scale in eight-year-old and 12-year-old patients were analysed and compared between three reporter groups: patient-alone, parent-alone, and patient and parents that filled out the scales together. Furthermore, trends in the several domains that were assessed were evaluated, and reporter group sizes were examined at different ages.

Results
Discrepancies between reporter types were seen especially in the psychological and social domains. More concordance was found in the functional domain. In scales that assessed the facial appearance, discrepancies between reporter types appeared different in eight-year-old patients when compared with 12-year-old patients. A large group of patients and parents that preferred to fill out the questionnaire together was identified in both age groups.

Conclusions
Even if a PROM questionnaire is validated for patient reports only, it is recommended to record the reporter type when a pediatric PROM is filled out. In order to capture outcomes that represent the patient's voice exclusively, though parental support is available, a pediatric PROM should be filled out by the patient alone and thereafter evaluated with a parent.

CLEFT-Q, PROM, Pediatrics, Questionnaire

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Clinical Outcomes of Bilateral Cleft Lip and Palate Repair with Nasoalveolar Molding and Gingivoperiosteoplasty from Birth to Facial Maturity

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction
The long-term effect of NasoAlveolar Molding (NAM) and gingivoperiosteoplasty (GPP) on patients with bilateral cleft lip and palate (BCLP) are unknown.

Aims
To report clinical outcomes of facially-mature patients with complete BCLP who underwent NAM and GPP.

Methods
A single-institution retrospective study of non-syndromic patients with complete BCLP who underwent NAM and GPP between 1991-2000 was performed. All study patients were followed to skeletal maturity, at which time lateral cephalogram was obtained. Total cleft procedures and cephalometric parameters were compared to a previously published external cohort of patients with BCLP in which a minority (16.7%) underwent presurgical orthopedics prior to cleft lip repair without GPP.

Results
Twenty-four patients with BCLP comprised the study cohort. All patients underwent GPP, 13 (54.2%) underwent alveolar bone graft, and 9 (37.5%) required speech surgery. The average number of procedures per patient was 5.25 [standard deviation (SD) 1.70], compared to 8.47 (SD 1.78) in the published cohort ($p<0.001$). Average age at the time of lateral cephalogram was 18.64 (1.92) years. There was no significant difference between our cohort and the published cohort with respect to SNA [73.23°(5.32°) vs. 75.37° (6.40°), $p=0.346$] or SNB [76.59° (5.03°) vs. 75.68° (6.14°), $p=0.448$]. Average ANB was -3.34° (3.60°) compared to -0.32° (4.10°; $p=0.023$). Twenty patients (83.3%) underwent orthognathic surgery.

Conclusions
Patients with BCLP who underwent NAM and GPP can have significantly fewer total cleft procedures and comparable midface growth at facial maturity compared to patients who did not undergo this treatment protocol.

NasoAlveolar Molding, Gingivoperiosteoplasty, Bilateral Cleft

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Anthropometric evaluation of unilateral cleft lip in Japanese: Application in cheiloplasty

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction
Primary cheiloplasty for unilateral cleft lip deformities aims to achieve nasal and lip symmetry. With regard to lip symmetry, it is important to understand the anthropometric parameters of cleft lip to achieve a symmetrical Cupid's bow by expanding the lip vertically and horizontally on the side of the cleft. Most studies that have reported anthropometric evaluation have discussed findings in Caucasian patients. Boorer and Fisher reported that the mean discrepancy in lip height between the cleft and non-cleft sides was 2.1 mm; they suggested that it was reasonable to use a triangular flap with a width of 2 mm in most cases.
Aims
In this study, we investigated the anthropometric parameters associated with unilateral cleft lip in Japanese patients and also the optimal repair techniques in such cases.
Methods
Using a flexible scale, a single investigator directly measured the vertical lip height in 177 consecutive patients (mean age 3.2 months) with unilateral cleft lip (75 patients with CLAP and 102 patients with CLA), who were administered general anesthesia immediately before cheiloplasty. The horizontal length of the lip was measured in the same manner in 74 of the 177 patients.
Results
The vertical lip height on the side of the cleft was less than that on the non-cleft side in all patients. The mean discrepancy in vertical lip height was 5.3 mm (SD 1.64) in the CLAP and 4.7 mm (SD 1.12) in the CLA group. The horizontal lip length on the cleft side was less than that on the noncleft side, with a mean discrepancy of 2.5 mm (SD 1.95) in 58 of the 74 patients.
Conclusions
In our study, the discrepancy in vertical lip height was greater in Japanese patients than in Caucasian patients. In view of these results, it is necessary to modify the cheiloplasty in Japanese patients.

unilateral-cleft-lip
anthropometry
cheiloplasty
Japanese

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Deconstructing changes produced with primary unilateral cleft lip and nose repair using intra-operative 3D stereophotogrammetry: balance is achieved through opposing cleft and non-cleft side changes

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

1. Introduction

Fundamental to reconstruction is a clear understanding of the deformity and the changes that occur with treatment.

2. Aims

The purpose of this study was to determine the immediate 3D alterations that occur with primary cleft lip and nose repair.

3. Methods

We performed anthropometric analysis on the immediate pre- and post-operative images (captured under anesthetic) of patients undergoing primary repair (n=36). Changes in dimensions and measures of balance were assessed using t-test ($p<0.05$).

4. Results

Angles and ratios that reflect cleft to non-cleft side balance normalized, though alterations occurred in opposing ways. Centralization of the columella narrowed the cleft nasal base (-7.1 mm) and widened the non-cleft nasal base (+1.3 mm). As the cleft columellar height elongated (+1.3 mm), the non-cleft columellar height shortened (-0.5 mm). With these changes and correction of cleft alar base retrusion, the cleft alar dome was raised. The cleft and non-cleft lateral lip heights (+1.6 and +0.5 mm) and widths (+3.4 and +2.3 mm) elongated while the Cupid's bow broadened (+2.1 mm), and the commissures were drawn closer together (-1.6 mm). Whereas the cleft philtral height lengthened (+3.0 mm), the non-cleft philtral height shortened (-2.1 mm). Reduction in non-cleft philtral height averaged 20% but varied with measures of pre-operative severity including columellar angle (R=0.67), the difference in philtral heights (R=0.65), and lateral deviation of subnasale (R=0.74).

5. Conclusions

Balance is achieved through opposing cleft and non-cleft side alterations.

We observed that the dimensions, shape, and configuration of cleft and non-cleft anatomic subunits change through surgery and that those changes may be anticipated when the interplay of opposing alterations is considered. Based upon this study, its inadequate to focus only on cleft side corrections. Nasolabial harmony requires balance of opposing cleft and non-cleft side alterations, and we propose that this should be the central goal of reconstruction.

Table 3: Non-cleft side philtral height shortening and associated pre-operative measurements

		Preoperative Measurements (mean ± standard deviation)		
Change in Non-Cleft Side Philtral Height		***Columellar Angle (deg)*** [1]	***Philtral Height Imbalance (mm)*** [2]	***sn_x (mm)*** [3]
≤ 1.0 mm	10	19.62 ± 4.33	-3.44 ± 0.39	2.99 ± 0.78
1.1 mm - 2.0 mm	15	28.71 ± 2.19	-4.61 ± 0.19	4.82 ± 0.40
2.1 mm - 3.0 mm	6	38.34 ± 4.65	-5.34 ± 0.52	6.98 ± 0.75
> 3.0 mm	5	44.63 ± 3.39	-5.59 ± 0.42	7.95 ± 0.86
Correlation [4]		***R = 0.67***	***R = 0.65***	***R = 0.74***

[1] Columellar angle is the deviation of columellar axis viewed from submental view from perpendicular to en-en (degrees).
[2] Philtral height imbalance is expressed as non-cleft side – cleft side; philtral heights were measured above the cutaneous roll to match clinical practice and because we recognize the cutaneous roll as a distinct subunit
[3] sn_x is the distance of subnasale from en-en midline along the x-axis (mm).
[4] Pearson correlation coefficient for preop measurement and change in non-cleft side philtral height.

3D, nose, lip, surgical change

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Cleft Palate Severity and Facial Growth Outcomes after Unilateral Cleft Lip and Palate Repair

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Background: Middle-face adequate growth it´s one of the main goals of Cleft Lip and Palate (CLP) repair. The hypothesis most supported it´s that facial growth outcomes would be related to the severity of the deformity. The evaluation of the transversal and anteroposterior measurements in study casts can give answers to questions that relate the cleft severity to their palatal plates size and treatment outcomes.
Aims: Verify the relationship between amplitude of the palatal cleft and maxillomandibular index in the deciduous dentition in UCLP patients submitted to palatoplasty.
Methods: A randomized, controlled, blinded trial carried out at the CADEFI, IMIP between January 2010 and October 2016. Sixty-four patients with UCLP, were randomized in two groups of 32 participants: Intervention Group (IG), underwent Early Veloplasty and Late Hard Palate repair, and Control Group (CG), submitted to a single stage palatoplasty. Impressions of the dental arches were taken at two different growth stages: before the first surgery and around five years of age.
Results: The anterior and posterior widths of the alveolar arch in addition to the anterior and posterior cleft widths were obtained before the surgical interventions and no statistically significant differences were found between the means of measurements in both groups. They showed a decrease in intercanine transversal dimensions obtained after palatoplasty. The correlation between the width/amplitude of the cleft thus evaluated and the maxillo-mandibular relationship assessed by the FYOI was not evidenced by the Spearman method.
Conclusions: It wasn´t found any correlation between the width before cleft repair Cleft plate and the maxillo-mandibular ratio evaluated by the FYOI index in both surgical protocols. There were no statistically significant differences between the two surgical protocols in relation to decreased intercanine distance and decreased maxillary arch length.

Cleft palate, Cleft Severity

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Unilateral Cleft Lip and Palate Surgical Protocols and Facial Growth Outcomes at eight years of age

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Background: This study will continue the clinical trial NCT02329509 in which patients with unilateral cleft lip and palate (UCLP) were allocated to an intervention group (GI) and a control group –(GC) operated by the same surgeon in a single center. To compare differences in craniofacial growth at 8 years of age according to the different protocols for primary cleft surgery .
Objectives: To evaluate dental arch relationships at age 8 years after two different protocols of primary surgery for UCLP. These results are secondary outcomes of the overall trial.
Methods: A randomized, controlled, blinded trial carried out at the CADEFI, IMIP between January 2010 and October 2016. Sixty-four patients with UCLP, were randomized in two groups of 32 participants: Intervention Group (GI), underwent Early Veloplasty and Late Hard Palate repair, and Control Group (GC), submitted to a single stage palatoplasty. Impressions of the dental arches were taken at three different growth stages: before the first surgery, around five years of age and before Orthodontics care around eight years of age. Study models of children (with non-syndromic UCLP at a age of 8 years were evaluated Dental arch relationships were analysed using the GOSLON Yardstick by a blinded panel of 5 orthodontists. To assess reliability, Kappa statistics were calculated. The trials were tested statistically with t-tests.
Results: Comparisons within this trial don't´tshowed statistically significant differences in the mean 8-year index scores or their distributions between the GI protocol and the GC protocol. However clinical comparisons between the trials could detect a better mean index in Group GI. The intra- and inter-rater reliabilities were acceptable.
Conclusion: The results of this trial some provide evidence that surgical protocol with Late Hard Palate Closure can suggest a better surgical outcome than the one stage early repair. However the study power that can change this conclusions must be considered

Cleft Palate, Facial Growth, Goslom

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Correlating preoperative severity of cleft lip and palate with nasolabial aesthetic outcomes at 5 years - development of an assessment tool for audit and research

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

1.Introduction
Various methods exist for the assessment of nasolabial aesthetics following cleft lip repair, but their application in audit and research has been limited.

2.Aims
We aimed to develop a reliable method of nasolabial aesthetic outcome (NLAO) assessment that would find application in our annual all-Ireland audit of 5 year old patients with a cleft, as well as research.

3.Methods
We refined our NLAO assessment, culminating in a modification of the Asher-McDade method. Frontal, basal and lateral view photographs were cropped to show only the lip, nose or profile. These were rated by members of the multidisciplinary cleft team on a 5-point Likert scale. Additionally, surgeons rated preoperative frontal and basal views of babies for difficulty of repair on a 5-point Likert scale. Intra- and inter-rater reliability (IRR) was calculated for each rater separately and a mean derived from scores of the most reliable raters. NLAO can be analysed as a composite score, or independently by its constituent parts (lip, nose, profile), and their relationship to perceived difficulty of repair.

4.Results
n=196 patients. Raters' scores with an Intra-RR of >0.7 (Krippendorf alpha) were included. Inter-RR ranged from 0.409 to 0.713 for individual subgroup analyses.
Difficulty of repair correlated strongly with composite outcome scores, nasal and profile outcomes, but only weakly with lip outcomes (see table). Surprisingly, clefts with an incomplete cleft alveolus showed only weak correlation with difficulty of repair for lip, nose and profile views.

5.Conclusions
We have established a reliable method of assessing NLAO after cleft lip repair and demonstrated a good correlation with difficulty of repair for a number of cleft types. This allows us to predict the expected outcome for a given difficulty of repair and thus determine whether the result is better or worse than the expected mean. This should find useful application both for audit and research purposes.

Pearson Correlation with Perceived Difficulty of Repair (1= perfect correlation, 0 = no correlation)					
	All cleft types	**Unilateral CLP**	**Bilateral CLP**	**Incomplete Alveolus**	**Complete Alveolus**
n	196	139	57	40	156
Combined score	0.731	0.691	0.699	0.439	0.656
Lip	0.248	0.205	0.18	0.204	0.22
Nose	0.686	0.629	0.781	0.294	0.599
Lateral	0.672	0.651	0.525	0.338	0.598

Effect of alveolar clefting on aesthetic outcome. Best outcome =1, worst outcome =5.			
Lip	**Complete Cleft Alveolus**	**Incomplete Cleft Alveolus**	
n	198	52	
Mean	2.77	2.55	**Lip outcome slightly better for incomplete cleft alveolus**
STDEV	0.84	0.90	
Unpaired t-test	p= <0.00001	t=5.53467	Cohen's d=0.2527
Nose	Complete Cleft Alveolus	Incomplete Cleft Alveolus	
n	198	52	
Mean	3.06	1.93	**Nose outcome worse for complete cleft alveolus**
STDEV	0.93	0.72	
Unpaired t-test	p= <0.00001	t=8.07352	Cohen's d=1.3587
Lateral			
n	198	52	
Mean	3.06	1.77	**Profile outcome worse for complete cleft alveolus**
STDEV	0.93	0.64	
Unpaired t-test	p= <0.00001	t=7.9866	Cohen's d=1.6159

Nasolabial aesthetic outcome, audit, research

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An Intercenter Comparison of Changes in UCLP Dental Arch Relationship Before and 10-Years After a Change in a Center's Treatment Protocol

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Aim: Peer benchmarking through intercenter comparisons resulted in identification of more and less favorable outcomes in dental arch relationship as measured by the GOSLON yardstick, as well as infant management protocol features associated with these outcomes. Poor outcomes found in a center using infant orthopedics and primary bone grafting resulted in a change of protocol at that center. This is a comparison 10 years after that change.

Method/Description: Dental casts of 132 patients with UCLP from three centers were rated using the GOSLON Yardstick. Center 3 was subdivided into two groups by protocol and timeline. The primary protocol at Ctr 1 (n=38) used only primary surgery without any presurgical manipulation. Ctr 2 (n=36) used a modified McNeil technique with extraoral traction. Ctr 3(1) (n=39) used an infant molding plate with primary bone grafting. Ctr 3(2) (n=19) used only primary surgery without any additional presurgical manipulation. Casts were scored twice by eight examiners using the GOSLON yardstick. Inter- and intra-rater reliability were evaluated with weighted Kappa. Kruskal-Wallis test with a Bonferroni correction was used to compare Goslon scores.

Results: Mean inter- and intra-reliability scores were excellent (.850 and .879 respectively). Significant differences in GOSLON score were seen between Center 3(1) and Center 3(2) following a change in treatment protocol with elimination of infant orthopedics and primary bone grafting (means=3.65 and 3.07 respectively) indicating a more favorable dental arch relationship outcome. Center 3(1) remained statistically significantly different than all other centers whereas, upon protocol change, Center 3(2) was only statistically significantly different than Center 3(1).

Conclusions: A change in protocol by eliminating infant orthopedics and primary bone grafting, resulted in a statistically significant improvement in GOSLON rating. Peer benchmarking to identify best infant management practices suggested the negative effect on dental arch relationship of certain features which, when eliminated, resulted in more favorable outcome.

intercenter comparison, Goslon, primary ABG

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Morphological correlations in nasolabial formation after primary lip repair for unilateral cleft lip

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: The consistent trend of primary lip platy focuses on geometric patterns of suture lines on the white lip surface. However, how about the balance of the nasolabial formation? Studies have suggested that the lateral lip element is smaller than the major lip in unilateral cleft lip deformity, which can result in postoperative malformations such as drooping of the nasal alar base and short red lip. We recently found morphological correlations among these malformations in patients with unilateral cleft lip (UCL).
Aims: The hypothetical postoperative morphological correlations examined in the present study are first, a correlation between the vertical height of the cleft-side alar base and the length of the cleft-side red lip, and second, a correlation between the length of the cleft-side red lip and the vertical position of the cleft-side oral commissure.
Methods: Three-dimensional bilateral measurements of the length of the red lip, vertical height of the nasal alar base, and vertical height of the oral commissure were conducted retrospectively on 26 patients with unilateral cleft lip and palate who underwent primary lip plasty at Osaka Women's and Children's Hospital from 2017 to 2019.
Results: We found a statistically significant correlation between the vertical height of the cleft-side alar base and cleft-side red lip length ($p=0.027$, $r=0.38$); thus, the longer the red lip, the lower was the nasal alar base. The correlation between the cleft-side red lip length and the vertical height of the cleft-side oral commissure also showed a statistically significant ($p=0.029$, $r=0.38$) ; thus, the shorter the red lip, the higher was the oral commissure.
Conclusions: The present results provided objective evidence showing basic morphological relationships between the postoperative nasolabial features of patients with UCL. The results lead to a reasonable approach to define the proposed peak of the Cupid's bow, an unsettled major controversy in cleft lip surgery.

cleft lip, unilateral, surgery, morphology

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The white skin roll flap and lip contour lines in unilateral cleft lip repair

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction: Although the “white roll” is often considered as a line, it is rather a subunit which is comprised between the vermilion border and the horizontal groove. In many techniques for unilateral cleft lip repair, this structure is approximated between the two sides of the cleft without being restored and this can lead to unnatural results in the normal pout of the lip.
Aims: The aim of our study was to assess the anatomical alteration of this subunit on the cleft margins to compare it to normal values on the non-cleft side.
Methods: Objective analysis involved anthropometric measurements performed on anesthetized cleft lip infants who underwent lip repair in a single institution. 134 non-syndromic patients aged between 3-6 months were enrolled in the study over a 2.5-year period. The white roll height at the peak of Cupid’s bow on the non-cleft side (CPHIR), on the cleft medial element (CPHIL) and on the cleft lateral element (CPHIL’) were measured. Differences in the average white roll height at these points were analyzed using the Mann-Whitney U test.
Results: The mean height of the white roll was 1.70 ± 0.30 mm at CPHIR, 0.98 ± 0.33 mm at CPHIL and 1.28 ± 0.32 mm at CPHIL’. The mean difference in height between CPHIR-CPHIL, CPHIR-CPHIL’ and CPHIL-CPHIL’ was significant in each paired sample ($p<.01$). No difference was reported between complete and incomplete clefts.
Conclusions: In unilateral cleft lip, a significant reduction in height of the white skin roll is present on both sides of the cleft. According to this, we strongly support the use of the white skin roll flap to restore this structure embracing the concept of subunits and lip contour lines.

Table 1. Comparison between WSR height at CPHIR, CPHIL and CPHIL'.

Pairwise Comparisons	WSR height (mm)*	Difference (mm)	Z-score	p-value
CPHIR:CPHIL	CPHIR= 1.70 (0.30) CPHIL= 0.98 (0.33)	0.72	12.30	<.01
CPHIR:CPHIL'	CPHIR= 1.70 (0.30) CPHIL'= 1.28 (0.32)	0.42	9.14	<.01
CPHIL:CPHIL'	CPHIL= 0.98 (0.33) CPHIL'= 1.28 (0.32)	-0.30	-7.24	<.01

*Values are expressed as means (SD)

unilateral cleft lip
white roll

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Evaluation of Optimal Outcome Reporting (OOR) in Cleft Palate Repair

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction:
Outcome assessment following palatoplasty varies significantly across institutions and no widely applied standardized outcome metric exists. We created a novel quality metric called "OOR" (Optimal Outcome Reporting) to reflect patients with cleft palate who experienced the best outcome: single operation, velar competence (no hypernasality or audible nasal escape), and no unintended palatal fistula.

Aim:
Retrospective OOR analysis at age 5 and 8 years in cohort of patients following primary palatoplasty by single surgeon (J.G.M.) from 2007-2013.

Methods/Description:
Data included sex, ethnicity, Veau classification, age at operation, presence of fistulae, and speech assessments at ages 5 and 8 years. Syndromic diagnoses included while submucous clefts excluded.

Results:
94 patients identified. Median operative age 10 months. 55 percent female and 54 percent Caucasian. Syndromic diagnoses 23/94 patients, most commonly Robin. Veau I most common cleft type (32 percent), followed by Veau III (28 percent), and Veau II/IV (20 percent). OOR at age 5 identified in 69 percent (65/94). Suboptimal outcomes resulted from multiple operations (9), velar incompetence (19), and fistula (1). OOR at 8 years in 73 percent (61/83). Failed OOR included multiple operations (12), velar incompetence (9), and fistula (1). Mean repair age significantly associated with OOR, while syndromic diagnosis and cleft type approached significance. 9 velar competence-related suboptimal outcomes at age 5 proved optimal at 8 with speech therapy alone. Failed OOR experienced significantly more clinic visits and accrued higher costs.

Conclusions:
Cleft palate care OOR describes the ideal outcome that patients and families would experience following primary palatoplasty. This simple and understandable surgical outcomes metric can be determined for individual surgeons and across centers, allowing for benchmarking and facilitation of quality improvement initiatives. In this patient cohort, we continue to evaluate cleft palate repair OOR metric durability to determine whether a suitable single time point exists for analysis.

Table 1. Patient Demographics

Cohort, n (%)	
Syndromic	23 (24.5)
Nonsyndromic	71 (75.5)
Sex, n (%)	
Female	52 (55.3)
Male	42 (44.7)
Median age at operation, mean (SD)	10.0 (11.4)
Cleft type, n (%)	
Veau I	30 (31.9)
Veau II	19 (20.2)
Veau III	26 (27.7)
Veau IV	19 (20.2)
Race/ethnicity, n (%)	
Caucasian	51 (54.3)
African American	4 (4.3)
Asian	16 (17.0)
Hispanic	3 (3.2)
Middle Eastern	3 (3.2)
Other	3 (3.2)
Unspecified	14 (14.9)

Abbreviations: SD (standard deviation); n (number); % (percentage)

Cleft Palate Repair,Optimal Outcome,Velopharyngeal Insufficiency,Speech,Fistula

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A relook at the anatomical basis of cleft palate repair

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

Introduction & Background:

Cleft palate results from the failure of embryonic fusion of the hemi-palates during palatogenesis. The midline schism in the ecto-endodermal envelope and the subsequent failure of mesodermal migration distorts anatomy.
Surgical restoration of the palate requires precise and in-depth knowledge of normal anatomy as well as the disruptions caused by the cleft. The techniques in vogue today are based on descriptions by Von Luschka(1868), Viktor Veau(1931), Otto Kreins(1970) which have been refined or revised by Boorman & Sommerlad(1975), Mehendale(2004) and others. However, several aspects of the anatomy of the normal palate and the extent of its distortion in the cleft, essential for accurate restoration of form and function during cleft palate repair have not been fully elucidated in the current literature.

Aim:
This paper aims to compare the anatomy of the normal palate based on cadaveric dissections with the abnormalities and distortions in the cleft palate using intra-operative observations made during cleft palate repair.

Results:
Our findings with direct relevance in influencing the techniques of cleft palate repair include the following:
a. Embryonic scar at the medial cleft edge causing shortening of the soft palate and techniques for correcting this.
b. The precise extent of abnormalities of the musculature in the cleft palate and its relevance to surgical muscle repositioning.
c. Relationship of the vomer and the posterior nasal spine in optimal positioning of the soft palate to facilitate velopharyngeal approximation.
d. Anatomy of the submucous salivary gland and its role in defining planes of dissection.

Discussion and Conclusion:
Our observations in this study suggest that some current principles and techniques of cleft palate repair may need re-examination. These findings along with further studies on this subject may play a significant role in simplifying the procedure and improving outcomes.

cleft palate, abnormal anatomy, musculature

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An anthromorphometric Study of the Nasal sill and its implication in cleft lip surgery

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FR3.8 PRIMARY SURGERY, Harris, EICC - Onsite Only, July 15, 2022, 11:00 - 13:00

INTRODUCTION: Cleft lip and palate affects the nasal architecture as much as it compromises the functional parameters. The nose being in the central portion of the face attracts much more attention when deformed due to its aberrant muscle insertions. Nasal sill is a soft tissue portion of the nose which creates a slight protuberance in the floor of the nostril. However, after cleft surgery, the oral and nasal architecture attains a defined shape and also completes the in- continuity along the defect. In this article we emphasize the need to correct the nasal sill according to its pre-existing morphology over the non-cleft side. We categorize the type and produce an incidence of the most common type of nasal sill amongst cleft lip children in the south Indian population.
AIM: The purpose of this study was to investigate the normal nostril sill anatomy amongst cleft lip patients and classify the different forms
METHODS: Photographs and Virtual scan of over 300 cleft children were studied in standard worm's eye view. In these photographs the nasal sill was categorized according to their morphological type. Type 1- Full nostril sill, Type 2- Pointed nostril sill and Type 3- Flat nostril sill.
RESULTS: The prevalence of nasal sill type was found to be, Type 1 -20%, Type 2 -10% and Type 3-60%. Type 3 is the commonest type of nasal sill observed.
CONCLUSION: This study provides references which will allow more accurate and proper correction and reconstruction of the nostril sill

Nasal Sill, Cleft N

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Staged Repair for Complete Bilateral Cleft Lip Palat /Nasal deformity : Early Results

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Bilateral complete cleft ip represents a surgical challange for cleft surgeons due to distrorted skletal anatomy and tissue deficieny . Although several portocols are present for dealing with such problem there is no universal agreement on the ideal one.
we present our protcol for staged repair for complete bilateral cleft lip with early postoperative outcome .
Mehtods :twenty five patients of non syndromic complete bilateral cleft lip patients were included in this study. first stage cheiloplasty with mobilization of the orbicularis and suture to periostium of the philteral margin was done at age 3-4 months with anterior palate closure using vomerine flap on one side.Cleft palate repair was done at age of one year and final cheiloplasty is done at age of 2 years
Early postoperative complications as dehsience were recorded and photographic analaysis of the philteral length , nasal width and symmetry and scar width pre and postoperatively.
Results: twenty one patient had a favrouble out come with good nasal projection and similar philteral length and nasal width . we had partial dehesience of the nasal lining following the first stage which was corrected during second stage cheiloplasty. one case had hypertrophic scar that was treated conversantly.
conclusion : Staged bilateral cleft lip repair offers a good alternative for wide defects and allow for gradual muscle stretch to achieve for tensionless closure. early outcomes shows good aesthetic results with successful nasal lining closure, while long term follow up is still nedded to show the effect on growth

bilateral complete cleft lip,staged

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uncommon postoperative bleeding after cheiloplasty in malnutrition patient: a case report

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Cheiloplasty in cleft lip patients has improved the quality of life in many contexts, both patient and their close. Present, there are projects of both the public and private sectors that help patients who previously lacked the opportunity to receive appropriate treatment. But because of the more diverse patient groups, the complications that can occur have a variety of causes as well.
This case report presents the event, guidelines, and preliminary treatment of the abnormal bleeding conditions after cheiloplasty in the patient which risk of malnutrition.
A 5 years old Thai boy lives on a rural island in Ranong province of Thailand. Has been transported from al volunteer medical unit for correction of Lt. unilateral cleft lip. The patient has delayed development and sign of malnutrition. He underwent a cheiloplasty under general anesthesia with Millard's rotational advancement technique. There was no intraoperative and immediate postoperative complication. But during the 1 day after surgery, there was bleeding from the surgical area. Local hemostasis with pressure and systemically with tranexamic acid combined with plasma transfusion can control abnormal bleeding with admission. After the follow-up, the treatment result was as planned.
In this patient, the abnormal bleeding was caused by malnutrition that affected the connective tissue and vessels to malfunction. If the problem was assessed and ruled out surgical caused, local and systemic hemostasis can solve the problem and avoid unnecessary re-operation.

cleft lip, complication, cheiloplasty

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A Retrospective Analysis of Speech and Hearing in Patients Receiving Surgery for Submucous Cleft Palate

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Aims: To describe surgical techniques and clinical outcomes in patients who underwent surgical repair of submucous cleft palate (SMCP) at a regional specialist cleft centre.
Methods: A retrospective case-note review of 57 consecutive patients aged 6 months to 15 years, who underwent one of Intravelar Veloplasty, Furlow or a novel “hemi-Furlow” technique for SMCP repair between 1999 and 2018. Speech was assessed using the Great Ormond Street Speech Assessment. Incidence of post-operative complications, frequency and outcome of revisional surgery, and incidence of otological disease alongside requirement for audiological intervention were examined.
Results: Hypernasality improved post-operatively in all surgical groups ($P<0.005$), with no evidence to favour any specific surgical approach. Post-operative complications, including wound dehiscence and fistulae, occurred in nine patients (15.8%). Nine patients (15.8%) required revisional surgery, either due to complications or persistent speech problems; all except one subsequently achieved normal speech. Otological disease was present in 54.4%, comprising conductive hearing loss due to otitis media with effusion (52.6%) or sensorineural hearing loss (1.8%). There were no significant correlations between SMCP grade, pre-operative speech and clinical outcome.
Conclusions: Based on these data, all three surgical approaches appear to be reasonable repair options. There is now a need for large, multi-centre randomised studies with robust outcome measures to further examine relationships between surgical techniques and clinical outcomes in people born with submucous cleft palate.
SMCP, palate repair, speech, hearing

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Lip repair in unilateral cleft lip: long-term comparison of outcomes between Millard's and Tennison-Randall's techniques.

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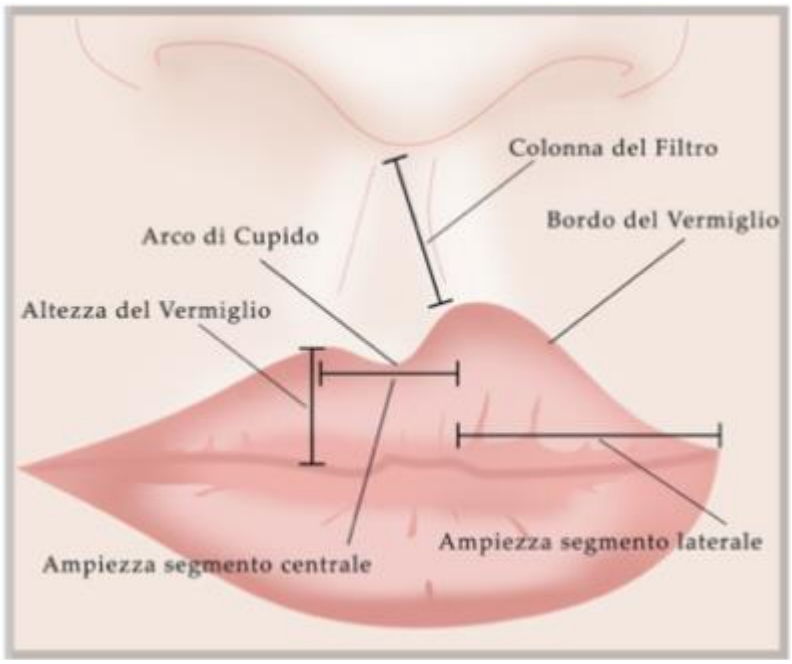
PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Lip repair in unilateral cleft lip: long-term comparison of outcomes between Millard's and Tennison-Randall's techniques.
Introduction:
Successful lip repair is crucial in the surgical treatment of unilateral cleft lip (UCL) and aims to achieve optimal aesthetic and functional outcomes. Different techniques have been proposed and described over time. The two most commonly used for UCL repair are the Tennison-Randall triangular flap and the Millard rotation-advancement techniques.
Aims:
The aim of this study is to compare and evaluate long-term outcomes of primary cheiloplasty performed during childhood, between these two surgical techniques used for lip closure .
Methods:
We conducted a comparative analysis on patients with UCLP, who underwent lip closure between 1988 and 1995 using either the Tennison-Randall or the Millard technique, without any need of secondary surgery. Surgical outcomes were evaluated at the end of the growth mean age 23 through a morphological analysis and a subjective aesthetical evaluation.
Results:
We analyzed 40 patients: 50% underwent Tennison Randall's technique and 50% Millard's technique. Measurements obtained from the morphologic analysis showed greater symmetry in Millard's technique. Questionnaires used for aesthetical evaluation revealed greater satisfaction for patients treated with the Millard's technique.
Conclusion:
Both surgical techniques have showed good results over time. Long-term morphologic and cosmetic analysis demonstrate that Millard's cheiloplasty leads to a higher rate of symmetry and satisfaction rate over time and we think it should be preferred in the treatment of unilateral cleft lip.



Lip cleft, Millard, Tennison-Randal, mycheiloplasty.

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Improvement of alar base ptosis on the affected side by changing the surgical technique at the primary cleft lip repair

一次口唇裂修復術の外科的手法を変更することによる、患側の眼瞼下垂の改善 Maki Inukai[1],
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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Aim: It is desirable to obtain an acceptable external nasal morphology during the growth period after the primary cleft lip repair. Before 1999, we performed cheiloplasty using the straight line repair and at the same time, rhinoplasty using interdomal suture through a reverse U incision . However, there were some cases that required multiple rhinoplasty during the growth period, and since 2005 we have changed the technique to the modified Millard technique with a small triangular valve without rhinoplasty . We investigated whether the change in technique improved the degree of alar base ptosis on the affected side in frontal view.
Methods: Twenty-one patients who underwent cheiloplasty by the same surgeon using the pre-1999 technique and 23 patients who underwent cheiloplasty after the change of technique in 2005 were included. The degree of alar base ptosis was measured and compared in frontal photographs at the age of 6 or 7 years old. The degree of alar base ptosis was measured by drawing a line parallel to the line connecting the bilateral inner canthus through the alar base on the unaffected side in the frontal view photograph, and measuring the angle between this line and the line connecting the bilateral alar base.
Results: The median degree of alar base ptosis on the affected side in cases before 1999 was 2.75°, and in cases after 2005, the median was 1.5°, a statistically significant difference.
Conclusions: The change in surgical technique improved the degree of alar base ptosis on the affected side in frontal view and resulted in an acceptable external nasal morphology during the growth period.

Improvement of alar base ptosis

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Estimated Time of Arrival: Impact of Healthcare Disparities on Access to Multidisciplinary Cleft Lip and Palate Care

Mr. Paul Asadourian[1,3], Ms. Nell Borys[2,3], Dr. Alyssa Valenti[1,3], Dr. Alexandra Michalowski[2,3], Dr. Albert Truong[1,3], Dr. Vikash Modi[2,3], Dr. Thomas Imahiyerobo[1,3]

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction:
Timely presentation to a multi-disciplinary craniofacial team ensures the delivery of comprehensive care. However, there is a paucity of literature examining the healthcare disparities surrounding the timeline of care for cleft patients. Because previous literature demonstrates disparities in pediatric surgical outcomes between demographic and socioeconomic groups, we hypothesized that a similar relationship may exist in the cleft population.

Aim:
To examine how demographic and socioeconomic factors influence cleft care.

Methods:
Retrospective chart review identified demographic, socioeconomic, and clinical data of cleft lip and/or palate patients who presented to the multidisciplinary clinics of two medical centers for primary repair from 2008 to 2020. The primary outcomes include age at presentation (AP), first surgery (AS), and lag-time (LT), or time between presentation and first surgery. Time values are reported in months. Subgroup analysis was based on origin of patient referral to the craniofacial team.

Results:
135 patients met inclusion criteria during the study period. Patient demographics are listed in table 1. Based on referral origin, patients were grouped into Obstetrics and Gynecology (OB/GYN) (40, 29%), Pediatric/Sub-specialty (57, 42%), Neonatal Consult (32, 24%), and Self-Referral (6, 4%) tracks. The OB/GYN track had a lower AP (0.3 vs. 3.1), AS (3.8 vs. 11.9), and LT (3.5 vs. 8.8) ($p < 0.05$ for all) than all other groups. African American patients had a later AS (14.6 vs. 8.9) and greater LT (11.5 vs. 6.8) than other cohorts while White patients had a shorter LT (6.1 vs 8.3) than other cohorts ($p < 0.05$ for all). No differences were observed amongst ethnicity and insurance status or between the highest and lowest groups for median income and distance to surgical center quartiles.

Conclusion:
Our data suggest that clinician referrals, especially from OB/GYN, and patient-specific factors, such as race, appear to influence the timeliness of cleft care.

Table 1: Patient Demographics			
Surgical Center	Patients	**Sex**	N (%)
CUIMC	75 (55%)	Female	66 (49%)
WCMC	60 (45%)	Male	69 (51%)
Total	135		
Cleft Lip/Palate		**Race**	N (%)
Cleft Palate	69 (51%)	White	63 (47%)
Cleft Lip	23 (17%)	AA	13 (10%)
Cleft L/P	43 (32%)	AAPI	18 (13%)
		Other	18 (13%)
		Declined	23 (17%)
Initial Surgery		**Ethnicity**	
Primary Palatoplasty	78 (58%)	Hispanic	33 (24%)
Primary Cheiloplasty	57 (42%)	Non-Hispanic	75 (56%)
	135	Declined	27 (20%)
CUIMC Initial Surgery		**Insurance status**	
Palatoplasty	28 (37%)	Private	69 (51%)
Cheiloplasty	47 (63%)	Public	66 (49%)
	75 (55%)		
WCM Initial Surgery			
Palatoplasty	50 (83%)		
Cheiloplasty	10 (17%)		
	60 (45%)		

AA, African American; AAPI, Asian American and Pacific Islander
CUIMC, Columbia University Irving Medical Center; WCMC, Weill Cornell Medical Center

Cleft-Palate, Cleft-Lip, Access, Disparities

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20-years experience with nasal muscles reconstruction in Cleft Surgery.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: If not by primary operation an accurate, symmetric and functional reconstruction of nasolabial muscles is achieved (Attia, 2019), gradation of the deformity follows and secondary deformities as: nasal obstruction and asymmetry, mouth breathing, reduced maxillary projection and premaxillary growth, excessive vertical length of the frontal part of the mandible and patient's inability to project the upper lip are the result (Talmant, 2014). The Aim of cleft surgery should be the reconstruction of anatomical defect as close to normal, as possible, to ensure good function and development. This principle has the same validity in primary and secondary operations (Markus, 2018). The Delaire method provides excellent cosmetic and functional results and reduces the need for additional surgical interventions (Bánsky, 2013).
Methods: During a 20-years of period 311 primary and secondary cleft patients have been treated with the Delaire technique. To achieve excellent results, subperiostal facial mobilisation and anchoring of the nasal muscles on the cleft side are necessary.
Results: Patients showed improved facial growth, function, esthetic appearance and nasal symmetry. Cases demonstration. Conclusion: Specific preoperative anatomical findings can lead a surgeon to a preference of one type of incision before another, but the closure of deeper under the skin lying structures is of much greater importance than the incision itself (Kuna 2016, Reddy, 2019). The correction of a cleft should aim to overcome the point of break in the embryogenesis during the fetal development (Millard, 1994). Operative techniques based on anatomical and physiological principles are more effective, than that ones, which reconstruct soft tissues only (Smith, 1995).
nasal muscles reconstruction, primary cleft

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Photography in Early Cleft Care: An Audit

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction

The implementation of a standardised photography set, for the purposes of accurate clinical record keeping as well as high-quality on-going audit and research for patients identified with cleft palates is recommended. The Institute of Medical Illustrators (IMI) published guidance in 2018 on facial and palatal views required for clinical photographs of children with a cleft.

Aims

To audit compliance with pre-operative photography standards set by the IMI 2018 guidance in patients with a cleft lip +/- palate.

Method

Retrospective electronic case note review for all patients registered with the National Cleft Surgical Service from 2017-2020. Clinical photographs were compared to the standards set by the IMI and completeness of records documented.

Results

333 patients were registered with the National Cleft Service over the 4-year period, with 274 included in the study. 130 children had a cleft palate only (47.4%) and 132 had a cleft lip +/- palate (52.6%). The entirety of the cleft was photographed in 192 patients (70.07%). For children with a cleft lip, 5 facial views are recommended and 72.22% of children had complete records. For children with a cleft of the palate (n=214), the entirety of the cleft was documented in 67.29% however most did not have the 3 palatal views as recommended by the IMI.

Conclusion

Clinical photographs of children diagnosed with a cleft make up an important part of the clinical record. Standardised views allow high-quality audit and research and are required as part of UK national audit undertaken at age 5. To improve compliance with the standards, Cleft Specialist Nurses have been trained to take the standard facial views on home visits and the need for medical illustration is included in the WHO Surgical Checklist for all patients with a cleft.
Cleft, photography, diagnosis

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Three-dimensional quantification of postoperative facial asymmetry using a facial symmetry plane in patients with unilateral cleft lip and palate

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: The goal of primary lip repair for unilateral cleft lip and palate (UCLP) is to obtain a balanced and symmetrical lip and nose form. However, it is difficult to quantitatively assess the degree of asymmetry in facial morphology after surgery.

Aims: To establish a reliable and quantitative method to evaluate three-dimensional (3D) facial asymmetry in UCLP.

Methods: A 3D facial symmetry plane was obtained by superimposing the original 3D facial image, excluding the lip and nose areas, which were involved in the surgical sites, and inverted facial image using the iterative closest point adjustment. Postoperative facial asymmetry was assessed by the discrepancies in depth and angle of the normal vector of the facial surface in 20 patients with UCLP. We then compared the asymmetry of the 3D facial images of patients with UCLP and those of 20 Japanese age- and sex-matched subjects without cleft lip.

Results: The mean depth discrepancy was 0.73 ± 0.32 pixels for non-cleft subjects compared with 1.34 ± 0.62 pixels for patients with UCLP, which was significantly larger (P = 0.0004). The mean discrepancy in surface angles of patients with UCLP (18.0 ± 5.88 degrees) was significantly larger than that in non-cleft subjects (12.8 ± 4.0 degrees) (P = 0.0024). In addition, in the biaxial assessment of the discrepancy in depth and surface angle, patients with UCLP had larger values than non-cleft subjects, which enabled the visual extraction of patients with greater facial asymmetry.

Conclusions: Facial asymmetry analysis based on a 3D facial symmetry plane can be used to quantify the facial asymmetry and is well-suited for soft-tissue surgical outcome evaluation in patients with UCLP.

Table. Mean discrepancies in the depth and surface angle and *p*-value comparing the UCLP and non-cleft subjects

	UCLP (n=20)	Non-cleft (n=20)	*p*-value*
Discrepancy in the depth	1.34 ± 0.62	0.73 ± 0.32	0.0004
(pixel)	(0.53 – 2.75)	(0.33 – 1.50)	
Discrepancy in the surface angle			
(degree)	18.0 ± 5.88	12.8 ± 4.0	0.0024
	(10.5 – 30.4)	(4.40 – 19.2)	

*: Students' *t*-test

3D assessment, facial asymmetry, UCLP

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Comparison between Furlow and Sommerlad Palatoplasty in Managing Patients with Pierre Robin Sequence

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction： The airway of patients with Pierre Robin Sequence (PRS) is compromised in various degree. Furlow palatoplasty achieves superior speech outcome by lengthening the velum but potentially increase the nasal airway resistence. Whether Furlow palatoplasty is suitable for patients with PRS needs further investigation.

Aims： To evaluate both the benefit and risk of Furlow velar lengthening for patients with PRS.

Methods: This study reviewed patients diagnosed with PRS who received either Furlow or Sommerlad primary palatoplasty in a tertiary hospital-based cleft center. The airway was evaluated using the Nasal Obstruction and Septoplasty Effectiveness (NOSE) Scale preoperatively, immediately postoperatively and at the age of five. The speech outcome was rated basing on both subjective assessment and nasopharyngoscope.

Results： A total of 51 patients with PRS was retrieved, with 24 repaired by Furlow palatoplasty and 26 by Sommerlad technique. No significant differences was detected in the age, gender, cleft severity or preoperative NOSE score between patients repaired by different techniques. Patients who received Furlow palatoplasty were of significantly higher rate of velopharyngeal competence (74.34%) than Sommerlad cases (49.67%). No significant difference was noted in the airway obstruction at any evaluation points.

Conclusions： Velum lengthening using Furlow palatoplasty achieves superior speech outcome among patients with PRS without increasing the risk of airway obstruction.

Pierre Robin Sequence, palatoplasty, airway

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First Recorded Case of Ring Chromosome 7 Syndrome in Indonesia with Bilateral Cleft Lip and Palate

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

ABSTRACT

Background: Partial monosomy of chromosome 7 resulting from deletion of various segments was first recorded over four decades ago. This constitutional chromosome aberration, termed “ring chromosome 7” syndrome is extremely rare, with only less than 20 cases worldwide up to this day. This report presents the first recorded case syndrome in Indonesia.

Case: A 1-year-old male was referred for cytogenetic evaluation due to global developmental delay. Physical examination at birth revealed bilateral cleft lip and cleft palate, microcephaly, clenched toes, multiple cafe-au-lait, and a history of epilepsy at one month of age. Neurological examination revealed severe mental and motor retardation. Genetic karyotyping revealed 46 XY r(7) (p22q36). At 7 months of age, the patient undergo lip correction surgery. Due to COVID-19 pandemic and inadequate weight, palatal correction surgery was delayed until the patient was 4 years old, where the patient remained severely malnourished with body weight of 7.5 kg. A hybrid, modified Furlow technique was performed on a moderate palatal index of 0.36. After 1 month, the result was favourable without any complications and the patient underwent rehabilitation for growth and development catch-up.

Conclusion: This case demonstrates the need of a multidisciplinary evaluation on cleft patients, especially those who presented with signs of syndromic features and global developmental delay. In Indonesia, genetic testing is not routinely done in these patients due to high costs. Therefore, keen observation and thorough diagnostic workup is crucial to determine patients’ clinical outcome.
Ring chromosome 7

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EVALUATION OF LIP AND PROLABIUM GROWTH AND EXTENSION IN PATIENTS WITH BILATERAL CLEFT SUBMITTED TO THE SPINA TECHNIQUE

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Many techniques have been developed to treat bilateral patients. To achieve better aesthetic and functional results, the surgeon must understand the standard growth curves of nasolabial structures over time and the impact of surgical procedures on this process.
Aims: To evaluate the growth of the labial structures in patients submitted to bilateral cleft lip repair by Spina's technique and analyze their tensions, comparing the metric variations in the individual's development.
Methods: A prospective study was carried out with an analysis of pre-operative, post-operative, and adult photographs of 27 Caucasian patients who underwent lip reconstruction at Cleft lip and Palate Center in Brazil, performed by the same plastic surgeon, using Spina's technique. Measurements were taken between 6 months, 4 years, and 10 years, using a public domain program for image processing (ImageJ). The definition of landmarks is according to Farkas' previous studies (1) (2). The data were submitted to the variance analysis (ANOVA, $p<0,05$).
Results: – The prolabium showed significant growth of 73.06% with 11.39mm at 10 years and 40% between 4 and 10 years. The upper lip reached 49.74mm at 10 years old, an increase of 16% between the 4th and 10th years of life. Finally, the lower lip grew by 43% in the first 10 years of life (53.16mm), while it grew by 27% between the 4th and 10th year.
Conclusions: The study shows that the growth rate of the prolabium is lower in patients who are submitted to surgical procedures than in the general population. The upper lip length ended up being 6% smaller than the lower lip unlike normal growth, where the upper lip is 20% bigger.

Cleft lip, anthropometry, lip growth

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Analysis of potential advantages of 3D RRE system in cleft lip and palate surgery

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction

Many surgical techniques for cleft lip and palate have been described. Patient preparation with the use of presurgical orthopedics (PSO) allows the optimalization of surgical procedure. In consequence, it contributes to improvement of aesthetics and functional results.

Aims

3D spatial analysis of unilateral and bilateral cleft palate reconfiguration during the use of presurgical orthopedics (RRE method). Surgical outcomes review.

Methods

35 patients affected by unilateral cleft lip and palate and 13 with bilateral cleft lip and palate received PSO RRE. Analysis of morphological palates' rearrangements with the use of 3D models based on the palates' plaster moulds was performed.

Results

Application of personalized acrylic palate for 9 months resulted in approximation of cleft segments and reposition of larger segments in patients with unilateral cleft lip and palate. In cases of bilateral cleft, reduction of the gap between segments and premaxilla was achieved.

Conclusions

Presurgical orthopedics preparation with RRE method of patient with cleft lip and palate led to superior intraoperative conditions. As a consequence, less extensive and invasive techniques can be used, resulting in reduced number of complications.

cleft, lip, palate, presurgical orthopedics

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VELOPHARYNGEAL INSUFFICIENCY IN ASSOCIATION WITH ISOLATED AND UNILATERAL ABSENCES OF THE SOFT PALATE AND IT MANAGEMENT

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Cleft soft palate is a well recognized congenital anomaly . partial or complete hypoplasia of soft palate may occurs with hemifacial microsomia but its isolated presence is extremely rare finding . Anatomically it is unique as all three layers of soft palate are absent lateral to midline. A few reports about its description are available in literature . Its association with asymmetrical velopharyngeal insufficiency (VPI) and nasal regurgitation mandate surgical management to restore palatal length as well as velopharyngeal port size followed by speech therapy.
Aims: The objective of this study was to determine the role of single stage surgical treatment to restore length of soft palate and correction of VPI by tailor made pharyngeal flap and local tissue rearrangement.
Study design: It was a case series. Settings: Plastic surgery department of Services Hospital Lahore and private clinics from February 2015 to June 2021.
Methods: This is a case series of 7 patients. Those patients in which ipsilateral soft palate hypoplasia is associated with VPI were included in study. Screening for presence of other congenital anomalies were done. All these patients were examined by speech pathologist for VPI assessment and documentation. Structural defect in one side of soft palate was managed by turn out technique and local tissue rearrangement for oral layer and tailor made ipsilateral posterior pharyngeal flap for nasal layer and port size control.
Results: A total of 7 patients were included in the study. Age ranged from 7 years to 25 years. speech quality and intelligibility was improved in term of Nasal emission and hyper nasality correction in all cases. Nasal Regurgitation corrected in 6 patients whereas soft palate length was restored in all cases.
Conclusions: Speech therapy and one stage surgical procedure is reliable and cost affective to restore soft palate length, VPI correction and regurgitation improvement.

Velopharyngeal insufficiency, Hypoplasia, Regurgitation, Hypernasality

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Design and Development of Nasal Creator Device for Patients with Cleft Lip and Palate

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Patients with Cleft lip and palate (CLP) usually experience several facial deformities. Treatment goals mainly focus on reducing cleft deformity and build up a proper shape of alveolar ridge, lip and nose. The present study invented a new nasal retainer device to correct and maintain the shape of nose in patients with CLP
Aims: 1) to design and develop Nasal Creator Device (NCD) for using during cheiloplasty and post-operative period in patients; and 2) to investigate whether the design and material of the device are appropriate to be used in the patients by finite element analysis.
Methods: Survey was performed to identify the clinicians and parents' needs. The NCD was designed by using SolidWork version 2017. This study used finite element analysis to simulate real situation exhibiting stress distribution and stability under given boundary conditions determined by scar contracture force and maximum tongue-muscle force during sucking.
Results: The stress was evenly distributed all over the device and the value of maximum stress was 10.4 N and not exceeding yield stress, the stiffness of NCD was 11.53 N/mm. This value defined the hardness of the device exhibiting stability.
Conclusion: The design of NCD has proper biomechanical properties; strength and stability to utilize in patients with CLP.

Nasal retainer, Nasal stent

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Esthetic Evaluation of Nasolabial Region in Cleft Lip and Palate Patients: Treated without Naso-Alveolar-Molding

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction
Primary lip surgery is the most important procedure that determines the esthetic in cleft lip and palate (CLCP) patient. Naso-Alveolar-Molding (NAM), the presurgical device can reduce the severity of the nasolabial deformity prior to primary lip surgery. However, most of the patients cannot come to hospital to make NAM due to inconvenience.
Aims
To reveal the incidence of CLCP patients in cleft care center and to evaluate the esthetic outcome of Nasolabial region in CLCP patients who did not use NAM prior to primary lip surgery.
Materials and Methods
The records of the CLCP patients since 2002-2021 were reviewed. The study group, 217 CLCP patients between 1 to 17 years of age who can come for follow up, were evaluated. These patients had already undergone primary lip surgery. The photographs of patients were obtained. The esthetic features of nose, upper lip and vermillion border were evaluated by 3 assessors using the 5-point Likert scale.
Results
There were 1072 CLCP patients (379 Thai, 180 Loas and 513 Myanmar) who did primary surgery during 2002-2021. In 1072 cases divided into 414 unilateral cleft lip, 29 bilateral cleft lip, 415 unilateral cleft lip and palate, 95 bilateral cleft lip and palate and 119 isolated cleft palate. There was no surgical wound dehiscence after surgery, except one patient who had trauma from falling down from bed. We found 5 cases who had surgical treatment of velopharyngeal in sufficiency. The results of 217 CLCP patients showed satisfied facial esthetic.
Conclusion
The esthetic of nasolabial region in cleft lip and palate region can be obtained even did not do NAM prior to primary lip surgery. However, experience of the plastic surgeon is the key success that contributes to the good result.

Esthetic, primary lip surgery, cleft

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Working in a non-privileged environment and provide high quality care to families and children affected by cleft

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Santiago del Estero Cleft lip and palate Team (CLPT) is an interdisciplinary team providing comprehensive cleft care for the last 20 years in Santiago del Estero, a province of the Northwest of Argentina.
March 2020, the world was hit by an unexpected health situation: The covid19 pandemic. Thus, optimizing a Quality Improvement cycle (QIC) was the key to making a difference in the attention of our patients.
Aims
This work presents the plan of action designed to improve the attention of the CLPT patients in this challenging situation.
Methods
During 2010 the Team designed a QIC generating a new vision for the members involved: monthly meetings to assess challenges identify solutions and adjust plans. The surgical team standardized the Fisher technique for unilateral cleft lip queilorinoplasty and Mulliken technique for bilateral, including vomer flap between 3 to 6 months of age and Intravelar palatoplasty (Sommerlad) 10 to 12 months of age. Each patient started their program with a presentation about comprehensive cleft care and a personalized treatment plan. Team members became involved in actualization courses provided by strategic alliances with International ONGs (Smile Train and Transforming Faces). The team improved Information systems; virtual platforms such as WhatsApp were incorporated into the daily work to enhance staff-families communication and accessibility. A parent's support group was created and guided by the team members.
Conclusions
The protocol for treating cleft patients followed the lessons learnt by Latin-American cleft centers of excellence such as Fundacion GANTZ in Santiago de Chile and Hospital de Rehabilitacao de Anomalias Craniofaciais in Bauru, Brasil; tailoring such knowhow to the local needs in view.
The number of patients reached in every discipline has increased. We conducted annual surveys with parents, children, youths, and professionals; the results have been gratifying.
Implementing a QIC has been vital for providing attention during the COVID 19 pandemic.

Quality Improvement cycle. Comprehensive care

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Efficacy of interventions in preventing post-operative bleeding in cleft palate repair: a systematic review.

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Introduction:

Infants born with cleft palate require operative intervention, usually within the first 12 months of life. Their small blood volume and easily obstructed airway makes haemostasis in primary palatal surgery an important consideration. Many interventions to reduce blood loss and post-operative bleeding have been described.

Aim:
The aim of this systematic review was to evaluate the effectiveness of various interventions in reducing post-operative bleeding in primary cleft palate repair, including adrenaline infiltration, systemic tranexamic acid, fibrin sealants and topical coagulants.

Methods:
A systematic review was carried out according to PRISMA-P guidelines. Covidence systematic review software was used to facilitate 3-stage screening and data extraction by 2 reviewers. Studies that included primary cleft palate surgery and detailed any intervention to reduce intra and post-operative bleeding were included. Outcome measures included estimated blood loss, rate of post-operative bleeding and rate of return to theatre for haemostasis.
Results:

Sixteen relevant studies were identified, with a total of 1,413 participants. Nine studies examined efficacy of local vasoconstrictors and all concluded that infiltration of 1:100,000 – 1:400,000 adrenaline reduced intra-operative blood loss, to the range of 12-60ml, compared to 30-90ml in control and non-adrenaline vasoconstrictor groups. Secondary bleeding and re-operation for haemostasis were uncommon. Tranexamic acid was studied in three RCTs, one of which demonstrated a significant reduction in blood loss compared to a control group. A further study demonstrated a superior surgical field when tranexamic acid was used but did not quantify blood loss. Use of fibrin and Gelfoam products was examined in three studies, all of which reported no or minimal bleeding.

Conclusion

Infiltration of vasoconstrictors, administration of tranexamic acid and application of fibrin sealants likely contribute to the low incidence of post-operative bleeding and intra-operative blood loss in primary cleft palate repair, however there is insufficient evidence to support the particular efficacy of any single intervention.
cleft palate, repair, bleeding

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Two-Stage Premaxillary Setback and Primary Cheiloplasty Using a Custom Stabilizing Oral Splint Allows Safe and Extensive Primary Rhinoplasty

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Introduction:
A severely protruding premaxilla in a patient with bilateral cleft lip and palate (BCLP) prevents functional closure of the orbicularis oris muscle and acceptable reconstruction of the nasolabial components during primary cheiloplasty. In these cases, vomerine osteotomy and premaxillary setback are done as a one or two-stage procedure before the lip repair. Soft-tissue dissection of the vomer with a simultaneous primary rhinoplasty leads to an increased risk of vascular compromise to the prolabium and premaxillary segment.

Aim:
We present two patients, an age-appropriate and delayed presentation of BCLP, in which we performed a premaxillary setback with a stabilizing oral splint, a primary cheiloplasty and primary rhinoplasty as a two-stage procedure.

Description:
Two patients with BCLP presented to our clinic for treatment. One patient was a 5-month-old male who presented for his formal cleft lip repair after unsuccessful lip taping and nasoalveolar molding. The other patient was a 17-month-old female who was adopted from India with no prior treatment. Both patients had a severely protruding premaxilla and underwent the initial procedure involving the vomerine osteotomy and premaxillary setback. After the procedure, custom 2mm thermoplastic splints were made from an impression taken in the operating room to stabilize the repositioned premaxillary segment during bony healing. The splints were fitted with denture adhesive in the recovery room and maintained intraorally for three months.

Results:
The staging of the premaxillary setback before the primary cheiloplasty and rhinoplasty reduced the risk of devascularization during healing by preserving the vascular supply to the prolabium and premaxillary segment. The custom splint stabilized the premaxilla and aided in bony healing of the vomerine osteotomy site improving the surgical outcome for both stages.

Conclusion:
A custom oral splint can effectively stabilize the bony healing of the premaxilla in a two-stage premaxillary setback and primary cheiloplasty procedure for patients with BCLP of various presentations.
bilateral cleft, premaxillary setback, splint

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The tubercle in unilateral cleft lip

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Background: Teenagers with repaired cleft lip occasionally present with a central whistle deformity, associated with adjacent unstable mucosa. This suggests an uncorrected tissue deficiency in that area. Traditional anthropometric landmarks of the tubercle (cphi, ls and sto) may not describe the deficiency in dry vermilion. We introduced additional anthropometric points (t) at the transition line between wet-to-dry vermilion, and designed an extended Noordhoff tubercle flap during the initial cleft lip repair to address the deficit.
Materials and Methods: Retrospective review of 5 year experience with the technique. Photographic details, technical modifications and early results (5 year) are presented. Preoperative, postoperative and 5 year anthropometric measurements of the tubercle landmarks are measured.
Results: Preoperative dry vermilion deficiency (cphi-t) measured 2mm on average at the cleft site philtral column, 2mm at the center of the tubercle (ls-t), and tapered to 4.5mm towards the non-cleft philtral column. The average dry vermilion deficiency calculated in 2.5mm preoperatively. Immediate post-operative results and 5 year results show maintenance of dry vermilion symmetry, while an increase in t-sto distances is observed, indicating a secondary free-margin irregularity.
Conclusion: Dry vermilion deficiency and tubercle projection can be improved by an extended Noordhoff tubercle flap. Longer term assessments are needed, such as re-evaluation in teenage years. We observed an increase in free-margin irregularity, especially early on in our experience. Technical modifications to minimize this side effect are presented.

cleft, tubercle, pars marginalis, anthropometry

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Effect of Veau Class on Levator Veli Palatini Muscle Composition

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction
Velopharyngeal insufficiency (VPI) after primary palatoplasty has been noted to be more common in patients with higher Veau classes, but the underlying reasons for this discrepancy are unclear.

Aims
In this prospective study, we compare levator veli palatini (LVP) muscle composition in patients with non-syndromic cleft palate to investigate the mechanism underlying increased rates of VPI in patients with higher Veau class.

Methods
Six patients with non-syndromic cleft palate (4 Veau II, 2 Veau III) were recruited. During primary palatoplasty, a small sample of LVP muscle was excised and prepared for histological analysis. Fat and collagen content were determined utilizing Oil Red and Sirius red, respectively. Muscle fiber cross-sectional areas were calculated by stereology of all fibers in a 20x field.

Results
Patients underwent repair at a mean of 11±1.6 months of age. Robin sequence was present in 3 patients, all with Veau II clefts. The mean fat content of LVP muscle was 1.8% in the Veau II group (range 0.01-52%) and 1.3% in the Veau III group (0.06-2.5%). Collagen content was approximately 25% in both groups (8.5-34% in Veau II, 15-36% in Veau III). Mean muscle fiber area was 843 µm2 in patients with Veau II clefts (784-973 µm2) and 701 µm2 in Veau III (651-750 µm2).

Conclusions
Histologic analysis suggested a greater mean LVP muscle fiber area in Veau II clefts than in Veau III, while fat and collagen content were similar. The increased rate of VPI after palatoplasty in higher Veau classes may therefore be a result of smaller muscle fibers, but further analysis of a larger cohort with longer follow-up is necessary to confirm these findings and their association with VPI.
cleft palate, velopharyngeal insufficiency, histology

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Hard and soft tissue growth in patients with unilateral cleft lip and palate following nasal vestibular expansion during primary lip repair: A retrospective analysis of prospectively collected data, with 5- and 10-year cephalometric outcomes

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Introduction: Cleft lip surgery can significantly affect jaw development in patients with unilateral cleft lip and palate (UCLP). We have previously reported that nasal vestibular expansion (NVE) on the affected side during primary lip repair facilitates the forward moulding of the maxilla in patients with UCLP, resulting in a more symmetrical alveolar arch form. However, its long-term effects on the subsequent growth of the maxilla are not clear.

Aims: This study aimed to analyse the effect of NVE during primary lip repair on the developmental profile of hard and soft tissues in patients with UCLP.

Methods: Patients with complete UCLP who underwent lip repair using a triangular-flap technique with NVE (NVE group) and those who did not experience NVE (non-NVE group) were enrolled for the study. Hard and soft tissue profiles were analysed using lateral cephalometric measurements taken longitudinally at 5 and 10 years of age.

Results: Each group included 35 patients. At 5 years of age, the NVE group showed significantly smaller SNA and SNB than the non-NVE group ($p=0.004$, $p=0009$, respectively). In contrast, the non-NVE group had a negative overjet, while the NVE group had a significantly larger overjet ($p=0.0046$). At 10 years of age, no significant difference in the hard tissue measurements between the two groups were noted, except for a larger overbite and nasolabial angle in the NVE group compared to the non-NVE group ($p<0.001$, $p<0.001$, respectively).

Conclusions: NVE does not promote forward growth of the maxilla but may contribute to reducing crossbite and better occlusal relationship in early childhood in patients with UCLP. However, with growing age, the effects on the jawbone became less obvious, and only effects on the occlusal relationship and nose form were observed.

lip repair, nasal vestibular expansion

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Nasal splints in unilateral cleft lip nasal repair revisited

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Introduction: Nasal splints can be used before and after the correction of unilateral cleft lip nasal deformity to improve results. Preoperative nasoalveolar molding has gained attraction with documented improvements of the width of the cleft defect, the columellar length, and the shape of the ala. Contrarily, postoperative nasal splinting has received less attention. Nordhoff et al. (1998) reported the effectiveness of postoperative nasal retainers concluding that their use for at least 6 months serves to preserve and maintain the corrected position of the nose after primary lip and nasal surgery, resulting in a significantly improved aesthetic outcome.

Aim: In this study, we revisit the findings reported by Nordhoff et al. regarding the effectiveness of nasal splinting after surgical correction of unilateral cleft lip nasal deformity.

Methods: We retrospectively reviewed charts and photographs of patients who underwent unilateral cleft lip nasal repair at our institution during a two-year period. Twenty patients underwent modified Mohler cleft lip repair with primary cleft rhinoplasty followed by postoperative nasal splinting. All patients had also undergone preoperative nasoalveolar molding. Patients that were compliant with the use of postoperative nasal activators were compared with those who were non-compliant. Degree of alar flattening of the cleft side compared to the non-cleft side was the primary endpoint.

Results: Fifteen patients were compliant with postoperative molding for at least 6 months. All of them demonstrated satisfactory to excellent outcomes regarding alar flattening of the cleft side. Four patients who were non-compliant with postoperative nasal splinting had poor to unsatisfactory outcomes. One non-compliant patient achieved a satisfactory alar contour. Follow-up ranged from 8 months to 4 years after surgery.

Conclusions: Post-surgical nasal splinting has demonstrated benefits as previously reported. This is a relatively low-cost and simple postoperative intervention that improves the aesthetic outcome and increases the long-term durability of cleft nasal defect repair.

postoperative nasal splinting

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Velopharyngeal Outcomes after Palatoplasty for Patients Wide Cleft Palate and Robin Sequence

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Introduction

Patients with Robin Sequence (RS) frequently have cleft palate, and velopharyngeal dysfunction (VPD) is common following primary repair. VPD can lead to speech resonance disorder, an indication for secondary palatoplasty. True VPD requires surgical correction since speech therapy alone cannot correct it.

Aim

To determine if width of cleft affects rate of VPD in patients with Robin Sequence.

Methods

Patients with Robin Sequence aged 4 + who received care at a single center between 1993 and 2021 were identified. Patients who used sign language, underwent repair at an outside institution, or had Veau class I, III, or IV clefts were excluded. Surgeon's note of a "wide" and/or "u-shaped" cleft, syndromic diagnosis, age at primary repair, VPD diagnosis, and the type of hard and soft palate repairs were recorded. Surgeon's years in practice at time of repair was also noted. Diagnosis of the true VPD was based on imaging studies.

Results

52 patients with Veau II cleft palate were included. Twenty had a wide cleft palate. VPD to non-VPD ratios were 13:7 for wide cleft palate and 12:20 for narrow (odds ratio=3.10, p=0.087). Syndromic to non-syndromic ratios were 4:16 for wide and 4:28 for narrow (p = 0.695). There were no significant differences in age at palatoplasty (1.11 mean ± 0.19 SD wide vs 1.14±0.24 narrow, p= 0.582) or years of surgeon experience (4.9± 2.0wide vs 6.3±4.4 narrow, p= 0.123). Type of repair also did not differ significantly between groups. A multivariate binary logistic regression yielded an odds ratio (OR) of VPD for the wide group of 3.86 (95% CI 1.17-14.04) and was statistically significant (p=0.032). Years in practice (p=0.146), and syndromic diagnosis (p=0.754) were not predictors of VPD.

Conclusion

Patients with non-syndromic RS who had wide clefts had a significantly greater chance of developing VPD after primary palatoplasty.

Cleft palate, VPI, Robin Sequence

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Maxillary arch dimensions pre-primary palatal repair as predictors of speech outcome in children born with unilateral cleft lip and palate

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Introduction: Maxillary arch dimensions (MAD) pre-primary palatal repair have been investigated as predictors to determine the success of this surgery and the risks of velopharyngeal dysfunction. However, the results are still controversial due to the great variability of the methods used. Purpose: Investigate the relationship between pre-primary palatoplasty MAD and hypernasality occurrence in children with unilateral cleft lip-and-palate (UCLP). Methods: Primary palatoplasty was performed by four surgeons in a single center, using Furlow or von Langenbeck procedures. The sample consisted of speech recordings between 3-6 years of age, and 3D-digitalized gypsum casts models performed pre-primary palatoplasty of 139 Brazilian patients with ICLP. Three experienced SLPs rated the occurrence of hypernasality of the recording samples. Data was analyzed considering surgical variables (surgeon skill, technique, time and gender) of each patient. Linear measurements of maxillary arch (intercanine distance-DIC, intertuberosity distance-DIT, anteroposterior distance of the hard palate-DAP, and posterior width of the cleft- LPF), and area measurements (cleft area-CA, greater palatal blade-GPB, minor palatal blade-MPB) were performed on the 3D-digitalized casts. Results: 86 (62%) patients presented normal resonance and 53 (38%) presented hypernasality. No statisticay significance was found between the occurrence of hypernasaliy and the surgical variables. The means of the maxillary measurements were: 27.22 mm for DIC, 35.67 mm for DIT, 28.35 mm for DAP, 10.16 mm for LPF, 427.59 mm2 for AF, 1335 mm2 for ALMa, and 979.28 mm2 for ALMe. Only the relation between the occurrence of hypernasality and the measurement of the AF was statistically significant (mean of 461.30 mm2 for patients presenting with hypernasality, and 372.88 mm2 for patients without hypernasality, p = 0.01). Conclusion: The area of the cleft palate (AF) was the only measure that could predict speech outcome in children born with UCLP.
Cleft-palate. Speech. Dental-arch. Anatomic landmarks

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3D analysis of the maxillary structure of infants with unilateral clefts lip and alveolus after presurgical orthopedics and gingivoperiostealplasty

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

[Aim] It is desirable to perform early closure of the alveolar clefts to provide normal oral function and esthetics for infants with cleft lip/palate. Gingivoperiostealplasty (GPP) is a surgical intervention used to achieve these goals. However, some studies have reported that GPP induced retrusion and impaired growth of the maxilla. To clarify the three-dimensional maxillary structure in infants with unilateral clefts of the lip and alveolus (UCLA) immediately after presurgical orthopedics and GPP, computed tomographic (CT) images were analyzed in this study.

[Methods] CT images of 26 UCLA infants (taken immediately after presurgical orthopedics, GPP and cheiloplasty), 12 infants with unilateral cleft lip (UCL) (taken immediately after cheiloplasty), and 25 non-clefted infants were analyzed. The distance between ANS and PNS (A-P distance), the distances between ANS and the Frankfort horizontal (FH) plane and between PNS and the FH plane (vertical position of the maxilla), and the distance between the bilateral forming deciduous second molars (arch width) were measured with Mimics Innovation Suite (Materialise). The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between UCLA, UCL and non-clefted infants.

[Results] There were no significant differences in age between the UCLA, UCL, and non-clefted infants (5.9, 5.7, and 5.0 months old, respectively). In the sagittal dimension, there was no significant difference in the A-P distance among the three groups. There was also no significant difference in the vertical position of the maxilla among the three groups. In the transverse dimension, there was no significant difference in arch width among the three groups.

[Conclusion] The three-dimensional maxillary structure and position after presurgical orthopedics and GPP in UCLA infants was comparable to those of UCL and non-cleft infants. However, the long-term effects of GPP on UCLA infants have not yet been verified.

Presurgical orthopedics,Gingivoperiostealplasty,3D analysis, Maxillary structure

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Stepwise approach for surgical consideration of Tessier No.4 facial cleft repair

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction

Craniofacial clefts are rare congenital anomalies with incidence ranging from 1.43 to 4.85 per 100,000 live births. Most of the clefts that we see affect the lips, palate, alveolus, nose, but facial clefts involve the facial regions such as cheeks, eyes, nose, forehead and affect the bones as well in the same region. Tessier Number 4 (No.4) clefts are one of the most complex craniofacial anomalies and present difficulties in surgical treatment. There are many issues arguing about its multidisciplinary repairing techniques.

Aims

To present systematic stepwise surgical approach for reconstructing Tessier No.4 facial clefts.

Methods

The most-common deformities associated with Tessier No. 4 clefts are displacements of the lower eyelids, medial canthus, and ala and decreased distance between the lower eyelids and lips. In surgery to correct these deformities, the greatest challenges are the design and the placement of the landmarks and incisions. Because of its relative rarity
and wide range of severity, no definitive operative methods have
been accepted for Tessier No. 4 facial cleft.
Surgical stepwise consideration includes 3main steps ; 1. Defect analysis, 2. Surgical consideration and planning, and 3. Final surgery. Firstly, defect analysis include anatomical and functional defect assessments, and geometrical evaluation of defect in manner. Second, the surgical consideration and planning based on the every principles of basic plastic surgery technique(advancement, rotational advancement , Z-plasty scar placement , etc..) in small points of every defect. The final step , final surgery implements the above consideration in order to achieve the final goals of aesthetic and function.

Case Report
This paper represents a patient with bilateral number 4 Tessier cleft lip and cleft palate and surgical approach on her.

Conclusion
We recommended that systematic stepwise surgical approach for repair of Tessier No.4 facial cleft improve the final aesthetic and functional outcomes.

Tessier 4
Surgical stepwise

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Palatoplasty for the patient with campomelic dysplasia -Report of a case and review of the literature-

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction

Campomelic dysplasia (CMPD) is a skeletal disorder resulting from mutations in the SOX9 gene, which plays a role in chondrogenesis. Although 64.7-82.2% of CMPD cases involve a cleft palate, palatoplasty is rare due to a high lethality rate in infancy from respiratory distress. We report on a case of palatoplasty in a patient with CMPD and review the literature of the cases that underwent palatoplasty.

Case Report

The female patient is the third child of healthy, non-consanguineous parents. The fetus was suspected of having skeletal dysplasia in fetal ultrasonography and magnetic resonance imaging. The patient was delivered by cesarean section at 38 weeks gestation. She had effort ventilation and was resuscitated by artificial ventilation immediately after birth. The patient demonstrated the characteristic symptoms of CMPD, including narrow thorax, short bowed limbs, clubfeet, macrocephaly, low-set ears, short palpebral fissures, hypertelorism, a flat nasal bridge, a long philtrum, micrognathia, a small mouth, and a cleft palate. Magnetic resonance imaging revealed no spinal stenosis or cervical vertebral body anomalies. She had repeated respiratory inflammations that required hospitalization by 11 months of age. She had developmental delay, and head control was established by the age of 2 years. Tooth eruption was almost normal. Palatoplasty was carried out at 2 years 9 months of age, after respiratory conditions had stabilized and motor development had caught up. We minimized neck flexion to avoid nerve damage. Furlow palatoplasty was used and both the nasal and oral flaps were completely closed without any complications. Voice production became active, hypernasality or nasal leakage of food was disappeared, and soft palate moved well after surgery.

Conclusions

Stabilization of the patient's respiratory status is the most important point to determine when a patient is ready for palatoplasty. Catch-up of motor development such as head control is also desirable.

campomelic dysplasia,cleft palate,palatoplasty,Furlow palatoplasty

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A review of perioperative analgesia in primary cleft palate repair

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Standardised perioperative analgesia is an important component of enhanced recovery, which is gaining increased attention in cleft palate surgery.

Aim: To describe the perioperative analgesia regimes in use at the Dublin Cleft Centre and investigate their impact on time to return to feeding and discharge from hospital.

Methods: A prospective audit of 61 consecutive patients undergoing primary cleft palate surgeries was conducted. The surgical protocol includes staged vomer flap with lip repair or adhesion in UCLP and BCLP cases respectively, followed by modified Malek palate repair. Demographics, diagnosis, perioperative analgesia, time to return to feeding and time to discharge were recorded.

Results: 34% percent of patients received a suprazygomatic maxillary nerve block, with 95% of patients receiving local anaesthetic infiltration directly to the operative field. 42% of patients received morphine intraoperatively and 27.8% in the recovery room. Paracetamol was administered intraoperatively to 82% of patients and NSAIDs to 27.9%. Postoperative regimes included regular paracetamol in 91.8% and ibuprofen in 57%. PRN clonidine was prescribed in 26.2% and pethidine in 22.9%. Sixty-seven percent of patients were prescribed morphine postoperatively, with 42% actually receiving it in the postoperative period. Twenty-five percent of infants were offered clear fluids in the recovery room; average time to first milk feed was 4hou and 20minutes. Average postoperative length of stay was 2 days. A Mann-Whitney U-test demonstrated no difference in time to first milk feed, first solid feed or time to discharge between patients who received a suprazygomatic nerve block and those that did not.

Conclusions: There was wide variation in perioperative analgesia regimes, particularly in relation to opiate use. While reasonable times to return to feeding and discharge from hospital were recorded, this data provides evidence for the development of an enhanced recovery pathway for cleft palate repair at our institution.

Perioperative Analgesia, Primary Repair, ERAS

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Bilateral cleft lip repair with Cutting's technique . Sonrisas del Futuro's initial results using Smile Train's quality assurance lip grading criteria

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Cutting's bilateral lip repair technique associated with preoperative NAM has proven to achieve excellent results
Objective: The present study shows the initial primary bilateral cleft lip repair results with Cutting's bilateral lip technique of Sonrisas del Futuro (Smile Train's partner from Argentina) using Smile Train's quality assurance lip grading criteria (retrospective study; May 2018 / December 2021) .
Patients: a total of 18 patients with bilateral cleft lip listed on Smile train express data base undergone bilateral primary cheiloplasty with Cutting's Technique. 12 patients (66,66 %) completed preoperative NAM. Median Follow up: 23 months.
Methods: Clinical & Photographical outcome evaluation of the cases (pre-op & 3 months post-op) utilizing Smile Train's Quality assurance pre and post-operative lip grading criteria :
Pre-operative: Grade 1: small cleft, limited to the vermillion; Grade 2: A cleft limited to the lip alone, with intact nasal floor and minimal nasal deformity ; Grade 3: standard complete cleft & associated nasal deformity; Grade 4; a cleft with high degree of tissue deficiency; Grade 5: a severe cleft associated with a Tessier level facial cleft
Post-operative: Grade 1: unsatisfactory result ; Grade 2: noticeable lip asymmetry; Grade 3: Average result; Grade 4: very good result and Grade 5: Excellent result
Results: Preoperative Grading criteria: Grade 2=1 patient ; Grade 3=15 patients; Grade 4= 2 patients. Postoperative Grading Criteria: Group 4 : 13 patients (72,2 %) ; Group 5: 5 patients (27,78 %)
Conclusions: despite our moderate percentage of completed NAM preop treatment , our initial results with Cutting's bilateral cleft lip repair looks promising and invite us to keep improving our numbers of NAM treated patients in order to achieve even better post-op results in these challenging cases.

Bilateral cleft lip repair results

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Congenital Syngnathia- Cleft Palate: A case Report

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

INTRODUCTION

Syngnathia refers to congenital fusion of the jaw bones. The fusion can be classified based on the nature of the fusion in to either bony or fibrous based on the tissue elements. Its a very rare condition associated with cleft of the lip or palate , aglossia, Popliteal pterygium or Van der Woude syndrome. Very few cases have been reported in the literature with out any standard approach to Management .Such fusions leads to compromised function with difficulty in breathing, feeding and poor growth.

REPORT

We report a case of a 8 month old child with congenital syngnathia associated with Van der Woude syndrome and isolated cleft palate which was referred to our cleft unit during the peak of the Pandemic. This report will stress on the interdisciplinary care of such rare entity with appropriately timed surgery with meticulous planning and postoperative management of such rare entity with respect to anesthesia considerations, airway management and feeding.

CONCLUSION

Jaw syngnathia is a rare condition and other abnormalities could exist making the case very challenging for management. This report sheds more light to the limited scientific literature on the entity which lacks standard protocols for management. We obtained a satisfactory result in our case by managing the condition simultaneously where in the jaw was released first followed by the cleft palate repair aided by Fiberoptic intubation. A good follow up is required in such cases to ensure normal mouth opening, growth, feeding and speech.

Syngnathia cleft palate Vanderwoude syndrome

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Our Surgical Protocol for Microform Cleft Lip

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

1. Introduction
Microform cleft lip refers to a mild form of incomplete cleft lip. Since Brown reported about this in 1964, there have been many reports on its diagnostic criteria and treatment. However, despite its history of more than half a century, there is still no conclusive treatments for it.
2. Aim
This study aimed to describe how far lesions should be cut and how they should be left uncut in the operation of microform cleft lip.
3. Methods
This is a retrospective study of 10 microform cleft lip cases diagnosed by Iwanami et al.'s diagnostic criteria in the past 20 years. In our protocol, the Rotation and Advancement Method (R-A Method) is applied to the difference in red lip height and the spread of cleft that cannot be corrected only by partial incisions. We analyzed the procedure of primary surgery, the need for secondary surgery, procedure of secondary surgery, and current symptoms. Postoperative results through facial photographs of patients in their final visits were evaluated using Thomson's evaluation criteria. For the statistical analysis, Thomson's evaluation scores (pre-operative and post-operative) were examined using the paired t-test.
4. Results
Incisions extending from the nostril floor to the entire length of the lips were performed in 7 cases, including 5 cases using the R-A Method. The remaining 3 patients underwent only partial incision. In all cases, the deep muscularis were continuous and these continuities were preserved. In the long-term follow-up, secondary surgery was performed in 4 cases, 6 times in total. Using Thomson's assessment, all cases showed significant improvement post-operatively. It also showed a statistically significant difference.
5. Conclusions
We therefore conclude that the continuous muscularis does not require dissection of the full thickness of the orbicularis oris muscle. Furthermore this surgical technique is considered less invasive.
Microform cleft lip

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Closure of an unusually wide u-shaped cleft palate with double-layer vascularized palatal island flaps.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Wide cleft palate usually presents a challenge for cleft surgeons due to inadequacy of local palatal tissue for closure without tension. Many techniques were introduced to overcome this problem such as modifications of conventional palatoplasty techniques and use of additional intra-oral or extra-oral soft tissue flap.
Case: An 11-year-old boy presented late with an unusually wide u-shaped cleft palate not amendable by conventional palatoplasty techniques. Modified double-layer vascularized palatal island flaps based on greater palatine arteries was used for closure of the cleft at hard palate and a modified three-layer closure of the soft palate was performed. The flap design and the surgical technique will be discussed in detail.
Result: Postoperative follow up showed a satisfactory result with nearly complete closure of the cleft. The residual oronasal fistulae at anterior palate and at the junction between the soft and the hard palate were secondarily closed with a turnover mucosal flap and simple sutures.
Conclusion: This unusually wide u-shaped cleft palate was successfully treated with non-conventional palatoplasty technique using local palatal tissue.

wide, u-shaped cleft, flap, technique

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The vomerine flap in hard palate cleft closure: The marginal gains concept in 117 cases

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction:
The vomerine flap has not gained popularity in the reconstructive armamentarium mainly due to equivocal facial growth and inconsistent outcomes. Although a simple technique, tissues in infants and the inherent technical challenges in design and execution, cause variation in reported clinical outcomes. We report our experience with 117 consecutive vomerine flaps in unilateral and bilateral hard palate repair and demonstrate the effect of incremental refinements in technique and patient optimisation.

Methods:
Consecutive unilateral and bilateral cleft lip and palate patients who underwent vomerine flap repair of the hard palate, between 2012 and 2018, were included in this study. Early surgical outcomes included: infection, bleeding, and blood transfusion. Late surgical outcomes included: fistula formation, and revisional palatal surgery. All patients were followed-up for a minimum of 2 years.

Results:
In total, 144 vomerine flaps were performed in 90 unilateral and 27 bilateral cleft lip and palate patients. The average width reduction in unilateral cleft was 4.4mm and in bilateral was 4mm following the first vomerine flap and 2.5mm following the second. The average age at the time of the first vomerine flap was 6.1 months and for the bilateral the contralateral was 10.6 months. One patient required return to theatre for bleeding. No fistulas were identified. No patients required revisional surgery. Cleft width at the time of soft palate repair was reduced by 33% and 50% in unilateral and bilateral cases respectively.

Conclusion:
The vomerine flap is a robust reconstructive option in the management of hard palate clefts. This study proved that it decreases the cleft width at the time of soft palate repair which can be advantageous in wider clefts.

Tables

Table 1. Patient demographics, procedure characteristics and surgical outcomes

	Mean ± SD	Min	Max	N	Student's t-test [p-value (95%CI)]
UCLP				90	
• Non-syndromic UCLP				65	
• Syndromic UCLP				25	
Age at operation (months)	6.1 ± 3.5	2.6	15.6		
Weight at operation (kg)	6.4 ± 1.5	4.3	13.5		
Width of Hard Palate (mm)					
• Pre-op	13.4 ± 2.8	4	20		<0.0001 (3.7 to 5.1)
• Post-op	9.0 ± 2.1	4	14		
Complications					
• Blood transfusion				0	
• Return to OR				0	
• Fistula				0	
• Partial Vomer flap loss				0	
• Total Vomer flap loss				0	
Length of Hospital Stay (days)	1.3 ± 0.5	1	3		
BCLP				27	
• Non-syndromic BCLP				22	
• Syndromic BCLP				5	
Age					
• 1° Stage (months)	6.1 ± 3.2	2.5	17.9		
• 2°° Stage (months)	10.6 ± 3.3	6.4	21.3		
Weight					
• 1° Stage (kg)	6.6 ± 0.9	4.8	8.4		
• 2°° Stage (kg)	8.5 ± 0.9	6.1	10		
Width of Hard Palate (mm)					
• Pre-op	14.9 ± 2.8	10	23		
• Post-op (Unilateral VF)	10.9 ± 2.6	6	16		<0.0001 (2.5 to 5.5)
• Post-op (Contralateral VF)	8.4 ± 2.7	4	13		<0.001 (1.1 to 3.9)
Complications					
• Blood Transfusion				1	
• Return to OR				1	
• Fistula				0	
• Partial Vomer flap loss				0	
• Total Vomer flap loss				0	
Length of Hospital Stay (days)	1.2 ± 0.4	1	2		

UCLP, Unilateral cleft lip and palate; BCLP, Bilateral cleft lip and palate; OR, operating room

Vomer flap, wide hard palate

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RECONSTRUCTION OF EXTREMELY CHALLENGING ORONASAL COMMUNICATION AND FISTULAE WITH AN ANTERIORLY BASED TONGUE FLAP – A CASE SERIES

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: A high incidence of cleft palate is reported among the local Kenyan population. Residual defects of the palatal region following congenital cleft palate can be extremely painstaking, daunting, and challenging to reconstruct. The shortage of donor sites and scarce local flap options within the oral cavity compound to the difficulty of the situation. Furthermore, excessive scarring after previously attempted repairs in the region drastically reduces the success of any future interventions aiming at correcting the deformity. Some of these cases present the surgeon with great difficulty hence necessitating innovative techniques that must be employed to achieve the intended outcome. The tongue flap offers numerous reconstruction advantages over previous methods such as ease of rotation along with abundant, highly vascular tissue which promotes healing. In this report, we present the management of two cases with palatonasal defects secondary to cleft palate who had undergone 3 to 4 previously attempted repairs which were all unsuccessful. After meticulous planning in collaboration with a multidisciplinary team, the recommended method of repair of these defects was via an anteriorly based tongue flap. This was successfully carried out with a desirable outcome and no further complications. Conclusion: Tongue flaps offer an excellent intra-oral source of abundant tissue for the repair of palatal defects particularly in cases where heavy scarring and fibrosis rule out other common modalities of treatment.
Tongue flap, Oronasal communication, reconstruction.

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SURGICAL MANAGEMENT OF CLEFT LIP IN PATIENTS WITH HOLOPROSENCEPHALY

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

INTRODUCTION
Holoprosencephaly (HPE) is a brain malformation in which the prosencephalon or embryonic forebrain fails to divide into 2 separate lobes between the third and fourth weeks of gestation.(1)(2) The 3 classical types of HPE in decreasing order of severity are alobar (66%), semilobar, and lobar. In approximately 80% of affected embryos, craniofacial abnormalities are present from cyclopy with an alobar holoprosencephaly to mild bilateral cleft lip with lobar holoprosencephaly. (3) Other less severe abnormalities include microcephaly, hypotelorism, depressed nasal bridge and single maxillary central incisor. (2) The reported prevalence of HPE in liveborn neonates is 1 in 10,000. (2)

Aim
The aim of this study is to report the surgical management of the cleft lip in patients with HPE in the last 10 years in San Luis Potosi, Mexico.

Methods
1,012 patients with cleft lip and palate, from 6 days to 15 years old, were treated by the plastic and reconstructive department in San Luis Potosí, nineteen of them were associated with HPE and treated surgically.

Results
The nineteen patients required reconstruction of the cleft lip. We divided them in two groups.
Group 1 patients (11 mild cases) were treated with the Mendoza technique for bilateral cleft lip and Group 2 (8 severe cases) with lip adhesion technique, with secondary reconstrucction of the columnela.

Conclusion
Due to the severe facial anomalies that may be present in patients with HPE, it is of utmost importance to avoid any unnecessary surgical procedure. However, cleft lip management is very important in returning a normal face appearance and ease children's acceptance within the community. Therefore, in severe cases with absence of the premaxila we suggest lip adhesion technique, and in mild cases the Mendoza technique for bilateral cleft lip with great results.

HOLOPROSENCEPHALY CLEFT LIP SURGERY

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Tessier 30 median mandibular facial cleft; case report

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Tessier cleft no. 30 is a rare congenital anomaly. It may range in severity from median cleft of the upper and lower lip to cleft of the manubrium sterni involving the mandible, floor of the mouth, tongue, hyoid bone, thyroid cartilage and strap muscles. Ankyloglossia and median web in the neck extending from chin resulting in neck contracture are
frequently found. This is a case report of median cleft of lower lip, lower alveolus, mandible with severe ankyloglossia and a fibrotic band extending from the chin to the suprasternal notch; in a 32 years old female. The deformity was corrected as staged procedure i.e. removal of release of the tongue from floor of the mouth and lower alveolus, repair of the cleft lower lip, excision of the fibrotic band and correction of neck contracture with multiple Z-plasties and reconstruction of the mandibular cleft. Orthodontic treatment and rhinoplasty will be done by surgeries in future.
Aim: To present the case of a midline Tessier 30 cleft in a 32 years old female who initially underwent a cheiloplasty and mentoplasty.
Methods:
Design: Case Report
Setting: Pin Lon Hospital
Patient: One
Result: A 32 years old female with a complete midline cleft of the lower lip, alveolus and mandible and ankyloglossia underwent glossoplasty,
secondary lip repair, mentoplasty, multiple Z-plasties and reconstruction of the mandibular cleft with subsequent excellent aesthetic outcome and normal oral competency.
Conclusion: Tessier 30 is a rare congenital midline mandibular cleft. Glossoplasty, secondary lip repair, mentoplasty, multiple Z-plasties and reconstruction of the mandibular cleft can correct the gross deformity, restore asthetic oral competency, and address functional needs such as swallowing and speech development. Future
bony repair and orthodontics treatment will hopefully complete the reconstruction.
Median mandibular Cleft 30

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Somatosensory evoked magnetic fields of lip sensation of patients with cleft lip after cheiloplasty

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Lip morphology of patients with cleft lip (CL) significantly improves with cheiloplasty. However, the lip somatosensory characteristics of patients with CL after cheiloplasty is still unclear since objective evaluation of oral sensations is difficult.
Aims: The aim of this study was to evaluate the somatosensory evoked magnetic fields (SEFs) associated with lip sensation of patients with CL after cheiloplasty by using magnetoencephalography.
Methods: SEFs induced by electrical stimuli to three points of the upper lips (right-side, center and left-side) and two points of the lower lips (right-side and left-side) were measured for 15 patients with unilateral CL (UCL group) and 30 healthy young subjects (control group). The activities with peak latency around 50 ms to 75 ms with posterior orientation (cP60m) were analyzed. The sources of the magnetic fields were modeled as single equivalent current dipoles (ECDs) and all ECDs located on primary somatosensory cortex by superimposition on magnetic resonance images. The latency and intensity for cP60m were compared between the UCL group and the control group. In addition, thresholds of tactile sensation were measured using Semmes Weinstein monofilament, and compared between the groups.
Results and Discussion: There was no significant difference either in the intensity for cP60m or in the threshold of tactile stimuli between the UCL group and the control group. On the other hand, the latency for cP60m on all parts of upper lip in the UCL group was longer than that in the control group ($p<0.05$). It was suggested that longer latency might be caused by surgical invasions on the neurotransmission pathway.
Conclusions: The present study indicates that SEFs may be an adequate measure to objectively evaluate lip sensations, and such evaluation might help to improve the surgical procedures and, in turn, to improve lip functions of patients with CL in the future.

cleft, lip, magnetoencephalography, SFFs, somatosensory

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SLEEP AND BREATHING: ASSESSMENT BY 3D-IMAGES AND POLYSOMNOGRAPHY.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

SLEEP AND BREATHING: ASSESSMENT BY 3D-IMAGES AND POLYSOMNOGRAPHY
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The maxillary retrusion frequently observed in individuals with cleft lip and palate and related craniofacial anomalies can negatively impact the upper airway dimensions, leading to a greater risk of sleep-disordered breathing, including obstructive sleep apnea. Previous studies from our group (Laboratory of Physiology, Hospital for Rehabilitation of Craniofacial Anomalies – University of São Paulo – Bauru, Brazil) have shown, through 3D images, that the nasal (Dos Inocentes et al 2021) and the pharyngeal (Trindade-Suedam et al 2017) airway volumes of adult individuals with cleft lip and palate are volumetrically smaller than that of individuals with no clefts. Furthermore, we have shown that the combination of maxillomandibular discrepancy with the upper airway reduction is related with worse quality of sleep and with a greater chance for the occurrence of obstructive sleep apnea (Campos et al 2021) when compared with the general population. Advancing age may also represent a predisposing factor for sleep apnea in the cleft population. However, contrary to what is expected, other variables such as the presence of a pharyngeal flap for velopharyngeal insufficiency may not cause sleep-disordered breathing (Campos et al 2016). The impact of treatment such as rapid maxillary expansion and orthognathic surgery on the upper airway dimensions will be discussed. Finally, a critical analysis of 3D computational methods for the assessment of respiratory pattern and airflow simulation is a key-points of this presentation.
sleep, imaging, polysomnography, cleft palate

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The retrospective study of clinical manifestations of amniotic band syndrome in oral and maxillofacial region

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Amniotic band syndrome was one of the common syndrome which occured in oral and maxillofacial. Although this syndrome has been reported detailly in obstetrics, pediatrics and orthopaedic, but reports of the clinical characteristics of oral and maxillofacial were few.
Aims : The purpose of this study is to perform a retrospective study of amniotic band syndrome in oral and maxillofacial region, and provide the basis for clinical diagnosis of amniotic band syndrome.
Methods: Retrospective analysis of study subjects were cases with amniotic band syndrome in the department of Peking University School of Stomatology from May 2011 to May 2021 was conducted. Review the cases and auxiliary examination data, basic information and the clinical manifestations of the maxillofacial deformities.
Results: A total of 6 amniotic band syndrome cases were enrolled in this study. Three cases with lateral facial cleft, 2 cases with bilateral facial cleft, 1 case without any facial cleft; 5 cases with maxillary duplication; 2 cases with unclear velopharyngeal closure, because they were too young to cooperate, 3 cases with velopharyngeal closed completely, 1 case with velopharyngeal incompetence; 1 case with lipoma of the palate. All of the patients without cleft lip, no mandibular duplication, no alveolar cleft and orbital distance broadening. The manifestations of maxillary duplication is that the vegetations located in buccal and palatal side of the upper alveolar, often accompanied by some teeth. Maxillofacial spiral CT shows that hyperplasia bone images of posterior buccal and palatal side in the upper alveolar with multiple supernumerary teeth.
Conclusions: Maxillary duplication was the most common manifestation in oral and maxillofacial region in patients with amniotic band syndrome, accompanied by facial cleft, cleft palate, alveolar ridge cleft, velopharyngeal incompetence, orbital broadening and lipoma of jaws sometimes. Patients with maxillary replication and jaws lipoma can be diagnosed with spiral CT in oral and maxillofacial region.
amniotic band syndrome; facial cleft;

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Cleft Lip & Palate Epigenetics, Etiology & Presentation Among Kenyan Patients

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Background/ Introduction
The etiology of cleft lip and palate (CLP) malformation has an interplay of complex gene-environment interaction. Epigenetics of the candidate genes change over time in response to the environment and involve DNA methylation, histone modification, and non-coding RNA. Exploring the potential role of CLP epigenetic modifications may generate clinically useful biomarkers, improve access to genetic services for counseling, identify risk factors and formulate preventive measures.

Broad objective/ Aims
To determine the epigenetics, etiology, and presentation of CLP among Kenyan patients.

Study design and site
A case-control study to be conducted in Kenyan hospitals.

Participants and Method(s)
Control and cases of children with non-syndromic CLP will be randomly selected. Demographic & lifestyle information for the parents will be collected via questionnaire. Mothers will be screened for anemia at the time of delivery while the infant's tissue samples (saliva, whole blood, lip/palate) will be collected for methylation studies. Epigenome-wide association studies (EWAS) will be carried out to test the association between DNA methylation and the different CLP subtypes.

Data management/ Results
Data will be analyzed using the means, modes, median, frequencies, and percentages calculated. The influence of the epigenetic factors on CLP will also be analyzed using the appropriate tests. P-values of <0.05 will be significant at a 95% confidence interval. Results will be presented in graphs, tables, and charts.

Expected main outcome measure(s)/ Conclusions
The findings of this research may inform on the epigenetics and etiology of the different CLP subtypes and improve on genetic counseling services, prevention methods, and formulation of clinically useful biomarkers.

Cleft, Epigenetics, Etiology, Prevention

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Respiratory sleep disorders, nasal obstruction and enuresis in children with non-syndromic Pierre Robin sequence.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction:
Obstructive sleep apnea (OSA) is highly prevalent in non-syndromic Pierre Robin sequence (NSPRS) patients. Studies have found a probable relationship between obstructive sleep apnea and nasal obstruction (NO) and between OSA and enuresis. Assessment of the relationship between these variables in NSPRS patients is scarce.
Aims:
To evaluate the relationship between symptoms of OSA, NO and enuresis, determining the prevalence of symptoms suggestive of these conditions, in schoolchildren with NSPRS, and describe the prevalence of excessive daytime sleepiness (EDS), habitual snoring (HS) and voiding dysfunction symptoms (VDS) associated with enuresis.
Methods:
This was a prospective analytical cross-sectional study developed at a reference center. Anthropometric measurements and a structured clinical interview were carried out in a sample of 48 patients. The instruments “sleep disorders scale in children” (SDSC) “nasal congestion index questionnaire” (CQ-5), and the “voiding dysfunction symptom score questionnaire (VDSQ)” were used. Statistical analysis was performed for $p < 0.05$.
Results:
Positive SDSC scores for obstructive sleep apnea and CQ-5 for nasal obstruction were observed in 38.78% and 16.33%, respectively. Enuresis was reported in 16.33% of children, being characterized as primary in 71.43% and polysymptomatic in 55.55%; according to the VDSQ. There was a significant relationship between NO and OSA ($p < 0.05$), but no significance was found between OSA symptoms and enuresis, and between NO and enuresis. The prevalence of daytime sleepiness was 12.24% and snoring of 48.98%. A family history of enuresis, younger age in years and a positive VDSQ score were associated with a higher prevalence of enuresis ($p < 0.05$).
Conclusion:
Children with NSPRS are at high risk for OSA symptoms and habitual snoring, with a correlation being observed between NO and OSA. In addition, the study showed that non-syndromic Pierre Robin sequence, obstructive sleep apnea and nasal obstruction symptoms were not risk factors for enuresis in these patients.

OSA, Pierre Robin, Enuresis, Nasal

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Hypodontia in non-syndromic Pierre Robin Sequence compared to isolated cleft palate and isolated unilateral cleft lip.

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Introduction: An increased incidence of hypodontia occurs with craniofacial abnormalities. Pierre Robin Sequence (PRS) is a craniofacial abnormality presenting with micrognathia, glossoptosis and airway distress with or without cleft palate.
Aims: To assess the prevalence and patterns of hypodontia in non-syndromic PRS and compare it with hypodontia in non-syndromic isolated cleft palates and isolated cleft lips.
Methods: Data from all patients born with a cleft between 1997 and 2007 and referred to Alder Hey Children's Hospital was assessed against the inclusion criteria for this study. The following inclusion criteria were used for recruitment: (1) Patients born between 1997-2007 (inclusive). (2) Patients with i) non-syndromic PRS and palatal cleft (Group 1) ii) isolated clefts of the soft palate with or without extension to the hard palate (Group 2) iii) isolated unilateral cleft lip (Group 3) (3) Patients have had an OPG radiograph. The exclusion criteria were: (1) Presence of syndrome (2) Previous distraction osteogenesis.
Results: Group 1 had the highest incidence of hypodontia with 47% having at least one tooth congenitally absent. Groups 2 and 3 had reduced rates of hypodontia with 27% and 19% of the groups missing teeth, respectively. 93% of cases of hypodontia in Group 1 involved the absence of at least one second premolar. Of these patients, there was found to be bilateral agenesis of second premolars in 50% of cases.
Conclusion: Patients with PRS and palatal clefts are more likely to have hypodontia than those with isolated cleft palates or unilateral cleft lips. Patients with PRS have more severe hypodontia than those with isolated cleft palates or unilateral cleft lips. Bilateral agenesis of lower second premolars is a commonly seen pattern amongst patients with PRS. In this large UK study, a similar prevalence and pattern of hypodontia to other non-syndromic PRS populations worldwide has been demonstrated.

Pierre Robin Sequence
Cleft
Hypodontia

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Mandibular Distraction Osteogenesis in airway obstruction associated with Micrognathia. Initial experience at the Hospital Infantil de San Isidro

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction
Mandibular distraction osteogenesis has proven to be one of the treatments of choice in patients with airway obstruction due to micrognathia that do not respond to conservative measures.
Aims
Evaluate the initial experience of mandibular distraction in patients with airway obstruction associated with micrognathia at Hospital Materno Infantil de San Isidro, Argentina
Methods
Retrospective study March 2011 November 2020. 18 patients (14 with Pierre Robin Secuence, 3 with Micrognathia without cleft palate,1 syndromatic patient with severe micrognathia) with airway obstruction associated with micrognathia were included for multidisciplinary team evaluation. From this group, 12 had no previous treatment and 6 patients already had a tracheostomy.
A total of 14 patients undergone bilateral mandibular distraction osteogenesis (3 patients that had no previous treatment, responded to conservative treatment and 1 patient with tracheostomy outgrew the mandibular deficiency and was decannulated).
9 of the patients that undergone distraction were less than 6 months and 5 patients were older than 6 months In 2 patients, internal distractors were utilized and external distractor devices were used in 12 patients.
The distraction protocol consisted of a latency period of 1 day for patients younger than 6 months and 2 days for patients older than 6 months, followed by a 1 mm./day activation period. Mean activation period was 18 days (12-24) , mean consolidation period was 40 days (32- 48) and mean length of distraction was 19 mm (13–25 mm)
Results: Tracheostomy was prevented in 7/8 patients (87,5%) and decannulation was achieved in 5/6 (83,3%).
2 minor complications with the external distractor devices and a device failure was experienced with internal distractors.
Conclusions
mandibular distraction osteogenesis is and excellent alternative in patients with airway obstruction associated with micrognathia that cannot be resolved with conservative measures, preventing the use of tracheostomies and allowing early decannulation in patients with tracheostomies.

Mandibular distraction osteogenesis, micrognathia, glossoptosis

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Feeding Difficulties in Babies with Pierre Robin Sequence: Literature Review

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Abstract: It has been documented that children with isolated Pierre Robin Sequence have multiple feeding difficulties associated with the condition. Objective: To describe the parameters and evaluation methods of feeding behaviour frequently applied to children with isolated Pierre Robin Sequence within the literature. Method: A bibliographic review was carried out using the PubMed, Scielo, LILACS, ScienceDirect and IBECS databases. Results: 28 articles that met all the inclusion criteria were rescued, and the quality of the evidence was evaluated with Sackett's classification of level of evidence. The results obtained from each article are summarized in terms of its sample, evaluation method and feeding evaluation results. Conclusions: The studies provide different percentages of presentation of the feeding difficulties, although they agree in the presence of gastroesophageal reflux, risk of dysphagia, use of enteral feeding, and dysfunction of the upper and lower esophageal sphincters. Despite the diversity in the phenotype and severity of the condition, most studies limit themselves to using clinical evaluation, rarely including objective evaluations and do not specify the professional in charge of the health evaluation. On the other hand, more than half of the studies included in this review reach a level of evidence 4, which makes it difficult to generalize the results obtained. Future research with greater rigor in its methodology is urgently needed to promote evidence-based care for children with Pierre Robin Sequence and their caregivers.

Tabla 1: Información de los estudios seleccionados

N°	Diseño de estudio	Nivel de evidencia
17	Estudio de corte transversal	1c
3	Reporte de caso	4
18	Estudios de caso y control	4
19	Serie de casos	4
20	Estudios de cohorte prospectiva	1b
21	Serie de casos	4
22	Serie de casos	4
12	Serie de casos	4
23	Estudios de casos y controles	4
24	Estudios de cohorte prospectiva	1b
25	Estudio de cohorte prospectiva	1b
26	Estudio de cohorte retrospectiva	2b
1	Series de casos	4
5	Estudio de cohorte retrospectiva	2b
27	Estudios de cohorte prospectiva	1b
28	Series de casos	4
29	Estudio de caso y control	4
30	Reporte de caso	4
31	Estudio de cohorte retrospectiva	2b
32	Series de casos	4
33	Estudio de corte transversal	1c
14	Estudio de corte transversal	1c
2	Estudio de caso y control	4
34	Estudio de caso y control	4
35	Ensayo clínico aleatorizado	1a
10	Estudio ecológicos, poblacionales y correlacionales	2c
36	Estudio de cohorte retrospectiva	2b
37	Reporte de caso	4

Fuente: Elaboración propia.

Pierre Robin Syndrome, sucking behavior

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Pierre Robin Sequence: Importance of the Interdisciplinary Approach. Our experience in a pediatric public hospital.

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Introduction: The initial treatment of the neonate with diagnosis of pierre robin sequence must be carried out quickly and precisely. Especially in cases where the airway is compromised by mandibular retrognathia. In our hospital for years it was not possible to address the pathology in an interdisciplinary way. With the consequence of prolonged tracheostomies and patients with speech difficulties during childhood. But currently we have specialists in each área working integrated.
Method: Five cases treated in the last three years will be presented. All cases with initial respiratory distress and treated with mandibular distraction after multidisciplinary concens. Each specialty had to carry out its learning curve and this evolution is reflected in the results.
Results: one previously tracheostomized patient received mandibular distraction to accelerate decannulation, two patients required tracheostomy despite mandibular advancement, due to late diagnosis of larynx or pharyngomalacia; and two patients avoided tracheostomy because of the clearance in the airway achieved with advancement.
In traqueostomized patients cannulas were removed at the age of one or even earlier, making the tracheostomy temporary. Allowing to start phonation without stoma.
Conclusion: the Pierre Robin sequence in neonates requires updated and experienced teams of specialists to achieve functional improvement in the short term. Evolution and better outcomes in treatment depend on this.

Pierre Robin sequence mandibular distraction

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CLEFT PALATE MANAGEMENT IN PATIENTS WITH PIERRE ROBIN SEQUENCE

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction
Pierre Robin sequence (PRS) consists of the clinical triad of congenital micrognathia, glossoptosis, and airway obstruction with variable inclusion of a cleft palate.1 The incidence of PRS ranges from 1 in 8000 to 1 in 14,000.1. Adjunctive measures, such as oxygen therapy, continuous positive airway pressure and nasogastric feeding, are added as required in more severe cases. Endotracheal intubation and tracheotomy can be performed as needed. The ultimate goal is the removal of the nasopharyngeal support with maintenance of adequate saturation and no CO2 retention.2 The literature describes a 30% incidence of cleft palate in PRS patients. The closure of palatal cleft is suggested at 18 months before the beginning of active speech.3

Aim
The aim of this study is to report the surgical management of the cleft palate in patients with PRS in the last 10 years in San Luis Potosi, Mexico.

Methods
1,012 patients with cleft lip and palate were treated by the plastic and reconstructive department in San Luis Potosí, seventeen of them were associated with PRS and treated surgically.

Results
Seventeen patients required reconstruction of the cleft palate. We divided them in two groups according to severity. Group 1 (15 mild cases) were treated with minimal incision technique and in group 2 (2 severe cases) we used de Von Langenbeck technique.

Conclusion
The variable complexity of the patient presentation lends itself to a multidisciplinary approach in uncovering the diagnosis, managing the airway obstruction and optimizing the feeding. However, in order to improve speech and to achieve adequate growth of the facial structures, it is of great importance to close the palatal cleft after initial management. We suggest minimal incision technique because in patients with PRS, who already have craneofacial abnormalities, causes less mid third bone retraction.

PIERRE ROBIN PALATOPLASTY

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The Egyptian Experience with the Tubingen Palatal Plate in an Infant born with Pierre Robin Sequence; A Case Report

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Introduction
Infants born with Pierre Robin sequence (RS) are facing many challenges, namely upper airway obstruction (UAO). Considering that many factors would influence the infant's respiratory condition, the main cause of UAO is glossoptosis. The Tubingen Palatal Plate (TPP) is a minimally invasive orthopedic plate with a posterior velar extension that extends downwards ending just before the epiglottis, propelling the tongue forward thus opening up the airway. The fabrication and insertion of the TPP requires a multidisciplinary team composed of a phoniatric, orthodontic and maxillofacial surgeon. Awareness of the TPP is still not widely spread in our country, where surgical approaches are still preferred.
Aim
Test the effectiveness of the TPP in reducing the number of desaturation events to <80% and <85% SpO2 in an Egyptian infant born with Pierre Robin Sequence.
Methods
After confirming UAO diagnosis, infant had her blood oxygen saturation measured and reported at baseline. A maxillary impression was obtained, along with a preliminary unsedated fiberoptic nasopharyngoscopy to determine the correct length of the velar part of the appliance. The appliance was fabricated in less than 24 hours and returned for final fitting. Correct velar extension of the TPP was confirmed by second endoscopy and a lateral head radiograph. The number of desaturation events to <80% and <85% SpO2 identified as events per hour using the Pulse oximetry-derived oxygen saturation were calculated at baseline, 1 hour after appliance insertion, and 1 month post.
Results
After insertion of the TPP, the number of desaturation events were significantly reduced. Opening of the upper airway was confirmed by the post insertion lateral head radiograph. This also allowed for oral feeding using a specialized feeding bottle and removal of the nasogastric tube.
Conclusion
TPP was very efficient and successful in reducing the UAO and reducing the number of oxygen desaturation events per hour in our infant.

PierreRobin, Tubingen Plate, Airway Obstruction

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"Surprise, you have a bifid uvula!" - my personal experience of late diagnosis of submucous cleft palate and reflections of a cleft orthognathic surgery patient.

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Introduction
A bifid uvula and v-shaped notch in the hard palate are considered hallmark signs of submucous cleft palate yet it is not uncommon for diagnosis to be delayed or even missed. In this case, late diagnosis of submucous cleft palate resulted in referral to the South Thames Cleft Service for subsequent cleft orthognathic surgery.

Learning Outcomes
The presenter provides attendees with a personal perspective of her own experience as a cleft orthognathic surgery patient, outlining the cleft patient pathway and discusses what can be learned from reported experiences of other cleft lip and palate patients. The presentation gives an insight into the psychosocial impact of living with craniofacial deformity and how the correct treatment can be life-changing.

Submucous Cleft Palate
Orthognathic Surgery

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Setting up and Running a Policy and Advocacy Department in a Cleft Organization: The Operation Smile Experience

Dr. Ulrick Sidney Kanmounye[1], Dr Chifundo Msokera[2], Dr Arsen Muhumuza[2], Dr Maria Fernanda Tapia[2], Dr Atenas Bustamente[2], Dr Marvee Turk[2], Mr Desmond T. Jumbam[2], Dr Ruben Ayala[2], Miss Irene Dzirasa
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Introduction
Cleft lip and palate (CLP) cause significant morbidity worldwide. Its global burden remains unacceptably high despite the combined efforts of non-governmental organizations that deliver care in underserved communities. Patients in these communities face numerous barriers to accessing quality care. Addressing these challenges requires coordinated health system strengthening interventions. Governance and leadership are important components of the health system that can be assessed and strengthened using evidence-based policy and advocacy (P&A) frameworks.

Aim
To detail the creation of a P&A department within our CLP organization and its outputs.

Methods
The senior author (RA) advocated for creating a P&A department. Stakeholders from within and outside the organization were interviewed. The authors used design thinking and mind mapping to identify challenges, strengths, and opportunities. LucidChart (Utah, USA) was used to visualize the CLP and global surgery landscape. Next, the authors developed a comprehensive strategy, which they shared with stakeholders for feedback. Finally, the feedback was integrated into the overall strategy, a timeline was designed with a departmental budget.

Results
Core areas for the strategy include grassroots advocacy, policy development, policy implementation, research, and global advocacy. The P&A department is staffed by nine members, including research fellows, P&A associates from Bolivia, Cameroon, Colombia, Ghana, Malawi, Panama, Rwanda, and the United States. P&A outputs included the development of a P&A situational analysis tool (PASAT), development of a National Cleft Care Protocol framework, publication of two op-eds in local journals, presentations at 16 international conferences and symposia, and health policy analyses in four countries (i.e., Cameroon, Ghana, Madagascar, and Malawi).

Conclusion
The P&A department has organized its activities around strengthening and connecting grassroots P&A with international P&A. Lessons from the creation of the Operation Smile P&A department could be useful for cleft organizations seeking to develop similar programs or initiatives for CLP advocacy.
Cleft, health system, policy, advocacy

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Association ALA – an NGO completing the circle of Comprehensive Cleft Care in Bulgaria

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Association ALA – an NGO completing the circle of Comprehensive Cleft Care in Bulgaria

Introduction: In Bulgaria the National Health Insurance Fund provides only the surgical treatment of the cleft-affected children.
The Association Facial Anomalies is an NGO with 25 years of history. Working with the support of Smile Train, Transforming Faces, European Cleft Organisation, Tulip Foundation and local sponsors ALA is the solution for the needs of the cleft patients in Bulgaria.

Aims: ALA strives to ensure everyone receives comprehensive cleft care in a country that lacks a formal policy in the treatment of facial anomalies.
We provide information how this aim is achieved without governmental support.

Methods:
ALA created and supports national networks of medical specialists, conducts educational trainings for parents/patients, runs parent's support group and ensures cooperation between these two groups (medical professionals and parents/patients).
ALA maintains the Electronic Medical Record for Facial Anomalies, a unique web-based platform - www.emrfa.org
ALA also participates in Erasmus + cleft-related projects which provide resources helping medical professionals and patients/parents to cope with certain psycho-social issues.
ALA promotes its activities through different internet channels:
www.ala-bg.org,
www.facebook.com/alabulgaria,
www.instagram.com/facialanomaliesbulgaria/
Results:
- Development of a National Cleft Center although without official status.
- Reduction in abandonment of children because of the cleft.
- Free availability of all main cleft care treatments.
- Increased involvement of the parents/patients in the treatment process.
- Better cooperation between different specialists involved in cleft care.
- Precise follow-up of the patient's treatment plan.
- Availability of statistics related to the incidence, treatment of cleft condition.

Conclusions:
An NGO can be an efficient means to ensure continuous provision of well-coordinated comprehensive cleft treatment on a national level in cases when it is not provided by national health system.
ALA's experience could be a source of motivation and ideas to other NGO around the world.

NGO, Comprehensive Cleft Care,

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Role of students in charity cleft mission: an investment in the future.

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Introduction: Sustainable cleft lip and palate care is depending mainly on interested surgeons and other cleft co-workers who can present the ideal management as a team. Students from medical and non-medical backgrounds can present many concerned activities with local teams in low and middle-income countries.

Activities: In Operation Smile Egypt, we did build a team of students who can share in many tasks and opportunities. We classified our students' team according to their interests and according to the foundation mission and vision. Our team shared in providing education to patients' families, logistics of the surgical missions, medical records, and patient imaging sessions. Roles of students in patients' recruitment were very positive through social media and physical campaigns. Inclusion of these teams in research projects had produced a good team of research co-workers in many research topics. Student teams continuously run and share in media campaigns and documentation, building public awareness, raising funds, and continuing recruitment of new students with spread of our message through events in their local and regional areas. Kids program is another project for secondary school students. They did help in social and psychological support for the patients pre- and post-operatively through simulating sessions before the surgery. In collaboration with other NGOs, our team is building projects for fighting bullying and cyberbullying against patients with clefts.

Conclusion: We believe an investment in students is an investment in our future, and the focus on youth leadership has been an integral part of our organisation.
Students
Role
Charity missions

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Using a health systems approach to sustain cleft care during the COVID-19 pandemic

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Background:

Cleft lip and palate conditions are one of the most common congenital anomalies. Most of the global burden of disease is recorded in low- and middle-income countries (LMICs) where health systems are overburdened, under-resourced, and lack the expertise or training to provide cleft care. Resultantly, cleft care is often provided by international humanitarian organizations. However, the onset of the COVID-19 pandemic limited international aid for cleft care in many LMICs.

Aim:

This paper discusses the potential of a health systems approach to build local capacity and sustain care for the growing burden of unmet cleft surgical needs in LMICs.

Health Systems Approach Methodology:

The health system approach can be viewed in two ways: 1) understanding the burden of unmet plastic surgery disease, and 2) developing and implementing context-relevant solutions based on this research to reduce the burden of unmet need.

Application of Health Systems Approach to Cleft Care:

The health systems approach has been described as a mechanism for building local capacity to deliver cleft surgery. When global plastic surgery adopts a health systems research approach, it has the potential to strengthen surgical systems in the following areas: human resources for plastic and reconstructive surgery, service delivery, infrastructure, information management, funding, and leadership, and governance. In countries where Operation Smile has made meaningful investments in the health system and supported local capacity-building, 77% sustained cleft care delivery during the pandemic. Countries with higher surgeon-densities were able to perform more local short-term programs, therefore training programs have been prioritized in these countries to increase the number of cleft care providers.

Way forward:

International humanitarian organizations can utilize short-term trips to assess and invest in health systems to support local capacity-building. This approach addresses the immediate need for time-sensitive cleft surgery while ensuring sustainability of cleft care by local systems.

global surgery, NGO, cleft care

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The Otolaryngologist's Role in the Management of the Excellence Center of Cleft Lip and Palate, Health Region IV in Thailand

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Managing the care for patients with cleft lip and palate for a long period of time entails coordination of multiple subspecialties in otorhinolaryngology, maxillofacial and plastic surgery, and speech therapy who were employed in the hospitals. In the end of 2020, Pranangklao Hospital, Ministry of Public Health, was recently established Excellence Center of Cleft Lip and Palate, Health Region IV in Thailand. The goals of the study was to review the recent literature regarding the growing role of otolaryngologist in the joint multidisciplinary team approach for proper managing the patients in the new excellence center. This retrospective study was conducted using data from the medical records, which contains the records of newborn to 18 year olds with cleft lip and palate admitted to Phanangklao Hospital between 2016 and 2020. The result of study shown that the otolaryngologist in the interdisciplinary team of the exellence center has critical multifunctional role that encompass airway management, otologic therapy, aural anatomical reconstruction, and also performing essential diagnostic procedures for associated speech and swallowing disorders. Highly-skilled and experienced otolaryngologist in the multidisciplinary patient with cleft lip and palate care team play a vital role through the provision of advanced and specific knowledge to care management. The role of otolaryngologist should be researched to enhance the quality of care management, thereby contributing to national and international patient care team development.

Table 1. Management and follow up for care of cleft lip and cleft palate patients by an otolaryngologist in the interdisciplinary team

Age	SD
0 – 3 month	Newborn hearing screen by otolaryngologist at birth followed by audiological evaluation till 3 months of age in case of negative result of hearing screen
3 – 6 month	Follow-up of lip taping or presurgical orthopedics till the day of lip repair surgery
6 – 12 month	ENT assessment and complete audiology assessment at 9 months of age followed by 6-12 monthly review till 5 years
12 – 18 month	– Speech-language assessment before palate repair and annual assessment till 6 years of age – The need for speech therapy will be based on the results of an objective speech language assessment.
3 – 5 years	– ENT assessment every 6-12 monthly review till 5 years followed by annual review till adolescence – Speech-language assessment and therapy annually – Evaluation by the plastic surgeon at 5 years of age for velopharyngeal insufficiency and consider for its management by intensive speech therapy or pharyngeal flap surgery.

otorhinolaryngology, maxillofacial, plastic, speech therapy

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Reduced nasal volume in cleft lip and palate patients is a risk factor for obstructive sleep apnea?

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Reduced nasal cavity (NC) dimensions have been associated with increased airflow resistance, which could lead individuals to obstructive sleep apnea (OSA). Previous studies have shown that cleft lip and palate patients (CLP) presents decreased internal nasal dimensions. Despite recent evidence, remains unclear the role of nasal cavities in OSA genesis. Furthermore, the relationship between CLP and reduced nasal volumes with OSA is not clearly established.

Aims: To assess NC volumes of CLP adults without OSA (CLP No/OSA) using cone-beam computed tomography (CBCT) and 3D reconstructions. NC volumes were compared with Non-CLP adults with OSA (NonCLP/OSA).

Methods: This prospective cross-sectional study comprised group 1, including 7 CLP No/OSA patients (6♂; 3 UCLP, 4 BCLP), and group 2, including 13 Non-CLP/OSA patients (4♂). Demographical data and body mass index (BMI, kg/m2) were collected after the CBCT exam. NC reconstructions using ITK-SNAP software, were made by two blinded and calibrated examiners at two distinct moments (ICC≥0.90). Group 1 underwent in-lab type 1 polysomnography. Group 2 individuals exhibited high risk for OSA (Berlin questionnaire) and underwent a type 1 or 4 polysomnography. A cutoff of ≥5 events/hour in the apnea-hypopnea index (AHI) or oxygen desaturation index (ODI) plus symptoms, was used for OSA diagnosis.

Results: Groups 1 and 2 differed by age (24.3±2.4 vs. 49.5±9.7 years), BMI (22.8±3.7 vs. 33.6±6.0 kg/m2), and AHI or ODI (1.8 events/hour; percentile 25%=1.4; 75%=2.1 vs. 22.0 events/hour; 25%=10.5; 75%=73.5), respectively (p≤0.05). NC volumes (23.9±3.2 vs. 28.1±5.0 cm3) did not differed between groups (p=0.06), even when compared by cleft type.

Conclusions: Adults with CLP and without OSA presented equivalent NC dimensions than controls with OSA, suggesting that both populations have obstructed nasal cavities. In CLP patients, reduced internal nasal volume does not seem to be an OSA risk factor.

OSA, CLP, Nasal Internal Dimensions

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The effect of a nasal decongestant in the acoustic characteristics of nasal speech sounds

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: The use of nasal decongestants increases the volume of the nasal tract, however, few studies have reviewed their effect on the acoustic characteristics of nasal consonants and nasalised vowels in adults.

Aims: To compare the acoustic characteristics of nasal consonants and nasalised vowels in healthy Chilean Spanish-speaking adults, after the application of a nasal decongestant.

Methods: All participants were submitted to an acoustic rhinometry and acoustic evaluation, carried out before and after the application of a spray-based decongestant (Oxymetazoline hydrochloride 0.05%). Their voices were recorded with two microphones (simultaneously), one 0.5 cm in front of the right nostril, and the other 20 cm from the nostrils. Comparisons were performed with the Wilcoxon test for paired data ($p<0.05$).

Results: 30 adults from both genders (23.4 ± 2.8 years) took part in the study. The decongestant generated significant increases in the right nostrils measurements, while the left nostril failed to have significant increases. After its application, the differences in sound pressure level (SPL) between nasal/hypernasal and oral emissions decreased significantly in 58% of the emissions 0.5 cm from the nostril and in 25% of the emissions 20cm from the nostrils. On the other hand, the vasoconstrictor significantly altered 8.3% of the results obtained at the level of formants and bandwidth (in Hz) at both distances, highlighting a trend towards an increase in F1 and a decrease in F2 after application. Finally, the measures of nasality A1-P0 and A1-P1 (in dB) dit nit differ significantly after application.

Conclusions: The main significant difference after the application of a nasal decongestant was the increase in differences in SPL between nasal/hypernasal and oral emissions 0.5 cm from the right nostril.
Nasal sounds, Nasal decongestant, Acoustic

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MIDDLE EAR PROBLEM IN CHILDREN WITH CLEFT PALATE, OUR EXPERIENCE.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

MIDDLE EAR PROBLEM IN CHILDREN WITH CLEFT PALATE, OUR EXPERIENCE!

Introduction
Middle ear infection and hearing deformity are considered as the common findings in the children who are born with the cleft palate, a retrospective study was conducted in the children who were treated in our centre for the primary cleft palate repair were assessed for the same.
AIM
To find incidence of middle ear infections and hearing deformities in cleft palate patients
Material and methods
A retrospective study was conducted in 500 children who were treated for cleft palate in our hospital between 2005-2012 were assessed for the hearing lose, middle ear infection, status of the tympanic membrane.
Results
Ear discharge was evident in only 6 out the 500 patients, in our study, we found only 3 patients with the perforated membrane and none of our patients had any sensorineural hearing lose.
Conclusion
In our study we found that it is not as common to have middle ear infection, perforated tympanic membrane and sensorineural hearing lose as described in the other studies.
Middle-Ear-problem, Cleft-palate, Infection, Hearing deformity

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Intratympanic steroid therapy adjunct to myringotomy with ventilation tube insertion for otitis media with effusion in children with cleft lip/palate – a matched pair randomized controlled trial

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: The objective of this study was to evaluate the efficacy of intratympanic dexamethasone therapy adjunct to myringotomy with ventilation tube insertion in cleft lip/palate children with bilateral otitis media with effusion.
Methods: The cleft lip/palate children between 2 months and 12 years of age with middle ear effusion were recruited. Dexamethasone was administered through the ventilation tube on the side of the ear that was randomly allocated and the placebo on the other side of the ear.
Results: Twenty-three children with cleft lip/palate were enrolled in this study. The mean age of the children was 33.04 ± 27.80 months. At 1 month follow-up, the hearing levels in both groups were significantly improved. On the dexamethasone side, the mean hearing level was changed from 46.48 to 28.90 dB HL ($p < 0.001$). On the placebo side, the mean hearing level was changed from 48.26 to 31.00 dB HL ($p < 0.001$). For between-group comparison, there was a trend favoring dexamethasone, however, it did not reach a statistical significance ($p = 0.070$). In the group that the duration of otitis media with effusion was less or equal to 3 months, there was a statistically significant improvement in the dexamethasone side (MD -3.18, 95% CI -4.88 to -1.49, $p = 0.002$). In the cleft lip/palate only group, there was a statistically significant improvement in the dexamethasone side (MD -3.24, 95% CI -5.04 to -1.43, $p = 0.002$). There was no statistical difference in adverse events between groups ($p > 0.05$).
Conclusions: The intratympanic dexamethasone adjunct to myringotomy with ventilation tube insertion may be useful in cleft lip/palate patients.
otitis media with effusion, steroids

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Management of velopharyngeal disfunction in 22q11 Delection syndrome patients. Our protocol at Hospital La Paz, Madrid.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

1- Introduction: the management of velopharyngeal dysfunction (VPD) in patients with 22q11 Deletion Syndrome is a challenge for all of us. Different approaches have been suggested for these patients.
2- Aims: We analyse the experience of the Paediatric Maxillofacial service at Hospital La Paz in the treatment of new patients of 22q11 syndrome with velopharyngeal dysfunction and propose our protocol of treatment.
3-Methods: We have review all the patients treated in our unit from 2010-2021 with the diagnosis of VPD and we have analyzed the outcome, complications and need for reoperations. After the analysis of the data, we propose our approach to the treatment of these patients.
4- Results: We have treated 58 patients with 22q11 syndrome in this period from 2010-2021. After the analysis of our experience, we propose the primary treatment with a Furlow palatoplasty, followed by a secondary autologous fat graft injection procedure to improve speech in patients with small gap in nasoendoscopy. With both treatments, patients have a very successful functional result, with intelligibility in all patients and none o minimum velopharyngeal insufficiency symptoms
5- Conclusions: We propose the use of our protocol, combining Furlow Palatoplasty and secondary fat graft injection in velopharyngeal region for the management of VFD in 22q11 Deletion Syndrome patients.

22q11, Velopharyngealdisfuction, Furlow , fatinjection

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22q11.2 deletion syndrome, Velocardiofacial syndrome (VCFS), Shprintzen Syndrome,Di George syndrome leaflet for parents, health professionals and educators

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

22q11.2 deletion syndrome, Velocardiofacial syndrome, Shprintzen syndrome, Di George syndrome leaflet for parents, health professionals and educators. Individuals with 22q11.2 deletion syndrome(22q11.2 DS) can present with a wide range of features that are highly variable, even within families. People born with this rare syndrome with the prevalence of 2000-4000 live births, making it almost as common as Down Syndrome. Each child with 22q presents a unique colletion of the wide array of associated issues. There are more than180/200 symptoms or major clinical manifestations caused by the 22q11.2 syndrome among them: congenital heart diseases or defects,particularly conontrucal malformations(tetralogy of Fallot, ventricular septal defect, interrupted aortic arch, and truncus arteriosus, atrial septal defect, interventricular communication defect…) feeding difficulties, hypocalcemia, delayed speech/motor skills; gastrointestinal problems;immune system disorders, palatal anormalities (velopharyngeal dysfunction, cleft palate, submucosal cleft palate, bifid uvula) and other speech problems, characteristic facial features, and learning difficulties.
Hearing loss can be conductive due to Eustachian tube dysfunction or sensorioneural. Psychiatric illness and autoimmune disorders and more common in people born with 22q11.2 syndrome. The diagnosis of 22q11.2 DS is established by identification of a heterozygous deletion at chromosome 22q11.2 on chromosomal microarray analysis or other genomic analyses, like genetic testing:FISH, MLPA,aCGH. For better understanding the parents, educators and health professionals the leaflet pretend bring detailed explanations of the aspects that health, communication, socialization, feeding facilitation strategies and education. Because 22q11.2 syndrome can affect every system in the body and cause over 200 posible syntoms, it is often not properly diagnosed. This patients required a personalized education program idealized by the speech therapist, health professionals and educators. This leaflet still intend to bring precious information to family members,health professionals and educators for better clarification information and management of 22q SD .Will bring illustrative images of patients and quality information.
Education , Speech therapy, 22q

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Validity of the surgical intervention for submucous cleft palate in the patients with 22q11.2 deletion syndrome.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

【Introduction】22q11.2 deletion syndrome (22qDS) is the most frequent known chromosomal microdeletion syndrome characterized by congenital heart disease, mental retardation, characteristic facial features, submucous cleft palate (SMCP) and associated velopharyngeal insufficiency. So far, surgical repair is not considered to be beneficial to obtain adequate velopharyngeal function in most cases of 22qDs due to developmental impairment or underdevelopment of cleft muscle compared with non-syndromic SMCP patients.

【Aims】In this study, we investigated clinical features of SMCP complicated with or without 22qDS, and evaluated usefulness of surgical intervention for SMCP on speech disorder.

【Methods】We retrospectively reviewed records of 170 patients with SMCP and divided into the groups complicated with 22qDS (22qDS group) or without 22qDS (SMCP group), respectively. All subjects were examined epidemiological features including, gender, age at first visit, chief complaint, associated anomalies, and the age of palatoplasty. Speech outcomes were comparatively evaluated between the cases with surgical correction and non-surgical cases for each group.

【Results】The incidence of 22qDS accounted for 27 of 170 patients with SMCP. There was no gender difference and 22 of 27(84.6%) patients presented developmental impairment. Age of the first visit were mostly distributed less than 1 year old in SMCP group, while those in 22qDS group distributed in wider range with median age of 4Y9M. Surgical treatments were applied to 9 of 27 patients in 22qDS group at the older age (median age: 4Y 8M) than those of SMCP group (median age: 2Y 8M). Although 60% of patients in 22qDS group presented postoperative hypernasality, surgical correction of SMCP beneficially improved the speech outcome.

【Conclusions】The surgical intervention could be useful for obtaining greater speech results in SMCP patients complicated with 22qDS. Further investigation will be needed to clarify the clinical indication and appropriate time for surgical intervention.

22q11.2 deletion syndrome

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Maxillary and mandibular relationships in non-syndromic Pierre Robin Sequence, isolated cleft palate and isolated cleft lip

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Pierre robin sequence (PRS) is a craniofacial abnormality presenting with the triad of micrognathia, glossoptosis and airway distress, with or without cleft palates. Although at birth, patients with PRS have a notably altered skeletal pattern, there is contrasting evidence regarding their skeletal pattern later in life.
Aims: To compare the maxillary and mandibular lengths and their relationship to the cranial base in patients with non-syndromic Pierre Robin Sequence (PRS) to isolated cleft palate (CP) and isolated cleft lip (CL) populations.
Methods: A retrospective cohort study based at Alder Hey Children's Hospital. The sample consisted of patients born between 1997-2007 (inclusive) divided into three groups: Non-syndromic PRS (group 1), isolated CP (group 2) and isolated unilateral CL (group 3).
Results: Data from 78 patients was included in the study. Group 1 had smaller SNA angles when compared to both Group 2 ($p<0.001$) and Group 3 ($p=0.002$). Group 1 had smaller SNB angles than both Group 2 ($p<0.001$) and Group 3 ($p<0.001$). Group 3 had significantly smaller ANB angles than Group 1 ($p=0.042$). There was no statistical difference in maxillary and mandibular lengths between the three groups. A non-significant trend towards greater mandibular length in Group 3 compared to Group 1 was noted.
Conclusions: Both SNA and SNB of patients with non-syndromic PRS are significantly reduced when compared to isolated cleft palate and isolated cleft lip patients. The ANB of patients with non-syndromic PRS is significantly greater than isolated cleft lip patients. There was no difference in maxillary and mandibular length in patients with non-syndromic PRS compared to isolated cleft palate and isolated cleft lip patients when using the McNamara analysis. In the largest UK study, the SNA and SNB values have been shown to be similarly reduced and comparable with other non-syndromic PRS populations worldwide.

Pierre Robin Sequence
Skeletal relationship

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Sustainable Cleft Care: A Comprehensive Model Based on the Global Smile Foundation Experience

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Clefts of the lip and palate are one of the most common congenital facial anomalies. Patients in underserved regions with these facial differences lack access to medical care, surgical expertise, prenatal care, or psychological support. Moreover, the deformity results in significant economic strains on patients and their families. While surgical outreach programs have attempted to fill this void, significant challenges facing international comprehensive cleft care persist.
Aim: Propose a roadmap for international sustainable cleft care based on the Global Smile Foundation experience.
Results: International sustainable comprehensive cleft care can be achieved by standardizing surgical outreach programs. Standardization of these missions would ensure uniform care delivery and encourage stakeholders to cooperate and adequately allocate funding and resources. Capacity building can be achieved through the "diagonal" model of cleft care delivery, multidisciplinary workshops, fellowship programs, research and quality assurance, as well as leveraging emerging technologies such as Augmented Reality.
Conclusion: International comprehensive cleft care requires continuous collaborative efforts between visiting and local teams as well as international and national organizations. Standardizing and regulating current practices as well as promoting capacity building initiatives can contribute to sustainable cleft care.
Global Health
Quality of Life

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Expanding the Clinical and Surgical Capacity to Address the Needs of Neglected Primary and Secondary Cleft Lip and Palate Patients in the State of Oaxaca-Mexico (Part II): Developing a new model of Comprehensive and Humanitarian Cleft Care within a State of the Art Mobile Hospital Facility

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction:
CLP patients and families in the poorest areas of Mexico face several barriers to access timely, safe and quality treatment. Mobile Surgery International brought a state of the art mobile hospital facility to Oaxaca - México, to develop an innovative and Comprehensive Cleft Care model to provide free medical and surgical care to patients with facial differences.

Aims:
To describe the development of a new model of Humanitarian and Comprehensive Cleft Care that aims to eliminate the backlog of patients with facial differences in the poorest areas of Mexico.

Methods:
A mobile surgical unit was brought to Oaxaca, Mexico in 2019. A strategy to develop a Comprehensive and Humanitarian Cleft Care model was created following the diagonal model to address the needs of neglected cleft lip and palate patients. During the implementation of the model the COVID 19 pandemic started and adjustments were needed to start activities.

Results:
In one year of activities, a team of 46 people has been trained and consolidated, being able to offer comprehensive care to patients with congenital facial differences. Attention is accessible for primary and secondary patients regardless of their age or previous participation in surgical missions.

The circuit is made up of 12 programs: pediatrics, nutrition, pre-surgical orthopedics, child life counseling, breastfeeding support, psychology, dentistry / pediatric dentistry, internal medicine, surgery, speech therapy, COVID free shelter.

A COVID free circuit was developed that has allowed 500 surgeries to be performed in 257 patient between November 2020 to November 2021.

Conclusions:
The development of a comprehensive cleft care model for patients with facial differences in a humanitarian context is possible using a state-of-the-art mobile medical infrastructure
Global-cleft-care; Neglected-surgical-conditions; Comprehensive-cleft-care; Mobile-Hospital

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Pattern of occurrence of non-syndromic cleft lip/palate in Eastern and Southern Africa

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Background
Non-syndromic cleft lip/palate (NSCL/P) is among the most common congenital craniofacial malformation found among live births and whose prevalence varies widely in different regions of the world. A review of literature reveals an existing dearth of information on the patterns of occurrence of NSCL/P in sub-Saharan Africa. Belarisu Foundation is a non-governmental organization that has partnered with Smile Train to offer free cleft lip and palate surgeries to those affected in the Eastern and Southern African region.

Aims
To describe the socio-demographic pattern of occurrence of NSCL/P as seen during surgical outreach programs undertaken by Belarisu foundation in Kenya, Somalia, South Sudan and Angola

Methods
Retrospective cross-sectional analysis of ALL the NSCL/P cases managed during surgical outreach programs undertaken by Belarisu Foundation in Kenya, Somalia, South Sudan and Angola over a period of four years (January 2018 – December 2021)

Results
A total of 2,184 NSCL/P cases were seen and managed over this period. Unilateral cleft lips contributed to 60% (1,317) of all cases while bilateral cleft lip cases were 18% (393). Cleft palates made up 21% (462) of the case load. Only 12 Tessier cleft cases presented during this period. The age range was 10 weeks to 78 years (mean = 6.24 years). Males were disproportionately affected with a male – female ratio of 1.6:1.

Conclusion
Patterns of occurrence of NSCL/P are a crucial component in the estimation of the burden of disease as well as availability and provision of care, particularly in low-resource settings. This can inform national health policy(s) research into local risk factors and on provision of targeted care

Pattern, Africa, Cleft

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Access to care for families with clefts and other craniofacial conditions

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Access to care for families with clefts and other craniofacial conditions

Introduction
It is well established that disparities and inequalities exist within healthcare and subsist within cleft and craniofacial care. Therefore, it is essential to provide an understanding from healthcare professionals how they view the access to the provision of care for families with cleft or craniofacial conditions.
Aim
To elucidate how healthcare professionals view access to care from various population groups in our society.
Methods
An adapted version of the questionnaire Defining and Measuring Access to Healthcare: the Patients' Perspective was utilised. The respondents had to answer how they viewed the provision of care in four areas (availability, adequacy, accessibility, affordability) for the following groups: general population, migrants/immigrants, families with low educational level, single parent, people with disabilities, ethnic minorities, religious minorities, refugees and asylum seekers. This was rated on the following scale: 1 - Not at all, 2 - To a very little extent, 3 - To some extent, 4 - To a great extent, 5 - To a very great extent.
Results
A hundred eighty-nine participants (35.4% male, 52.9% female) from 24 European countries and eight non-European countries participated. Their age range was 18 - 74 years old, and 47% of them have worked with cleft and/or craniofacial care for over nine years. The result indicated a disparity between the different population groups. When combing the three lowest ratings for the variable accessibility, which means that treatment is accessible in a timely way throughout all stages of their care. For the general population, 22,7% has a challenge to obtain care, while for migrants/immigrants, 32,3% and refugees and asylum seekers, 55,9% had a considerably more challenge to obtain care.
Conclusion
The result indicated that the survey respondent believes that the provision of care is different between various population groups.

availability, adequacy, accessibility, affordability care

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Clinica Aleman Project: Cleft Lip and Palate Center in El Salvador

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: In El Salvador, 35.2% of the population lives in poverty. These families show deprivation in education (97.7%), social security (90.8%), sub-employment and unstable employment (84.4%), healthcare (83.7%), among others. It is estimated that 51.8% of the children 0-5 years old live in poverty, without adequate access to healthcare. The children born with cleft lip and palate in El Salvador, Central America, come from this socio-economical context. Clinica Aleman, is a local cleft lip and palate center that has worked offering free integral cleft treatments for the low-income population in El Salvador.
Aims: The aim of the present study is to describe the work done by a local cleft lip and palate center in El Salvador, Central America.
Methods: A quantitative retrospective study was done to analyze the epidemiological data of the population treated at a local cleft lip and palate center in El Salvador from 2009 to 2021.
Results: 253 surgeries were done in 123 patients; 72 were male, and 51 were female; 71 patients had unilateral cleft lip and palate (UCLP), 36 were female, and 35 were male, 42 had bilateral cleft lip and palate (BCLP), 34 were male and 8 females, 8 had isolated cleft palate (ICP), 6 females and 2 males; 2 had isolated cleft lip (ICL) both were male. In concern to the number of surgeries by patients, 43 patients received 1 surgery, 43 received 2 surgeries (86), 22 received 3 surgeries (66), 12 received 4 surgeries (48), 2 patients received 5 surgeries (10).
Conclusions: The majority of the patients treated at this center have received at least two essential treatments in cleft care. A growing number are receiving bone graft surgeries in a comprehensive treatment involving nutritional and psychological support, speech-language therapy, maxillofacial orthopedics, orthodontic and dental treatments.

Cleft, lip, palate, bone, graft

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Developing a Culture of Safety in Cleft Missions

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction-Many hospitals across the country have adopted safety techniques to reduce harm in the patients we care for. These techniques have been shown to be effective and by implementation have established a culture of safety. Many in the surgical community have embraced the need for cleft missions into resource deficient areas to improve quality of life. Though many models are available, it is still imperative to create a safe system to reduce harm. Cleft Teams engaging in such missions should work to establish a culture of safety.
Methods- Implementation of strategies such as the World Health Organization's "huddle" and "debrief" are a start. The entire team needs to feel empowered to speak up for safety. Procedures should be defined to assure informed consent, credentialing for each aspect of the team, pre- intra- and perioperative care should be standardized decreasing variability that adds risk. Importantly, the culture should reduce hierarchy that may prevent speaking up for safety. Strategies to address the pandemic should employ preoperative PCR testing as well as antigen testing for family members and staff. Vaccination of the staff should be required. Safety techniques will be discussed and how they directly affect the cleft mission.
Conclusion- Introduction of a safety focus in cleft missions should decrease harm.

International, safety, harm

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Centralization of services for children with cleft lip and/or palate in Hong Kong

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction
Cleft services led by pediatric surgery were centralized in Hong Kong along with the establishment of the new Hong Kong Children's Hospital (HKCH) in 2019.

Aims
This study aimed at reviewing the services using international standards and particularly comparing the speech therapy service provision before and after centralization.

Methods
Service coordinator was interviewed for data including specialty members on the team, closely liaising professionals, new case number per year, patient care setting, clinical audit and research. A binary yes-no coding was used to chart whether the service meets the recommendations made by the Clinical Standards Advisory Group (CSAG) in the United Kingdom in 1998. Qualitative interview was done with speech therapists under the topic of assessment and treatment protocol, as well as clinical audit and research. These data were subjected to thematic analysis.

Results
Cleft care provided in HKCH fulfills most of the CSAG recommendations that the care is provided through a multidisciplinary team with essential specialty members and liaison with other professionals. Service is provided in both inpatient and outpatient settings, with periodic clinical audit and research output. A recent reduction of new cases and primary cleft operations was noted due to various reasons including COVID-19 pandemic. Speech outcome measures were commented as more valid given the standard use of cleft speech specific assessment tool after centralization, which facilitated clinical audit and quality research. Variation in practice has been eliminated in terms of assessment and treatment timing, while more instrumental assessments were implemented to guide clinical management.

Conclusions
Findings reflected the viewpoints from professionals on the cleft care quality at HKCH that centralization brings benefits and approaches international standards. Key outcome measurements including speech, appearance and psychological function should be the next step for assessing the service quality, as well as to survey patient's perspective towards the new service model.
Cleft services, Centralization, Hong Kong

1153

Equality of Provision of Cleft Care in Europe: A survey of cleft care providers involved in the European Union (EU) COST (Cooperation in Science and Technology) Action

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction:
Cleft care requires co-ordinated multidisciplinary input to achieve optimum outcomes, while minimising burden of care for patients and families. Funding and organisation of cleft care varies across the EU.

Aim:
To study country/institution level variations in organisation, resources and funding related to cleft care in countries involved in the COST Action

Methods: This study forms part of the European Cleft and Craniofacial Initiative for Equality in Care (ECCE) funded by an EU COST Action. A survey questionnaire was designed by a core group for the COST Action, with feedback from COST Action members at an in person meeting. The survey was disseminated to all participants in the COST Action and participants were asked to respond on behalf of their unit/country after consultation with colleagues in their units/country.

Results: 39 responses were received and were grouped into European regions: Northern (12.8%), central (5.1%), western (10.3%), southwestern (18%), southeastern (38.5%), eastern (0%). COST actions include invited collaborators who comprised 15.4%. Most cleft care was provided by public institutions, but 10% reported private care provision with 5% reporting a combination.
Most respondents were surgeons with fewest responses from psychologists and social workers. Most centres had cleft teams, but 13% were not part of a team. Most reported some level of challenge in providing appropriate care and accessing funding with psychology being one of the least well resourced services. Less than 25% reported the existance of national guidelines for cleft service provision.

Conclusions: Marked variation in resources/funding for comprehensive care exists across the EU. Multidisciplinary care is not equitably resourced and variation exists not only between countries but also within institutions. There is a need to agree minimum standards for provision of cleft care.

Equality, provison of care; COST

973

Cleft missions during COVID-19 pandemic: What we can do for quality and safety!

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Background: COVID19 pandemic continues to be a major health problem worldwide. Operation Smile Egypt has a great responsibility and carries a heavy burden to manage and provide its services to large numbers of suffering children with cleft conditions. Although quality assessment is hard to apply everywhere to present safety environment during the pandemic, we tried to develop the best quality measures to continue introducing our services to planned scheduled missions.
Methods: Operation Smile established very strict guidelines through its quality team. Virtual screening sessions to select ideal patients had been applied a week before every surgical program to diminish patients' physical attendance as much as we can. COVID-19 rapid antigen testing applied for all volunteers, patients and their families coming to the final screening sessions. Vaccines offered to all staff and volunteers. A trained quality team had been added to team composition to take care of these guidelines. Prepared plans were always ready to deal with and/or isolate any newly infected volunteers or patients during the mission.
Results: Rapid antigen testing and vaccination added great values to moving forward to regain activities and help our patients. From July to December 2021, we had implemented 10 national and 3 international missions respectively with totally screening of 787 patients and surgically managed 532 patients of them. In national programs, we depended mainly on our national volunteers to overcome the travel ban to international volunteers. Attention to local infection rate and concomitant health crises were considered with new guest hospitals selected according to their capacity and distance from the crowded areas. Virtual connections were very helpful to smoothly run our programs.
Conclusion: Field testing and implementation of quality guidelines can identify safety and create a peaceful environment for patients and volunteers to run surgical programs for cleft patients.
Cleft missions
COVID19 pandemic
Quality

928

Cleft Surgery in Romania: Our Experience from an Outreach Setting to a Cleft Center

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate, the most common facial malformation worldwide, affects over 20.000 people in Romania with 300 new cases emerging every year. Their medical needs, from birth to maturity, involve many specialties, surgery included, gathered together in a coherent multidisciplinary team.
Aims: In view of providing our cleft patients good esthetic and functional results, we aim to present our journey in the cleft field during the last 20 years, focusing on primary surgical treatment, emphasizing on what still need to be done.
Methods: A retrospective study was done on our database for cleft patients treated in the Cleft Unit at the Hospital for Children, Bucharest, for a 20 years period, from 2002 to 2021. We analyzed information regarding patients treated, type of deformities, protocols, surgical treatment including surgical techniques, primary versus secondary procedures, outcomes.
Results: For the study period, 604 cleft lip and/or cleft palate patients were operated and 920 surgical procedures were performed, 65% of these being primary surgery. Out of the 598 primary surgeries, 275 were cleft lip repairs, 220 for unilateral and 55 for bilateral cases, while 323 were cleft palate repairs, performed to 226 patients. The main surgical technique for primary cheiloplasty was Millard with modifications, performed in 84% of the cases. For primary palatoplasty, out of the 226 patients, 126 underwent a one-stage procedure, while for 100 patients the cleft palate was closed using a two-stage repair, soft palate preceding hard palate, protocol we followed routinely from 2003 to 2010.
Conclusions: For the last two decades, cleft surgery represents an important part of our work. Even the results are decent, we still need to improve in many ways: surgical techniques refinements, completing the cleft team, objective and standardized assessment of the results, long term evaluation, mentoring from an experienced cleft center, etc.
cleft surgery, cleft team

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Promoting palate examination of every newborn: Design and implementation of the Early Cleft Care project in Bungoma County, Kenya.

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: In limited-resource settings, the safety of infants born with a cleft palate (CP) is compromised by the lack of early diagnosis. A lack of/delay in diagnosis can adversely affect growth, development, and timely medical management. False beliefs around the cause of cleft lip (that often accompanies CP) and the lack of awareness regarding case management among health professionals further contribute to the ill-fate of patients.
Aim: To promote systematic palate examination at birth across all health facilities in Bungoma County.
Methods: We devised a 3hr-training curriculum to raise awareness among nurses of the need to examine every newborn's palate. Training sessions were organised across Bungoma County with the support of the Ministry of Health. Knowledge assessment and feedback on the curriculum were captured through questionnaires filled by a sample of 316 participants immediately after training and during follow-up visits of facilities.
Results: In September 2021, 1,092 nurses providing maternal and newborn care services in 190 hospitals, healthcare centres, and dispensaries across Bungoma County were educated on the adverse consequences of delayed/lack of cleft palate diagnosis on patients' health and instructed in the correct technique to conduct palate examination. Prior to training, 72.9% of nurses said that they never examined the palate of a newborn. Immediately after training, 81% of nurses reported feeling confident that they could examine the palate of every newborn and 90.5% felt confident that they could assist mothers with feeding their infants with a cleft. During facility visits, self-reported implementation of palate examination was close to 100%.
Conclusions: This training initiative empowered health workers assisting deliveries and providing maternal and child health services with essential knowledge and skills to examine the palate of every newborn and offer immediate counselling and feeding assistance to mothers of newborns with a cleft. Strategies to ensure that adoption of practice is sustained are recommended.

palate examination; limited-resource setting; feeding'

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Why is it Imperative to have comprehensive cleft care centres in Low and Medium income countries ?

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction

Comprehensive care is the goal of management of cleft lip and palate deformities in any setting. This not only includes surgery, speech support and orthodontic care but also Nutritional counselling and growth monitoring, psychosocial support , dental care, genetic counselling , prenatal counselling amongst other things .

Aim

This presentation will outline why it is extremely important for cleft care centres to provide comprehensive care particularly in low and middle income countries.

Methods

Very often the first point of contact of cleft patients in these settings are with the cleft team. There maybe very significant issues of malnutrition and attendant comorbidities which may be life threatening. Significant congenital anomalies other than the cleft which again might impact quality of life will be present in a significant minority of these patients and will be unravelled only by due diligence by the cleft team

Conclusions. This presentation will highlight our experience in addressing the challenges mentioned earlier while setting up a comprehensive cleft care centre and will argue for a very inclusive agenda for these centres so that quality of life in children with cleft can be optimised
Comprehensive care. Imperative LMIC

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The First Hybrid International Educational Simulation-Based Comprehensive Cleft Care Workshop

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Objective: Describe the first hybrid global simulation-based comprehensive cleft care workshop, evaluate impact on participants, and compare experiences based on in-person versus virtual attendance.

Design: Cross-sectional survey-based evaluation.

Setting: International comprehensive cleft care workshop.

Participants: Total of 489 participants.
Interventions: Three-day simulation-based hybrid comprehensive cleft care workshop.

Main Outcome Measures: Participant demographic data, perceived barriers and interventions needed for global comprehensive cleft care delivery, participant workshop satisfaction and perceived short-term impact on practice stratified by in-person versus virtual attendance.

Results: The workshop included 489 participants from five continents. The response rate was 39.9%. Participants perceived financial factors (30.3%) the most significant barrier and improvement in training (39.8%) as the most important intervention to overcome barriers facing cleft care delivery in low to middle income countries. All participants reported a high level of satisfaction with the workshop and a strong positive perceived short-term impact on their practice. Importantly, while this was true for both in-person and virtual attendees, in-person attendees reported a significantly higher satisfaction with the workshop (28.63 ± 3.08 vs. 27.63 ± 3.93; p=0.04) and perceived impact on their clinical practice (22.37 ± 3.42 vs. 21.02 ± 3.45 p=0.01).

Conclusion: Hybrid simulation-based educational comprehensive cleft care workshops are overall well received by participants and have a positive perceived impact on their clinical practices. In-person attendance is associated with significantly higher satisfaction and perceived impact on practice. Considering that financial and health constraints may limit live meeting attendance, future efforts will focus on making in-person and virtual attendance more comparable.

Cleft, Education, Simulation, Workshop, Surgery

979

The Pandemic's Disruption of Comprehensive Cleft Care Globally

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction
COVID-19 changed the landscape for comprehensive cleft care (CCC) in high income countries (HICs) and low- and middle-income countries (LMICs) due to numerous factors including healthcare operational restrictions and public concerns about the disease. Treatment continued with modified or delayed schedules in some settings, while other countries experienced significant delivery disruptions.

Objective
To identify impact of COVID-19 on global CCC through an international survey.

Methods
An online survey was administered in six languages by the Circle of Cleft Professionals, an alliance of 10 global NGOs, to cleft professionals worldwide. Survey questions included, "How is COVID-19 currently affecting your cleft care work location?" and "How has the pandemic influenced your ability to earn income from your CCC work?". Changes in patient volume, quality of care, as well as the availability of professional advancement opportunities were also explored.

Results
There were 172 survey respondents. 74% saw a decrease in the number of patients with a cleft treated. 51% saw a decrease in the quality of cleft care. 50% experienced an income reduction from cleft work, of which mainly resided in LMICs. While all respondents reported great concern for the implications of COVID-19, this was disproportionately higher in LMICs. Significant differences were also found between professionals in LMICs and HICs in their experience of the pandemic and their resulting priorities for professional development.

Conclusion
COVID-19's disruption exacerbates existing challenges and introduces new limitations to cleft care worldwide, but its impact may be greater in lower resource settings, potentially increasing global inequity of CCC. The effects of pandemic restrictions, new economic hardships, and treatment backlogs creates extensive concern for healthcare professionals, patients and families affected by clefts. Prioritizing the support of cleft teams through improved protocols, telehealth initiatives, and professional development programs is necessary for advancing comprehensive cleft care.
COVID-19, comprehensive cleft care

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Developing a Sustainable NasoAlveolar Molding Program in Outreach Settings: A Ten year Follow-Up

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction:
Global Smile Foundation (GSF) is a not for profit foundation whose founders and volunteers have been providing cleft care to underserved communities around the world for 35 years with focus on interdisciplinary cleft care and sustainability and training initiatives for on-site cleft care providers. In 2012, GSF added pre-surgical NasoAlveolar Molding (NAM) therapy for their patients in Guayaquil, Ecuador

Methods:
Data was collected from GSF surgical, clinical, photographic and dental records.

Results:
A total of 238 patients were treated with pre-surgical therapy: 192 patients received NAM therapy, while 46 patients were treated with lip tape and/or nasal elevator. Of the 192 NAM patients who received NAM, long-term follow up was available for 96 patients (50.0%), while 84 (43.8%) were lost to follow up or subsequently seen by another foundation, and 12 (6.3%) were undergoing NAM or awaiting primary surgery.
Of the 96 patients with long term follow up, we present information on diagnosis, gender, NAM initiation, completion/ incompletion, surgeries completed, including primary, revision, GingivoPerioPlasty, pre-maxillary setback, Velopharyngeal Insufficiency corrections and follow up years.

Over a 10 year period, 13 NAM providers were trained in Ecuador, 7 provided treatment in Ecuador, and 6 provided treatment internationally, making Ecuador a site for information exchange. In 2015, a fully staffed Cleft Team and Center was established (including Plastic Surgery, Pediatric Dentistry, Orthodontics, Speech Therapy, Nutrition, Psychology) that runs year round. In 2017 the government affiliate funded the first salary paid position for a dentist to provide NAM and Dental Care. This includes continued long term follow up and comprehensive cleft care in addition to NAM therapy. During COVID, telehealth was provided.

Conclusion:
With yearly patient follow-up and year-round partnership with local professionals, our model shows successful long-term delivery of NAM therapy as part of a sustainable comprehensive cleft care strategy in outreach settings.

Nasoalveolar Molding, Global care, NAM

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The Operation Smile Global Surgery Fellowship: An opportunity to advance cleft care on the global health agenda during the COVID-19 pandemic

Dr Priyanka Naidu[1], Dr Atenas Bustamante[1], Dr Maria Fernanda Tapia[1], Dr John Dutton[1], Dr Allyn Auslander[1], Dr William P Magee, III[1,3,4]

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Background:

Cleft care is longitudinal and utilizes numerous sectors within a health system. Intentional investment in comprehensive cleft care can catalyze increased capacity for all essential surgery. The call to prioritize surgery on the global health agenda has created a need for global surgery leaders, yet there are few structured programs that support development of necessary skills. The Operation Smile Global Surgery Fellowship ("Fellowship"), established in 2009, is an example of a structured program that is focused on developing the next generation of global surgery leaders.

Aims:

To demonstrate that fellowship experiences can be valuable in developing global surgery leaders in cleft care

To highlight factors in addition to travel experience that foster development of global surgery leaders in cleft care

Methods:

This was a cross-sectional descriptive analysis. An 18-item questionnaire was designed and administered via REDCap to all 10 fellows currently in their Fellowship from eight countries.

Results:

The response rate was 90%. Three fellows from high-income countries (33%) and six from low- and middle-income countries (67%). Despite the pandemic, the Fellowship positively impacted exposure to research in global surgery (n= 9, 100%) and cleft care (n= 9, 100%), research skills (n= 8, 88%), clinical knowledge in cleft care (n= 8, 88%), opportunities for career development (n= 9, 100%), access to mentors (n= 9, 100%),

opportunities to lead projects (n= 9, 100%), opportunities for local collaboration in developing context-relevant solutions (n= 9, 100%).

Conclusion:

The Fellowship continues to provide opportunities for career development, research, and mentorship to develop global leaders in cleft care, despite the challenges of COVID-19 pandemic. This is a model that can be implemented in both high- and low-middle income countries, with funding support from organizations such as Operation Smile.

global surgery, cleft care, leaders

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Classification Systems of Cleft Lip, Alveolus and Palate: Results of an International Survey

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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

INTRODUCTION

During the history of cleft care, many classification systems have been developed and implemented. As a result of great variety in possible classification systems, craniofacial specialists often use different classification systems. This hampers mutual understanding, communication and treatment outcome comparison among specialists and prevents the development of a uniform prevalence/incidence system.

AIMS

This study aimed to identify commonly used classification systems by cleft providers around the world, including the perceived indications and limitations of each system.

METHODS

A cross-sectional survey was conducted, 197 registrants from three international cleft/craniofacial meetings were included. Participants were sent a web-based questionnaire concerning cleft classification systems. Main outcome measures were frequency of commonly used classification systems, their perceived indications and limitations.

RESULTS

A total of 197 respondents from 166 different centers completed the questionnaire. Healthcare professionals from all disciplines responded, with the most frequent respondents being plastic surgeons (38.1%), maxillofacial surgeons (28.4%) and orthodontists (23.9%). Eighteen different classification systems were in use. The most frequently used systems were the International Statistical Classification of Diseases and Related Health Problems (ICD-10) (35.5%), LAHSHAL (34.0%), and Veau (32.5%) classification systems. Most respondents (32.5%) indicated that anatomical and morphological characteristics are essential components of a classification system.

CONCLUSIONS

Great variety in the use of classification systems exists among craniofacial specialists internationally. The results recommend the usage of the LAHSHAL classification of OFCs, due to its comprehensiveness, relatively high implementation rate globally, convenience of usage and complementarity with the ICD-10 system. Moreover, it can overcome deficiencies inextricably linked to ICD-10, such as incapacity to describe laterality and clefts of the alveolus. More international exposure to the merits of using the LAHSHAL classification system would be highly recommended.

Classification system; orofacial cleft; survey

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Integrating digital technologies in prosthodontic management of cleft lip and palate

Dr Akanksha Srivastava[1], Dr David Reisberg[1]
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PS1 Monday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 11, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate patients often present with complex and diverse oral conditions, including partial anodontia, malocclusion, altered speech, poor esthetics, lack of normal smile line, and altered facial anatomy. Oral rehabilitation of such defects commonly involves surgical, orthodontic and prosthetic management. Digital technologies, such as computer assisted designing and manufacturing, static guidance, dynamic navigation, and virtual reality have opened a new era of diagnostic and planning capabilities for prosthodontic management of such orofacial conditions.

Aim: The purpose of this clinical presentation is to describe integration of digital technologies for quality improvement of prosthodontic outcomes in cleft lip and palate patients.

Methods: The author will illustrate the implementation of various digital workflows for diagnosis, planning and clinical management of prosthetic challenges, ranging from single missing tooth to severe malocclusion cases with unsuccessful surgical and orthodontic outcomes. The presentation will also highlight the advantages of digital technologies in enhancing patient's psychological goals and preparedness for treatment, as well as promoting predictable clinical outcomes.
CAD/CAM, guided implant surgery, virtual-reality

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An objective evaluation of post cleft lip repair deformities and the optimum guide to avoid them.

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Background: Several assessment systems of the cleft-related facial deformity have been reported in the medical literature. Assessments have been made from direct clinical evaluation, facial casts, photographs, on-screen digital images, video recording, laser scanning, computer-aided tomography, and stereophotogrammetry. An evaluation method based on standardized photographic views is developed for the sake of evaluation of the common postoperative deformities and to detect the responsible factors for their occurrence and how to avoid them.
Material and methods: One hundred cleft lip cases (60 unilateral and 40 bilateral) were evaluated by using standard sheet and scoring system based on photographic analysis of different items including cupid's bow, nasal symmetry, vermilion contour and white roll continuity. Images obtained through professional patient imaging technicians.
Results: According to this scoring system, we found 16.7% excellent, 36.6% good, 30% fair, and 16.7% poor results in the unilateral repair cases. For bilateral clef lip cases, we found 35% excellent, 30% good, 15% fair, and 20% poor outcomes. The most common postoperative deformities were deformed cupid's bow, depressed cleft alar rim and vermilion contour asymmetry
Conclusion: This objective evaluation system can determine the common cleft lip nasal deformities with detection of the responsible factors. Principles that guide optimum surgical repair have been advocated to avoid these common postoperative deformities.
Evaluation
Cleft lip
Images
Deformities

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ORTHOPEDIC TREATMENT IN A PATIENT WITH CLEFT AND LIP PALATE UNILATERAL (2 MONTHS-3 YEARS OLD) CASE REPORT

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ORTHOPEDIC TREATMENT IN A PATIENT WITH CLEFT AND LIP PALATE UNILATERAL (2 MONTHS-3 YEARS OLD) CASE REPORT

Introduction: The role of the orthodontist is fundamental in the interdisciplinary treatment of orofacial clefts, such as cleft lip and palate. The therapeutic intervention commonly begins during the neonatal period of the patient and with adequate monitoring and control, favorable results can be achieved focusing on the treatment of the displaced alveolar segments as well as the use of techniques to sculpt the cartilage and correct the lip and nasal nostril deformities in an effective way, managing the vertical, sagittal and transverse dimensions followed by the control of the skeletal and dental components in evolution.
Materials and methods: The review, evaluation, and evolution of a patient with a diagnosis of left cleft lip and palate in Contigo Sonreímos association, was accomplished from the beginning of their orthopedic treatment from 2 months of life to 3 years of age, with a treatment divided into 2 phases:
· Presurgical orthopedic treatment: Using the nasoalveolar molding technique; labial bands and intermaxillary elastics were used from 2 months to 5 months of age
· Maxillary orthopedics: Using appliance with an upper V expander screw and a lower parallel expander as well as maxillary traction using a face mask
Results: Presurgical orthopedic treatment is an effective treatment in CLP, which improves the quality of life of the patients.
It was observed that the feeding patterns improved, evidenced in a favorable increase of weight; the shape of the arch and the proximity of the segments notably improved with favorable postoperative results.
Conclusion: Thanks to the application of the orthopedic techniques, benefits are noticed, such as improvement in alveolar development at the fissure site when aligning and approaching the maxillary segments, improvement in the masticatory function, alignment, and tooth eruption.

ORTHOPEDIC TREATMENT, CASE REPORT

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Presurgical orthopedic treatment in cleft lip and palate patients: series of cases

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1.Introduction
Cleft lip and palate (CLP) represent the most common congenital malformation of the head and neck. Several genetic and epigenetic factors are identified in its etiology. In the first two years of life, several surgeries are performed in order to closure the lip and palate cleft and correction of the nose. In 1999, the first treatment protocol with a nasoalveolar molding (NAM) was defined. The NAM consists of a presurgical orthopedic device that allows the reduction of the size of the cleft and the modulation of the nasal cartilage. Aim: The main purpose of this poster is to present two clinical cases that underwent NAM.

Methods: Two patients, one with bilateral CLP and the other with left unilateral CLP, followed at the Institute of Orthodontics of the Faculty of Medicine of the University of Coimbra and the Pediatric Hospital of Coimbra were submitted to the presurgical NAM protocol. The NAMs were placed on the eighteenth day of life and the parents were instructed to put the appliances day and night, removing only to perform daily hygiene. NAM control was performed weekly for 12 weeks until the time of lip closure surgery.

Results: A significant reduction of the cleft before surgery with the approximation of the cleft lip segments and the improvement of nasal projection with columella lengthening was observed in both cases.

Conclusions: Presurgical treatment with NAM in CLP patients improves surgical results which may contribute to aesthetic and functional improvement.

Cleft, nasoalveolar molding, orthopedic treatment

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Does presurgical nasoalveolar molding reduce the need for future bone grafting in cleft lip and palate patients? A systematic review and meta-analysis

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1. Introduction: nasoalveolar molding (NAM) is a technique that is utilized in patients with cleft lip/palate before performing lip surgery. This procedure has been shown to result in a more aesthetic nose with lesser columellar deviation and reduced scarring.
2. Aims: The study aims to evaluate the long-term results of nasoalveolar molding and gingivoperiosteoplasty in cleft lip and palate patients.
3. Methods: An electronic search of databases (i.e., PubMed, ISI Web of Science, EMBASE, Scopus, and Google Scholar) from inception to March 2021 was performed, and after selecting the eligible studies, relevant data were collected using piloted extraction forms. The success rate of NAM and gingivoperiosteoplasty and Bergland score were pooled using random-effects inverse-variance meta-analysis.
4. Results: Seven studies from 469 relevant studies were included in this meta-analysis and systematic review. The pooled mean success rate of nasoalveolar molding with GPP based on the continuity of alveolar bone structure was 71% (95% CI=54–85), demonstrating that in 71% of cases, NAM+GPP treatment eliminated the need for future bone grafts. Also, no significant difference was found between the success rate (RR=1.00, 95% CI=0.64–1.58) and the mean Bergland score (MD=0.64, 95% CI=-1.04–2.31) of NAM+GPP and skeletal bone graft. Only one study evaluated the use of NAM alone without gingivoperiosteoplasty. None of the patients who received nasoalveolar molding had a successful result.
5. Conclusion: Nasoalveolar molding and gingivoperiosteoplasty were successful in 71%t of cases treating cleft lip and palate patients. This treatment is comparable to the secondary alveolar bone graft in both the success rate and the alveolar height generated while being less invasive and with lower morbidity. Despite this finding, the use of NAM alone is not successful in generating alveolar bone in cleft palate patients.
Nasoalveolar Molding, Neonatal Orthopaedics, Gingivoperiosteoplasty

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Perinasal and Intraoral Digital Impression to create PNAM in a Neonate with Unilateral Cleft Lip and Palate

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Aims
PNAM (presurgical nasoalveolar molding) is a presurgical appliance that assists nasoalveolar development. Previously, impression materials such as alginate or silicon were used to create PNAM. However, especially for neonate, a special care was required to refrain an accidental ingestion, aspiration or choking while impression. Therefore, it was impossible to take a seamless impression from the perinasal and intraoral region. In this report, we present a safer technique for a neonate using digital impression to create PNAM.
Methods
A neonatal female with unilateral cleft lip and palate on the left side, visited at Advanced Cleft Lip and Cleft Palate Center, Okayama University Hospital. She showed difficulties to feed due to the cleft. First, in order to create a working model for PNAM, digital impression was taken from a neonate with unilateral cleft lip and palate, using optical impression scanner. Next, STL data directly obtained from the perinasal and intraoral region were transferred to a three-dimensional printer to build up a working model.
Results
The seamless structures of perinasal and intraoral region were represented in a single working model by STL data obtained from a neonate with unilateral cleft lip and palate. Then, PNAM appliance was molded up by immediate curing resin. Followingly, a nasal hook of PNAM was attached to the appliance in accordance to the inside of nasal hole on the working model. The PNAM was finally set and adjusted to the neonate with unilateral cleft lip and palate.
Conclusions
Perinasal and intraoral digital impression had advantages to represent seamless structures including intraoral and perinasal region in a single working model. Therefore, PNAM hook could be adjusted to the nasal hole in the working model before the appliance was set to the neonate. Thus, seamless digital impression for perinasal and intraoral region might contribute to provide PNAM appliance precisely with safety.
PNAM, Digital Impression, Neonate, Safety

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Nasal Molding: A New Approach for Pre- and Post-surgical orthopedics in cleft lip and palate patients

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Introduction: One of the most noticeable features in cleft patients is often the nasal deformity. Pre- and post-surgical orthopedics is still a work-in-progress. There are many different protocols, devices, and outcomes research that still need to be done in this area but undoubtedly, we are convinced of the benefits it can provide with better surgical results.
Aims: The purpose of this presentation is to show a new approach to pre- and post-surgical management of cleft lip (CL) and palate (CP) patients. This technique improves results by creating a more manageable and effective treatment plan for all providers who treat CP patients (Orthodontists, Pediatric Dentists, Surgeons). Treatment of patients with nasal appliances, at a young age, can potentially reduce the number of future operations.
Methods: We use one or two different appliances in pre-surgical treatment, depending on cleft size. We generally use two appliances in bilateral CL, when it is necessary to bring the premaxilla to the midline and align the occlusal plane, or in wide unilateral CL/CP. We use separate intraoral and nasal appliances; the latter is the Rhinoplastic Appliance Design, designed by the author in 2009. This device is molded to correct the patient's nasal septum deviation and deformation, improve nostril size and columella elongation, elevate the nasal tip, and stretch the prolabium before CL surgery. Using the nasal appliance separately from the oral appliance is more comfortable for the baby and easier for physiological feeding, an important point to consider.
Results: Pre-surgical treatment performed in 5 bilateral CL patients and 5 unilateral CL patients showed a straight nasal septum, columella elongation and better nostril alignment. Postsurgical treatments showed good nostril size and preserved a straight septum.
Conclusions: Pre- and post-surgical nasal molding is an effective and functional technique in CL/CP patients.

Cleft lip, cleft palate, pre-surgical

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Rescue – A Novel Pin-Retained NAM Expander

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Introduction:
Nasoalveolar Molding (NAM) reduces the severity of preoperative deformity in patients with cleft lip and palate before lip repair. The success of NAM requires access to craniofacial care, frequent appointments, and compliance from birth through infancy. Patients who are non-compliant or unable to receive NAM therapy often present with a collapsed palate and alveolar segment on the affected side(s), particularly those with underlying neuromuscular conditions.

Aims:
The goal of a pin-retained NAM expander (Rescue) is to restore the appropriate maxillary and alveolar form after the lip repair without requiring frequent visits and diligent compliance. Additionally, this appliance may improve feeding before palate repair by creating an oronasal separation and provides the tongue with a normal resting posture during growth and development.

Method:
The Rescue is an acrylic prosthetic palate with an expander screw, made 1-2 weeks before lip repair. After the lip is repaired, the appliance is fixed on the palate with pins while the infant remains under general anesthesia. After 2 weeks, the parents are instructed to turn the screw twice a day (0.5 mm/day) until adequate maxillary expansion and alignment of alveolar segments are achieved. The patient can be monitored at longer intervals through in-person or telemedicine visits. Once the expansion is achieved, the inactive appliance is used as a retentive device and removed during the palate repair. Placement and removal of this appliance adds 10 minutes to the total operative time.

Results:
The Rescue will improve lip support, midface projection, arch form, and alveolar alignment for those patients who were unable to receive presurgical orthopedics in their infancy. This pin-retained prosthesis requires less compliance and minimizes follow-ups as it is fixed intraorally and does not require adjustments.

Conclusion:
This novel appliance "rescues" patients with collapsed cleft palates and alveolar segments before palate repair, normalizing their maxillary form and improving surgical outcomes.
presurgical, infant, expansion, palate, cleft

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Developing core outcome set for anthropometric evaluation for presurgical infant orthopaedics for unilateral cleft lip and palate: e-Delphi consensus.

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Introduction: Presurgical infant orthopaedics (PSIO) in infants with cleft lip and palate (CLP) focuses on improving the anatomical conditions of the lip and nose before the first lip surgery; however, its effectiveness has not been objectively proven.
Objective: To identify the anthropometric measures proposed in the specialised literature and select through an expert panel a core outcome set for anthropometric evaluation for PSIO for unilateral cleft lip and palate (UCLP).
Method: After an exhaustive literature search, the intraoral and extraoral anthropometric measures were identified and their operational definitions and schematic representations were elaborated; those that were apparently the same but reported under different names were grouped together. Three rounds of the Delphi methodology were carried out to choose a set of anthropometric measures, with a ≥80% expert consensus considered necessary to evaluate the effectiveness of PSIO in UCLP.
Results: A total of 10 experts participated in the panel. The panel chose 18 anthropometric means considered necessary out of 101 measures found in the specialised literature and 5 consensus proposals.
Conclusions: The anthropometric measures of columella height, nasal tip projection, projection alar length, width of nostril, nasal basal width, columella angle, cleft lip segment, height of the non-cleft lip, height of the cleft lip, intersegment distance, arch length, greater segment length, lesser segment length, Lateral deviation of the incisal point, Posterior width of palatal cleft , arch width, greater segment rotation and lesser segment rotation constitute the core outcome set for anthropometric evaluation for PSIO for unilateral cleft lip and palate.

validation study, PSIO, Delphi consensus

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Avaluation of the results of pre surgical Naso Alveolar Molding in Cleft Lip And Palate Pacients

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1- Introduction

Unilateral and bilateral cleft lip and alveolar deformity are associated with abnormality in the nasal cartilage, alar base, and columella morphology. The objective of pre-surgical nasoalveolar modeling is to align and bring together the segments of the alveolar cleft, achieving correction of nasal cartilage and soft tissue deformity. These corrections are achieved by adding a nasal stent to the labial labial flange of a maxillary orthopedic plate, as described by Grayson. Pre-surgical cleft and soft tissue reduction considerably reduces tissue tension at the time of surgical approximation, obtaining better results.

2- Aims

The aim of the present study is to evaluate the effect of presurgical impression, its benefits for primary cleft lip and nasal surgery, and its mid-term effect on maxillary growth. It will also help cleft patients to minimize the stigma that accompanies the cleft lip sufferer's face. As it is a clinical work, it adds knowledge of new techniques to professionals involved in the treatment of cleft lip and palate.

3- Methods

Newborn patients with complete unilateral cleft lip and palate and unilateral cleft lip and ridge will be selected for the work, for nasoalveolar molding using the Monastery and Bennun elevator plus lip bandage and maxillary orthopedic plate for alveolar remodeling. Photographs and models will be taken in 4 stages: before the nasal tutor, before surgery, immediate post-op and after six months.

4- Results

The improvement in the columella deviation, the proportionality in the relationship between the angle and the width of the nostril and the decrease in the size of the alveolar cleft are the main results achieved.

5- Conclusions

The adoption of this early protocol is of great importance for the reduction of sequelae and consequently of future procedures. This knowledge will increase the possibility of training services throughout the world.

early orthopedic treatment, NAM,

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EFFECTS OF PRE- AND POST-SURGICAL ORTHOPEDICS ON DENTAL ARCHES OF CHILDREN WITH CLEFT LIP AND PALATE: COMPARISON BETWEEN PROTOCOLS AT THE FIRST YEAR OF LIFE

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Background. This study aimed to evaluate the effects of treatment protocols on the dental arches of children with cleft lip and palate treated with or without pre- and post-surgical orthopedics (PSO).
Methods. Ninety-six dental models divided into: Group 1 (G1) – Hotz plate; Group 2 (G2) – nasoalveolar moulding plate; and Group 3 (G3) – without PSO. The participants were evaluated before (T1) and after (T2) cheiloplasty. Linear measurements, areas and angles were analyzed. Paired t test, ANOVA/Tukey test, and Pearson correlation were used (α=5%).
Results. Intergroup analyzes of the growth changes showed that G3 had a smaller percentage growth for segments area (p=.013), cleft area (p=.012), and ∠GCT angle (p=.002) than children treated with PSO. The G3 exhibited the worst asymmetry of the dental arches at T2 (p<.001).
Conclusions. Pre- and post-surgical orthopedics reduced the residual effects produced by the healing tension of the lip on the dental arch, mainly in the anterior area of the palate.

"This work was supported by Smile Train,Inc.

Cleft Lip/palate; orthopedics; plastic surgery

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Post-treatment Effects of Nasoalveolar Molding in Patients With Cleft Lip and Palate: A Systematic Review and Meta-Analysis

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Introduction: Previous systematic reviews on nasoalveolar molding (NAM) focused predominantly on nasal aesthetics as a primary treatment outcome. Dental arch relationships and craniofacial morphology are equally important components of clinical outcomes. They have not been systematically reviewed despite their significant impacts on subsequent surgical reconstructions.

Aim: This study aims to comprehensively analyze therapeutic effects of NAM as a part of cleft primary management protocols for patients with non-syndromic unilateral and bilateral cleft lip and palate (CLP) by conducting a systematic review and meta-analysis.

Material and Methods: Six electronic databases and three journals were searched up through October, 2021. Studies comparing treatment outcomes between NAM and non-NAM protocols were selected for further analyses. Nasolabial aesthetics, craniofacial characteristics and dentoalveolar relationship were outcomes of interest. Data extraction, methodological quality assessment, risk of bias assessment, meta-analysis, and subgroup analysis were performed.

Results: Ten retrospective cohort studies were selected for a qualitative review, and six for a meta-analysis. Eight studies were performed in patients with unilateral CLP and two were in those with bilateral CLP. For risk of bias assessment, one study was rated as low while the rest was classified as moderate. Majority of outcome parameters concerning nasolabial aesthetics, craniofacial morphology, and dental arch relationship from protocols with NAM were not significantly different from other protocols. However, subgroup analysis demonstrated that a treatment protocol combining NAM and primary rhinoplasty improves nasolabial outcomes.

Conclusion: For patients with unilateral CLP, this study found that a protocol with NAM alone offers only limited benefit. However, a protocol combining NAM and primary rhinoplasty improves nasolabial outcomes. In addition, performing NAM does not appear to improve craniofacial morphology and dental arch relationship. For patients with bilateral CLP, the available evidence remains inconclusive.

Cleft-lip-and-palate, Nasoalveolar-molding, Nasolabial-aesthetics, Craniofacial-morphology, Dental-arch-relationship

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RRE System: A presurgical orthopedics method that Redirects and Repositions Effectively all the structures of the cleft in children.

RRE System: A presurgical orthopedics method that Redirects and Repositions Effectively all the structures of the cleft in children. Ricardo Elizondo[1]

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1.Introduction

A modified, simpler, cheaper, and faster PSO named RRE System according to the way it works (Redirecting and Repositioning Effectively) is presented.

2. Aims

The general objective of the RRE System is to redirect the soft tissues that are alterated in the cleft in order that hard tissues are repositioned to its right place in a short period of time and in an easy way.

3. Methods

The biological and mechanical bases as well as many cases treated with the RRE System are going to be presented.

4. Results

The RRE System in unilateral clefts straightens the vomer and brings the philtrum, columella, premaxilla, and the maxillary frenum to the midsagittal plane, while the alveolar ridges are shaped and positioned reducing the lip and palatal cleft to zero even in a 4- week period. In bilaterals centres the premaxila, elongates the columella, “backwards” the premaxilla and reduces the width of the nose.

5. Conclusions

The RRE System is a very simple and effective way to bring all the structures of the lip and palate clefts to its right position in a short period of time and in an easy way.

presurgical orthopedics

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PRE-SURGICAL INFANT ORTHOPEDICS: OUR EXPERIENCE AT THE LAGOS UNIVERSITY TEACHING HOSPITAL, NIGERIA.

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Introduction: Pre-surgical infant orthopedics (PSIO) is an important aspect of the pre-surgical care for patients with clefts. Although there is some controversy about its long term benefits, many centres still practice this because of the reported benefits in facilitating surgical repair and the psychological benefits to the parents of the child with a cleft.
Aim: To present our experience in the treatment of patients with pre-surgical infant orthopedics at the Lagos University Teaching Hospital (LUTH), Idi-araba, Lagos.
Methodology: This was a two year (2020-2022) review of patients treated with PSIOs at our centre prior to surgical repair of the clefts. The different types of PSIOs used, the average treatment duration and challenges faced in providing this care were all assessed.
Results: A total of 24 children were treated with PSIOs during this period with age ranging from 2weeks to 2months, at inception of treatment. Gender distribution showed that 37.5%(9) were male and 62.5% (15) were female. The different cleft types attended to were BCLP (33.3%), UCLP(58.3%) and incomplete cleft of the lip and alveolus (8.4%).The PSIOs used were as follows: Lip taping (33.3%), Dynacleft elevators(12.5%), Nasoalveolar molding appliance(50%) and clear aligners(4.2%). The duration of treatment varied from 1-10months, with a mean treatment time of 3.78months. The major treatment challenges were poor patient compliance which was sometimes associated with limited finances, poor communication with patients sometimes due to poor literacy level and also loss of patients to follow-up. Clinician associated challenges included poor record taking, poor patient assessment to ensure availability for scheduled appointments and inadequate parents' education on the expectations for treatment with PSIOs.
Conclusion: A wide variety of PSIO techniques are used in the treatment of patients with clefts at LUTH. The quality of PSIO care currently provided can be significantly improved, by addressing the challenges faced in the provision of this care.
PSIOs, Experience, LUTH, Nigeria

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Early Pre-surgical management of cleft lip and palate patients in the New Cleft-Craniofacial Center

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Introduction: Children born with cleft lips and palates have many problems, requires continuity of care involving a multidisciplinary team. Craniofacial and Cleft Center provides optimal care and works to improve the quality of life for patients and families of children with facial differences.
Aim: The objectives of this paper were to review the pre-surgical management with nasoalveolar molding (NAM) in the New Cleft-Craniofacial Center, appliance using Pranangklao's technique in cleft lip infants, evaluate the advantages & disadvantages of techniques and surgical outcome.
Method: This study was included infants with cleft lip who presented to the Division of Plastic Surgery between May 2016 and April 2021. Families were offered the option of early presurgical nasoalveolar molding and traditional lip repair. Preoperative photographs with pictures of two views: frontal and basal. Pranangklao's technique are suggested to achieve an orthopedic effect; they include alveolar molding, lip strap, NAM. The advantages and disadvantages of pre-surgical management, surgical techniques and outcome were recorded. Result: The twenty-five patients presented in this study, Pranangklao's technique approaches, At the end of the treatment a reduction of length of the arch was observed with the retraction of the pre-maxilla, decrease in arch width and reducing defect width of the palatal and alveolar ridge, which in turn will reduce lip tension and benefits wound healing postoperatively.
Conclusion: This study showed that pre-surgical management with Pranangklao's technique approaches do help to approximate the segments of the cleft maxilla and do reduce the intersegment space in readiness for the surgical closure of cleft sites. Our surgical colleagues found smaller cleft gaps more straightforward to close than larger ones, it allows the primary repair of the patient's lip with asymmetric bilateral fissure in only one-step surgery in consequence.

Keywords: pre-surgical nasoalveolar molding

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Pre-surgical orthopedic treatment of bilateral cleft lip and palate patients with severe premaxillary protrusion and/or asymmetry using series of digitally designed individual cleft correctors.

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Introduction

Contemporary medicine achieved significant progress in a surgical treatment of cleft lip and palate. But bilateral cleft lip and palate (BCLP) cases with severe premaxillary protrusion and asymmetry still require special presurgical orthopedic treatment in order to get the better result of cheilorhinoplasty. While nasoalveolar molding protocol proved itself to be efficient in many cases it has some limitations and drawbacks. We tried to create a new approach using modern CAD and 3D-printing technologies that address those issues and also makes this kind of treatment available for wider range of patients and medical institutions.

Aims

The aim of the study was to evaluate the clinical efficiency and practical applicability of the new protocol of pre-surgical orthopedic treatment for newborn BCLP patients.

Methods

The method was used to treat the group of 9 BCLP patients with severe premaxillary protrusion and/or asymmetry at the age from 1 week to 24 weeks. Impression have been taken using individual tray and dental impression material. Stone models were made and scanned by laboratory 3D scanner. Individual sequence of Individual cleft correctors (ICC) were made using CAD software, 3D-printing and vacuum forming technology. Treatment usually required one visit to hospital during which first appliance in a sequence was fitted to patient and parents were instructed how to use the next ones. Protrusion and asymmetry were measured before and after treatment using the standardized photo protocol and stone models measurement.

Results

Measured indicators demonstrated considerable decrease in premaxillary protrusion and asymmetry during the treatment.

Conclusions

New protocol effectively reduces premaxillary protrusion and asymmetry. Using 3D technologies allows to create orthopedic appliance with better biocompatibility and more comfort for patient. It doesn't require extra-oral attachment. One-visit protocol also proved to be more convenient for the patients from remote areas. Used equipment and materials are available in many medical institutions throughout the world.

BCLP, presurgical orthopedic, cleft, CAD/CAM

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Fabrication of fully digitalized passive plates used in presurgical infant orthopedics

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[AIM] To avoid the risk of vomiting and aspiration in infants with cleft lip and palate (CLP) when taking impressions with impression material, we use an intraoral scanner to fabricate oral models in presurgical infant orthopedics. However, conventional laboratory processes were required to fabricate passive plates after the oral models were made, and digital information was not yet fully utilized. The aim of this study was to fabricate passive plates with computer-aided design/manufacture (CAD/CAM) technology without creating oral models for CLP infants.
[Methods] In all cases, an i500 intraoral scanner (MEDIT Corp.) was used. The STL data obtained by the optical impression were transmitted to the dental laboratory immediately after data acquisition along with detailed requests about the closure of the cleft and the design of the sucking fossa. At the dental laboratory, the requests and design were reflected by Dental System (3shape Corp.) in the STL data. The passive plates were fabricated using a Carla Print 4.0 3D printer (KULZER GmbH).
[Results] Case 1: Left CLA girl, optical impression taken 17 days after birth. Case 2: Right CLP girl, optical impression taken 45 days after birth. In both cases, sufficient STL data were obtained from the optical impression, and passive plates were prepared through the steps outlined above. Both plates fitted well, and there was a reduction of the feeding time.
[Conclusion] Passive plates can be fabricated through a fully digitalized process. It is essential to ensure close communication between dentists and dental technicians for successful plate fabrication. This fully digitalized process can simplify laboratory processes in presurgical infant orthopedics.
Cleft lip and palate,passive plate,CAD/CAM

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Rehabilitation process to solve developmental delay of cleft lip and palate - children: A significant role of occupational therapist in comprehensive and holistic cleft care team

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction:Children with cleft lip and palate often face trouble in swallowing ability at baby-stage and struggle with developmental delay. Comprehensive and Holistic cleft care aim the patients for quality of life. Occupational therapist plays a significant role in rehabilitation process toward quality of life (QOL) of the patients.
Objective:Wider awareness and understanding of this particular role helps to empower quality of cleft care team facilitating respective patients to reach QOL.
Method :Highlighting key stimulating activities and intervention techniques to enable a patient to overcome feeding problem and barriers preventing them to achieve their full potential of the main developmental area in physical, cognitive, emotional and social skills from birth until teenage.
Conclusion:Intervention assigned by occupational therapist as a member of comprehensive rehabilitation team enhances the patients for survival and ability to effectively engage in activities of everyday life.

Occupational Therapy in Cleft Care

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Resonance in Chilean adults with velopharyngeal insufficiency rehabilitated with pharyngeal bulb prosthesis. Case series

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: Velopharyngeal insufficiency (VPI) is one of the most frequent speech disorders in patients with cleft palate (CP). Its correction requires physical treatment, which can be surgical or prosthetic (velopharyngeal bulb) in nature, accompanied by speech and language therapy. When surgery is contraindicated, wheater due to a medical condition, or anatomical alterations of the tissues to be intervened upon, a velopharyngeal bulb prosthesis is to be considered. However, there are few reports on results in Spanish-speaking patients.

Aims: To describe resonance in a group of Spanish-speaking Chilean adults, both with and without palatal prosthesis.

Methods: Three men and two women with VPI secondary to CP, with ages ranging from 21 to 58, took part in this study. Surgeons ruled out the possibility of achieving a surgical rehabilitation of their VPI, so they were referred to the palatal prosthesis centre of the Gantz Foundation. These prostheses were made by orthodontists and speech therapists in an average of three sessions, along with eight sessions of speech and language therapy. After 6 months, resonance was evaluated with and without prosthesis, by perceptual auditory evaluation of hypernasality through the use of universal parameters and speech nasometry using a Kay Elemetrics Model 6450 nasometer.

Results: Table 1 shows the degree of hypernasality and the measured nasalance values, both with and without prostheses.

Conclusions: When temporary or definitive contraindications for VPI surgery exist, palatal prosthesis accompanied with speech and language therapy may be a treatment alternative that improves resonance alterations.

	PERCEPTIVE		NASOMETRY (%)					
	Hypernasality		Oral paragraph		Nasal paragraph		Distance	
	W/P	W/o/P	W/P	W/o/P	W/P	W/o/P	W/P	W/o/P
S1	2	1	41	28	45	48	4	20
S2	2	1	33	31	44	49	11	18
S3	3	2	44	31	49	49	5	18
S4	3	0	51	16	57	59	6	43
S5	3	1	38	22	47	44	9	22

Velopharyngeal insufficiency, pharyngeal bulb prosthesis

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Optimizing the perioperative settings during cleft lip and palate surgery

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Optimizing the perioperative settings during cleft lip and palate surgery viewed from the perspective of the surgical nurses and operating department practitioners (ODP).

Introduction: We have a highly specialized setting in Denmark as all cleft lip and palate surgery is centralized to one hospital. Every day, around two cleft lip and palate related procedures are carried out. The patients are being operated at all ages, as lifelong care is provided by the Danish government. To provide the best care for the patients with cleft lip and palate during surgery, it is of outermost importance, that the perioperative settings are optimal. The patients may go through several operations during their lives. We aim to give the patient, considering their age, and their parents an experience that despite the uncommon setting, will give comfort and assurance to help them through the procedure.

Aims: We wish to share, what we as surgical nurses and ODPs do to obtain the best perioperative care.

Methods: We will present our experience with text and pictures, either on a poster (and preferably on a laptop with a PowerPoint presentation) or as an oral presentation. We will describe in detail, how the patients and parents are received in the operating theater and how to make them feel comfortable. We will describe and show the interior design in the operating theater, including operating lights, microscope, chairs etc. All is adjusted to secure patient comfort and safety and to optimize the performance of surgeons, nurses and ODPs.

Results and Conclusion: We have in our highly specialized cleft lip and palate unit developed and summarized our experiences in optimizing the perioperative settings during cleft lip and palate surgery to ensure the best care and safety for the patient. This may serve as inspiration to other centers worldwide.

Perioperative nursing during Cleft surgery

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A REPORT BASED ON TEACHING CLEFT LIP AND PALATE IN A BRAZILIAN UNIVERSITY

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: Speech-Language Pathology (SLP) is one of the multiprofessional areas that constitutes the cleft lip and palate (CLP) team. It is believed that providing basic education to the undergraduate students about the cleft care conditions may contribute to their professional qualification with a coherent, critical, and humanized healthcare vision.

Aim: To assess if the CLP teaching materials used in a class of a Brazilian Undergraduate SLP Course were important in providing knowdlege to the undergraduate students when asked about some specificities of the cleft care.

Methods: The optional class “Special Topics in SLP: Cleft Lip and Palate”, with a total workload of 60h, was taught to 24 students enrolled in an Undergraduate SLP Course at a Brazilian Public University that uses problem-based learning as the main learning and teaching method. Due to the COVID-19 pandemic, the class activities were performed remotely. Subjects were addressed through discussions, lectures, online games, online conversation with mothers and patients with CLP, production of CLP informative subjects addressed to parents and patients and materials for speech therapy. At the end of the class, a structured questionnaire about the content taught was provided and answered by 16 undergraduate students.

Results: The questionnaires indicated that majority of the students feel confident in providing guidance on speech (93.75%) and feeding aspects (87.5%), while 100% of the students reported being able to refer patients to CLP teams and 93.75% indicated that cleft palate±lip represents the worst prognosis for feeding and speech. All participants agreed that CLP is associated with a higher risk of hearing disorders, recognizing the possibility of using utensils as facilitators of feeding, and referring hypernasality as the main speech symptom following velopharyngeal dysfunction.

Conclusion: The majority of the students were able to identify important aspects of CLP rehabilitation process and provide guidance to parents and referrals to the CLP teams.

Cleft Palate, Speech-Language Pathology, Education

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Perceptions of South African plastic surgeons regarding their academic training in the field of facial clefts and craniofacial anomalies

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

This study investigates South African plastic surgeons' (PS) perceptions of cleft lip/palate (CLP) and craniofacial academic training with the aim to determine the need for dedicated CLP academic education programmes.
An online survey and telephone interviews (using a structured questionnaire) investigated PS's perceptions of their academic training and their perceived academic education needs in the facial clefts (FC) and craniofacial anomalies (CA) fields. The research survey was completed by PS who consented to participate in the study. The structured questionnaire was developed on Qualtrics Research Suite survey software.
The questionnaire was completed by 41% (n 56) of practising PS on the South African Medpages health care provider database. Most of the respondents (63,3%) were between 30 and 49 years of age. Of the respondents, 74% showed a good general knowledge of FC/CA. However, 76,5% acknowledged that they had received only limited clinical training and exposure in this field, which prevented them from providing adequate services to FC/CA patients. Only 41% of the respondents offered primary and/or only secondary treatment to both FC and CA patients, and 40% of them had participated in interdisciplinary teams. All the respondents agreed on the need for a dedicated training programme(s) in FC/CA management, and the majority recommended sub-speciality training through either a clinical fellowship or a degree course.
Conclusions
This study demonstrates that PS clinical exposure and postgraduate academic training in the FC/CA field are limited. All the respondents agreed that an educational strategy to meet the needs of PS providing FC/CA care needs to be established in South Africa. Participants suggested that sub-speciality training and degree courses are needed to help them provide adequate care for CLP/CFA patients.

Cleft education, Plastic surgeon, craniofacial

868

Changed Surgeon Decision-making with use of CLEFT-Q: How Patient Reported Outcomes Change Patient Management

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Management of patients with cleft lip/palate has historically predominately reflected surgeon assessment of patient appearance and function. Patient-reported outcome (PRO) instruments are increasingly used to assess patient perceptions of their health states; however, these may differ from their parents or clinicians. Patterns of potential agreement or discord between clinicians and patients are not well described for cleft lip/palate (CL/P).

Aims
Discordance between clinical assessment and planning with and without PRO in patients with CL/P was assessed.

Methods
Patients 8 years of age and older were prospectively, consecutively enrolled at a tertiary cleft center. The validated Cleft-Q PRO instrument was completed prior to the clinic visit. The attending surgeon was initially masked to Cleft-Q findings and conducted a standard clinic visit with formulation of a provisional assessment and plan. The Cleft-Q data was then reviewed by surgeon and patient together, with concerns and plan revised. Discrepancies in verbal and scored PRO responses greater than one standard deviation from normative data were considered discordant.

Results
Fifteen patients (5 female) met inclusion criteria at time of abstract. Three patients (20%) had one or more modules of discordance. Discordance was most common in sectors of lip and lip scar appearance, followed by nose and jaw appearance. Proposed management plan changed in all discordant cases as a result of Cleft-Q, with one patient (6.7%) provided non-surgical subspecialist referral and two (13.3%) suitable for surgical management. One patient underwent a recent surgery where an opportunity for concurrent surgical treatment of a separate problem was missed.

Conclusions
Early results in this ongoing study suggest that PRO implementation can identify discordance between patient perception and goals compared to standard surgeon assessment in approximately 20% of cases, most commonly around lip and lip scar appearance. Furthermore, a changed management plan was feasible in all cases of reported discordance.
Cleft Care, Patient Reported Outcomes

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Application of electromyographic biofeedback in the speech therapy of velopharyngeal insufficiency associated with cleft lip and palate

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction

In cases of severe and prolonged velopharyngeal insufficiency, the established pathological compensatory mechanisms are extremely difficult to overcome. Accumulated fatigue from various interventions over the years often is conected with sets of pathological psychophysiological reactions. Accompanying facial movements are an ineffective compensatory mechanism, of which the patient is not fully aware.

Aims

To evaluate the effect of EMG-BFB in overcoming facial grimaces during speech. In order to improve the automation process of stop sounds (e.g., P, T, K) during improved physiological state under biofeedback training.

Methods

Two female cleft patients aged 29 and 33 with severe velopharyngeal insufficiency underwent a course of 16 sessions of speech therapy, accompanied by HRV biofeedback. The usual speech therapy exercises are conducted whilst the patient is trained in maintaining the enhanced psychophysiological state, recorded via the biological feedback equipment. A test-retest approach is used to evaluate the level of improvement in speech construction, as well as the elimination of grimaces, observed in certain phonemes. Self-assessment protocols for quality of life are applied in the beginning and end of the treatment.

Results
In the first case, the pathological co-movements of the middle face disappear completely during the articulation of the sounds P and T at the level of spontaneous speech. In the second case, an improved stops was achieved. The psychophysiological state of both patients improved, as indicated by the biofeedback signals. A better, relaxed state was achieved. Furthermore, self-confidence and life perspectives improved. Constant activation of the sympathetic nervous system was overcome.
Conclusions
Electromyographic biofeedback is a technique which can provide further benefits when used in addition to standard speech therapy, providing awareness and assistance in overcoming facial grimaces. Speech therapy techniques become more effective and enable a new way of processing trauma, experienced from prolonged treatments.
cleft, biofeedback training

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SLP's educational and professional training in CLP cases in Brazil

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: Craniofacial anomalies, such as cleft lip and palate (CLP), demand specialized professional monitoring in various areas of health, such as Speech and Language Therapy (SPT), from birth to adulthood. Approximately two thirds of congenital anomalies are classified as craniofacial. In Brazil, it is estimated that for every 650 live births one is affected by CLP. The quality of care for patients with craniofacial anomalies is an important concern in the scientific and professional environment, due to difficulties in the actions of the professionals and, therefore, often unsatisfactory treatments.
Objective: To analyze the SLT performance in its different areas regarding the clinical practice in cleft lip and palate cases.
Methodology: This is a cross-sectional, quantitative exploratory study, with the participation of SLT that may work with CLP cases. A questionnaire survey is being conducted recruited through snowball sampling. This data collection is online.
Results: Data collection is still ongoing.
Conclusions: work is still ongoing.

CLP, professional education, practice, SLT

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The Impact of Maxillary Osteotomy on Fricatives in Cleft Lip and Palate: A Perceptual Speech and Acoustic Study

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction

Maxillary osteotomy (MO) is usually undertaken to correct facial deformity in individuals with cleft lip and palate (CLP). The surgery can impact speech outcomes such as articulation, although the evidence remains limited and ill-defined in CLP and mainly from perceptual studies.

Aim

To investigate the impact of MO on the production of fricatives /f/ and /s/ using both perceptual and acoustic analyses, and to explore the nature of speech changes seen, if any.

Methods

Twenty participants with CLP were seen 0–3 months pre-operatively (T1) and 3 months (T2) and 12 months (T3) post-operatively. A normal group (N = 20) was similarly recruited. Perceptual speech data was rated from audio and audio-video recordings. Acoustic analysis was made on 4 spectral moments: centre of gravity (CG), standard deviation, skewness (SK), kurtosis (KU).

Results

Perceptually, a statistically-significant improvement was seen for /s/ over time, $\chi 2(2) = 6.889$, $p = 0.032$. Effect sizes were medium between T1 and T3 ($d = 0.631$) and small between T2 and T3 ($d = 0.194$). Acoustically, effect sizes were similarly medium between T1 and T2 (e.g., SK, $d = 0.652$) and small between T2 and T3 across all parameters. Independent t-tests showed mainly statistically-significant differences between both groups across timepoints with large effect sizes (e.g., T2 CG, $t = –4.571$, $p < 0.001$, $d = 1.581$), indicating that /s/ was not normalized post-operatively. For /f/, however, differences tended to be only at T1 with large effect sizes (e.g., CG $t = –2.307$, $p = 0.028$, $d = 0.797$), reflecting normalization post-operatively.

Conclusion

Maxillary osteotomy has a positive impact on /f/ and /s/ and are stable and permanent by 3-months post-operatively. Speech changes seen are an automatic and direct consequence of the physical changes from MO, effecting articulatory re-organization. An early post-operative speech follow-up is indicated in contrast to the typical one-year timepoint.

A Summary of Indications of each spectral moment

Centre of gravity (Hz)	Average energy concentration Indicates the length of vocal tract and front resonating cavity
Standard deviation (Hz)	Dispersion of energy Indicates the average energy range of distribution
Skewness	Asymmetry of spectral shape Positive values indicate a negative tilt with energy concentration in lower frequency Negative values indicate a positive tilt with energy concentration in higher frequency
Kurtosis	Peakedness/flatness of spectral shape Positive values indicate a clearly defined spectrum with well-resolved peaks Negative values indicate a flat spectrum without clearly defined peaks

Reference:
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Jongman A, Wayland R, Wong S. Acoustic characteristics of English fricatives. J Acoust Soc Am. 2000 Sep;108(3 Pt 1):1252–63.

Maxillary osteotomy, Cleft, Acoustic, Fricatives

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Difficulty in speech accessibility for children with cleft lip and palate in Myanmar: Can speech volunteers help?

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: The residual abnormalities after repair cleft lip and palate (CLP) were commonly articulation disorders. Accessibility of speech therapy is none or limited in developing countries. Aims: To investigate the effectiveness of A Speech Therapy Model by Volunteer for children with CLP in reduction of the number of articulation errors.
Methods: Twelve children with CLP, grade 1-7 (ages 7 - 13 years old) were included for this prospective study. Two children were excluded because of no articulation errors. A Speech Therapy Model by Speech Volunteers for Clefts was conducted for children with CLP. Pre- and post- evaluation of the Myanmar Articulation Screening Test and Myanmar Articulation, Resonation, Nasal Emission and Nasal Turbulence Test at word and sentence levels were performed by Thai speech and language pathologists (TSLPs), a Burmese linguistic professional, Myanmar speech volunteers, and research assistants (RAs), as roles of interpreters. TSLPs demonstrations and teaching of services in speech therapy for children with CLP for speech volunteers (SVs), and caregivers were provided during a 3-day speech camp. Three 1-day follow-up speech camps, and 3-interim speech therapies for complicated cases were further provided. SVs provided speech correction (SC) at local health care units based on TSLP's individual monitoring program and supervision. Caregivers practiced assigned exercises at home.
Results: A Wilcoxon signed-rank test revealed significant reductions in the number of post-articulation errors in the Myanmar Articulation Screening Test [median difference: MD = 6 (95% Confident interval: CI =5.24- -9.24)], and the standard Myanmar Articulation, Resonation test, Nasal Emission and Nasal Turbulence Test, at both word and sentence levels; [MD= 8 (95% CI =6.47- 10.83); MD=5 (95% CI =4.23- 8.28)].
Conclusion: The Speech Therapy Model by Volunteer for Children with CLP significantly decreased the number of articulation errors for children with CLP in Myanmar, where speech services are not available.

Speech Therapy, Volunteer, Cleft palate

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PALATE PROSTHESIS USERS: PROFILE AND CHARACTERISTICS OF PATIENTS BEING FOLLOWED AT A REFERENCE CENTER FOR CLEFT LIP AND PALATE LOCATED IN SOUTHERN BRAZIL

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: For adequate production of oral sounds and vocal quality it is necessary a good function of the velopharyngeal sphincter, preventing air from passing into the nasal cavity during these productions. However, in the case of velopharyngeal dysfunction, congenital or acquired cases, changes may occur in speech and voice, and the treatments indicated are surgery, speech therapy and/or palate prosthesis.
Aims: analyze the profile of patients with indication and use of palate prosthesis and their characteristics regarding velopharyngeal dysfunction.
Method: data collected from medical records of patients with indication and use of prosthetic palate in a Reference Center for cleft lip and palate located in southern Brazil. We analyzed age and sex; diagnosis; type of velopharyngeal dysfunction (insufficiency or incompetence); speech and language therapy (SLT) follow-up. The data was analyzed quantitatively.
Results: medical records of 40 patients were analyzed. The age was between 6 and 55 years; 65% female and 35% male. 80% of the cases had cleft lip and palate, 13% cleft 22q11.2 syndrome and the remaining 7% had other problems in the velopharyngeal mechanism. 90% had velopharyngeal insufficiency and 10% velopharyngeal incompetence. Regarding the type of prosthesis: 33% obturator, 27% elevator; 22% elevator + obturator; 8% without information in the process; 10% did not make the prosthesis mold. 35% of the patients had no SLT follow-up.
Conclusion: We found a high number of cases with velopharyngeal insufficiency related to the high number of cleft lip and palate cases. This study calls attention to the fact that few patients with indication and use of a palatine prosthesis were under SLT follow-up. Such follow-up may contribute to the rehabilitation of velopharyngeal dysfunction and with aspects related to the production of speech sounds and vocal quality. This should be investigated and worked with patients in the process of treatment with palatine prosthesis.
Cleft palate, prosthesis, speech therapy

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The observation of the motion of tongue and lips during articulation in healthy children with impaired oral functional development

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
'Impaired oral functional development' is a new definition in pediatric dental disease. It means the retardation of gain oral function related with oral habit including mouth breathing or tongue thrust. It has not been clear whether the impaired oral functional development affects accuracy of articulation. In this study, we examined the word which is easier to evaluate the level of articulation with irregular motion of tongue and lips during speech, and investigated the relation with lip closing force.
Methods
Twenty-four children aged 6-9 years old were investigated for the lip closing force using a measurement tool. They pronounced the 16 words after watching cards, the sounds and tongue and lips motion were recorded. Three pediatric dentists judged the irregular pronunciation and motion. No lip closure in [pa], [ba] and [ma] sounds and tongue thrust in [sa] and [ta] sounds were judged as an irregular motion.
Results
Only one subject could be judged to sound disorder in articulation by all three dentists. About the motion of tongue and lips, 16 children were judged as normal, 8 subjects were judged in tongue thrusting group. Five subjects in the tongue thrusting group also had no lip closing in [pa], [ba] and [ma] sounds. Lip closing force in boys in the tongue thrusting group was significantly lower compared with normal, but not in case of girls.
Conclusions
It was suggested that 'Impaired oral functional development' is related with specific articulation including [sa], [ta], [pa], [ba] and [ma]. However, it requires the observation of the motion of tongue and lips, visually. The myofunctional therapy for lip closure and tongue position to elevate the lip closing force may also be effective for accuracy of articulation.

Impaired oral functional development

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SLP's educational and professional training in CLP cases in Portugal

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

1. Introduction: Craniofacial anomalies, such as cleft lip and palate (CLP), demand specialized professional monitoring in various areas of health, such as Speech and Language Therapy (SPT), from birth to adulthood. The quality of care for patients with craniofacial anomalies is an important concern in the scientific and professional environment, due to difficulties in the actions of the professionals and, therefore, often unsatisfactory treatments.
2. Aim: To analyze the SLT performance in its different areas regarding the clinical practice in cleft lip and palate cases.
3. Methodology: This is a cross-sectional, quantitative exploratory study, with the participation of SLT that may work with CLP cases. A questionnaire survey is being conducted recruited through SLT working with CLP cases, a SLT association, and by snowball sampling. This data collection is online.
4. Results: Data collection is still ongoing.
5. Conclusions: Study is still ongoing.
Cleft, Professional Education, Professional Practice.

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The voice of CLP kid

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
The Cleft Lip and Palate (CLP) is one of the more frequent congenital craniofacial malformations. Its incidence flows from 0.5 to 2 for each 1000 borns.

Objective
To describe the work of phonetic and language habilitation and rehabilitation in the Department of Phoniatrics of the National Institute of Pediatrics (INP).

Methodology
Once the patient is canalized to the phoniatric department, the follow-up of the language and phonological development begins. To evaluate the voice and the articulation we use 21 different parameters: 1) The universal parameters and 2) Madame's Borell modified classification (I-IV grades). Once the voice and articulation evaluation and the nasoendoscopy is done at 5 years old of CLP patients. When the competent veil on the phonation, it is prescribed to the less than, songs and breath exercises. In those older than 5 years old, the exercises are with songs, recitations and out loud reading. The veil of the intervened palate will never have a 100% of closure, therefore, the patients show a 100% of voice with a lightly nasality and most intelligible speech.
Results
The 40% revealed a competent veil on the cohort (n=2400) observed over time, the cases has been, mostly, a phoniatric success, which has repercussions on the patient's optimal integration on his / hers familiar, scholar and social environment, also, with a laboral future, leaving aside the misarticulation problem, nasal escape or any other phoniatric alteration. It's remarkable to mention that, all of this, implies a phoniatric and familiar team work in order to an optimal and integral patient's development. When the nasendoscopy reveal velopharyngeal insufficiency, that will set the treatment to follow, which is different for each patient, with articulatory and respiratory exercises in communication with surgeons for surgical planning and subsequent therapeutic strategy.

PHONIATRICS, NASAL LEAK, VPI

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Effectiveness of the Hypernasality Modification Program in Thai School-Aged Children with Cleft Lip and/or Palate

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Background: Cleft lip and/or palate (CL/P) is a congenital malformation. Hypernasality with/without articulation disorders is the most common speech defect in patients with CL/P. This study aimed to compare pre- and post-test the severity of hypernasality, nasal air emission, and the number of articulation errors: word and sentence levels by perceptual assessment and nasalance scores.
Methods: Fifteen Thai school-aged children with CL/P were enrolled in this study. Hypernasality modification program, 30-minute session of speech therapy in each week, was provided for 6 weeks. Pre- and post-test of severity of hypernasality, the number of articulation errors by perceptual assessment, and nasalance scores by nasometer. Each is Parents or caregivers did home exercises under supervision.
Results: Both hypernasality and nasal emission significantly decreased severity at post assessment. The number of articulation errors was significantly decreased at the word and sentence level.
Conclusions: Hypernasality modification program in Thai school-aged children with CL/P can be used as a guideline for modifying hypernasality in Thai school-aged children with CL/P.
Hypernasality, CL/P

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Phonetic and Phonological Speech Therapy Interventions for Children with Cleft Palate: A Systematic Review

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Even in 2022, the evidence of duration, intensity and type of speech therapy for cleft palate ± cleft lip (CP+/L) remains unclear. The objective of the present study was (1) to investigate effectiveness of phonological and/or phonetic therapy for children and adolescents (1;0-19;11 yrs.) with CP+/L and cleft type characteristics (CTCs) and (2) to identify different types of interventions assessed.

Methods
A systematic review of journal publications was conducted in January 2022 by an extensive electronic search and analysis of the databases of Cochrane Library, PubMed, ISI Web of Science, APA PsycINFO and The Health Technology Assessment Database. The search strategy was amended by a manual search of published articles and by checking reference lists of identified publications. There was no limitation in publication year or language. Inclusion criteria for studies were: phonological or phonetic therapy without any technical instruments, experimental group ≥ 90% of children with CP+/L and CTCs, therapy by SLT/SLP, reported outcome measures for speech-language assessment.

Results
The searches identified 637 references. After screening for title and abstract 558 papers had to be excluded, while another 55 publications dropped out by full text analyses regarding missing inclusion criteria. Finally, a total of 24 studies could be included in the analysis. Seven studies were conducted prior 2000, 6 were conducted between 2000 and 2015, and the remaining 11 studies took place after 2015. The publications reflect different study designs with various levels of evidence. In terms of intervention approaches, 12 studies evaluated phonological approaches, 6 evaluated phonetic approaches and 6 a mixture of both.

Conclusion
The analyses of the studies show significant improvements by all three approaches, with an advantage in phonological intervention. Risk of bias in studies was moderate.

systematic review, speech therapy, effectiveness

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Speech outcome in teenagers with pharyngeal bulb treatment

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: Velopharyngeal incompetence occurs when the velum and the lateral pharyngeal walls fail to separate the oral cavity from the nasal cavity during speech.
This translate into hypernasality of the voice and nasal air emission, wich affects intelligibility.
Communication between peers is esencial in adolescence, because of this it is necessary to provide and effective treatment.
The use of pharyngeal bulb as a temporary treatment before or in preparing for surgery of pharyngeal flap it seems as a suitable solution.
Method: Three cases will be shown. The prosthesis is performed after a correct clinical and viceofibroscopy diagnosis. Speech treatment is performed to eliminate compensatory joints. The prosthesis is evaluated in each control to observe closure due to muscular stimulation. Speech is also evaluated by speech
Results: improvement on speech and intelligibility of the voice was observed in the three adolescent treated at our hospital.
Conclusion: the pharyngeal prosthesis turns out to be an effective and fast method that corrects velopharyngeal incompetence, stimulates improvement in speech, and is an intermediate solution prior to the pharyngeal flap

incompetence velopharyngeal bulb speech

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Developing a theoretical model of speech processing for children born with cleft palate +/- cleft lip.

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Clinical management of speech sound disorder (SSD) is informed by theoretical models of speech processing describing a complex system of interacting processes, including hearing, speech perception, stored phonological representations, and motor planning, programming and execution. These models are relevant to children born with cleft palate with or without cleft lip (CP+/-L), however, specific factors that may critically impact speech development and processing in this group are not fully represented.
Current models can be usefully updated by including the potential impact of differences in anatomy and somatosensation pre- and post-surgery and integrating research advances in neurobiology of sensori-motor speech development, anatomy and physiology of vocal tract development and expert clinical experience. The resulting theoretical model may be used to generate clinical hypotheses about underlying processes driving cleft related SSD, and to guide systematic investigation of speech processing in this population.
Aim
To develop a theoretical model of speech processing that includes relevant anatomical, physiological and cognitive components, and influencing factors specific to children born with CP+/-L.
Method
We reviewed research literature on existing theoretical models of speech processing, speech development in children born with CP+/-L, neurodevelopment of speech, orofacial development and clinical experience with children with cleft related SSD.
Results
The resulting theoretical model of speech processing integrates the diverse factors potentially affecting speech processing in children born with CP+/-L, which in turn could impact on speech production, intelligibility and subsequently life-outcomes. We consider dynamic interactions with changes in anatomical structure, movement and sensation pre- and post-surgery.
Conclusions
Our theoretical model will evolve with research advances regarding speech processing in CP+/-L. Representation of the unique factors related to children born with CP+/-L will support clinicians and researchers to generate hypotheses to support targeted management and increased understanding of cleft related SSD.

speech processing model, cleft palate

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Reviving burned bridges: vascular delay of random pattern repeat buccal myomucosal flaps for palatal fistula repair: A Case Report

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

We present a challenging cleft palate repair following recurrent breakdowns, including loss of pedicled buccal artery flaps. The recurrent fistula was repaired using random pattern, turnover, buccal myomucosal flaps utilising the vascular delay technique. This is an unusual but useful technique to use in select cases.

We present a case report of a cleft patient with an isolated Veau II cleft palate, who had multiple complications and re-repairs including failed bilateral buccal artery flaps to repair a recurrent palatal fistula. Bilateral, delayed random pattern buccal myomucosal flaps were used to repair the fistula and lengthen the palate. First, bilateral myomucosal flaps with a length: breadth ratio of ~3:1 were incised but not inset, with the old donor site incision placed at the caudal border. After two weeks of vascular delay, the random pattern myomucosal flaps were used as turnover flaps with the raw area on the oral side, to avoid undue tension and minimise vascular compromise. The donor sites were allowed to heal by secondary intention. Two weeks following the second stage, one of the flap tips had necrosed, requiring return to theatre for debridement and closure assisted with a small local turnover flap.

The palate healed (final length 27mm) and significant reduction of hypernasality.

Our case illustrates preconditioning techniques, which should be considered when options are limited. The advantages include minimal donor site morbidity, good perfusion, limited congestion, good tissue match and shorter operating time. The main disadvantage being multiple procedures, an important consideration in syndromic patients.

We demonstrate the value of the vascular delay technique in bilateral buccal myomucosal flaps as a reliable addition to the armamentarium of the cleft surgeon, for challenging repairs of oral mucosa or nasal floor, where alternative flap options are suboptimal.
cleft fistula delay buccal buccinator

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Experiences in evaluating the outcome of surgery for VPD: How do we measure up and where is the change?

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction:
Patients with velopharyngeal dysfunction (VPD) undergoing surgical management for speech, routinely undergo pre and post-operative perceptual speech review to support understanding of the degree of perceptual speech change following surgery. Challenges exist in consistent assessment and reporting of the outcomes of VPD surgery in this often heterogenous patient cohort. Understanding of the factors likely to influence speech outcome is essential to provision of appropriate pre-operative counselling and implementation of robust speech reporting protocols.
Aim:
This paper aims to discuss the factors likely to influence outcome of surgery for VPD from retrospective analysis of pre and post-operative speech assessment data. Factors related to the degree of speech change and timeline for change will also be explored. It will present a summary of challenges encountered in evaluation of speech change and protocol revisions for pre- and post-operative Speech Pathology reporting developed following the review.
Method:
Retrospective evaluation and comparison of pre- and post-operative speech data was conducted for children undergoing surgical management for VPD at the Queensland Children's Hospital between 2017 and 2019. Results of Speech Pathology assessments for this group of patients were analysed to evaluate the parameters likely to change based on surgery type and diagnostic groupings.
Results:
Results highlight the unique challenges in the surgical management of VPD and in reporting outcomes for the often heterogenous group of children undergoing this surgery. Results regarding improvement or change based on both surgery type and diagnostic groupings will be provided.
Conclusions:
This study highlights the importance of striving for consistency in reporting of VPD surgery outcomes. Identification of the parameters more likely to change have provided greater clarity regarding ideal surgical candidates, in comparison to cases where change cannot be as easily predicted. Understanding of these factors has been essential to provision of robust pre-operative counselling and revision of speech assessment and documentation protocols.

evaluating, outcome, speech, surgery, velopharyngeal

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Treatment algorithm for VPI in Patients with Cleft Palate: A Systematic Review.

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: Various surgical techniques have been described in the literature for treatment of VPI after CP repair, the common goal of these techniques is to create a permanent partial obstruction of the VP port. No one operative procedure is suitable for all cases. Therefore, the factors that dictate the choice and success of each technique should be highlighted, in order to reach a treatment plan that suit individual cases and ensure best outcome.
Aim: The aim of this study was to review current literature regarding the speech outcome of different techniques of surgical treatment of VPD in cleft patients, in an attempt to reach a treatment algorithm.
Methods: A systematic review was done, by searching Pubmed, Scopus and Web of Science electronic databases, following the PRISMA guidelines. Participants: Articles reporting speech assessment results of secondary VPI surgeries on non- syndromic patients with CP. Interventions: surgical techniques were categorized into two groups; palatal and pharyngeal surgeries. Raw data was extracted to compare speech outcome and complication of each technique, with special emphasis on the factors affecting, the patients' selection for each technique.
Results: Our results showed comparable success and complication rates among these techniques. However, the factors governing selection of each technique, were identified and taken into consideration to reach a preliminary algorithm.
Conclusion: a preliminary treatment algorithm is described based on the results of our review; the most important factors affecting the technique choice are: VP gap size, palatal length/ pharyngeal depth, LVP position, palatal mobility, palatal scarring, VP closure pattern and age of the patient.
Cleft palate surgery, Velopharyngeal insufficiency

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Are Vowels Normalized After Maxillary Osteotomy? An Acoustic Study in Cleft Lip and Palate

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

1. Introduction

Maxillary hypoplasia is a common skeletal condition of many individuals with cleft lip and palate A Le Fort I osteotomy is typically undertaken to correct this facial deformity. The surgery can impact negatively on velopharyngeal function whilst improving speech articulation particularly for alveolar type consonants. There is also some evidence that vowel articulations are also adjusted post-surgically due to altered vocal tract configuration and the phenomenon of articulatory reorganization.

2. Aims

The current acoustic study aims to investigate whether vowels are normalized post-operatively and to explore the nature of articulatory reorganization in relation to the DIVA model, a neural network model of speech motor control (Guenther, 2016).

3. Methods

A prospective study was conducted to examine the vowel production of a group of individuals with cleft lip and palate (N = 17) undergoing maxillary osteotomy and a group of normal controls (N = 20) using speech acoustic data. The data were collected at 0-3 months pre-surgery (T1), 3-months (T2) and 12-months (T3) post-surgery. General linear model (GLM) repeated measures and independent t-tests were undertaken on F1, F2 and vowel space area (VSA).

4. Results

GLM repeated measures revealed no main effects of time for F1 ($F(2, 22) = 1.094$, $p = 0.352$), F2 ($F(2, 22) = 1.269$, $p = 0.301$) and VSA ($F(2, 28) = 0.059$, $p = 0.943$). Independent t tests showed statistically significant differences ($p < 0.05$) for all acoustic parameters and all vowels between the CLP and the normal groups at T3.

5. Conclusions

Vowels were not normalized after maxillary osteotomy despite positive anatomical changes within the oral cavity. Individuals with CLP tended to re-adjust their articulatory gestures based on existing feedforward and feedback control systems to maintain pre-surgical speech motor patterns. The nature of articulatory reorganization appears to be prompt, sensory-driven, complete, and permanent.

	CLP		*Normal*	
	F1	F2	F1	F2
/ɑ/	681.77 (66.13)	1304.25 (119.85)	745.89 (48.24)	1412.05 (124.20)
/i/	393.96 (46.32)	2417.84 (290.44)	448.73 (65.75)	2651.64 (205.75)
/u/	469.28 (48.00)	1881.99 (183.59)	519.76 (59.48)	2093.00 (164.34)
/æ/	743.45 (89.66)	1624.22 (95.58)	870.63 (84.89)	1738.08 (110.97)

Table 1. Mean (standard deviation) values (in Hz) of F1 and F2 of CLP and the normal group at T3.

maxillary-osteotomy, vowels, articulatory re-organization, acoustic

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Cleft palate re-repair with islanded buccinators flaps

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction & Aims
We have used islanded mucomuscular buccinators flaps for cleft palate re-repairs where palate investigation has revealed velopharyngeal dysfunction with insufficient palatal length or poor mobility. We illustrate the surgical technique, advantages and outcome.

Methods
Buccinator flaps are designed with a fishtail extension anteriorly and raised with the oral mucosa and underlying muscle anterior to posterior in a submuscular plane. At the posterior base of the flap, the mucosa is incised maintaining the continuity of the underlying muscle fibres. The flap can then be tunnelled through the submucosal plane or turned over depending on the site of palatal defect.

Results
Palate re-repairs with islanded buccinators flaps are reliable in both children and adults. They provide high quality outcomes for improving velopharyngeal dysfunction.

Conclusions
Islanding of buccinators flaps has the advantage of ease of manipulation and insetting of the flap position while maintaining a reliable blood supply. This reduces the risk of congestion when tunnelling the flap, need for additional surgery to divide the pedicle, and there is no requirement for bite blocks.

Islanded Buccinator flap, velopharyngeal dysfunction

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Autotransplantation of the lower central incisor to the maxillary lateral incisor region : Evaluation of occlusal in Patients with cleft lip and palate

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1. Introduction
In patients with cleft lip and palate, the maxillary lateral incisor in the cleft area is frequently congenitally missing.In our clinic, after secondary bone grafting in the cleft area, the occlusion is completed by orthodontic treatment without the use of bridges or other prosthetic devices.In such cases, the combination of autotransplantation and orthodontic space closure is very effective. In our clinic, we often perform autotransplanting of mandibular central incisors to maxillary lateral incisors.This is an effective treatment method because it allows the mandibular anterior teeth to be inclined lingually without retraction of the maxillary anterior teeth.
2. Aims,Methods
In this case report, the occlusal status of eight cleft lip and palate patients who underwent autotransplant was evaluated by using radiographs, dental models at the beginning and end of orthodontic treatment, jaw profile analysis, anterior ratio and PAR Index.
3.Results
The maxillary central anterior tooth axis was improved by orthodontic treatment, and the mandibular anterior tooth axis became average to lingual inclination.The anterior ratio ranged from 68.3 to 72.1%. The maxillary anterior ratio was larger than the mandibular anterior ratio, and the molar relationship at retention tended to be Angle Class I or Class III tendency.
The PAR Index showed an improvement of more than 60% in all cases.

4. Conclusions
In the case of cleft lip and palate patients with congenital absence of maxillary lateral incisor whose occlusal status at the beginning of orthodontic treatment Class III or Class III tendency, transplantation of mandibular incisors to maxillary lateral incisors was considered to be one of the useful methods to complete the occlusion without prosthetic replacement.
autotransplantation,
congenital absence

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Adoption of Telemedicine for Interdisciplinary Cleft Care in COVID-19 Pandemic

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Background : Cleft lip and/or palate is a disease with complexity care by interdisciplinary team as well as taking a long time with periodical follow-ups had a lot the burden of expenses for both medical personnel and caregiver. And pandemic occurrence of Coronavirus Disease 2019 (COVID-19), therefore telemedicine is utilized to continuously follow up on cleft lip and cleft palate patients to decrease travel cost or income-loss from work leave of caregivers including the reduction infection risk of COVID-19 in patients, caregivers and medical personnel.

Aims: To study the benefit of telemedicine in cleft lip and cleft palate care during COVID-19 Pandemic.

Methods: Descriptive study in patients through telemedicine by interdisciplinary team of Naresuan University Cleft and Craniofacial Center, during January 2021 – September 2021. The study is evaluated by questionnaire in terms of satisfaction in service, the spread in associating Cleft clinic and the evaluated cost of travel expense to hospital.

Results: A total of 127 cleft lip and cleft palate patients were treated and followed up via telemedicine during January 2021 – September 2021 by interdisciplinary team of Naresuan University Hospital and Dental Hospital. The patients and caregiver do not travel to meet the doctor in person and there is no spread in patients, caregivers and medical personnel. The cost of travel expense decreases (approximately 850 baht/family) and 96.6% of parents or caregivers are satisfied with telemedicine follow-up.

Conclusion: The use of telemedicine in the treatment of cleft lip and palate patients results in increased follow-up by an interdisciplinary team, decrease in travel cost and income loss from work leave, and a reduction in the risk of COVID-19 infection.

Cleft lip palate Telemedicine Interdisciplinary

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Experience with the 3D Microscope in Cleft Surgery

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction:

Cervical spine injuries can be devastating for cleft surgeons, but are not uncommon. The traditional "Rose" operational position necessary for palate repairs places the cervical spine in extreme flexion, in addition to requiring loupes +/- headlight. For every 15 degrees of flexion, an additional 10 pounds of force are transmitted through the cervical spine: repetition of this can lead to serious morbidity. Sommerlad advocated the use of the operating microscope in 2003, introducing improved ergonomics for surgeon/assistant, for muscle dissection and potentially closure.

Despite this, repetitive strain on the cervical spine remains a serious occupational hazard in this field.

Aims & Methods:

Whilst prismatic loupes may be an answer to some of these issues, they do not allow the cervical spine to remain in a neutral position throughout the whole of the operation. We report our initial experience with use of a novel alternative, the 3D microscope, in 10 cleft lip and palate repairs/vomer flaps.

Results:

Use of the 3D microscope has presented several advantages. For the surgeon, the entire procedure can be performed with the cervical spine in a neutral position, improving back/neck ergonomics, with easy touch adjustments. The screen allows a detailed exact view for the surgeon and everyone in the operating room. This facilitates improved engagement of the scrub team and, for the trainee/assistant, a perfect view allowing detailed observation/supervision, improving teaching. It also allowed for easier access whilst in-setting the anterior edge of vomer flap at the alveolus, which can otherwise be challenging. There is a minimal learning curve with challenges in depth perception/orientation, however, no compromised post-operative recovery.

Conclusion:

We feel that the 3D microscope may provide a viable alternative to the standard microscope or prismatic loupes in order to achieve optimum operational ergonomics, improve visualisation of the operating field and improve teaching/training facilities.

3D Microscope, Innovation, Novel Technique

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Scientific Research in Cleft Lip and Palate Online Diploma Course

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Scientific research training focusing on paper critical analysis and research project development is a priority learning area of need in Latin American countries.
Aims
Presentation of a new model of scientific research training for members of the interdisciplinary cleft team from different Latin American countries.
Methods
A 5 months diploma course has been developed on a videoconferencing platform as interactive educational tool for development of competences in paper critical analysis and development of research projects.
Results
The online educational diploma course has used use for training of 15 students of cleft team different specialties. 12 of them (80 %) finalize the course and achieved the objectives.
Conclusion.
Scientific research training is an essential educational tool for scientific paper analysis and development of research projects of the cleft team members. The COVID-19 pandemic forced to close their campuses and move didactic instruction online.
This Online Diploma Course could achieve good student performance in scientific research and promotes scientific paper critical analysis and publication.
Online training
Cleft Lip Palate

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The Development of Information System for Multidisciplinary Team and Patients Management in the Cleft Lip and Palate Center

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Managing the care for patients with cleft lip and palate entails coordination of multiple subspecialties for a long period of time. Due to the complex nature of facial clefts and the several medical problems that patients are involved with, it is necessary for the multidisciplinary team consisting of numerous specialties to manage the treatment of these patients. The aim of this study is an application development in Exellence Center of Cleft Lip and Palate in Health Region IV, Thailand for management of the center. This research was a developmental research. The related information was collected, designed and analyzed to be suitable for the healthcare system. The database was created as well as the information system was developed. The variety of tools used in developing the information system were analyzed, designed and implemented in mobile and web application format. The system and satisfaction towards the use of completed information system were evaluated to make improvement of the system. It was used by the team consisting of several specialties related to patient and system administrator in Pranangklao Hospital, Ministry of Public Health, Thailand. The information system for patients inside and outside the hospital was able to work according to the purpose of development. Based on this research, the development of information system could help improve the performance and transmission of the information efficiently. The user satisfaction was evaluated and found to be very satisfied. In order to make more effective system, the manual should be made and the users should be trained to be more knowledgeable about the application for proper management of the patients and multidisciplinary team.

TABLE I. MEAN , STANDARD DEVIATION (SD) AND LEVEL OF USERS SATISFACTION WITH INFORMATION SYSTEM

Users satisfaction with information system	*Mean*	*SD*	*Level of users satisfaction*
Application or information system	4.04	0.51	Good
Design of user exprerience (UX)	4.21	0.45	Good
Design of user interface (UI)	4.08	0.50	Good
Design of information system security	4.07	0.56	Good
The practical application of the system	4.01	0.56	Good
Overall satisfaction	4.08	0.52	Good

IS, management, cleft, lip, palate

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Secondary care costs to the National Health Service (UK) for children and adolescents born with unilateral cleft lip and palate, bilateral cleft lip and palate and cleft palate from birth to 20 years of age

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Aims
To conduct a micro-costing analysis to assess the cost to the NHS of treatment in secondary care for children and adolescents born with unilateral cleft lip and palate (UCLP), bilateral cleft lip and palate (BCLP), and cleft palate only (CPO), from 0 to 20 years of age.
Methods
A care pathway was mapped out for those with BCLP, CPO and UCLP in the South West Cleft Service (UK). 23 hospital case notes of children born with cleft (10 UCLP; 8 CPO; 5 BCLP) were identified from age 0 to 10 years and a second group of 23 hospital case notes of adolescents with cleft (10 UCLP; 10 CPO; 3 BCLP) were identified from post-secondary alveolar bone graft to 20 years. Retrospective data collection of episodes of care were recorded. Costs of care were calculated using local and national sources which were applied to each item of resource used.
Results
Mean costs for children with BCLP, UCLP, CPO and between 0-10 years of age were £17,004 (SD £7,362), £11,620 (SD £2,548), and £6,137 (SD £2,320) respectively. Mean costs for adolescents with BCLP, UCLP and CPO from post alveolar bone graft to 20 years of age were £9,416 (SD £6897), £7,977 (SD £4,786) and £3,809 (SD £1,809) respectively.
The largest costs across all phenotypes were staff followed by overheads, consumables, and finally pharmaceuticals. Outpatient costs exceeded inpatient costs. Surgery was the largest inpatient cost factor, where alveolar bone grafting and repeat surgery had a marked impact. Orthodontic care was the largest for outpatient cost across all phenotypes.
Conclusions
Costs for provision of care by the NHS for BCLP, UCLP and CPO from birth to 20 years of age are significant and can vary based on the surgical and outpatient care provided. The greatest costs were incurred with care for BCLP and the least for CPO.

Micro-costing, Cleft care, In/outpatient costs

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Validity of a Velopharyngeal Composite Score based on the Cantonese-Cleft Speech Assessment Tool (C-CSAT, Yiu et al., 2019): A Pilot Study

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction: Evaluation of velopharyngeal function involves both perceptual and instrumental assessments. An overall velopharyngeal composite score-summary (VPC-Sum) derived from a specified range of perceptually rated parameters known to be associated with velopharyngeal dysfunction has been found to be a useful, reliable and valid outcome measure. Such a measure, however, has to be validated specifically with the perceptual framework being used.

Aim: The aim of this study is to evaluate the validity of a VPC-Sum score based on parameters from the Cantonese-Cleft Speech Assessment Tool (C-CSAT).

Method: Perceptual speech and lateral videofluoroscopy (LVF) data from 14 children with cleft lip and palate were analyzed. Hypernasality, audible nasal emission, passive and non-oral cleft speech characteristics (CSCs) were used in the calculation of the VPC-Sum score. Correlational analyses were undertaken with hypernasality and anterior oral CSCs for convergent and divergent validity respectively. To assess criterion validity, VPC-Sum scores were compared with ratiometric measurement of displacement of velum (Dv) (0=no movement, 1=full movement) based on LVF images and surgical decisions around the need for velopharyngeal surgery.

Results: There was a significant and moderate correlation between VPC-Sum scores and hypernasality, $r(12) = .52$, $p < .05$, but a weak and non-significant correlation with anterior-oral CSCs, $r(12) = -.04$. VPC-Sum was significantly correlated with Dv, $r(12) = -0.67$, $p = .01$. Surgeons offered velopharyngeal insufficiency corrective surgery to all patients with VPC-Sum of 2 to 4 and to 71% (5/7) of those who scored 0 to 1.

Conclusions: There is initial evidence as to the convergent, divergent and construct validity of the VPC-Sum score based on the C-CSAT. Further psychometric evaluation of its reliability and validity is necessary for the measure to have both clinical and research utility.
VPC-Sum, Videofluroscopy, Cantonese, Velopharyngeal insufficiency

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Speech therapy assessment in the Electronic Medical Record for facial anomalies in Bulgaria

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction:
The co-funding program for speech therapy that our NGO delivers to families required an update of the criteria and forms in our Electronic Medical Record for facial anomalies (EMRFA) in 2020. This was necessary to improve the control of the Center to the national network of specialists, the reports to our partner organization and to improve the follow up of the patients.
Aims:
The aim of this study is to present the criteria for validation of the outcome scores in the post ''consultation'', post ''therapy'', the post ''start'' and ''end'' of the period of therapy and also the post ''global evaluation'' in the EMRFA.
Methods:
Using the platform of the EMRFA we will illustrate the structure of the EMRFA in the field of Speech therapy.

Results:
The global evaluation scores have been evaluated by two speech therapists retrospectively using the speech samples included in the EMRFA done by all the specialists in the national network.
Conclusions:
The need of standardized samples periods for assessment of the speech with mandatory fields for validation is paramount in order to improve the follow up and to reduce the excessive or insufficient treatment. The global evaluation posts in our EMRFA will give us the possibility to present a more precise study for the outcomes in a larger population.
cleft, speech assesement, speech therapy

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Relationship Between Velopharyngeal Status and the Likelihood for Development of Cleft-Related Compensatory Articulation Errors Post-Palatoplasty

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Introduction: Compensatory articulation errors are commonly reported for children with repaired cleft palate (CP). These errors occur when placement for speech sounds is altered, resulting in atypical, non-developmental sound substitutions. The purpose of this study was to determine the likelihood and frequency of compensatory error production in school-age children with repaired CP.

Methods: A review of patients evaluated in a large craniofacial center was completed. A total of 3,185 patients met inclusion criteria. Data on age at palatoplasty, compensatory error production, and velopharyngeal status were analyzed. Descriptive statistics were obtained for variables of interest. Logistic regression was performed to determine the likelihood of compensatory error production in patients with velopharyngeal dysfunction.

Results: Children between 3-5 years old (mean, 4;2) with a history of repaired CP demonstrate compensatory errors in 44% of cases. Approximately 18% of patients demonstrated two or more error types. Those with adequate velopharyngeal closure demonstrated errors 28.4% of the time. Those with marginal velopharyngeal closure demonstrated errors 52.2% of the time. Those with inadequate velopharyngeal closure demonstrated errors 72.7% of the time. The logistic regression model was statistically significant, $\chi 2 = 287.031$, $p < 0.0001$. Those with velopharyngeal inadequacy were 3.93 times more likely to exhibit compensatory speech errors than those with velopharyngeal competence. The most common compensatory errors were glottal stops and nasal fricatives.

Conclusion: Compensatory errors frequently occur in children with repaired CP. Children with marginal or inadequate velopharyngeal closure following palatoplasty are significantly more likely to produce compensatory errors. However, nearly 30% of children with adequate velopharyngeal closure post-palatoplasty produced compensatory errors. This indicates that the speech-motor plan for compensatory errors may be learned prior to primary palatoplasty and persist into school age, despite a functional velopharyngeal mechanism. Awareness of the type and frequency of error patterns associated with CP is essential to better identify speech errors and implement timely intervention.
articulation, velopharyngeal function, palatoplasty

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Early language indicators and their relationship with Speech and Language Therapists ability to judge velopharyngeal function in children born with cleft palate at age 18-24 months.

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Introduction:
In the United Kingdom (UK) speech and language development of children with a cleft palate +/- lip (CP+/-L) is reviewed between 18-24 months of age. There is variation across centres for the exact timing of this assessment. The purpose is to judge velopharyngeal function and identify emerging cleft speech characteristics (CSCs), language or communication concerns so intervention can be implemented if required. Evidence suggests children with CP+/-L may have delayed language development, which may impact on early identification of velopharyngeal dysfunction.

Aims:
This study aims to explore if associations are present between early indicators of language skills and speech and language therapists' (SLT) ability to judge velopharyngeal function at age 18–24 months.

Method:
Using data from The Cleft Collective cohort studies (http://www.bristol.ac.uk/cleft-collective), a longitudinal cohort of children and their families affected by cleft, associations between number of conversational turns from Language ENvironment Analysis (LENA) at age 13 months, parent reported language outcomes from the Ages and Stages Questionnaire (ASQ) at age 18 months, SLT's informal judgement of language development and having 'enough sample to rate palate function or not' at age 18-24 months. Data is available for approximately 300 children from around the UK and will be analysed using descriptive statistics, Chi square tests and logistic regression. Analysis will be adjusted for cleft type, socio-economic status, gender and age.

Results:
Results are pending but will report associations found between the early language skill indicator variables and SLT ability to judge velopharyngeal function at age 18-24 months.

Conclusion:
Findings will enable reflection on SLT assessments at 18-24 months. It is expected that SLT's will be more readily able to judge velopharyngeal function of children with more advanced language skills. Recommendations regarding early language screening and input as well as timing of the 18-24 month assessment will be made.
18-24-month speech assessment cleft palate

1143

Profiles of Early Expressive Phonology in Brazilian Portuguese: Comparison of children with and without cleft palate.

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Profiles of Early Expressive Phonology in Brazilian Portuguese: Comparison of children with and without cleft palate.

Introduction: Children with cleft palate may present speech disorders in phonetic and phonological aspects. The assessment of the phonological changes requires the use of specific protocols, such as the American PEEPS (Profiles of Early Expressive Phonological Skills, designed to evaluate and compare profiles of developing children 18 and 36 months of age. The protocol was adapted to Brazilian Portuguese (PEEPS:BP). Aims: The present study compared the phonological skills of children with repaired cleft palate (CP) and without cleft (NC), using the PEEPS:BP. Methods: 33 CP-children,17 females, aged 18 to 35 months (27±5m) vs. 47 control NC-children, without speech disorders, 26 males, 18 to 36 months (28±6m) were assessed. Children with syndromes, sensorineural hearing loss and multilingual speakers were not included. PEEPS:BP-36 words were elicited by toys, addressing articulation place and manner of Portuguese consonants, different syllable structures, and voice/voiceless phonemes, and audio/video recorded. Phonetic transcription of the words was performed by two experienced speech therapists. In case of disagreement, a consensus analysis was performed. Parameters analyzed were: 1) number of consonants in the initial and medial/final positions; 2) accuracy, by the percentage of correct consonants for plosives, fricatives, affricates, nasals and liquids, and total consonants; 2) the production of the place of articulation (labial, alveolar, velar and palatal); and 3) the percentage of speech disorders (omission, oral and nasal replacements). Groups were compared at $p<0.05$. Results: Indicators of significant speech impairment were observed only in Group C, except for oral replacements also seen in Group NC. Conclusions: PEEPS:BP showed that children with cleft palate±lip, at an early age, have significant deficit in phonological skills not observed in the non-cleft children, and that the cleft children caught up to the non-cleft children. This study provides the first normative comparison.

Speech, phonology, assessment, cleft palate.

1122

Asymmetric Lift of the Soft Palate: a clinical sign of velopharyngeal incompetence

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Background/Purpose:
Purpose: To report an important clinical finding of asymmetric lift of the soft palate.
Methods/Description:
Method: All patients that presented with asymmetric lifts in a four-year period were systematically analysed for demographics, presentation, presence of a cleft palate, identifiable syndromes or related pathologies, speech therapy investigations, surgeries and final speech outcome.
Results:
Results: 12 cases (male:female 6:6) were identified with asymmetric lift of the soft palate on direct inspection. Only 2 of 9 (22.2%) demonstrable asymmetric lift on nasendoscopy. 2 (16.7%) were noted following cleft repair and 4 (33.3%) were associated with velocardiofacial syndrome. 2 (16.7%) were associated with significant neurological conditions affecting the brainstem. Of 10 cases that underwent VP surgery, 5 (50%) had significant, 2 (20%) moderate and 2 (20%) poor speech outcomes, and one with neurological diagnosis deteriorated.
Conclusions:
Discussion: This case series identifies a previously unpublished clinical phenomenon, which may be a sign of velopharyngeal incompetence. Patients presenting with asymmetric lift may be at higher risk of velocardiofacial syndrome or more serious underlying neurological pathology, and may have poorer speech outcomes.
asymmetric lift palate neurology signs

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The relationship between backed articulation and posterior edge of the residual cleft in two-stage palatoplasty

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【Introduction】 Cleft lip and palate (CLP) patients in Niigata University Hospital have been treated according to our regimen of two-stage palatoplasty. One speech impairment that reads to unwanted phonological process is backed articulation (BA) error. The position of the posterior edge of the residual cleft after soft palate closure was backward to T-T' line (the distance between maxillary tuberculosis points) might be one of the indicators for an incidence of the BA in our regimen.

【Aims】 We investigated the relationship between the BA and the posterior edge of the residual cleft after soft palate closure by receiver-operating characteristics (ROC) analysis.

【Methods】 The subjects were 28 unilateral CLP patients with good velopharyngeal function. They were treated with Hotz's plate, performed soft plate closure at 1.5 years of age using modified Furlow's double-opposing Z-plasty, after which an interim obturator was used then, and performed hard palate closure at 4-5.5 years of age. The subjects were divided into two groups, with and without the BA at 4 years of age, 15 patients with BA and 13 patients without BA. We conducted an area under the curve (AUC) of ROC curve analysis of the posterior edge of the residual cleft for BA occurrence.

【Results】 The area under the ROC curve was 0.79 (CI:0.61-0.96, $P<0.001$). Highest Youden's index was 0.53, yielded from the cut-off point value of 0.7mm to T-T' line.

【Conclusions】 We demonstrated the position of the posterior edge of the residual cleft after soft palate closure might be set forward 0.7mm to T-T' line for the prevention for an incidence of the BA in our regimen.

Two-stage palatoplasty, Backed articulation

899

Acoustic characteristics of nasalized vowels in healthy Chilean adults of both genders

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Introduction: The acoustic characteristics of nasalized vowels have been described in different languages such as Chinese, American English and French. However, there are no studies that characterize and compare healthy male and female speakers of Chilean Spanish, a characterization that is important for the study of resonance.

Aims: To compare the acoustic characteristics of nasalized vowels of healthy Chilean adults of both genders.

Methods: The voices were recorded simultaneously with two microphones, one 0.5 cm in front of the right nostril, and the other 20 cm in front of the nose. Each participant emitted two sets of syllables and 8 words with the studied vowels (/a/ and /i/) in different phonetic contexts: oral, nasal and hypernasal. The sound pressure level (SPL) was obtained from the MRS amplitude analysis. The formants and bandwidths were obtained by a PRAAT Script. Finally, an automated nasality measurement script (in PRAAT) was used to obtain A1-P0 and A1-P1 differences. Comparisons were carried out with the Mann-Whitney U test ($p<0.05$).

Results: Sixteen women (22.8 ± 3.1 years) and 14 men (24.2 ± 4.6 years) participated. The SPL did not differ between groups in any of the emissions. The formants differed significantly between males and females in 53.1% of the obtained values. Meanwhile, only 7.2% of the bandwidths differed significantly. Additionally, only 4% of the A1-P0 measurements were significantly different, while 35% of the A1-P1 differed significantly.

Conclusions: The amplitudes, bandwidths and A1-P0 differences of nasalized vowels did not differ between males and females. Meanwhile, formants and A1-P1 differences were the acoustic characteristics that differed the most between groups.
Acoustics, Nasalized vowels

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The impact of parental wellbeing on early speech, language and communication development for children born with cleft palate and/or lip.

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The aim of this study is to investigate the relationship between parental wellbeing and a child's speech, language and communication skills at 13 months. The specific research questions are; a) Is there a relationship between parental wellbeing and communication development? b) What is the incidence of depression and anxiety for parents of children born with cleft palate +/- lip?

The study is ongoing at this time. Existing questionnaire data from the Cleft Collective Birth Cohort and the Cleft Collective Speech and Language Study have been used. Parent responses to the Speech and Language Questionnaire when the child was 13 months of age provided information regarding speech/language development and the post-natal questionnaire provided information about parental depression and anxiety.

Correlations between parental anxiety and depression scores and children's speech/language scores were analysed. A hierarchical multiple regression will be performed to determine whether parental wellbeing contributes additional variance to reported speech/language skills whilst controlling for other variables such as; family history of communication needs, child's hearing status and socioeconomic status.

The results indicate that there is a relationship between maternal anxiety and depression and a speech and language development at 13 months but no relationship between paternal wellbeing and speech and language scores was found. This project will establish whether parental wellbeing contributes additional variance when controlling for the other variables.

This study will present the incidence of anxiety and depression in parents of children born with CP+/-L and will explore the relationship between parental wellbeing and the speech and language skills of children born with CP+/-L at 13 months of age. The results and conclusions will be presented at the Cleft Congress 2022.

Parental wellbeing early speech/language development

1065

SPEECH SAMPLE REPRESENTATIVE OF COMPENSATORY ARTICULATIONS IN SPEAKERS OF BRAZILIAN PORTUGUESE WITH CLEFT LIP AND PALATE IN PERNAMBUCO, NORTHEAST OF BRAZIL

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Introduction: Speech is one of the indicators of the results of primary palatoplasty in cleft lip and palate (CLP). The auditory-perceptual judgment is considered the gold standard for identifying speech disorders resulting from velopharyngeal dysfunction, and aspects such as characteristics of the speaker, the evaluator and speech samples can affect the judgment. Objective: To establish a collection of recordings of people with CLP with representative do speech using the glottal stop (GS) and pharyngeal fricative (PF), in Brazilian Portuguese with Pernambuco regionalism. Methods: Study carried out at a reference center for FLP in Recife. Phase I of the study was subdivided into IA and IB. Phase IA included: Twelve sentences with consonants plosives and fricatives the Brazilcleft protocol were the samples of interest for this study. Existing recordings were from patients with CLP, ages 5-45 years, identified and organized according the correct place of production of sonds (CPPS), GS or PF. The video recordings were converted into wave. Phase IB involved the auditory-perceptual judgment by two speech and language therapists (SLT) experienced in CLP, who identified, in consensus, the type of articulatory production on identifying samples of CPPS and the use of GS and PF. Result: Between 2014-2019, 1526 recordings were recognized and 610 were selected. In PHASE IB, of the 610 speech samples, the two SLT agreed with 422 speech samples and 113 experimental samples and 113 reference samples were selected to conduct the Phase II study. The second phase will involve a comparative analysis of the auditory-perceptual judgment between SLT from Pernambuco and São Paulo under conditions with and without access to reference samples. Conclusion: Representative samples of the use of the GS and the PF in Pernambuco speakers were established, enabling the control of Pernambuco regionalism in future studies involving speech analysis after primary palatoplasty.

speech, assessment, audio recordings,cleft palate

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Assessment and recovery of articulatory disorders in patients operated on for cleft lip and palate at the Pediatric Surgery Department of the Treichville University Hospital-Abidjan.

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Introduction

Speech therapy management of cleft lip and palate patients requires a good evaluation and a better method for an optimal recovery.

Aims

The main objective of this study is to correctly evaluate speech disorders in patients with cleft lip and palate surgery and to rehabilitate them adequately.

Methods

This is a prospective longitudinal study of 3 years (October 2018 - September 2021) conducted at the Department of Pediatric Surgery of the CHU of Treichville. It focused on 20 children (aged 5 to 12 years) operated on for cleft lip and/or palate, assessed before, during and after speech therapy interventions to highlight the different impairments and the effects of the interventions. Rehabilitation was progressively focused on isolated phonemes, syllables, words, word-sentences, sentences and conversations.

Results

Bilabial (P, B), labiodental (F, V), dentate (D, T), alveolar (S, Z), pre-palatal (CH, J) and velar (K, G) occlusions were affected. More than half of the patients (13) had all these disorders. 7 patients had no bilabial and dentate phoneme disorders. All patients had nasal emissions. Half had hypernasality and 1/3 had hypo-nasality. 3 patients had a velopharyngeal insufficiency to be repaired surgically.

The intervention was one session per week with instructions to the parents to continue at home. 17 patients progressed well. They recovered the (P and B) in one session. The (K, G) and (CH, J) were recovered afterwards.

Conclusions

Articulatory disorders in cleft lip and palate mainly affect high pressure phonemes for which progressive speech therapy is effective in our context.

Speech Therapy Cleft Sound Disorders

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Testing the sensitivity of the Dorsum Excursion Index for comparing typically developing speech and cleft speech characteristics

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1. Background

Speakers with cleft lip and palate (CLP) may overuse the tongue dorsum as compensation for velopharyngeal insufficiency. The Dorsum Excursion Index (DEI) (Zharkova, 2013a) was designed to quantify articulatory overuse of the tongue dorsum, particularly for speakers with CLP. A higher DEI indicates higher tongue dorsum elevation. Its sensitivity to different places of articulation (POA) has been validated in typical adult speech (Zharkova, 2013b). There are no studies testing its sensitivity in the speech of typically developing children or children with CLP.

2. Aim

Test DEI's sensitivity in detecting differences between post-alveolar and alveolar or velar POA in typical and cleft speech.

3. Methods

The preliminary results are based on five speakers with CLP (mean age 8;6, SD = 1;2) and six typical speakers (mean age 7;10, SD = 0;6). The final report will include 35 children with CP aged 3;07-12;02 and 29 TD children aged 5;8-12;10. They were recorded using high-speed ultrasound data (~100 fps), and simultaneous audio, producing /k, t, s, ʃ/ in an /aCa/ environment, ten times for cleft palate speakers and once for typical speakers. The TD and CLP data was analysed using a linear mixed effects model: DEI ~ Consonant (baseline: /ʃ/) * Speech type (baseline: TD) + (1 + Consonant | Speaker)

4. Results

DEI was significantly different when /ʃ/ was compared to /k/ but not when /ʃ/ was compared to /s/ or /t/ and this was true only for the group of typical speakers.

5. Conclusions

DEI can distinguish between postalveolar and velar POA in typical speakers, but not between alveolar and postalveolar sounds, and between TD and CP speech. Future research needs to control for the effect of error types in CP speech.

dorsum excursion index, ultrasound, articulation

750

Nasalance in children with velopharyngeal insufficiency rehabilitated with a pharyngeal flap during the COVID-19 pandemic.

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Introduction: The upper pedicule pharyngeal flap is one of the most common corrective surgeries for velopharyngeal insufficiency (VPI) in Chilean children with surgically corrected cleft palate (CP). During the COVID-19 pandemic, interdisciplinary treatment teams, the patients and their parents, all faced new challenges, which is why the evaluation of results during this period is of vital importance.

Aims: To compare the nasalance values in Chilean children with VPI secondary to CP, who underwent pharyngeal flap surgery during the COVID-19 pandemic.

Methods: Nasalance values obtained before and after upper pedicule pharyngeal flap surgery, always performed by the same surgeon, were analysed. The nasometry was performed with the Kay Elementrics Model 6450 Nasometer, at the Gantz Foundation Speech Therapy Unit. The values obtained during the sustained production of vowels, numerical series and sentences were compared using the Mann-Whitney U Test ($p<0.05$)

Results: The values of 22 children, with an average age 8.4 ± 4.0 years, were compared. The average nasalance decreased significantly ($p<0.001$) in the vowel /a/ from 29.9% to 15.8%. In the vowel /i/ the value decreased significantly ($p<0.001$) from 61.6% to 37.9%. In the numerical series (1 to 10) the value decreased significantly ($p<0.001$) from 48.2% to 30.5%. Finally, nasalance values decreased for: : /p/, from 43.4% to 27.7% ($p=0.009$); /t/, from 42.1% to 31.4% ($p=0.050$); /s/, from 46.1% to 30.7% ($p=0.009$); and /f/ from 46.6% to 34.1% ($p=0.014$). While, in the sentence with /k/ the value decreased from 43.3% to 34.9%, but not significantly.

Conclusions: Nasalance values decreased significantly in Chilean children with IVF operated with pharyngeal flap during the COVID-19 pandemic.

Pharyngeal flap, Nasalance, VPI

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Completion rates of two different speech samples, specifically designed for 3-year-old children with cleft palate +/- cleft lip (CP±L).

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Introduction
There is a lack of standardisation in the speech samples used to assess speech at age 3-years in the CP±L population. Typically, two types of speech sample are used, single word naming and sentence repetition.

Aim
To compare the completion rates of two speech samples to determine if there is a preferred speech sample to use in assessments with 3-years-olds with CP±L.

Method
Two speech samples were specifically designed and adapted for this age group. Sample A comprised 2-minutes of spontaneous speech and picture naming (59 pictures). Sample B consisted of repetition of 24 short phrases. Each sample targeted the same phoneme four times. Twenty 3-year-olds with CP±L and five 3-year-olds without CP±L were recruited. The participants were randomised as to whether they completed Sample A or B first. All samples were video recorded by one Speech and Language Therapist (SLT). Completion of the speech samples was rated as: not completed, partially completed, or fully completed.

Results
The average length of time to complete (partially or fully) Sample A was 16.5 minutes compared with an average of six minutes for Sample B, with a mean of 22.5 minutes to complete both samples. The typically developing group fully completed both samples. One participant with CP±L did not complete either speech sample. More participants attempted Sample A than B. In the CP±L group 70% fully completed both Sample A and Sample B. Partial completion was only seen in Sample A, these participants could not complete Sample B. Those fully completing the first sample also fully completed the second, irrespective of order.

Conclusion
Three-year-old children with CP±L can complete comprehensive speech samples in a single appointment. Short phrase repetition is a more challenging sample at this age. Being able to fully complete one sample predicts whether the child can fully complete another.

speech assessment, speech samples, pre-school

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Evaluation of VPI- Assessment with Lateral Videofluroscopy by C Arm in the Context of Bangladesh

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Velopharyngeal dysfunction (VPD) defines when velophryangeal valve does not close adequately during the production of oral sounds. It contains velopharyngeal insufficiency (VPI), inadequacy and velophaeryngeal mislearning. The VPI evaluates by perceptual analysis and also instrumental analysis. In Bangladesh C arm machine was use to assess VPI.

Aims
To evaluate velopharyngeal insufficiency (VPI) by lateral videofluroscopy for cleft patients.

Methods
Thirty patients (18 females and 12 males) age 3 to 32 years with cleft lip and palate and the palate underwent to surgical protocol at SHNIBPS and DMCH. Articulation level was evaluated using the speech assessment protocol that focuses on intelligibility, hypernasality, nasal emission, pharyngeal friction, and glottal stop. After finding the cleft characteristics the phonetic placement was evaluated by lateral videofluroscopy to find VPI. Patients were instructed to stand beside the x ray detector and articulate the phonemes. Video recording was taken by camera for further discussion.

Results
The 21 of the sample had VPI with a severe to moderate degree of nasality and nasal air escape, presence of pharyngeal friction, glottal stop and a systematic compromising of the intelligibility. Also grimace was evident. The 6 of the sample showed close to normal VP function including mislearning acceptable phonological outline with hypernasality and glottal stops. 3 patients showed a perfectly normal VP function. The VPI patients recommended for secondary speech surgery and VP mislering undergo the speech & language therapy.

Conclusions
Evaluation of VPI by lateral videofluroscopy is most common method used in cleft palate patients but using c arm is a unique and quick process to assess VPI. It provides objective data regarding the function of the velopharyngeal valve and allows multidisciplinary team to make decision for further management.

Cleft palate,VPI,Intelligibility,assessment, multidisciplinary

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Speech Assessment after Radical Soft Palate Soft Palate Treatment

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Introduction: The timing and technique of soft palate closure varies from one treatment center to the next. The goals of the surgery concerning function are allowing the beginning of proper speech development and tube function.
Aims: The aim of this study was to analyze speech intelligibility of children, who had undergone radical surgical soft palate closure, using automatic speech recognition software.

Methods: 23 cleft patients were treated by closure of the soft palate at about 6 months of age (Sommerlad, 2003). At the age of 11 their speech intelligibility was evaluated through automatic word recognition and word accuracy rate. An institute for speech therapy evaluated the speech samples for intelligibility. The results of this study group were compared to those of 3 other groups: non-cleft age-matched children (N=21), children with a cleft lip without palate involvement (N=11) and those who had undergone the repair of the soft and of the hard palate in one operation (N=6).

Results: These children had a significantly lower word recognition rate of 41.4. (SD 11.65) compared to non-cleft age-matched children, (mean 52.17 SD 8.99). There was no significant difference in word accuracy rate between the groups. The patients in the study group received mostly scores of “good” or even “very good” subjective intelligibility.

Conclusions: The early microsurgical repair of clefts of the soft palate without lateral release incisions results in a good speech outcome.

cleft palate, speech recognition software

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The development and validation of a Japanese outcome-tool for the perceptual assessment of speech in cleft palate patients

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Introduction: Different clinical assessment tools for cleft palate speech have been used in different facilities. However, a standardized cleft audit protocol remains unestablished in Japan.

Aims: To develop and validate a Japanese outcome tool for the perceptual assessment of speech in patients with cleft palate.

Methods: The participants were 13 speech-language-hearing therapists from the Japancleft projects. The tool was based on the Cleft Audit Protocol for Speech-augmented; CAPS-A (John et al., 2006; Sell et al., 2009), with modifications to some speech parameters.
Phase 1: CAPS-A-Japan (CAPS-A-JP) was developed, and content validity was tested on 10 patients, using the newly developed Japanese speech samples and modified speech parameters.
Phase 2: Criterion validity was assessed by comparing the CAPS-A-JP resonance outcomes of 40 patients with the outcomes of clinical investigations.
Phase 3: A listening experiment with six experienced speech therapists was conducted on two occasions, to test the intra- and inter-rater reliabilities for 20 patients. Intra-class correlation coefficients (ICCs) were used to analyse the reliability.

Results: The mean percentage agreement of criterion validity for resonance was 71% on high-pressure sentences, but 54% on low-pressure sentences. The inter-rater reliability was rated moderate/good (ICC: 0.45–0.80), except for developmental errors, which were rated fair. The ICC was very low or incalculable in hyponasality and metathetic error because most results were zero.
The intra-rater reliability was rated as good/very good. The ICC was very low or incalculable in hyponasality, nasal emission, and metathetic error, for similar reasons as those described for the inter-rater reliability.

Conclusions: A valid and reliable cleft speech audit tool was developed. Further research is required to optimize the tool, based on the inclusion of a training protocol.

Cleft Audit Protoocol for Speech

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Consonant intelligibility in individuals with adult un-operated cleft palate with intelligible speech

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There can be sometimes individuals with unoperated cleft palate or severe velopharyngeal dysfunctions presenting with intelligible speech in adulthood. Analysis of such speech will help us gain insight into the adaptive strategies used to prevent the compensatory errors in CLP.

Aim: The study presents consonant intelligibility and speech characteristics in 3 unique adult cases with unoperated cleft palate, velopharyngeal incompetency and submucous cleft palate presented with intelligible speech.

Method: Case A was a 19-year-old male with and complete unoperated cleft palate, Case B a 27 year old female with features of submucous cleft palate and Case C a 26 year old female, with velopharyngeal incompetence. Intraoral examination was done and speech samples were recorded and the speech characteristics were reported using universal parameters protocol for reporting speech outcome in cleft palate (Henningson's et al, 2008). The intelligibility of consonants was analyzed using percent consonant correct-Revised in words and connected speech. Lateral view videofluroscopy was done to confirm VP incompetency in one of them.

Results: Case A, B and C had normal to mild speech understandability and acceptability in connected speech. Case A did not have perceptual hypernasality or nasal air emission . Case B and C had mild hypernasality in words and connected speech with no nasal air emission. Case A did not have any placement errors, case B had glottal substitution for g sound. All 3 participants had above 95% PCC-R score.

Conclusion: All three client despite the structural defect had perfect oral placement for the consonants as well as conservation of air to maintain an oral resonance. The reason for this in some individuals with CLP is hardly discussed in the literature (Fletcher 1985). The discussion will give insight into setting achievable goals for speech in individuals with CLP despite persisting structural deficit.

speech intelligibility, PCC-R, speech motor

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Glottal stop with vocal fold movement ——based on simultaneously observation using electroglottography and fibro nasopharyngoscopy

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Introduction. Glottal stop (GS) is a typical compensatory articulation, which has a great impact on speech intelligibility in patients with cleft palate. It is usually detected by perceptual analysis.
Aims. The study aimed to investigate electroglottography (EGG) can be a substitution of perceptual judgement verified by using fibro nasopharyngoscopic video in cleft palate patients with GS, when unaspirated monosyllables are articulated in Mandarin.
Methods. Unaspirated monosyllables /pa/ /pi/ /ta/ /ti/ with tone one were analyzed. In addition, 10 patients with cleft palate underwent simultaneous EGG and nasopharyngoscopic video recording under fibro nasopharyngoscopy through nasal while performing the tasks. A total of 120 tokens were obtained from 10 patients, divided into a GS category (n = 96 tokens) and a nonglottal stop (NGS) category (n = 24 tokens), as assessed perceptually by three judges. The prevocalic movement of the EGG signals as well as the glottal area images, which were extracted from the nasopharyngoscopy movies, were calculated, and the correlations between both parameters were analyzed.
Results. The consistency rate of each judge was 80% -83%, the average consistency rate was 81.3%); unweight Cohen's Kappa analysis showed that the three doctors were highly reliable between every two (Kappa values were 0.622, 0.558, 0.652, respectively). The results indicated that the prevocalic movement of EGG was consistent with the observed glottic movement in the video from nasopharyngoscopy.
Conclusions. Results demonstrate that in cleft palate patients with glottal stop, EGG has a potential to be a substitution of perceptual judgement by the vocal fold movement observed in nasopharyngoscopic video, and suggest that the prevocalic movement signal can be an objective parameter in the utterances marked as glottal stop.
Glottal stop,electroglottography (EGG),nasopharyngoscopiy,cleft palate,prevocalic movement

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European Portuguese nasopharyngoscopic assessment protocol for cleft lip and palate sequelae

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1. Introduction: Although nasopharyngoscopy is considered an important tool to assess Cleft Lip and Palate (CLP) speech production, there is no standardized protocol for this examination and none of the previous protocols apply to the European Portuguese language.
2. Aims: The present study aims to create and validate an European Portuguese nasopharyngoscopic assessment protocol in cleft palate sequelae.
3. Methods: This study was divided in two phases: development and judgment. In the development phase, the protocol was created and applied, based on a literature review of 49 references (published between 1961 and 2011). At the judgement stage, the protocol was submitted to a panel of 5 experts (2 otolaryngologists and 3 speech and language therapist) and the Content Validity Index (CVI) was calculated.
4. Results: In the final protocol, 37 of 41 items remained and the total CVI was 1.00. It was calculated the Kendall W coefficient and the value of Cronbach's Alpha, in order to assess the agreement between the experts evaluations. Their values are low for total experts ($W = 0.322$ and $p = 0.011$, $\alpha = 0.475$) and higher for the group of speech therapists ($W = 0.676$ and $p = 0.000$, $\alpha = 0.769$).
5. Conclusions: These results showed that the profession was an influential factor in the opinion of experts. The content validity of the PAN-SFP was established. It´s necessary to implement a pilot study to finish the validation process.

Velopharyngeal Function, Nasopharyngoscopy, Content Validity

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Protocols and Documentation: How to get better speech results through regular assessment controls.

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Introduction:Cleft palates affect different functions related to the orofacial complex and require long-term follow-up until the end of facial growth, around 20 years of age. This requires longitudinal follow-up by multidisciplinary teams. To evaluate the results obtained over these years, it is necessary to standardize the evaluations within each sector and use standardized protocols recognized by the entire team.
Aims:To demonstrate a model of speech documentation protocol used since 2007 in pre and post surgery periods in a Reference Hospital in Brazil.
Methods:Video documentations are made following exactly the same pattern of identification for each patient and data collection through quarterly controls. These documentations are always performed by an audio and video professional, accompanied by a speech therapist who uses the same speech and intonation pattern, as well as the same protocol of words and phrases to be repeated by the patient. The studio structure, lighting and sound equipment are prepared so that there is perfect identification of the patient's speech. All videos are saved in a secure server.
Results:As a result of this system implemented by the speech therapy sector more than 15 years ago, the SOBRAPAR Institute of Plastic and Craniofacial Surgery, SOBRAPAR Hospital, Campinas, São Paulo, Brazil. currently has approximately 6518 files and 1211 patients documented in all phases of speech and resonance development, thus being able to assess and reassess behaviors determined by the multidisciplinary team, and thus provide more assertive and personalized interventions for each patient.
Conclusions:Looking back at this long trajectory of care and documentation, we can conclude that documentation safeguards the multidisciplinary team's conduct, besides bringing the possibility of reflection and evaluation on the strategies implemented to improve each patient's speech and resonance.
This is an essential tool and an easily replicable method to be adopted by other teams and services.
Protocol
Speech and resonance
Assessement

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Speech in 5-year-olds with Cleft Lip and Palate with and without Syndromes and/or Additional Malformations – a Consecutive Series

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Introduction
In studies of speech in children with cleft palate with or without cleft lip (CP/L), children who also have syndromes or additional malformations (CP/L+) often are excluded.
Aims
To present speech outcomes from a consecutive series of 5- year-olds born with CP/L without syndromes and/or additional malformations (CP/L-) compared to peers with CP/L+.

Methods
The study design was cross-sectional and retrospective. One hundred 5-year-olds born with CP/L participated, of which 20 were born with CP/L+. They were treated with primary surgery in one stage with muscle reconstruction according to Sommerlad. Surgery was performed between 8.8 – 19.1 months. The mean age for surgery in the CP/L+ group was 13.1 months and 12.1 months in the CP/L- group. Three independent speech and language pathologists made phonetic transcriptions and ratings from audio recordings of the children. Perceived velopharyngeal competence, percent consonant correct (PCC) and non-oral errors were investigated. Comparisons between groups were performed.

Results
The results for speech variables indicated poorer speech in the CP/L+ group compared to the CP/L- group, but no statistically significant differences were seen. In the total group, mean PCC was 88.2 and mean percent non-oral errors 1.5. The distribution of results was wider for several consonant variables in the CP/L- group than in the CP/L+ group. The group with bilateral cleft lip and palate (BCLP) had poorer result on measures for consonant production compared to groups with other cleft types.

Conclusions
No significant differences in speech outcome between the two groups were seen. Poorer speech was more common among children with more extensive clefts. The results indicated relatively good speech compared to children with CP/L in previous studies. The number of participants was low, and studies with larger groups of children are warranted.

CLP, speech, syndromes, additional malformations

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Comparison of Nasality Microphone and Nasometer 6450

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Introduction

In assessment of resonance disorders, Nasometer 6450 (KayPentax) is commonly used as a diagnostic tool supplementing perceptual analysis made by an SLP. Nasality Microphone (Rose-Medical) is a newer handheld nasometry unit which seems convenient for clinical use compared to Nasometer 6450. Currently, no comparative studies on Nasality Microphone and Nasometer 6450 have been published. A study on the comparability of the two nasometry units is relevant when considering introduction of Nasality Microphone in clinical practice.

Aims

The first aim of the study is to compare nasalance scores from Nasometer 6450 and Nasality Microphone to assess comparability of the two nasometry units. The second aim is to study test-retest reliability on each unit.

Methods

The study design is inspired by Watterson, Lewis & Brancamp (2004). Subjects are non-cleft speakers aged 18 to 35 years. The procedure involves 3 trials in which subjects repeat test sentences. Between 2nd and 3rd trial, the headgear is reapplied. The procedure is performed on both nasometry units. Speech material consists of a set of sentences containing only oral consonants and a set containing nasal consonants. Between machine differences will be analyzed by comparing group means from 1st trials on both units. Within machine differences will be analyzed by comparing group means from the 3 trials on each unit. Statistical analyses will be carried out by means of analyses of variance.

Results

Currently, data is collected from 20 subjects. Preliminary group results show a slightly, but significantly higher mean nasalance score for nasal consonant sentences on Nasometer 6450 compared to Nasality Microphone. No significant difference between machines is found for oral sentences. The current data show relatively large variation in nasalance scores both within and between machines.

Conclusions

Preliminary results indicate that nasalance scores obtained from Nasometer 6450 and Nasality Microphone on oral sentences are comparable in assessment of resonance disorders.

Resonance disorder, Nasometer6450, Nasality Microphone

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Speech outcomes following palatal lengthening using buccal flaps for velo-pharyngeal insufficiency in cleft and non-cleft patients.

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Introduction: Palatal lengthening using buccal flaps for velopharyngeal insufficiency is a well established procedure. This study adds to the body of evidence

Aim: The aim of this retrospective study is to report speech outcomes following palate lengthening surgery with buccal flaps in a cohort of cleft and non-cleft patients presenting with velopharyngeal insufficiency.

Methods: Retrospective case note review of patients treated with buccal flap lengthening for velo-pharyngeal insufficiency (final number TBC) from 01/01/2008 until 31/08/2021. Primary outcome measures are speech (change in resonance and in nasal airflow). We will also report on complications and the need for further surgery.

Results: TBC

Conclusion: TBC

velopharyngeal insufficiency, palate lenghthening, speech

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AERODYNAMIC OUTCOME FOLLOWING SURGICAL MAXILLARY ADVANCEMENT IN INDIVIDUALS WITH CLEFT PALATE: ANALYSIS OF 302 CASES.

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Introduction: Several studies have been performed aiming to investigate the velopharyngeal deterioration (VPD) after surgical maxillary advancement (MA) in individuals with cleft palate (CP). Clinical and instrumental assessments before (PRE) and after (POST) MA must be routinely performed in order to diagnose morphofunctional disorders, to guide therapeutic approaches, and to evaluate institutional therapeutic results.
Aim: To investigate the occurrence of VPD in individuals with CP following MA performed by a team of oral and maxillofacial surgeons over 20 years.
Methods: A total of 302 male and female individuals with repaired CP, aged 16 to 45 (24±13) years, underwent MA between 1996 and 2016 were retrospectively assessed: 66 operated by surgeon “A”, 96 by surgeon "B", 112 by surgeon "C", and 28 by surgeon "D". Velopharyngeal cross-section area (VP-CSA) was estimated by pressure-flow technique and classified according to velopharyngeal orifice area obtained (0-0.049cm²=adequate; 0.050-0.199cm²=borderline; ≥0,200cm²=inadequate) PRE and, on average, 18±8months POST-MA. Only individuals with adequate velopharyngeal closure PRE-MA were included in this study. Differences between PRE and POST-MA values were analyzed by Wilcoxon Test. POST-MA VPD was analyzed by Kruskal-Wallis Test ($p<0.05$).
Results: Mean VP-CSA obtained PRE-MA was 0.011(±0.013)cm², confirming absence of VPD in all individuals. After MA, 24%(73/302) of this population presented mean VP-CSA of 0.293(±0.196)cm². Of these, 24%(16/66) were operated by surgeon “A”, 29%(28/96) by surgeon “B”, 20%(23/112) by surgeon “C”, and 21%(6/28) by surgeon “D”. Significant difference between PRE and POST-MA mean values of VP-CSA was found ($p<0.001$). However, significant difference among the proportions of individuals with POST-MA VPD, per surgeon, was not observed ($p=0.528$).
Conclusion: POST-MA VPD was observed in a considered number of cases. Similar proportions of affected cases were observed among surgeons, being slightly higher for one of them. Studies are being conducted aiming to identify factors related to the surgical techniques that can contribute to the appearance of VPD.
cleft palate, orthognathic surgery

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SPEECH OUTCOME IN PATIENTS WITH UNILATERAL CLEFT LIP AND PALATE SUBMITTED TO TWO DIFFERENT PALATOPLASTY PROTOCOLS

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Background
The main goal of cleft palate repair is to accomplish a good speech with preservation of the maxillary growth. Speech and language disorders are an important issue of the treatment failures. During speech, Velopharyngeal Deficiency (VPD) may occur. Patients with Late Hard Palate Closure(LHPC) showed increased rate of VPD compared to patients with Early Palate Repair(EPR) in some researches
Aim
Evaluate the speech outcomes in children with unilateral cleft lip and palate (UCLP) who were operated by a single surgeon in a single-center using two different treatment protocols, one a two staged repair with Hard Palate Late Closure(HPLC) and a Control Group with EPR
Methods
A randomized, controlled, blinded trial was carried out at CADEFI between January 2010 and October 2016 and evaluate speech outcomes in two groups of subjects with UCLP through auditory-perceptual assessment by three experienced speech-language pathologists(SLP) at a different Institution . The intervention group (IG), had two stages repair with LHPC, between 3 and 4 years of age (32 patients) and the control group (CG) with early one stage repair between 9 to 15 months (28 patients). Speech samples were collected and recorded in a standardized manner following Brazilcleft recommendations. For the auditory-perceptual assessment was considered: compensatory articulation disorders (CAD) and hypernasality (present and absent). The unweighted kappa was calculated for the compensatory articulation disorder an hypernasality.
Results: Compensatory articulations were absent in 18(56,25%) patients for the IG and in 19(67,86%) patients in a CG. Intrarater reliability was calculated for the three SLP raters.. Resonance adequated were verified in both groups: GI=32 46,88%(15), mean=1,5(SD± 0,5070), GC=28(60,71%(17),mean=1,6 and SD±0,4973.
Conclusion: The findings suggested that the compensatory articulation rate was similar in both groups. The agreement level for the three SLP raters showed better results for the Control Group revealed lower frequency of hypernasality, although without statistical difference.

Cleft Palate, Speech Outcomes

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Electromyographic Activity of the Masseter and Temporal Muscles in Patients With Nonsyndromic Complete Unilateral Cleft Lip and Palate: 2-Stage Versus 1-Stage Palate Repair

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1. Introduction: A wide variety of surgical protocols exists at cleft centers world-wide as there are differences of opinion on the optimal timing and
technique of cleft palate repair to obtain the best speech and midfacial
growth outcomes.In this context, there are 2 different therapeutic protocols with different moments and surgical techniques: repair of the cleft palate in 2 surgical stages or repair of the cleft palate in a single surgical stage.Regarding the treatment of patients with cleft lip palate, different therapeutic outcomes (eg, facial growth, speech, hearing, occlusion, aesthetic, among others) have been used to evaluate the therapeutic protocols worldwide.
However, masticatory function has received little attention in major longitudinal studies on therapeutic endpoints in cleft care.
We are not aware of any investigation focused on evaluating the influence
of different therapeutic protocols on the masticatory function of cleft patients.
Therefore, the purpose of this study was to evaluate the electro-
myographic activity of the masseter muscle and the anterior portion
of the temporal muscle during rest and habitual mastication comparing 2
therapeutic protocols.

2.Aims: To assess the electromyographic activity of the masseter and temporal muscles in cleft patients who underwent 1-stage palate repair versus 2-stage palate repair.

3.Methods: Thirty-two patients with nonsyndromic complete unilateral cleft lip and palate operated by 2 different protocols for palate repair, 1-stage (group 1, n=16) versus 2-stage with delayed hard palate closure (group 2, n=16) were available in the retrospective longitudinal study. Standardized electromyographic records of the masseter and anterior portion of temporal muscles were obtained with 2 repetitions during mastication and rest.

4.Results: No statistically significant (all $P > 0.05$) differences were observed in the electromyographic data between the groups 1 and 2.

5.Conclusion: There were similar electromyographic activity of masseter and temporal muscles during mastication and at rest after 1- and 2-stage palate closure.
Cleft palate, electromyography,masticatory muscles, repair

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Electropalatographic Study of Lateral Misarticulation in Patients with Speech Sound Disorders

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Introduction: Lateral Misarticulation (LM) is often found in patients with cleft palate as well as in non-cleft patients with speech sound disorders. Previous research of Japanese LM using electropalatography (EPG) has revealed that total tongue-palate contact and posteriorly placed tongue-palate contact were common in cleft palate patients. From these studies, LM was defined as a type of misarticulation in which the tongue dorsum makes full contact across the hard palate continuously, forcing the air stream laterally out from the retromolar region to the buccal groove. The definition is widely used to describe LM in Japan, regardless of the etiology of the patient group.
Aims: This study investigates the tongue-palate contact pattern of LM in patients with speech sound disorders of unknown origin as a comparison with cleft palate patients.
Methods: The participants were 30 patients with LM (mean age: 26.6 years). The EPG pattern and acoustic data were recorded with WinSTARS (Asahi Roentgen), and the recorded data were analyzed by the Articulate Assistant software (Articulate Instruments). Participants were asked to repeat a sentence five times, and analysis was applied to 19 consecutive syllables from the sentence. For each participant, the cumulative tongue-palate contact patterns of 19 syllables (global pattern) and the maximum contact pattern for a consonant /ɕ/ were obtained and analyzed.
Results: The global pattern showed extensive contact in the central alveolar region. Fourteen showed continuous posterolateral contact only on one side, and eight showed no continuous posterolateral contact on either side. In the maximum contact pattern for /ɕ/, complete contact across the palate especially in the anterior region was a common trend. No participant showed total tongue-palate contact pattern.
Conclusion: The common tongue-palate contact patterns of LM seen in cleft palate patients were not evident in the non-cleft patient group. It is necessary to reconsider the classification and definition of LM.

electropalatography, tongue-palate contact, connected speech

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Association between OMENS score and spinal anomalies in the oculo-auriculo-vertebral spectrum

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1. Introduction
The oculo-auriculo-vertebral spectrum (OAVS) is a rare clinical condition characterized by the involvement of different facial structures. The degree of facial involvement, traditionally assessed through the OMENS score, may be more frequently related to vertebral malformations; conflicting evidence is found in medical literature.
2. Aims
This study aimed to identify the prevalence of spinal anomalies in those individuals, to describe them and establish a correlation between spinal and facial anomalies.
3. Methods
This project was financed by the Brazilian National Council for Scientific and Technological Development.
The sample was selected by the Clinical Genetics Division of the University of São Paulo Hospital for Rehabilitation of Craniofacial Anomalies.
The inclusion criteria were a clinical diagnosis OAVS with no overlap with other syndromes and radiograph availability.
The OMENS scores were defined in multiprofessional meetings with members of the Craniofacial Surgery and Clinical Genetics teams, and the radiographs went through blind evaluation by a radiologist.
4. Results
The sample consisted of 46 individuals with OAVS, 24 (52,2%) female and 22 (47,8%), male (1M:1F). Twenty-one (45,7%) had unilateral craniofacial involvement and 25 (54,3%), bilateral.
Twenty-eight (60,9%) presented spinal anomalies. Those with unaltered spinal morphology showed a slight preference towards OMENS scores under 5: among 7 individuals, only one of had spinal alterations (14,3%), whereas 68,8% (22) in the group with scores 5-9 (n=32) and 71,4% (5) in the 10-15 group (n=7) did as well.
Test statistics results for the association are shown in table 1. The unobjectiveness and incomplete description of soft tissue and ear components (respectively), however, posed a considerable limitation.
5. Conclusions
Spinal anomalies in OAVS are more common than usually reported in medical literature and correlate with statistical significance to the OMENS score. Notwithstanding, due to the scale's subjectiveness, we recommend that all OAVS patients be screened through the available imaging method.

Table 1. Independent samples test

		Levene's Test for the Assessment of Equality of Variances		T-Test for the Equality of Means							
		Z	Sig.	t	df	Sig.		DM	SED	95% CID	
						U	B			Inf.	Sup.
Total	AEV	1.492	0.228	-2.219	44	0.016	0.032	-1.770	0.798	-3.377	-0.162
	UEV	-	-	-2.088	29.268	0.023	0.046	-1.770	0.848	-3.503	-0.037

Z: Z-score; Sig: significance level; U: unilateral (P); B: bilateral (P); DM: difference in means; SED: standard error of the difference; CID: confidence interval of the difference; Inf: inferior; Sup: superior; AEV: assumed equal variances; UEV: unassumed equal variances.

oculo-auriculo-vertebral spectrum, vertebral, spine, malformations

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Speech Outcomes of Cleft Lip & Palate Patients after Speech Therapy : A Preliminary Study

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Speech disorders are common in cleft palate child. Patients with cleft palate (PCP) frequently show compensatory articulation disorder (CAD). These errors require a prolonged period of speech intervention. Scaffolding strategies are used for correcting placement and manner of articulation.

Aims:
To assess the outcome of speech after providing therapy to patients with cleft lip and palate (CLP) in terms of articulation and nasality.

Methods:
In this experimental study, 22 with non-syndromic (age 3 to 32 years, mean age 12.22 years) Patients received 2 hours of individualized speech therapy in two/ three days in a week for 10 month period of time. The therapy focused on the correct phonetic placement and contrasts between oral and nasal airflow by some exercise at clinic and home. Acoustic software named Praat was used to evaluate nasality and Speech evaluations performed by perceptual techniques before and after the therapy. Variables of consonant were compared by t-test.

Results:
Post-therapy improvement of speech was noted in most of the patients, although to varying degrees. Clinically relevant progress of oral and nasal airflow obtained in 1 patient, correct phonetic placement was obtained in 4 patients. Overall, 6 patients showed normal place and manner of articulation, while 4 patients required additional speech therapy. There were suspected VPI speech characteristics in 7 patients who need further instrumental assessment. However, a statistically significant outcome was observed after the speech therapy.

Conclusions:
These preliminary results demonstrate that speech therapy can be effective for patients with CLP, in order to take care of the speech improvement. It ensures the role of a speech & language therapist in a comprehensive cleft team.

Cleft lip and palate,Speech therapy,Articulation,Airflow,VPI

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Local Speech Therapy Resources to Suit Local Communities in Cleft Care Management in East Africa: Luganda and Kiswahili Word Games.

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction:
Comprehensive cleft care (CCC) is the goal for all children born with cleft lip and palate deformities. Speech pathologists play a vital role in providing holistic treatment programs to children with cleft lip and palate who present with communication and swallowing difficulties before and after surgical repair. Additionally, speech pathologists are instrumental in determining the necessity of secondary surgery for further improvement of speech. Speech and language therapy remains a new profession in East Africa, with the first cohort of locally trained speech pathologists graduating in 2010. In this region, only a small number of specialized speech pathologists have competencies in treating communication difficulties associated with cleft lip and palate diagnoses.

Aim:
The aim of Luganda and Kiswahili word games is to provide speech therapy in the language in which children are most competent, in order to produce better results in a shorter period of time.

Method:
The word games focus on improving high pressure consonant production with target words which follow specific guidelines: one high pressure consonant is focused on at a time; each word consists of only the target high pressure consonant, with all other phonemes being low pressure or nasals; words chosen must be familiar and frequently used by children in the local dialect. Illustrations are paired with the words for use with children of all ages and reading abilities. A speech pathologist uses the word games to target phonemes through all levels of the speech hierarchy until the child has mastered each sound.

Results:
Luganda and Kiswahili word games are used by specialist speech pathologists in Uganda and Kenya, as well as by parents for speech practice in the home.

Conclusion:
More comprehensive research will provide further detail on the impact of the Luganda and Kiswahili word games on the speech outcomes of children with repaired cleft lip and palate.
Local-therapy resources
Luganda&Kiswahili word games

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The effect of intervention by a speech-language pathologist on cleft palate patients with congenital anomalies.

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Cleft lip and/or palate patients are known to have a relatively high incidence of other congenital anomalies. Treatment strategies for cleft lip and palate vary depending on the severity of the congenital anomaly. Palatoplasty, in particular, is performed on the premise of postoperative development of language functions, but the effects of surgery should be examined in cases of developmental retardation.
Aims
The timing of surgery and postoperative development of cleft palate patients with congenital anomalies were examined. The effect of therapeutic intervention by a speech-language pathologist was also examined in patients who did not undergo surgery.
method
About 36 cases of cleft palate(with/without cleft lip) patients with congenital anomalies were divided into two groups: those who underwent palatoplasty and those who did not. In the palatoplasty group, the time of surgery and the developmental quotient (DQ) before and after surgery were examined. In the no-surgery group, the reasons for not having surgery were summarized. The presence and content of speech therapy interventions for both groups were also examined.
Result
In 22 patients in the operated group and 14 patients in the unoperated group, the mean time of palatoplasty was 2 years and 3 months (1 year and 2 months to 4 years).
Cleft palate patients with congenital anomalies had delayed surgery and a lower developmental index. There were cases with good postoperative development and cases with increased feeding and well communication, even in unoperated cases.
conclusion
Intervention by a speech-language pathologist seemed to have an effect on the development of oral functions, such as feeding functions, regardless of whether the surgery was performed or not.

palatoplasty, speech therapy, developmental quotient

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Assessment of Long-term Speech Outcomes in Children with Pierre Robin Sequence

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Robin Sequence (RS) includes microretrognathia, glossoptosis, and upper airway obstruction. Cleft palates in this population are wide and U-shaped, making palatoplasty challenging. Velopharyngeal insufficiency (VPI) can result in aberrant speech development and necessitate secondary speech surgery. This study evaluates long-term Pittsburgh Weighted Speech Scores (PWSS) and secondary speech surgeries in patients with RS after palatoplasty.

Methods
Patients diagnosed with RS who underwent primary cleft palate repair between 2001- 2019 were included. Demographic data, medical case information, and speech-language therapy records were collected. Patient outcomes included Pittsburgh Weighted Speech scores and secondary operation for VPI.

Results
107 patients met inclusion criteria (43% male). 93.3% of patients had Veau-Class II cleft palate. 70.1% of patients underwent cleft repair using the modified Furlow technique. Mean age at surgery was 1.3±0.6 years and average age at long-term speech evaluation of 9.0±3.9 years old. Mean PWSS were 4.2±3.4, and only 6.5% demonstrated competent velopharyngeal mechanism. Borderline velopharyngeal mechanisms with minimal to mild hypernasality were achieved in 79.4% of patients. 38.7% of patients developed VPI requiring secondary speech surgery. There was no difference in PWSS between Furlow and straight-line repair (p=0.154) or association between age at surgery and PWSS (p=0.35, R2=0.01).

Conclusion
Only 6.5% of patients demonstrated completely competent velopharyngeal mechanisms in long-term speech analysis. The majority had borderline VP mechanisms in which speech was not overtly stigmatized. 38.7% underwent secondary speech surgery for persistent VPI and stigmatized speech. Results of this analysis are similar to published outcomes in palatoplasty populations with much longer follow-up.
Robin Sequence, palatoplasty, speech, cleft

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Improved speech outcome at five years with early pharyngeal flap surgery – elaborated

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Improved speech outcome at five years with early pharyngeal flap surgery – elaborated

Introduction

This poster will elaborate the oral presentation Improved speech outcome at five years with early pharyngeal flap surgery, where we present the effect of pharyngeal flap surgery on phonological development assessed in children with CP+/- L with VPD at five years of age.

Aims

To add perspectives to the change in our clinical treatment toward an earlier age of secondary surgery.

Content

Adding perspectives regarding

1. Why this change in treatment?
- Videoflouroscopy made assessment of younger children possible
- Research on typical Danish phonological development
- Clinical experience as part of evidence based practice

2. Assessment of need of secundary surgery)
- lack of obstruent consonants in speech
- No obstruent consonant development despite intervention

3. Burden of care
- speech assessment and intervention before age five
- Disordered speech at school entry

Evaluation

Preliminary results support our clinical experience that early secondary surgery allow children to naturally develop obstruent consonants and speech without cleft speech characteristics.
Thereby reducing burden of care and difficulties in communication substantially.

Phonological development, secondary speech surgery

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Group Intensive Fun therapy (GIFT): a service evaluation of a residential Speech and Language Therapy and Psychology weekend.

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction:
Many children with cleft speech characteristics (CSC's) have ongoing difficulties with speech at 5 years old. However, children are not always able to access speech and language therapy (SLT) intervention in a timely way. Ongoing difficulties with speech are known to negatively impact on psychological wellbeing and life outcomes. In order to support the speech development and wellbeing of children with CSC's, Cleft.Net.East trialed a residential SLT and psychology weekend.

Aims:
To improve the speech and confidence of children with CSC's, to increase parent/carer understanding of their child's speech difficulties and support the wellbeing of both children and parents/carers.

Methods:
Ten children, (eight with CP+/-L, two with 22q11 deletion syndrome) aged between 6-10 years, presenting with ongoing CSC's, attended a 2 day residential weekend with a parent/carer. The target sound for the weekend, for all children, was /s/ in all positions within words. SLT intervention was delivered in structured speech activity sessions, adventure activities and daily tasks. Emotional regulation, confidence and psychological well-being was supported by clinical psychologists in 1:1, group and ad hoc sessions.
Speech and psychology baseline assessments were completed 10 days prior to the residential weekend. Probe testing of target words was carried out on the final day and these assessments were repeated 3 months later to understand ongoing need for intervention.

Outcomes:
At the end of the weekend, /s/ production in practised single words was between 40-100% accurate across the children and between 30-100% for 'un-practised' words. Ninety percent of the children felt that the residential was helpful and 80% of parents felt better equipped to support their children.

Conclusion:
The outcomes and feedback suggest this model of intensive multidisciplinary intervention could be effective in supporting the speech of children, and wellbeing of families and children.

Velopharyngeal-dysfunction
Speech therapy psychology intervention

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Taking Speech therapy beyond Correction of Speech all alone and considering correction of Voice Disorders in Individual with Clefts: A Pilot study

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction:

The voice is a primary means of expression and oral communication, which initiates from the cry of an infant, eventually becomes the voice of an individual. The components of the entire speech production system are of relevance to voice disorders. Various studies have done in past in identifying the various voice problems in groups of children with cleft palate, or with unilateral cleft lip, alveolus and palate. All of them has common nasalized speech irrespective of hearing loss with misarticulation personality disorders and other language disorders.

Aim:

Making use of the Various technological advances software program during Speech therapy session and to create the role of the Speech therapist beyond the dealing with the Cleft Lip and Palate individuals in this professional world from beginning of journey.

Method:

In the management parents and caregivers plays a significant role in applying voice therapy along with speech pathologist. Use of Dr Speech Software program and VOCAB jointly helped the children to develop effective comprehendible communication within 3 years. 14 children aged 2.6 years till 2.9 years were taken – 8 parents adopted Software program and used at home and 6 parents were not concerned about the nasalized speech but wanted the child to overcome language delay.

Results:

A routine usage of the software gadgets helped the child to develop normal denasalized voice with strong articulation and language after a successful disciplined run for a period of 33 to 36 months. The comparison shows, the children who attended routine speech therapy sessions for language and denasalized speech, still carrying nasal emissions in oral sounds where as language development is equal to the software based therapy group.

Conclusion:

Use of software as feedback helps to develop competence and confidence level in cleft child overcoming the deficit and prepare to move with strong personality.

Vocabulary Denasality Voice Disorders Articulation

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ASSESSMENT and CLINICAL CARE through ELECTRONIC SPEECH SERVICES (A.C.C.E.S.S.): An Online Speech Therapy Service Program by Operation Smile Philippines

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

INTRODUCTION
The COVID-19 pandemic created limitations for providing speech therapy services for children with cleft lip and palate (CLP) due to mobility restrictions and increased costs. Teletherapy is an effective platform in ensuring the continuous delivery of speech-language pathology (SLP) services amidst the pandemic.

AIMS
In response to the COVID-19 pandemic, the SLP volunteers of Operation Smile Philippines created the Assessment and Clinical Care through Electronic Speech Services (A.C.C.E.S.S.) program, which is an online speech therapy platform providing assessment and intervention for children with CLP.

METHODS
Patients were enrolled in the program immediately post-surgery and attended eight 1-hour, weekly sessions conducted by volunteer SLPs. Patients came from a diverse group of low-income families from across the country. The study looked at four outcome parameters: Speech Sound Targets, Degree of Patient Progress, General Parent Satisfaction, and Volunteer Engagement and experience. Parent outcome data was obtained from an online questionnaire and feedback form, and volunteer engagement data was obtained through a focused group discussion conducted after the program cycle.

RESULTS
The phonemes /p/ (18.20%), /k/ (13.60%), /t/(11.40%) and /s/ (11.40%) were most targeted. The Degree of Progress attained based on the SLPs were Optimal (25.6%), Moderate (30.2%), Slight (41.9%), and No Progress (2.3%). 93.33% of parents reported being highly satisfied with the program. Volunteer engagement yielded positive outcomes including: exposure to CLP, promotion of altruism and volunteerism, expansion of professional network, and clinical innovation.

CONCLUSION
A.C.C.E.S.S. is an example of how volunteerism, technology, and engagement can produce positive results and quantifiable speech outcomes. It proved that teletherapy is a useful platform in providing speech therapy services amidst environmental limitations and restrictions. This also resulted in an increase in patient sign-up, volunteer participation and collaboration with corporate partners, thereby increasing public awareness of the services offered by Operation Smile Philippines.

cleft, teletherapy, speech pathology, volunteers

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Novel regulatory variant in IRF6 contributes to the high incidence of cleft palate in Finns

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PS2 Tuesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 12, 2022, 13:00 - 14:00

Introduction
Finland has an unusually high incidence of isolated cleft palate compared to other countries. The possible genetic background for this unique cleft prevalence is not known.
Interferon Regulatory Factor 6 (IRF6) is one of the known genes whose variations cause and contribute to the risk of orofacial clefts. IRF6 is important for formation of periderm, which is a transient embryonic cell layer that prevents adhesions during orofacial development.

Aim: Our aim was to identify novel causative and modifier genetic factors that contribute to isolated cleft palate in the Finnish population.

Methods: As part of the FinnGen project, we performed a genome-wide association study for isolated cleft palate cases in the Finnish population (228 cases, 308799 controls). The association of the highly associated risk variants were replicated in an independent sample of cleft palate cases from Estonia. In addition, we determined the in vitro and in vivo effects of the highly associated variant with expression analysis in CRISPR-Cas9 edited oral epithelial cells and with luciferase and transgenic mouse reporter assays.

Results: We identified a strong association with variant rs570516915 ($p < 5.25 \times 10\text{-}34$, OR = 8.65, 95% CI 6.11-12.25) located in an enhancer of the IRF6 gene. This is a single nucleotide polymorphism that changes a highly conserved nucleotide disrupting a consensus IRF binding site. This leads to decreased IRF6 binding to the IRF site and decreased IRF6 expression in CRISPR-Cas9 edited oral epithelial cells.

Conclusions: Our results suggest that the enhancer for IRF6 harboring rs570516915 is required for proper development of the palate and helps to explain the high prevalence of isolated cleft palate in the Finnish population.

cleft palate,GWAS,IRF6

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A simplified DOZ(double opposing z plasty) with palatal myoplasty for primary palate repair.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Title:
A simplified DOZ (double opposing z plasty) with palatal myoplasty for primary palate repair.
Introduction:
Surgical techniques for closure of soft palate aiming for zero VPI is still under evolution. Historically, straight line closure of the soft palate with inevitable contracture leads to higher incidence of VPI. Furlows Z plasty involves creation of long, narrow thin mucosal flaps with malaligned muscle closure and is generally held to be difficult to master. We present a technique of DOZ which borrows from and adds to the existing methods, which is robust, easy to replicate and results in normal speech consistently.
Aims:
1. To design a technique applicable to all types of soft palate clefts, combining palatal myoplasty and Double Opposing Z plasties.
2. To breakdown the technique into a step wise approach for ease of surgery.

Methods:
Our procedure combines the positive aspects of both furlow's technique and direct muscle repair to form a sling.
The DOZ is simplified by step by step approach and with design of smaller Z plasties. Nasal Z plasty contains mucomuscular flap posteriorly.
From the oral Z plasty muscle is dissected off and sutured to the nasal mucomuscular flap to complete the sling.
Oral z plasty is only mucosal and reverse of the nasal side.

Results:
Adequate speech records are available for 123 cases operated between 2014 to 2016 with at-least 5 years follow-up. 120 had normal speech, & 3had VPI of which two were subsequent by corrected and went on to develop normal speech.
Conclusion:
This novel DOZ is a simple technique with good speech outcomes as it combines the principles of z plasty and separate muscle repair with sling formation.

Palate repair, Modified DOZ

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Abstract for Solving Obstracle of Cleft Care in GMS and Developing in Lao People's Democratic Republic

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Back ground: For people with cleft lip and palate (CLP) in the Lao People's Democratic Republic (Lao PDR) are either limited or not available in some areas. There continue to be patients needing to theartment. Moreover, they have not been given speech services or received integrative multidisciplinary diagnosis and treatment.

Objective: Incurrenly, there are many CLP's patients in Mahosot Hospital, so the study is learning information on the problems among, and problem solving for, the persons caring for patients with CLP in Lao PDR, as well as the further treatment needs for CLP in Lao PDR.

Material and Method: The statistic of CLP patient in Mahosot Hospital from 2017-2021.

Result: Base on the statistic of CPL in Mahosot Hospital and problem in fact after they're have sugery, they have not been given speech or cared for this issue.

Conclusion: All issues requare to development the taking care of patients with CLP include lack of personnel, knowledge, medical equipment and financial support.

CLP in Lao PDR

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SYMPHYSEAL MANDIBULAR CLEFT (TESSIER 30): BONE HEALING IN SINGLE STAGE REPAIR.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: The symphyseal mandibular cleft is described as a cleft of the lower lip and mandible with or without a cleft of the tongue and neck. It is a rare congenital disorder first described by Couronné in 1819. The first case of symphyseal mandibular cleft in Slovenia was born in 2013.
Methods: In this report we present a case of a complete lip and symphyseal mandible cleft with ankyloglossia and congenital heart malformation. After the operation of a partial atrioventricular canal defect at age 6 months, the median mandibular cleft reconstruction was performed at age one year.
Results: In a one stage procedure, the ankyloglossia was released, mandibular segments were fixed with one strong Vicryl suture to the lower border of the mandible and with an additional titanium wire between the erupted deciduous first incisors.The lower lip was reconstructed in anatomical layers, the height of the lower lip and vestibulum was achieved by two Z plasties, one at the chin and another below the white roll.
Conclusion: After 9 years normal width and height of the bone at the site of the cleft was observed, all permanent lower incisors were erupted with lip competence and normal functions of chewing and swalowing.

median mandibular cleft, Tessier 30,

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Three-dimensional photogrammetry in planning and evaluating early and long-term results of
primary cleft lip and nose repair

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Three-dimensional surface imaging has become popular in practice as it offers advantages for surgical planning and outcome assessment.
Aims: The photogrammetric assessment of early and long-term results of primary cleft lip and nose repair was performed to compare the efficiency of anatomically shaped postsurgical nostril retainers.
Methods: A main group of patients (n = 25; aged from 3 to 15 months) with a unilateral cleft lip who was captured with the Vectra H1 system before and after functional primary cheilorhinoseptoplasty and control group (n = 10; operated by different techniques without using of nostril retainers) were analyzed. Aesthetic results were assessed by using a special scale of the upper lip and nose symmetry based on anthropometric ratios (five degrees of severity). Nostril retainers were introduced after each primary repair.
Results: Results of the 3D-photogrammetric analysis were summarized in Table 1. In the main group, the ratio of the alar lengths and the nasal tip deviation after primary cleft lip and nose repair was decreased (mean – 15,9% and 6 deg at I-III degrees, mean - 39,4% and 10.4 deg at IV-V degrees). Small improvement with using nostril retainers for the ratio of the alar lengths (mean – 0,8±0,1%) and the nasal tip deviation (mean - 2,4±0,8 deg) in all degrees of severity were found. In the control group, postoperative complications were noted such as stenosis of the nostril, a significant deviation of the nasal septum, asymmetry of the alar cartilages.
Conclusions: These results suggest that the 3D-photogrammetric evaluation is accurate and reliable, it helps to objectify the effects of correction for upper lip and nose structures. This method can be included in the list of mandatory studies for cleft lip and palate patients at the pre-and postoperative stages of rehabilitation. A 3D-photogrammetry method is non-invasion and can be used in infants.

	nasal tip deviation, °	nasofrontal angle, °	SbalR-SbalL, mm	cphR-SbalR/ cphL-SbalL, %	alR-Sn/ alL-Sn, %	nlR-ndR/ nlL-ndR, %	alR-alL, mm	PRN-N, mm	PRN-Sn, mm
I-III degrees deformity	n=14								
Before operation	7,25	137	21,07	92,47	77,5	88,6	28,67	15,82	11,2
After operation (without retainer)	1,25	131	19,86	98,92	93,4	95,31	26,12	15,91	11,45
After operation (with retainer)	0,47	130,5	20,17	-	94,2	95,85	26,37	15,89	11,6
IV-V degrees deformity	n=16								
Before operation	14,5	149	24,56	83,14	52,8	75,38	32,16	16,73	11,93
After operation (without retainer)	4,1	133	19,42	98,51	92,2	94,42	26,74	15,94	11,32
After operation (with retainer)	0,82	127	20,34	-	93,1	96,5	26,8	15,86	11,52

stereophotogrammetry, 3D, cephalometry, nostril retainers

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Unilateral Cleft Lip Repair: Technical Maneuvers to Achieve Vermilion and Mucosal Height

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Abstract

Aims

Patients with unilateral cleft lip often require secondary procedures due to asymmetric fullness or deficiencies along the mucosal free margin of the upper lip. Here we describe our technique for mucosal advancement and repair to attain symmetry.

Methods

Maneuvers to obtain vermilion and mucosal height include: (1) Use of a tailored vermilion flap; (2) supraperiosteal release of the lesser segment; (3) backcut “poker incision” to mobilize the mucosal flap on the lesser segment; (4) transverse release of mucosa across the greater segment; (5) accurate reduction along vermilion-mucosal junction; and (6) bilateral medial mucosal advancement. To examine postoperative outcomes, photographic data were available for fourteen patients with unilateral complete cleft lip. The Cleft Lip Component Symmetry Index (CLCSI) was then calculated as a ratio of upper lip height on cleft to non-cleft sides, where a CLCSI of 1 indicates symmetry.

Results

Sixteen consecutive patients underwent unilateral cleft lip repair with this technique over a three-year period, none of whom have required secondary operations. The CLCSI for 14 of 16 patients was 1.02 ± 0.11 (95% CI [0.96, 1.08], p = 0.56), demonstrating satisfactory upper lip symmetry.

Conclusion

Postoperative asymmetry after unilateral cleft lip repair, particularly along the free margin, continues to be a common problem necessitating secondary procedures. The technique of mucosal repair merits more careful attention than it has previously received, and here we describe in detail a method that has allowed for improved symmetry.

cleft lip, vermilion reconstruction,

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An innovative palatoplasty for Primary Cleft Palate repair

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction:

Many surgical techniques have been developed to restore function in patients with cleft palate. Despite the development of many surgical techniques for primary cleft palate repair there is not standard procedure that ensures palatal function as that in normal children. Furlow´s and intravelar veloplasty are the most common methods for velar repair in
patients with cleft palate however some limitations have been described by different authors.

Aim:
The objective of this study is to present an innovative method for primary cleft palate repair that addresses the shortcomings of conventional methods.

Methods:
Since 2017, 88 consecutive patients with non-syndromic unilateral cleft palate have undergone primary anatomical repair of palatal deformity using this technique.
This method combines nasal mucosa Z plasty and muscular overlapping with the use of one hemiuvula for uvular repair (unilateral uvuloplasty).
The nasal mucosa Z plasty produces velar lengthening by transposition of nasal mucosa and myomucosal flaps.
The unilateral uvuloplasty reduces anatomically the velopharyngeal gap and increases the velar length thus reducing velopharyngeal distance.

Results:
This innovative palatoplasty, achieves proper anatomical and functional reconstruction of the repaired palate.
Only our patients (4.54 %) developed mild or severe hypernasality and one patient (1.13 %) had postoperative palatal fistula in this group of patients.

Summary:
A new method to address non-syndromic cleft palate is presented in this article.
This innovative technique lets obtain low rate of non-desirable outcomes improving limitations of conventional methods.
Reduced oral mucosa incisions, limited velar muscle dissection and preservation of the tensor veli palatini anatomy are some of the benefits of this technique.

Table I. Operative characteristics and postoperative outcomes of the studied patients with unilateral cleft lip and palate. (n: 88)

Characteristic	Value
Gender	
Female	37 (42.05 %)
Male	51 (57.95 %)
Affected side	
Left	58 (65.90 %)
Right	30 (34.10 %)
Age at the time of surgery (mean)	13.4 (Range: 10 - 14 months)
Postoperative outcomes	
Velopharyngeal insufficiency	4/88 (4.54 %)
Oronasal fistulas	1/88 (1.13 %)

Primary palatoplasty Cleft palate repair

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Evaluation of Prognostic Factors for Palatal Fistulae after Cleft Lip and Palate Surgery in a North-Western Romanian Population over a 10-Year Period

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate is the most frequent birth anomaly, with increasing reported rates of complications, such as palate fistulae. Current studies concerning the occurrence rate of cleft lip and palate (CLP) report 2 to 10 cases in 10,000 births.

Aim: The purpose of this study was to investigate the existence of factors that could predict the occurrence of fistulae after cleft lip and palate surgery.

Material and Methods: A retrospective study was performed by collecting and analyzing data from all patients who were operated for cleft lip and/or palate in the Maxillo-Facial Department of the Emergency Clinical County Hospital of Cluj-Napoca, Romania, between 2010 and 2020. We investigated the existing evidence for possible links between the number of fistulae observed after the primary palatoplasty and the age at which the primary palatoplasty was performed, the sex of the patient, the type of cleft, the timing of the surgical corrections, and the presence of comorbidities.

Results: A total of 137 cases were included for analysis. A significant link between the number of fistulae and the type of cleft was found (with fistulae occurring more frequently after the surgical correction of CLP- $p < 0.001$).

Conclusion: No evidence was found for the existence of significant links between the number of fistulae and the patient's sex, the timing of surgery, or the presence of comorbidities. This study concluded that the incidence of palatal fistulae appears to be influenced by the type of cleft (CLP), but not by the sex of the patient, the timing of surgery, or the presence of comorbidities.

Table 2

Summary of the tested hypotheses regarding the number of secondary palatal surgical interventions.

Criteria	Evaluation of Criteria	2-Tailed *p*-Value (Fisher's Exact Test)	2-Tailed *p*-Value (Mann–Whitney Test)
Age	<4 years vs. >4 years	>0.05	>0.05
Comorbidities	Presence/Absence	>0.05	>0.05
Sex	Male/Female	>0.05	>0.05
Type of cleft	CP/CLP	<0.001	<0.001

cleft palate, fistula

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Primary repair of Bilateral Cleft lip and Nasal deformity with severely protruded premaxilla

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Primary repair of bilateral cleft lip and nasal deformity has become a more common surgical technique. However, functional closure of the orbicularis oris muscle and esthetic reconstruction of nasolabial components is difficult in patients with severely protruded premaxilla. Synchronous premaxillary set back by vomerine osteotomy can achieve a good result in such deformity.
Aims: Evaluating the outcomes of premaxillary setback with posterior vomerine ostectomy in primary repair of complete bilateral cleft lip and nasal deformity with severely protruded premaxilla.

Methods: From January 2021 to June 2021, 17 patients of complete bilateral cleft lip and severely protruded premaxilla underwent primary lip nose repair with premaxillary set back by vomerine ostectomy. Additional gingivoperiosteoplasty was done in all patients, achieving enough stability of the premaxilla in its new position to be able to close the alveolar gap bilaterally. Primary lip-nose correction was done by Mulliken's procedure. Patients with diagnosed syndromes were excluded.

Results: The age of the patients ranges from 4 months to 21 months. Proper positioning of the premaxilla was achieved in all patients, with good lip-nose repair and good scars. The follow-up period was 6 to 8 months. There were no complications, such as loss of the premaxilla or vascular compromise.
Conclusions: In the case of a complete Bilateral Cleft lip with severely protruding premaxilla, a primary nasolabial repair can be performed after premaxillary setback by vomerine ostectomy without jeopardizing the premaxillary segment or the philtral flap. This will reduce the number of surgical procedures.

Bilateral Cleft lip, Protruded Premaxilla

22

THE SURGICAL NASOALVEOLAR MOLDING: A RATIONAL TREATMENT FOR UNILATERAL CLEFT LIP NOSE DEFORMITY AND SYSTEMATIC REVIEW

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
The purpose of this study was to evaluate the surgical outcomes after using primary surgery alone to address unilateral cleft lip nose and palate deformities and a systematic review of the literature to evaluate the effects of the nasoalveolar molding plus primary surgical repair on non-syndromic unilateral cleft lip and palate.

Methods and materials
A cohort study of one surgeon's outcome of 37 performed primary complete unilateral cleft lip nasal deformity repairs.
Anthropometric measurements of the repaired nose and alveolar cleft width was performed preoperatively and one and 5 years postoperatively.
A systematic review of the literature was performed for studies published until March 2020 to evaluate the effect of presurgical NAM.

Results

Statistically significant differences have been observed between pre and postoperatively columellar angle, alar base position, alar width and alveolar cleft width.
After systematic literature searching, 308 identified studies only 9 were qualified for the final analysis, which included 684 patients. The overall study quality according to Oxford CEBM level of evidence was low.

Conclusion.
The results of this study suggest that proposed primary cheilorhinoplasty alone is a good alternative to improve nose appearance and maxillary arch in patients with unilateral cleft lip nose and palate deformity. Definitive conclusions about the effectiveness of presurgical Naso Alveolar Molding cannot be drawn. Available scientific evidence is not sufficient to demonstrate that the combined use of presurgical NAM and primary surgery provides better outcomes than primary surgery alone.

Table 3. Postoperative comparisons of the non-cleft and cleft sides used the proposed method at one and five years old. (n:37)

Measurements (mm)	One year					Five years				
	Cleft side		Non-cleft side			Cleft side		Non-cleft side		
	Mean (SD)	CI	Mean (SD)	CI	p *	Mean (SD)	CI	Mean (SD)	CI	p**
Nostril dome height	**10 (3.333324)**	7.96-12	**9.81 (1.090821)**	9.46-11.2		**10.75 (0.967472)**	10.4-11.1	**10.54 (1.002254)**	10.2-10.9	
Nasal base Width	**12.45 (1.028959)**	12.1-12.8	**12.75 (1.148747)**	12.4-13.1		**13.73 (0.808468)**	13.5-14.2	**13.27 (1.183718)**	12.9-13.7	
Alar base position	**13.75 (1.077666)**	13.4-14.1	**13.89 (1.176481)**	13.5-14.3		**14.64 (0.999635)**	14.3-15.0	**14.78 (1.142022)**	14.4-15.3	
Columellar length	**4.64 (0.674276)**	4.42-4.86	**4.48 (0.828055)**	4.21-4.75		**6.29 (1.705666)**	5.74-6.84	**6.13 (0.965415)**	5.82-6.44	
Lip height	**10.24 (1.038449)**	9.9-10.6	**10.89 (1.086676)**	10.5-11.2		**13.02 (0.853609)**	12.7-13.3	**13.10 (1.007673)**	12.8-13.4	
Lip width	**12.29 (1.098303)**	11.9-12.6	**11.18 (0.905001)**	10.9-11.5	0.003	**18.24 (1.583606)**	17.7-18.8	**14.54 (1.178546)**	14.2-14.9	0.0001
Vermillion height	**4.67 (0.837499)**	4.4-4.94	**5.00 (0.869917)**	4.72-5.28		**7.48 (0.828381)**	7.21-7.75	**7.81 (0.925202)**	7.51-8.11	

Wilcoxon signed rank test; CI Confident level 95 %
p* Comparison between postoperative cleft and non-cleft side at 1 year.
p** Comparison between postoperative cleft and non-cleft side at 5 years.

Unilateral Cleft lip, Primary rhinoplasty

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Comparison of Pre-surgical Anthropometric Measures of Right and Left Complete Unilateral Cleft Lips and/or Palates.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
Left-sided clefts occur twice as frequently as right-sided ones. The sidedness has been suggested to influence certain outcomes. Most surgeons consider a right-sided cleft more challenging to repair, often attributed to their reduced prevalence. We perceive this to be caused by morphologic differences. Our hypothesis is that there are anthropometric differences between left- and right-sided complete cleft lips.

Methods
Patients with complete unilateral cleft lip, with or without cleft palate, operated at the age of three to six months, between 2000 and 2018, by a single surgeon, were included. Eight standardized anthropometrics of the cleft lip, collected just prior to cleft lip repair, compare lip and vermillion dimensions and ratios between left- and right-sided clefts.

Results
139 Left and 80 right unilateral cleft lips were compared. A significant difference was found between left- and right-sided clefts for the ratio comparing vertical lip height and vermillion height of the upper lip comparing the cleft and non-cleft side.

Conclusion
Right-sided cleft lips have a greater degree of lateral lip element hypoplasia with a greater deficiency of lateral lip and upper lip vermillion height compared to left-sided ones. This has clinical implications on preoperative assessment, choice of surgical technique, as well as postoperative and long-term outcomes.

Anthropometrics, Cleft Lip, Sidedness, Hypoplasia

975

Does early Cleft Lip Repair affect Intelligence and Socioeconomic Status in the Midterm?

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: The timing of the cleft lip repair varies vary from one center to another. Whereas recent studies show aesthetic and functional benefits in early surgery, others cite animal studies that early surgery including anesthesia might affect brain development of the newborn negatively. However, with the advances in pediatric anesthesia, perioperative risks are now no higher at an earlier time point.

Aims: Does early cleft surgery really affect the developing brain in the mid and long term?

Methods: In order to address this question, we assessed 21 children born with a cleft lip who underwent an early cleft lip repair within 4 weeks after birth. At 12 years old they were then tested for their intelligence as assessed with the CFT 20-R intelligence test and for socioeconomic status assessed by the survey used in a German national health assessment (KiGGS).

Results: The average fluid intelligence as measured by the CFT 20-R test was 104,6 (SD 10,6). As for learned intelligence, the cleft patients achieved average scores of 102,3 (SD 10,6) for vocabulary and 99,3 (SD 13,3) for numerical sequence testing. This suggests, that the fluid and learned intelligence of the cleft children who underwent early anesthesia falls within the range of scores for the age-matched population. The parameters for socioeconomic status did not differ significantly to the norm values assessed for same-aged healthy German children.

Conclusions: Our results did not show any midterm (12 year) effects on the intelligence and the socioeconomic status of the children who underwent early cleft lip repair. Therefore, advances in pediatric anesthesia as well as advances in cleft surgery like using the microscope make an earlier and safe cleft lip closure possible, thus leading to an unimpaired childhood.
cleft lip, anesthesia, intelligence

1030

Quantitative Evaluation of palatal legthening following the use of buccinator myomucosal flap combined with furlow Z plasty in cleft palate repair

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

The combined use of Buccinator Myomucosal flap with furlow palatoplasty in primary cleft palate repair has been proposed by many authors to overcome some of limitations of the Zplasty repair (tear of mucosl flaps on stretching - need for relaxing inscisions for tesion free closure) . However , there have been no studies that quantitatively measured the effective palatal leghthening when the buccal flap is used.
Patients and methods: the buccinator myomucosal flaps was routinely used during primary cleft palate repair in order to fill the gap between the hard palate and the reoriented palatal muscle sling .The soft palate length was measured in the middle line from the posterior edge of the hard palate to the base of the uvela . In all patients palatal length were measured before start of surgery and after palatal closure in the standard position for cleft palae repair.
Results: seventy three patients with veau I,II,III cleft palate were included in this studym the mean age at time of operation was 11.4 +/- 3.5 months . mean pre operrative length was 21.36+/-4.71mm. the mean palatal length change was 8.29+/-2.51 mm
Conclusion : The combined use of Buccinator myomucosl flap with Furlow palatoplasty have proven effective for palatal leghthening and achieved tensionless closure without the need for relaxing iniscions. it also provided a pliable soft tissue attachment of the palatal muscles to the hard palate allowing for better muscle function and extended range of mobility

palate, furlow ,Buccinator myomucosal flap

941

Primary Open Cheilorhinoplasty- Holistic approach to cleft lip and nasal deformity

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Nasal deformities inherent to a cleft are challenging. The repair of unilateral cleft lip nose deformity remains a challenging endeavor for reconstructive surgeons for many reasons, one of which is the timing of rhinoplasty, whether to be synchronous or staged with cleft lip repair and the technique for rhinoplasty.

2. Aims Aim and objectives: To assess the results of primary cheilo -Rhinoplasty in infants with unilateral complete cleft lip nose according to symmetry

3. Methods: Retrospective evaluation of UCLP patients who underwent open cheilorhinoplasty. Primary complete unilateral cleft lip nasal deformity repairs was performed by a single surgeon. The outcomes were analyzed by anthropometric measurements of the repaired lip and nose.

4. Results: : All the patients benefitted from primary open Cheilorhinoplasty correction of their complete cleft lip and nasal deformities.

5. Conclusions: Primary correction of the nasal deformity is an important component of primary surgery at the time of lip correction. The use of primary Open Cheilo- Rhinoplasty in all cases of cleft lip-nose has yielded cosmetic results and balanced nasal development.

Primary Open Cheilorhinoplasty cleft lip

1121

Effect of Bucal Fat Pad Flap on healing of lateral gaps in Palatoplasty.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

INTRODUCTION: We use Bardach technique for Cleft Palate repair, which leaves bare bone on both sides called lateral gaps. These gaps are filled with absorbable gel foam which gets absorbed in three to four days and wound epithelizes in three weeks. Babies are given liquids. Instead of Gel foam, “Buccal fat pad flap” was inserted one side to see its effect on healing of lateral gaps. The other side acted as “Control”.

AIM: was to see the effect of buccal fat pad on healing of lateral gaps produced because of medial movement of palatal flaps.

METHODOLOGY:
All patients between nine months to 18 months of age were included in the study. In every patient on one side, either left or right buccal pad fat was inserted and other side Hemostatic gel foam was used.
Buccal fat pad flap was harvested by inserting a curved iris scissor in the superior buccal sulcus just lateral to the maxillary tuberosity. This result in protrusion of the buccal fat from the hole. This fat pad flap was teased out gently and placed in the lateral palatal defect of expose bone. The lateral palatal flaps were sutured with gingiva with Polygalactic (Vicryl) suture size 4/0.
All patients were followed on 7 days, 14 days, and 21 days and were noted for healing on both sides.
RESULTS:
129 patients had been operated from Jan.2020 to Dec.2021. All patients were seen at 7, 14 and 21 days post operatively. Healing of side with buccal fat Pad flap was compared to non-buccal fat pad flap. In 96 patients gap on buccal fat flap was healed completely on 14th day, while it was slightly open on non-buccal flap side. Five patients had developed fistula and dehisce was noted in one.

CONCLUSION:
Buccal fat pad flap is good addition for promoting the healing in Palatoplasty.

Palatoplasty, bucal fat pad flap.

1017

Unilateral cleft lip and palate: Simultaneous repair of the nose, lip and total palate reconstruction. Technical note.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction
There are at least 194 different protocols for the surgical treatment of unilateral total cleft lip, alveolar process and palate. Only 5% of protocols is simoultanius one step closure. One operation was required for complete closure of the cleft in ten protocols (5%), two steps were performed (71%), three operations were performed in (22%) and four were required in four protocols (2%) In Poland and most of other countries, each center has its own protocol, they differ in the age of the first and subsequent operations, the method of lip and palate closure. Most operators use proprietary modifications of classic methods.
2. Aims
Presentation of relailble and repeatable method of surgical treatment of unilateral complete cleft lip end plate.
3. Methods
Meticulous step by step description of treatment protocol.
4. Results
Early and late results of three generations of surgeons providing
5. Conclusions
Craniofacial morfology, nasolabial apperrence, dental arch and speech outcomes are comparable with best cleft center results.
simultaneous-closer, one-stage closer, 1-stage repair,

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Modifications in One stage correction of complete Unilateral Cleft of Lip and Palate. - 6years follow-up study

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Title:
'Suspension Palatoplasty' for the treatment of moderate to severe VPI 5 years follow-up.

Introduction:

Moderate to severe Defects are seen in 80% of VPI cases seen following cleft palate surgery. In a significant percentage of these conventional methods fail to produce good velopharyngeal closure.
An innovative surgical technique is presented here which has shown promising results for achieving normal speech consistently and reliably.

Aims:
To develop a new approach based on optimal spatial positioning of palate at the time of VPI correction, by using a non-obstructive, high, midline pharyngeal flap.

Methods:
'Suspension Palatoplasty' for the treatment of moderate to severe VPI.
The procedure presented is completely different from earlier described methods. In this technique DOZ (Double opposing z plasty) is used to revise the palate and a small pharyngeal flap (midline superiorly based at the lower 1/3 of adenoids) is used to position the palate as close to the pharyngeal wall as possible. This is done both by mucosal tetherance to the base of the flap and also anchoring the muscle to the flap as close to the base as possible.

Results:
The resultant lateral ports on post op Endoscopic studies studies have been shown to be dynamic and non-obstructive. 104 patients were operated by this method from the year 2014 to 2016.
Speech in all showed improvement as per the universal parameters. And 29 out 41 where complete speech results were available, found to have normal speech, many of these did not have speech therapy at all.
As can be expected younger patients had better speech outcomes but what came on a pleasant surprise is that many of the adults also developed normal speech.

Conclusion:
Suspension Palatoplasty is a physiologically sound and predictable procedure for surgical correction of Moderate to Severe VPI. It has minimal to negligible side effects or complications.

One Stage Correction, Total Correction

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Surgical Care Protocol for Patients with Cleft Lip and Palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Patients with cleft lip and palate (CLP) face difficulties in different aspects of their development and growth, such as, auditory, respiratory, dental, and aesthetic. Likewise, these malformations affect different anatomical structures (lip, nose, throat, teeth, among others), and the strategies for the treating patients depend on the magnitude of the malformation. This implies that the rehabilitation process is a function of time, and patients must receive an individualized comprehensive treatment, according to the complexity of their fissure.

Aim: The objective of this work is to propose a protocol for the surgical care of patients with CLP, defined by the complexity of their malformation from birth to discharge.

Methodology: The definition of the surgical care protocol considers three aspects: 1) Complexity of the fissure, 2) Health specialties that intervene in the care process, and 3) Rehabilitation time, since it is intended to monitor from before birth (through ultrasound study) until the patient is discharged.

Results: A CLP classification system was developed. It considers the anatomical characteristics of the fissure, and initially four primary classes were defined: two for the primary palate (lip) and two for the secondary palate (palate). The classification of fissures in both palates is determined by a combination of these four primary classes. Based on this classification system, a first surgical care protocol was developed for the specialty of plastic and reconstructive surgery, through which decisions on the surgical treatment of patients are made.

Conclusions: The CLP classification system makes it possible to identify the surgical complexity of the fissure and subsequently, with the care protocol, surgical criteria are unified for surgeons. Additionally, the registration and monitoring of patients with CLP using this protocol allows the standardization of the patient surgical management, the systematization of information and the generation of knowledge for the development of the line of research in LPH.

Surgical care protocol, classification system

382

How do you get your complete and incomplete cleft lips to look the same: Replacing tissue and removing deforming forces using the Anatomic Cleft Restoration Philosophy

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
A challenge in unilateral cleft lip/nose repair is to achieve equal results regardless the severity of the cleft defect. To date, Traditional treatment has approached the cleft as a gap to be pulled together using geometric tissue rearrangement and a reshaping of the nose through aggressive cartilage repositioning. In severe clefts, this can result in disfigurement at maturity.

Advances in embryology now see the cleft not as a GAP, but as a malformation/deformation. A malformation is literally missing tissue and is treated by adding tissue. A deformation is treated by removing the forces causing deformation and allowing the tissue to rebound towards normal.

This presentation describes techniques, and shows results, for a small set of patients where this new approach has been effective.

Aims
Delegates will be able to describe;
- the differences between incomplete and complete clefts.
- how to perform the first and second treatment stages required to treat more severe clefts.
- the natural rebound effect and how to use it in reducing nasal scarring.

Content
- Photos and diagrams help teach the steps of the approach.
- Case examples, including mature patients, illustrate why staged surgery is still necessary in present day medicine.
- Treatment planning for incomplete and complete clefts is outlined with differences highlighted.
- Qualitative assessments of lip posture and facial balance compare results for patients born with and without clefts.

Conclusion
To date, no cleft lip/nose approach addresses the nasal deformation by removing the deforming forces and using the natural rebound phenomenon as an integral part of the nasal reconstruction.
The Anatomic Cleft Restoration Philosophy (ACRP) allows patients with complete clefts to more consistently achieve the same results as patients with incomplete clefts. The steps to consistently excellent results are straightforward and part of an ACRP-based plan.

Deformation, primary lip repair, ACRP

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Self-perception of adults with CLP to determine residual treatment need

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction

Orofacial clefts (OFC) are one of the most common congenital anomalies worldwide (1) and the most common of all facial birth defects (2). It is known that OFC can affect individuals psychologically, psychosocially and functionally. To explore opinions of residual problems after multi-disciplinary management in childhood / adolescence a literature review was undertaken to identify self-perception of adults with repaired, non-syndromic OFC.

2. Aims

To investigate self-perception of adults with OFC to determine if and what residual treatment needs exist.

3. Methods

PubMed, Google Scholar and Sage-Journal databases were searched to obtain relevant articles published in English between 1970 and 2021. Key words were Cleft lip and palate (CLP); CP; CL; OFC; Adult; Adults; Psychology; Self-Perception; Facial Appearance. Search yielded 8369 studies with 8 being deemed as relevant to our project.

4. Results

Few studies were specifically dedicated to the self-perception of adults with OFC and no validated questionnaire for adults with clefts to identify their residual treatment needs was found (3). A survey of a sample of patients with clefts in the UK revealed that 73% 15-20 year olds felt that their cleft had affected their self-confidence and 60% had been teased about their speech or appearance (4). In addition, results of previous studies of adults with OFC vary from reporting a high degree of acceptability and satisfaction with facial profile (5), to evidence revealing that 50%-60% of adults with OFC remained dissatisfied with their physical appearance (6).

5. Conclusions

It would appear to be difficult to determine when a patient with OFC feels that they have reached the end of their treatment journey. Once issues have been identified, it’s important that measures are undertaken to address these and to ensure that adults with OFC are appropriately managed to ensure long-term success both functionally and psychologically.

Cleft lip/palate; Adult; Psychology; Self-Perception

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Comparing surgical costs of Traditional and Anatomic Cleft Restoration Philosophy-based repairs: framing the full cost picture by evaluating direct surgical costs to completion of treatment at maturity

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
This study looks at direct surgical costs of primary and secondary cleft repairs, from birth to maturity. Two different approaches were compared; the Traditional approach, which pulls adjacent tissues together, and the Anatomic Cleft Restoration Philosophy (ACRP), which adds tissue that modern embryology tells us is missing from the cleft.

Aims
Delegates will be able to describe;
- why and how costs differ between ACRP and Traditional.
- why cost to maturity matters and how to calculate it.

Methods and Results
Data was collected for two cohorts, including Veau class, OR time, outcomes, complications, and whether speech and/or jaw surgery was required.
1. The ACRP cohort was identified by reviewing 662 patients from the authors 35-year practice which identified 167 patients (V1-4) without syndromes and with follow-up to maturity.
2. A Traditional cohort of 167 virtual patients was created by literature review, paralleling the characteristics of the ACRP group.

Treatment algorithms were developed, and costs assigned to each step, based on real cost data in our region. The direct costs associated with primary and secondary surgical procedures were calculated. Three sub-groups were analyzed in each cohort (see table).
{insert table here}
Conclusion
The ACRP has surgery totals and lifecycle costs that are essentially equal across sub-groups. Traditional repairs do not, as total surgeries and lifecycle costs increase with cleft complexity.
The ACRP V1-2 repairs (the group with the least tissue replacement), were slightly more expensive, but still averaged fewer surgeries to maturity. All other ACRP sub-groups were less expensive and required fewer surgeries to maturity. When combining all ACRP sub-groups, results clearly show that overall, the ACRP costs less.

Groups	Number of patients	Average Number of surgeries	Life cycle cost
ACRP			
V1-2	31	1.32	39,003
V3-4	116	1.32	39,982
Pierre Robin	20	1.32	37.898
TRADITIONAL			
V1-2	31	1.45	34,997
V3-4	116	2.21	58,787
Pierre Robin	20	1.70	47,766

Cost analysis, Lifecycle, ACRP, Comparison

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Perioperative Caries Prevention and Oral Hygiene Instruction After Surgical Cleft Lip and Palate Repair

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

As a follow up to the 2017 International cleft meeting presentation in Chennai, India, Global Smile Foundation has continued to explore different Oral hygiene protocols to parallel the surgical post operative instructions after cleft lip and cleft palate repair. To date the literature is still inconclusive on formally addressing the best type of oral hygiene instructions, while surgical post- operative instructions has been in place in every center.

Literature is present on the importance of oral health, along with its implications to systemic health. The need for early oral health and anticipatory guidance for patients with cleft is beneficial due to higher caries risk from multiple contributing factors.

Aim

Development of Oral Hygiene Instructions (OHI) protocols after surgical cleft lip/ cleft palate repair.

Methods

After pilot studies year one and two, utilizing different agents (toothpaste, chlorhexidine, CPC et), mechanical debridement (soft bristle toothbrush, foam, brush, gauze etc) and timing post surgery, our results were anecdotal without standardized bacterial count tests in an outreach setting.

We revisited literature searches (oral hygiene protocols, caries prevention, nutrition, national guidelines, surveying cleft/ craniofacial centers) to start from the foundation of addressing the basic goals of oral hygiene protocols to enhance and parallel surgical post op instructions.

Results

We discuss the importance of perioperative caries prevention, and oral hygiene in cleft lip and palate repair. We present our oral hygiene protocols: post cleft lip repair, post cleft palate repair, with and without teeth, based on age of repair, and our experiences in outreach and non- outreach settings.

Conclusions

Discussion between the dental and surgical teams is paramount to stimulate each center's protocol, combining OHI with surgical post op instructions. Regardless of agent or protocol, the main goal remains the same, to reduce the bacterial load which will enhance wound healing of the surgical site .

Oral Health, Surgery, Dentistry, International

1135

A UK multicentre audit of the dental anomalies in children born with a cleft lip and /or palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Background:
CL/P is known to have a higher incidence of dental anomalies compared to the general population. This can be attributed to the cleft itself or the surgical correction of the associated defect. Associated anomalies include hypodontia, supernumerary teeth, ectopic eruptions, and abnormal morphology. It is essential to diagnose the dental anomalies occurring in patients with CLP for effective multidisciplinary dental treatment planning.

Aim:
To determine the type of anomalies and incidence of these in the different types of Cleft lip and/ or palate patients. Including, Cleft palate (CP), Unilateral cleft lip and palate (UCL/P) and bilateral cleft lip and palate (BCL/P).

Method:
A retrospective audit was carried out across two centres. A total of 157 CP, 125 UCL/P, and 59 BCL/P records were analysed. Data was collected from two cleft centres and analysed using MS excel and descriptive statistics.

Results:
Age range was between 10 and 18 years old. Of the 157 CP, 59 UCL/P, and 125 B/CLP patients, 30.6%, 57.6%, and 52% respectively each had one or more dental anomalies in permanent teeth. Anomalies noted included hypodontia, supernumerary teeth, ectopic eruption of permanent first molar, abnormal tooth morphology, and enamel defects.

Conclusion:
Dental anomalies appear to be influenced by the cleft type and severity. The type and extent of the cleft determined the frequency of dental anomalies which can have a long term impact on the patient's facial anatomy and self-esteem. Careful monitoring and management in the early mixed dentition is important.

Dental anomalies
Multi-centre
Paediatric Dentistry

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Patterns of attendance for Cleft patients attending in a 12-month period

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
All cleft patients require multiple visits across different dental specialities throughout childhood and adolescence. This is a retrospective analysis over a 12-month period focusing on those patients who did not attend (DNA) their appointments.

Aims
To analyse the attendance patterns of patients with cleft lip and or palate attending dental services at a Cleft Centre over a 12-month period.

Methods
Retrospective analysis of all patient's attending the dental department between 04/2019 and 04/2020 was carried out. Data was analysed in MS excel and the chi-squared test and t-test were used for statistical analysis.

Results
786 unique patients attended the dental department for a total of 2431 visits.
DNA rates were 9% (n=222), with most appointments failed in paediatric dentistry (17%); this was significantly different than other specialities (p=0.002). DNA rates for restorative, orthodontic and maxillofacial dentistry were 7%, 9% and 9% respectively.
The average age overall was 13.8 years (0 to 25 years); which was not significantly different from the average age of those who DNA (14.3 years). 55% of attendees (n=435) were male and 45% (n=351) were female; for both sexes the DNA rate was 11%.
Comparing DNA rates by type of clefts:
- Unilateral clefts: 13% (n=70/526)
- Bilateral clefts: 6% (n=14/233)
- Submucous clefts: 11% (n=3/27)

There was a significant difference in DNA frequency between attendees with unilateral or bilateral clefts (p=0.008).
From those patients who DNA, the average distance travelled to the appointment was 22.5 compared to 29 miles for those who did attend. This was not significantly different (p=0.11).

Conclusions
Age, gender and distance travelled did not significantly affect attendance. Patients with unilateral clefts were more likely to miss their dental appointment than those with bilateral clefts. Most patients were likely to miss their paediatric dentist appointment and more information on possible associated risk factors is needed regarding this.
attendance patterns, specialist dental care

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An Audit on the Dental Health of Children with Cleft Lip and Palate prior to Alveolar Bone Grafting

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
Children with cleft lip and palate may require an alveolar bone graft (ABG) as part of their cleft care. At the South West Cleft Service, children are assessed to determine whether they require an ABG on a joint surgical and orthodontic clinic. There is not currently an established care pathway that includes a dental health assessment for these children. Optimising dental health in ABG candidates is important in order to facilitate the best outcome for the patient and minimise the risk of healing complications. Therefore, this audit will establish the dental health of patients at the time of being placed on the ABG waiting list and assess the need for a dental care pathway.

Aims
1. To determine the dental health of paediatric cleft lip and palate patients at time of being listed for ABG

2. To identify whether there is a need for a dental care pathway for ABG patients

Methods:
· Standard: All paediatric cleft lip and palate patients should be caries-free and have optimal gingival health at the cleft site when listed for ABG

· Dental data for 20 patients will be recorded at the time of the ABG assessment on the joint surgical-orthodontic clinic. Data recorded will include dental attendance, presence of caries, infection and gingivitis at the cleft site.

Results
Preliminary data from a convenience sample of 11 children suggests a high prevalence of dental disease in cleft patients being assessed for ABG. 45% of these 11 children had caries in their primary dentition. Furthermore, a high number of patients had gingivitis or visible plaque deposits in the cleft site.

Conclusions
The preliminary results indicate a need for a dental management pathway for children who require an ABG.
alveolar, bone, graft, dental, health

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Does the Provision of Early Intervention Improve the Oral Health of Children Attending a Regional Cleft Unit?

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
Maintaining good oral health is paramount for children with a repaired cleft lip and/or palate (CLP) as care may be compromised by dental disease. The burden of care increases with the development of caries. Many studies examining the oral health status of children with CLP call for preventive programmes to be directed towards parents and their children.
Aims
This study investigated whether children with velopharyngeal dysfunction at an 18-month assessment clinic who received early group speech therapy together with intensive oral health advice demonstrated good oral health at aged 5 years.

- Identify children with velopharyngeal dysfunction at aged 18 months to attend a 6-week group therapy course
- Develop parents/carers oral health knowledge and behaviour
- recorded dmft at aged 3 and 5 years will be the same as or less than the local population

Methods
Children identified with velopharyngeal dysfunction were invited to attend a 6-session, early intervention speech therapy course provided by 2 Cleft Team, Senior Speech and Language Therapists. An intensive oral health preventive programme was also incorporated within the course provided by the Cleft Unit, Dental Therapist. Descriptive statistics report the findings.
Results
Data is reported from 22 invited families. 18 attended an average of 4 sessions over a 6-session course, (range 1 – 6), 1 declined and 3 failed to attend any of the sessions.
The recorded dmft at aged 3 years = 1.95 and 2.82 at aged 5 years. Data will be further interrogated.
Conclusions
This high-risk group report an oral health need which must be addressed to meet the challenges of maintaining a healthy dentition. Despite an intensive, preventive programme, children are returning at aged 3 and 5 years with dental caries. A whole Cleft Team early years approach alongside improved liaison between the Cleft Unit and local dental care providers should be considered.

Paediatric oral health intervention

609

Three-dimensional assessment of the pharyngeal airway in Down syndrome during the mixed dentition period

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Down syndrome (DS) is the most common chromosomal disorder caused by the genetic trait of trisomy 21. Some studies are reported that children with DS have higher prevalence rates of obstructive sleep apnea (OSA). It is important to undertake nasopharyngeal airway assessment in children with DS during the growing stage to understand the factors causing OSA. However, there are no studies that include three-dimensional assessment of the nasopharyngeal airway in DS.
Aims: The aim of the present study was to evaluate the nasopharyngeal airway volume of preadolescents with DS and compare the results with those of control subjects well-matched for sex and age.
Methods: We enrolled 15 DS (mean age, 9.43 ± 0.38 years; 8 boys, 7 girls) and 15 control subjects (mean age, 9.51 ± 0.40 years; 8 boys, 7 girls). The nasopharyngeal airway volume was measured with cone-beam computed tomography taken for orthodontic treatment. Statistically analysis were conducted with analysis of covariance (ANCOVA) with Bonferroni post hoc pairwise comparison test, with body height and body weight as covariates. Moreover, as covariates with ANB angle and Mandibular plane angle, ANCOVA with Bonferroni post hoc pairwise comparison tests were also conducted.
Results: The total airway, nasal airway, superior airway, and middle airway volumes of DS subjects were significantly smaller than those of the control subjects. However, there was no significant difference in the inferior airway volume between the two groups.
Conclusions: Our results indicate that the nasopharyngeal airway volume differs between preadolescents with and without DS, and these differences could be a factor in the occurrence of OSA in DS during the growing stage.

Down syndrome, pharyngeal airway, CBCT

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Characterization of the oral microbiota and its relationship with dental and periodontal status in children and adolescents with cleft lip and palate.

Systematic review and meta-analysis

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduccion: Changes in the microbiota can produce an alteration in the ecological balance causing environmental disturbances that lead to a predominance of harmful microorganisms that contribute to the pathogenesis of oral diseases such as tooth decay and periodontal disease.
Aims: To identify the characteristics of the oral microbiota and its relationship with dental and periodontal status in children and adolescents with cleft lip and palate. Methods: Five databases were consulted, using controlled and uncontrolled language; scientific articles in the period from 01-01-1985 to 06-30-2020 in English, Spanish and Portuguese, were included. The quality assessment of observational studies was performed using the Newcastle – Ottawa (NOS). The quality assessment of experimental studies was performed using the and CONSORT scales. Using the Rev Manager 5.4 program, the included studies were assessed for risk of bias. After the qualitative process, 5 publications were meta-analyzed. Results: The microbiota found in pre and postoperative interventions in individuals with FLP, it was as follows: Staphylococcus aureus, Klebsiella pneumoniae, Klebsiella oxytoca, Streptococcus pyogenes, Moraxella catarralis, Staphylococcus aureus resistant to methicillin and Candida spp. Regarding the cariogenic microbiota, elevated levels of Lactobacillus spp and Streptococcus mutans. Periodontopathogenic microorganisms were isolated such as: Prevotella intermedia, Prevotella nigrescens, Porphyromonas gingivalis, Fusobacterium spp, Campylobacter spp, Fusobacterium nucleatum and Parvimonas micra. Were found: Streptococcus mutans, Lactobacillus spp and Candida spp in patients with incomplete cleft lip and / or palate. Therefore, there is a great heterogeneity in microbiological counts in cleft patients. The meta-analysis revealed that patients with cleft lip and palate are 2.03 times more likely to develop caries compared to the control group ($p < 0.005$). Conclusions: Children with cleft lip and palate have a great diversity of microorganisms, which can vary according to the type of cleft and surgical interventions predisposing them to a greater likelihood of tooth decay.

Methodological quality of analytical observational studies
Newcastle - Ottawa quality scale

Studies	Selection	Comparability	Exposure	Results
Thomas 2012	****	**	*	******* 7/9
Sundell A, 2015	****	***	**	********* 9/9
Machorowska A, 2017	****	***	**	********* 9/9
Ahluwalia M, 2004	****	*	**	******* 7/9
Lucas V, 2000	****	*	**	******* 7/9
Loveren C, 1998	****	**	***	********* 9/9
Bokhout B, 1996	****	**	**	******** 8/9
Perdikogianni H, 2009	****	*	**	****** 7/9
Quirynen M, 2003	****	*	**	******* 7/9
Da Silva J, 2018	****	*	**	******* 7/9
Costa B, 2003	****	*	**	******* 7/9
Durhan M, 2018	****	*	**	******* 7/9
Sundell A, 2018	***	*	***	******* 7/9
Cocco J, 2010	***	*	***	******* 7/9
Rawashdeh, 2011	***	**	**	******* 7/9
Tuna E, 2008	***	**	**	******* 7/9

Microbiology, dental caries, periodontal disease.

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Oral Health Related Quality of Life (OHRQoL) of Children with Cleft Lip and Palate

Dr. Lateefa Alkharafi[1], Dr. Saud Alhasawi, Dr. Noor Aljeraiwe, Dr. Khaled Alotaibi, Dr. Muneera Alhuwais, Dr. Fatma Aldoub, Dr. Alhanoof Alduraie, Dr. Sara Aldouseri, Dr. Maryam Alduwaisan, Dr. Talal Alenezi, Dr. Ashraf Mokhtar, Dr. Fawzy Alqatami, Dr. Amritha Geevarghese, Dr. Aisha Alkhatrash
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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate (CLP) is one of the most common craniofacial anomalies, with an occurrence of 1.48 in 1000 live births in Kuwait.

Aims: The aim of this study is to report on the oral quality of life and its correlation with the oral health status of children and young adults with CLP in Kuwait.

Methods: Patients with CLP attending the Ministry of Health Clinic, Kuwait, 60 patients aged 11-18 undertook clinical examination for dental caries, gingivitis and periodontitis via the decayed, missing, and filled teeth (dmft/DMFT) index, Marginal Bleeding Free Score, Plaque Free Score, and Simplified Basic Periodontal Examination (BPE), respectively. Cleft diagnosis was recorded using the ICD-10 classification. Measures of oral-health-related quality of life (OHRQoL) were recorded using modified version of CPQ (11-14) questionnaire. Data was entered in SPSS (version 22.0 IBM); Descriptive and univariate analyses were performed. Spearman's correlation was employed to analyze the continuous variables. The Mann-Whitney U-test and Kruskal Wallis (non-parametric) test were performed to assess for the significance of differences between groups.

Results:
Total CPQ scores ranged from 0-125 and the mean CPQ score was 20.15+19.12. There was no significant difference in the oral health related quality of life scores based on type of oro-facial cleft, however the mean CPQ score was highest for those diagnosed with cleft lip (23.00+20.28) followed by cleft palate with cleft lip (20.67+20.15) and only cleft palate (15.00+13.71). Although there was no statistical difference, the quality of life was observed to be worse among children aged 15 and above (22.14+17.30) as compared with 11-14 years group (19.54+19.78). The plaque score and bleeding score did not have a statistically significant influence on the CPQ scores.

Conclusion: Higher CPQ scores indicated poor oral quality of life in patients with oral clefts.
Oral, Cleft, Quality, Life, CPQ

1019

Treatment of severe nasal stenosis after primary surgery with the “Nasal Molding Device “ (NMD): Case report

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

Cleft lip and palate are a common congenital defect. After the primary surgery a scar formation occurs. In some cases, the tissue healing leads to a hypertrophic scaring that affects negatively the esthetic and function and can lead to a significant stenosis of the nostril. In our cleft center, Fundación Gantz, the use of Nasal Molding Device (NMD) after surgery is part of the interdisciplinary protocol.

Aims

The use of Nasal Molding Device (NMD) developed by us in 2002 and used by us in Fundación Gantz for the last 20 years, after nasal surgery, can prevent and/or recover from nasal stenosis. This tailor-made device made of acrylic, has the advantage that it can be modified by drilling or adding acrylic in each appointment, allowing the expansion and compression of the scar tissues.

Methods

In this clinical case, the treatment with NMD began one month after surgery. The patient presented a severe stenosis of both nostrils, and the molding of the device was performed every 1 to 3 weeks. The cleft scar therapy includes the compression of the lip scar and expansion of the nostril.

Results

After a 6-month period of treatment, the nostril recovered a harmonic esthetic and normal function.

Conclusion

The use of NMD allows an adequate management of a hypertrophic scar and enhances the esthetic after the occurrence of a stenosis in a patient borne with a cleft.

post surgical; nasal orthopedic; stenosis

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The development of a tool to assess and record the prevalence of dental anomalies in anterior teeth and the impact these anomalies have on dental services for children with Clefts.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
Specialists in Paediatric dentistry working within Cleft teams in the UK form a Clinical Excellence Network (CEN) and collect data relating to Developmental Defects of Enamel (DDE) at age 5 and 10 years.
It is vital that specialists are calibrated to ensure data is reliable and comparable. The CEN developed a calibration programme specifically for cleft children, multiple sets of clinical photographs were scored, discussed, a consensus view obtained and example cases were incorporated into a training/calibration package.
Aim
To determine the prevalence of anomalies in the upper anterior region at age 5 and 10 years and subsequent impact on dental services
Methods
Data was examined from five United Kingdom cleft units at age 5 years (birth year 2010 -2013): South Wales, Cleft Net East, Thames, West Midlands, and Cleft North-West, and from three units at age 10 years (birth year 2005- 2008)
Results
Age 5 years- children with at least 1 tooth affected ranged from 42.7%-50.4% , 10 years 46% -62.6%, children with 3 or more teeth affected -19.4% at age 5 compared with 18.5% at age 10.
Anomaly =
hypomineralisation 27.4% age 5, 29.3% age 10;
supernumerary 39.4% age 5, 16.8% age 10;
missing lateral incisor 12.6% age 5, 38.9% age 10.
Conclusions
Developmental defects of enamel are prevalent, and many require dental intervention. For example to improve the aesthetics of poorly formed or hypomineralised teeth or to replace missing teeth. The development of the calibration tool has allowed us to compare the need across different regions and develop resources to provide this care.
Calibration, Dental anomalies, Children, Cleft

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Effectiveness of Triple P for parental difficulties of mothers having children with cleft lip and/or palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

【Introduction】
Parents having children with cleft lip and/or palate have unique parenting difficultie. We focused on Triple P, a positive parenting program designed to prevent and treat behavioral and emotional problems in children.

【Aim】
We aimed to clarify how parental difficulties were changed by performing Triple P on mothers of preschool children with cleft lip and/or palate.

【Methods】
We recruited mothers who had preschool children with cleft lip and/or palate in a Japanese dental hospital. The participants got Triple P training for eight-session during eight weeks. The sessions were composed four times of lectures, three times of telephone consultation, and one time of discussion. Surveys regarding parental perception, the Strengths and Difficulties Questionnaire, Parenting Scale, Depression anxiety stress Scales, Being a parent scale, and Health-Related Quality of Life scale (SF-36) were conducted before and after training. These scales of total and subscale scores were analyzed using the Wilcoxon signed-rank test. The ethics committee approved this study of our university and the hospital.

【Results】
Five mothers participated in all the sessions. These mothers were an average of 40 years old, belonging to nuclear families. All factors, including total and subscale scores, were insignificant between before and after training. However, one mother realized the training effectiveness, in which children who disliked dental examinations could visit smoothly. In some families, the training lecture time was the first opportunity for the father to take care of the child, and for the mother to get close to other mothers.

【Conclusion】
There was no statistically significant difference due to the small number of participants. However, the participants' voices revealed that training had a good side effect.
parenting program, Triple P, mother

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Nursing through a pandemic

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Nursing through a pandemic

Introduction

The COVID pandemic has resulted in significant changes for health care staff. During the pandemic even with intent to cooperate, the continued stress makes it significantly harder for nursing teams to sustain coordinated performance over time. The necessity for social distancing and virtual working conditions have given the cleft nurse specialists the opportunity to reflect on their practice in order to adapt and deliver effective care in these unprecedented times.

Aim

Our shared goal was to continue to deliver safe, supportive, high-quality family centred care, while overcoming the challenges faced, ensuring national standards were met and adhering to government guidelines.
Focusing on self-awareness and supporting each other were essential to staff well-being and effective team work.

Methods

Due to the large geographical area Scotland provides we had pre-existing virtual platforms available to maintain contact and communicate effectively with families. While working in difficult circumstances there is often the risk of colleagues communicating less. The cleft nursing team protected time daily, meeting virtually to communicate more. Effective team communication ensured there was merging of observations, expertise and decision-making responsibilities to optimise patient care while working autonomously but as part of a team.

Conclusion

Following reflection on the impact of COVID on our service our poster will demonstrate how we took the opportunity to embed in our standards and practice, positive innovations and change, in order to move forward towards the ‘new normal’.

Nursing
Pandemic
Communication
Reflection
Teamwork

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Prenatal nursing care: pregnant women diagnosed with craniofacial anomalies

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Introduction: Pregnancy is a complex period in a woman's life; when she receives the fetal diagnosis of cleft lip and palate, this moment becomes anxious, with anguish, uncertainty and emotional disorganization. Nursing care is essential at this moment, aiming to favor the mother-professional and mother-infant bond, by counseling on the steps of rehabilitation, feeding and general care for the baby.
Objective: to identify the main doubts, anxieties and fears, and aid the pregnant woman and family members to go through this mourning phase and reorganize to receive their baby.
Method: prospective, qualitative study, conducted by specialized nurses, on 20 pregnant women with fetal diagnosis of cleft lip and palate. In the first consultation, all participants answered a questionnaire about physical, social, gestational and emotional aspects and about their doubts. Additionally, they visited the hospital and learned about the stages of rehabilitation through which their babies would undergo. After the doubts had been solved and the pregnant women and family members were more reassured and calmer, they were asked to provide a feedback about the care received.
Conclusions: the study demonstrated that the nursing care in this phase was effective, aiding in the acceptance, family resilience and to establish the professional-mother-infant bond.

Nursing ; cleft lipand palt

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Changes in understanding of the Kumagai feeding method based on visual media teaching material

さん。 **Yukari Kumagai**[1], Mr. Shingo Ueki[2], Mr. Takayoshi Sakai[3], Ms. Chihiro Sugiyama[3], Mr. Kazunori Nozaki[4], Mr. Susumu Tanaka[5], Mr Mikihiko Kogo[5], Ms. Miho Ike[1]

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

【Introduction】

Nurses have provided special education regarding breast-feeding and bottle-feeding techniques to families with children who have cleft lips and palates. However, it is too difficult for the child to feed even if special nipples are used unless they are attached to a Hotz plate. This feeding difficulty results in small amounts of lactation or longer feeding times. Moreover, ulcer formation in the nasal mucosa may occur if inadequate techniques are used. Therefore, we created three videos about the Kumagai method, a unique feeding method using the Silicone Long Nipple feeder® in our hospital, to promote understanding of how to successfully bottle feed infants with cleft lips and palates.

【Aim】

We aimed to clarify how watching the video of the Kumagai feeding method changed participants' understanding of bottle-feeding methods.

【Methods】

To gauge changes in the understanding of how to feed infants milk through the Silicone Long Nipple feeder ®, we asked the target audience the same questions before and after they watched the videos about the Kumagai feeding method. The questions covered the following four items: timing, length, speed, and angle of feeding. Responses were given along a 10-point Likert scale. A Wilcoxon signed-rank test was used to analyze the data. This study was approved by the ethics committee of our university and the hospital.

【Results】

We received answers from 68 general viewers. Almost all answered that their understanding of each item was promoted by watching the videos. A significant difference was found ($P<0.01$) between the responses obtained before and after viewing the videos.

【Conclusion】

The videos promoted understanding of insertion timing, length, speed, and angle of feeding. All are important aspects of using the nipple. This visual representation of the Kumagai feeding method is an effective media teaching material.

CLP, Kumagai method, bottle-feeding, child

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Intelligence of children with isolated Robin Sequence: Report of three cases

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction: Breathing, eating and sleeping difficulties in children with Isolated Robin Sequence (IRS), defined by presence of micrognathia, glossoptosis and cleft palate without other major anomalies, may constitute risk factors for development and intelligence. However, few studies evaluating this population are found.
2. Aim: To present the results of the intelligence assessment of 3 children aged 6 to 11 years old diagnosed with IRS.
3. Methods: This is a serie of 3 cases of children born with IRS. This study was approved by the Research Ethics Committee and the subjects and their respective legal guardians signed an Informed Consent and Term of Assent documents. Intelligence assessments were done using Raven's Colored Progressive Matrices (RAVEN) and Wechsler Abbreviated Scale of Intelligence (WASI). The results were verified using Pearson's correlation and the significance level considered was $p \leq 0.05$.
4. Results: With a mean age of 9.3 years, the subjects (two girls, one boy) were full-term newborn and adequate weight. All three subjects had IRS associated with a U-shaped cleft palate and required hospitalization in the neonatal period. Two participants used nasopharyngeal intubation and all required a nasogastric tube. At the time of the assessment, carried out in 2019, the patients were in elementary school and had no complaints of learning difficulties. The general intelligence quotient (WASI) varied between 90-100 percentiles (M=95.7), not differing from population mean for the same age group and according to the instrument's standardization (percentiles between 89 and 119). The three subjects showed no significant differences between verbal and performance IQ. The assessment of fluid intelligence (RAVEN) indicated a percentile between 37-50, also corresponding to the mean according to the instrument (percentile range between 26 and 74).
5. Conclusions: Results showed that the children evaluated did not present intellectual deficits,
This work was financially supported in part by Smile Train, Inc.
Pierre Robin Syndrome; Intelligence; Neuropsychology.

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Educational intervention and standardization for a pre- and post-surgical orthopedic device directed to healthcare providers treating patients with cleft lip and palate.

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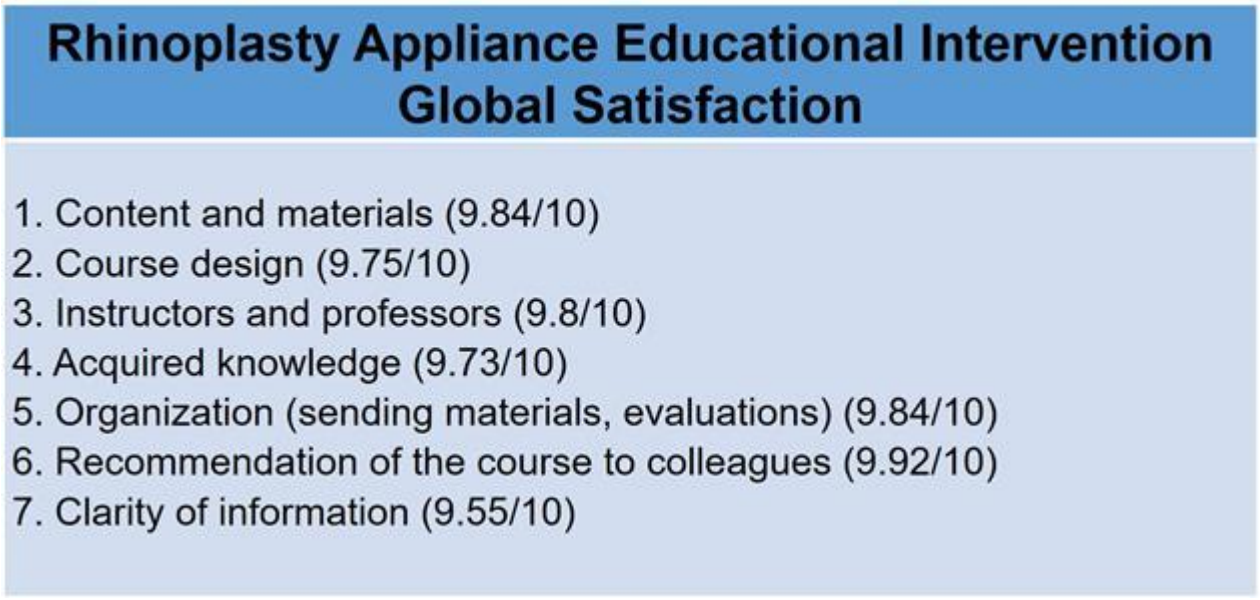
PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Regarding the treatment of cleft lip and palate (CLP) there is a worldwide tendency for interdisciplinary approach, consisting of an initial stage with presurgical orthopedic and a post-surgical nasal molding. There are more than 280 reports , but low scientific evidence, lack of a validated measurement instrument for effectiveness,, clinicals trials that suport clinical recommendations.
Aims: To describe the process involved in creating an education and standardization system for use of the pre-post surgical Rhinoplastic Appliance by healthcare professionals.
Methods: Smile Train organized a course b-Learning for education and standardization in 6 partner centers in Mexico. The educational materials designed was: an instructive manual, brochures, educational videos, synchronous personalized tutoring on educational platform (LMS) and personalized visit for refinements. The curriculum was based on the Thomas & Kern educational model with the key points: anatomy, biomechanics of the device, clinical protocol and standardization of a preoperative measurement instrument validated in Mexico. Ethics and Research Committee (2021/18264).
Results: Six partners in Mexico participated, the professional profile was surgeon and orthodontists in each center. The educational intervention was effective in 97% of participants, (Before: x=63.67 (45–89)], after: x= 84.60 (65-95)], ($p<0.001$)). The global satisfaction was very high (9.78/10.0). The reproducibility of the instrument was r = 0.89 and postoperative nasal symmetry instrument (r = 0.908 (Intra-observer (0.91), interobserver correlation coefficient (0.89)).
Conclusion: Investing in education and development of orthopedic devices is useful in centers around the world. Advances in telehealth and eLearning break down barriers of time, space with lower costs, helping to guide treatment in low-resource settings. This work lays the initiation of clinical trials in Mexico, Central America and the Caribbean.



Educational intervention, Rhinoplastic Apliance

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Developing evidence-based psychoeducational resources for adults and parents affected by craniosynostosis.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Craniosynostosis is a complex craniofacial condition occurring in 1:2,000 live births. Individuals and families affected by craniosynostosis may experience a range of psychosocial challenges, yet overall understanding of support needs remains poor.
Aims: Over the past four years, researchers at the Centre for Appearance Research (CAR) have collaborated with UK charity Headlines Craniofacial Support with the aim of conducting exploratory research and developing evidence-based psychoeducational resources to meet the needs identified.
Methods: Informed by a priority-setting exercise and stakeholder workshop, an online survey, consisting of standardised measures and open-ended questions, was designed. The survey was distributed UK-wide to parents and adults affected by craniosynostosis.
Results: In comparison to general population norms, parents (n = 111) reported higher levels of stress and anxiety, and lower levels of resilience, optimism and relationship satisfaction. Also, in comparison to the general population, adults with craniosynostosis (n = 36) reported more fear of being negatively judged by others, pressure to conform to appearance 'ideals', more symptoms of anxiety, poorer body image, lower levels of optimism and resilience, and less satisfaction with relationships. Yet, only 27% of parents and 3% of adults had accessed psychological support. Qualitative responses provided additional insight into participants' experiences and unmet support needs.
Conclusions: Survey findings were used to co-produce a support booklet for parents and an online resource for adults, in collaboration with parent/patient representatives and clinical psychologists. The booklet was evaluated by a wider group of parents and health professionals (n = 44) and received an acceptability rating of 100%. Development and evaluation of the resource for adults is ongoing, and involves co-production of materials in written and video format. These interventions may help to bridge the gaps in support; however, routine screening for psychological distress and support across the lifespan via craniofacial teams is also indicated.
Psychology, Craniosynostosis, Parents, Wellbeing

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Self-concept and its relationship with educational and work level in adults with sequelae of cleft lip palate.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
In Mexico, as in other Latin American countries, after surgical treatment of cleft lip and/or palate (CLP), the rehabilitation and psychological treatment of the patient is not adequately followed, nor is the impact of the consequences of this condition on the subjects throughout their lifetime.

Objectives
The main objective was to analyze the level of self-concept presented by adults with CLP sequelae and to describe how it is associated with the educational and work level at which they operate.

Method
The design of the research was developed under mixed methodology, being of sequential explanatory type, transversal and descriptive in two times. A sample of 22 participants (12 women and 10 men) was recruited, with an average age of 26.6. The AF-5 scale of the Auto- concept (Salum-Fares, Marin & Reyes, 2011) and a semi-structured interview were adapted for evaluation.

Results
In the quantitative results, it was found that 100% of the sample had a normal self-concept, while at the educational level 41% had a basic level and at the labor level only 2% were professionals. In the qualitative results, a discrepancy was found between what was reported in the self-concept and the perception that they have of themselves within the different spheres, finding that more than 50% of the sample had difficulties inserting themselves into educational and working life.

Conclusions
This research provides an overview of some problems faced by adults with sequelae of CLP in Mexico, reaffirming what has been reported in other research on the importance of establishing measures that allow parents to have access to real information about the pathology and providing comprehensive treatment to people with CLP from childhood.

Self-concept, education, work. adults, clp

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Working with cleft lip and palate in the Covid-19 pandemic: development of tools to strengthen mental health

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction: Studies indicate that professionals who deal with other people at work may present risk factors for mental illness, such as higher stress levels than the general population, with even higher levels in health professionals, who may be more prone to development of Burnout Syndrome. In this context, the COVID-19 pandemic adds even more risk factors for the mental health of these workers, such as work overload, dealing with the death of patients and colleagues and the fear of contamination of loved ones.
2. Aim: To assist in strengthening and developing coping strategies to manage negative variables related to the work environment during the Covid-19 pandemic.
3. Methods: To help health professionals who work with patients with cleft lip and palate, a Practical Guide was developed with information on stress, anxiety, examples of situations that can lead to higher stress and anxiety, and presentation of some coping strategies. A Webinar was also organized on this subject with a psychologist and a psychiatrist.
4. Results: The Guide and Webinar were released during the International Week of Cleft Lip and Palate, on 2020 October, when appointments and elective surgeries for the rehabilitation of cleft lip and palate were once again being scheduled. A variety of activities was realized in this week involving Cleft Lip and Palate Centers. Many professionals from these Centers were talking about how much important was considering this thematic in that moment.
5. Conclusions: The main goal of the Guide and the Webinar was leading the individual to identify symptoms and warning signs regarding their mental health, thus they should not be considered a substitute to psychological and/or psychiatric treatments, when these are indicated.
Financial support for the work was provided by Smile Train, Inc.
mental health; burnout; covid 19

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The importance of psychology in the multidisciplinary treatment of patients with cleft lip and palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
In the last decade, the importance of psychological care in patients with cleft lip and palate (CLP) has been demonstrated in different research projects and countries around the world since malformation not only involves physical but also emotional and psychological consequences in both the patient and the family. This paper analyzes the psychological services available in cleft clinics and the care protocol used.

Objectives
The main objective was to review and analyze the importance given to the psychological care of patients with CLP in Mexico and other Central American countries, with the aim of developing and establishing a valid, permanent care protocol for psychology that offers the necessary and implicit support and guidance in the comprehensive rehabilitation of these patients.

Method
The design of the research was developed under qualitative methodology, being of descriptive exploratory type, a form was made in Google Forms and sent to different registered cleft care clinics, resulting in a total sample of 33 participants. Of these, 72% are clinics in Mexico, and 38% are in Central America.

Results
During analysis of responses sent by the clinic managers, it was found that only 6% do not consider psychological care to be a priority. 33% do not have a psychology service at the institution because it does not have sufficient resources and 64% do not know any specific care protocols for the different stages of treatment. 79% have not referred a patient or parent to support or psychological counseling at any time during the treatment.

Conclusions
The picture of psychology in multidisciplinary treatment is visible from this research. Although it has increased in relevance and attention in institutions, there is still a lack of psychologists involved in treatment and in the design of a protocol aimed especially at the population with cleft at the different stages, their family and professionals involved.

psychology, treatment, care protocol, clinics

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Psychology and Cleft Lip and Palate: first continuing education course

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Psychology works in the rehabilitation process of cleft lip and palate (CLP), aiding patients and family members to adhere to treatment in its different stages. Aiming to contribute to the assistance to psychological aspects in CLP, a continuing education course in psychology and CLP was held in Brazil.
Objective: To describe the development and main results of a continuing education course in the field of psychology and CLP.
Methodology: The course was free, held at distance, from March to October 2021, totaling eight one-hour lectures. The following themes were addressed: 1) Psychology work in CLP: from the General Hospital to the Specialized Centers; 2) Psychological aspects of CLP diagnosis: pregnancy and birth; 3) Pre-surgical psychological preparation in primary surgeries; 4) CLP and development stages: pre-school and school; 5) CLP and development stages: adolescence and adulthood; 6) The nasopharyngoscopy exam; 7) Neuropsychological assessment in CLP; 8) Emerging issues and psychological care protocols in the treatment of CLP.
Results: Among the 97 students enrolled, 73 completed the course. The content taught in each lecture was evaluated, as well as its contribution to the following aspects: Knowledge about psychological issues related to CLP, with 80% indicating it as Very Good, 17% Good, 1% Regular, 1% Little and 1% Very little; Improvement of the psychological care of patients with CLP, with 77% indicating it as Very Good, 19% Good, 1% Regular and 1% Very Little; and Establishment of new practices in the care of patients with CLP, with 72% indicating it as Very Good, 22% Good, 4% Regular and 2% Very Little.
Conclusion: It is believed that the course contributed to the improvement of most students on the subject of CLP, which may provide better quality of psychological practices offered to this population.
Financial support for the work was provided by Smile Train, Inc.
Psychology, Continuing education course

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Breaking Down Prejudices: What Do You Know About Cleft Lip and Palate?

Breaking Down Prejudices: What Do You Know About Cleft Lip and Palate? Julieta Maria Perondi[1]
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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

"Does my child have an intellectual disability?", "should she/he attend a special school?", "will he/she be able to have a "normal" life?", are questions that parents of patients with cleft -coming vastly from an underprivileged background- bring regularly to the psychology team at Gavina Foundation (Fundación Gavina).

Patients and their relatives have held on to prejudices and popular misbeliefs about cleft. Children ask about their scar, why they have it and whether it can be removed. Their parents usually do not know what to answer.

Aims

.Identify the level of information of the population attending Gavina Foundation.
.Provide a clear concept about cleft, its causes, types, treatments and impact.
.Debunk myths associated with cleft.

This approach is essential to provide patients with new resources and skills to cope with the obstacles that they frequently encounter, thereby improving their adaptation to the psychosocial environment.

Methods

We conducted a qualitative and descriptive study based on weekly psychoeducational workshops, involving group sessions divided by age. We used verbal and written questionnaires, spontaneous story-telling activities, role-playing and didactic and audiovisual material.

Results

Our studies exposed that subjects that reach Gavina Foundation have little or no information about cleft. With the involvement of patients and their parents, we were able to clarify doubts and confront myths, up to the extent that our limited resources permitted.

Conclusions

Those results allowed us to initiate new research and propose new therapeutic objectives at an interdisciplinary level. We could identify the misinformation that causes prejudices about cleft and provide accurate and clear data.
However, we face the lack of adequate material aimed to little and young children. The creation and dissemination of new and updated teaching instruments, specially in audiovisual and didactic format, would

determine a significant contribution to continue demystifying cleft in a clear, entertaining and enriching manner.

Prejudices, Cleft, Information, Children, Myths

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Does age, gender or diagnosis affect the satisfaction with facial appearance, hearing and speech among 5, 10, 15 and 20 year olds with cleft lip and/or palate?

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
This is a National research study with data from the Cleft Psychology CEN Network of Great Britain and Northern Ireland that examines satisfaction with appearance within the Cleft population.
Aims
To determine whether we can predict the satisfaction of speech, hearing, and appearance in CL/P patients based on age, gender or diagnosis.

Methods
The Cleft Hearing, Appearance & Speech Questionnaire (CHAS-Q) 15-item self-report was given to patients during routine clinical practice between 2010-2018 across 8 different Cleft centres in the UK, to respond on 11-point interval scales ranging from 0 (unhappy) to 10 (happy). Participants: 666 matched pairs of parent and child data, and 2,198 participants across age groups 5-20 years. Data was analysed using IBM SPSS statistics version 22, analysed by age, gender and diagnosis (CL, CP, CL/P, BCLP, UCLP). Analyses: univariate ANOVA and Chi-square test of association across each item level.

Provisional Results
Age and diagnosis were strongly related to items on the CHAS-Q questionnaire with high significance <0.001.

Gender did not have a significant effect on items. However, females rated themselves less good looking (4.7% 1-3) than males, despite high scores with 74% rating 8-10. Females rated their cleft as more noticeable than males.

CP and CLP patients were most satisfied with their whole appearance (85.65% rating 8-10). BCLP patients had low rating (8.5%, 1-3) of how good looking they perceived themselves compared with other cleft types, with CLP rating the highest (75.%, 9-10).
BCLP were least satisfied with their speech (8.1% rating 1-3) and hearing (9.3% rating 1-3).

Parent mean scores exceeded child scores on most items with high significance <0.001.

Conclusion
This study concludes that satisfaction with appearance decreases with age and satisfaction with speech and hearing increases with age. Diagnosis can predict satisfaction. There are insignificant gender differences. Parents routinely rate their satisfaction higher than their children.
CHAS-Q
Satisfaction
National

CEN

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Contextual Correlates of Perceptual Quality of Life in Youth with Cleft Lip and Palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: While quality of life (QoL) in youth with cleft lip and palate (CLP) has been widely studied, a better understanding of QoL context is needed for improved screening and intervention.

Aims: Describe relationships between participants' QoL self-perception with cleft-related experiences and medical and sociodemographic factors.

Methods: Participants with isolated CLP completed the Youth Quality of Life, Facial Differences, with 18 contextual items (e.g., teasing frequency) and 30 perceptual items yielding 5 subscales: Positive Consequences, Coping, Negative Consequences, Negative Self-Image, and Stigma. Pearson correlations were completed for subscales with: 1) contextual items and 2) medical and sociodemographic variables.

Results: Participants (N=114) were 11-22 years old (M=17.8±2.9). Most were female (57%), Latinx (68%), and had public insurance (62%). Household size was 2-15 (M=4.7±1.8) and SES was low (43%). Participants had unilateral (88%) or bilateral (22%) CLP and 2-11 (M=5.4±1.9) cleft-related surgeries. GOSLON ratings were 3 (14%), 4 (51%), or 5 (35%). Moderate and strong correlations (i.e., ≥0.30, P<.001) are reported. Positive Consequences was associated with talking about CLP (r=.030), talking about CLP with peers (r=0.30), and dating (r=0.38). Negative Consequences was correlated with staring (r=0.40), negative comments (r=0.33), repeating themselves (r=0.33), and teasing (r=0.35). Negative Self-Image was associated with talking about CLP (r=0.34), staring (r=0.45), repeating themselves (r=0.40), and teasing (r=0.45). Stigma was related to talking about CLP (r=0.47), talking about CLP with peers (r=0.37), staring (r=0.53), negative comments (r=0.55), being excluded (r=0.42), repeating themselves (r=0.44), fighting about CLP (r=0.40), and teasing (r=0.66). Of 9 medical and sociodemographic variables, there were moderate correlations only for bilateral CLP with Negative Self-Image (r=0.31) and Stigma (r=0.39)

Conclusions: Lower QoL was associated with having bilateral CLP, staring, negative comments, and teasing, indicating these are key risk factors and opportunities for intervention. Talking about CLP had negative and positive associations, suggesting coping strategies are needed for cleft-related discussions across settings.
cleft lip/palate, quality of life

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Adaptive Behavioral Functioning in Infants and Toddlers with Sagittal Craniosynostosis

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: While generally in the average range, non-syndromic sagittal craniosynostosis is associated with mild neurodevelopmental delays. Fewer studies have examined adaptive behavioral functioning in this population.

Aim: To describe the cross-sectional and longitudinal adaptive behavior of children with sagittal craniosynostosis.

Methods: Caregivers (N=134) completed the Adaptive Behavior Assessment System, Second Edition (ABAS-II) preoperatively (T1; n=116), 6 months postoperatively (T2; n=81), 18 months postoperatively (T3; n=68), and at age 3 years (T4; n=55). The ABAS-II yields a General Adaptive Composite (GAC) score (M=100±15) from 7-10 subtests (171-241 items). Scores were compared to test norms, based on socioeconomic (SES) and surgery variables, and over time.

Results: The majority of children were male (78%) and of Latinx (41%) or European-American (30%) ethnicity. SES was generally evenly distributed, household size was 2-12 (M=4.8±1.8), and 49% were English-speaking. Calvarial vault remodeling was at a mean age of 5.5±2.3 months. GAC scores were in the average range: T1 M=103±9, T2 M=98±11, T3 M=93±14, and T4 M=97±20. GAC scores below the 2nd percentile were: T1 0%, T2 4%, T3 7%, and T4 15%. Low scores were mostly for children with emerging autism symptoms. Compared to norm means, GAC was higher at T1 and lower at T3, with moderate effect sizes, with no T2 or T4 differences. Gender, SES, and household size were correlated with GAC. Age at surgery and anesthesia time were not related to any postoperative GAC scores. Longitudinal mean comparisons (n=47) showed no significant difference between T1 and T4, with variation between other time points; however, caution is needed in interpreting longitudinal results due to sample attrition.

Conclusion: Mean adaptive functioning was average, associated with family context, and unrelated to surgery variables. While longitudinal GAC scores indicated no change preoperatively to age 3, group cross-sectional results reflected increasing proportions of children with delays, suggesting a need for adaptive functioning screening.

sagittal craniosynostosis, adaptive functioning

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Hospital psychology service: a proposal for telemonitoring of patients with cleft lip and palate treated at a Rehabilitation Hospital

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction: Connected health was initiated by Telemedicine and expanded to other healthcare categories by telehealth, which is characterized by the provision of health services by Information and Communication Technologies (ICTs), including telepsychology.
2. Aims: To survey the scientific literature for studies conducted in the field of telepsychology at the secondary and tertiary healthcare levels, and to verify the possibility of implementing this action in the care of patients with cleft lip and palate (CLP) treated at a Rehabilitation Hospital.
3. Methods: This was an integrative literature review, which allows the analysis of experimental and non-experimental studies, searching results that may contribute to the development of policies, protocols, procedures and critical analysis on the issue, performed on the databases Portal Regional da BVS, PubMed, LILACS, SciELO e Periódicos CAPES between 2015 and 2021 using the descriptors “telepsychology”, “hospital psychology” and “health psychology” in Portuguese, English and Spanish.
4. Results: A total of 68 articles were found, among which 5 met the inclusion criteria for presenting reports on how telepsychology has been implemented in secondary and tertiary health services, as well as guidelines for telepsychology in such contexts of action.
5. Conclusions: The studies surveyed indicate the effectiveness of interventions performed by ICTs and provide guidelines for their application. Thus, telepsychology is considered an important contribution to the monitoring of patients with CLP, since the rehabilitation process is long and may require psychological support in moments of greater emotional weakness.
This work was financially supported in part by Smile Train, Inc.
Telepsychology, Health Psychology, Hospital Psychology.

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A PSYCHO-MEDICAL THEORY OF THE SMILE MECHANISM AS A MIRACLE IN THE HUMAN FACE

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Background: Faces sense and interpret our outside world, express how we feel and influence our many interactions. The smile is our most communicative facial actions; a cleft lip a forbidding deformity which hides this most sensible expression. Reconstructing a cleft lip is at its heart the reconstruction of a smile. Surgeons and others working in this field work in large degree to recreate this important social element. The smile mechanism implicates sophisticated anatomical, psychological, and biochemical pathways which should be thoroughly examined and reported.
Investigations: A smile is thought to involve 17 of the 43 facial muscles. There are smile gradations, ranging from “Mona Lisa” smile to the “full denture” variety. One group of facial muscles can present a specific look, while multiple muscle groups can simultaneously contract to present another look. The Facial Action Coding System assigns each of the 43 facial distinctive facial muscles a number, called an “action unit.” When do the facial muscles move? Is this voluntary or spontaneous, emotional or non-emotional? A spontaneous smile circuit with a direct cortical pathway produces “real” or “emotional” smiles. A voluntary smile circuit with direct and indirect pathways would lead to fake or social smiles. Apparently, we smile with, without, before or after any of the known five senses, so it works as a common factor in our daily life. There is a struggle between happiness and stress hormones; endorphins versus cortisol to move these muscles. The degree of the smile is absolutely correlated to the amount of endorphins released. Cortisol, as the stress hormone, takes more time to penetrate the face as its release is a multi-step process involving two additional hormones; adrenaline and nor-adrenaline. While we may only imperfectly understand the psychological and biochemical processes that create a smile, we can agree on its centrality as a human emotion and special sense.

Smile
Mechanism
Psycho-medical
Special-sense
Theory

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What is the relationship between parental dental concerns, parental anxiety and healthcare satisfaction? A National Cohort Study

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

Research has shown that there can be a psychological burden among the parents of children affected by cleft lip and/or palate (CL+/-P). Therefore, examining the relationship between parental psychology and their satisfaction with healthcare may help to inform care.

Aims

To explore the relationship between parental dental concern about their child's teeth, parental anxiety, and healthcare satisfaction.

Methods

Data from the Cleft Collective Cohort Studies, a longitudinal study of children with CL+/-P and their families, were analysed. Questionnaires were returned by mothers (n=890; n=764; n=414) and fathers or mother's partners (n=560; n=360; n=228) when their children were aged 18 months, 3 years and 5 years respectively. Parental anxiety and healthcare satisfaction were assessed using the Hospital Anxiety and Depression Scale, and Paediatric Quality of Life measures. Logistic regressions were performed to explore associations.

Results

At 18 months mothers who had the highest levels of anxiety were almost 3 times as likely to have a concern about their child's teeth in comparison to those mothers within the "normal" HADS anxiety category (OR=2.99; p<0.001). Similarly at 3 years those with the highest level of anxiety were 2 times as likely to have a dental concern in comparison to the "normal" HADS anxiety category (OR=2.08; 95%; p=0.002).

Dental concern reduced as healthcare satisfaction increased. Strong evidence was found to suggest an association between how happy the mother was with the amount of information received and dental concerns. The odds of having a dental concern was reduced by 1.7% for each unit increase of satisfaction (OR 0.983 95% CIs 0.976 – 0.991; p<0.001).

Conclusions

The odds of a parent having dental concerns were increased with parental anxiety and reduced with increasing healthcare satisfaction. Reduced dental concern is particularly associated with information provided, highlighting the importance of communication and provision of information resources.

HADS, Psychology, Parents, Dental, Satisfaction

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Summer camp:

An alternative to promoting self-esteem in children with cleft lips and/or palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
To analyze the psychological aspects that a patient with cleft lip and/or palate (CLP) may have, we must start from the idea that the child needs to be considered in the context of its multiple environments, and also remember that they suffer physically and psychologically. Self-esteem is a concern in many homes and is part of conversations among family members of children with CLP.

Objectives
The objectives of the camp, which lasts for 4 weeks, are intended for the child with CLP to learn how to value himself and know his emotions through games and recreational activities. as well as promoting leadership through exercises where the little one will have the initiative to act and live with their peers.

Method
The research design was developed from qualitative methodology, under the type of phenomenological design, with a sample of 6 children (with an average age of 7.1) and 5 girls (with an average age of 5.4).

Results
In the analysis of summer camp results, it was observed that 80% of children acquired and strengthened socialization skills through peer interaction. while 75% expressed their emotions more freely and 100% had more confidence and security, which influenced higher self-esteem.

Conclusions
To ensure that the patient with CLP has an optimal quality of life that includes an appropriate level of self-esteem and inclusion in society, it is absolutely crucial that from birth the family and the people who are part of their environment learn how to manage the CLP situation so that the approach to the problem is successful. Thus achieving the reduction and perhaps elimination of factors that negatively affect the psychological aspect of patients with this malformation

Summer camp, self-esteem, children, clp

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NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION.

Dr. Suely Prieto de Barros[1], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Alexandre Vieira[2], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Maria Julia Villela[1], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Cleide Carrara[1], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Eliane Arena[1], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Talita Fernandes[1], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Paula Jorge[1], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Gabriel Peres[3], NUTRITIONAL MONITORING THROUGH THE WHATSAPP® APPLICATION: A POST-COVID-19 PANDEMIC INNOVATION. Cristiano Tonello[1]

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

The Covid-19 pandemic has restricted in person care at our cleft treatment center. Thus, we have sought new ways to monitor the nutritional status of infant patients by using the WhatsApp® application, so as to conduct timely nutritional interventions and to prevent malnutrition and anemia.

To monitor the nutritional status of babies with cleft, using the WhatsApp® application, and to validate its use.

Approved by the Institutional Review Board. The protocol: new cases of infants up to 30 days old; consent form signed by parent or guardian; mothers receiving training, personally; data comparisons against WHO benchmarks; nutritional interventions considering RDI's.

18 cleft patients were followed up by regular data submission through the WhatsApp® application. 1 had a gastrostomy tube, 2 had cow milk protein allergy, and 1 had cardiac disease. 8 have already been submitted to lip surgery. Twelve as coming from low-income families, and 6 medium income families. Most of them (no. = 17) travelled between 100-500 km to receive the first care. Thirteen children were fed breast milk for 120 days; 5 were fed formula. Nine began eating additional foods at 6 months, the remaining patients were not old enough for that yet. Eleven children had normal weight, 3 were malnourished when the study began and recovered after about 54 days; 4 were at risk when the study began and recovered after about 26.5 days. No patient had to delay surgery because of anemia. Nutritional interventions included encouraging breast feeding and different breastfeeding positions, guidance regarding the appropriate concentration of infant formula and how /when to introduce of additional foods.

The use of the WhatsApp® application for nutritional follow up proved to be a valid and effective way to monitor the patients' growth and development, yielding efficient nutritional recovery. This work was financially supported by Smile Train, Inc.

Whatsapp®
nutrition
babies
cleft

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Quantification of Tongue Movement During Bottle Feeding Using Ultrasound :A Preliminary Study

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction

It is thought that tongue movement disorders can cause feeding problems. However, it is difficult to objectively compare tongue movements. Therefore, we aimed to develop a method to quantify the periodicity and speed of tongue movements using ultrasound imaging.

2. Methods

We report the development of a method to quantify tongue movements in terms of parameters, such as periodicity and velocity, in healthy infants aged 4–8 weeks using ultrasound imaging. The motion velocity vectors were estimated for each direction using the Speckle Tracking Method.

3. Results

The average motion velocities of the three points on the B-mode image were analysed in Lateral (X) and Axial (Y). The results showed that (1) the mean motion velocity (2.064 mm/s) in the axial direction was the largest in the sagittal section. In the frontal section, the average motion velocity was highest in the axial direction (2.097 mm/s).

4. Discussion

In a previous study of tongue movement using ultrasound imaging, only morphological changes on the tongue surface could be observed. However, by applying the Speckle Tracking method, it became possible to quantify tongue movements and measure the internal movements in the tongue muscles. The analysis of tongue movement through this method was considered helpful to determine reference values that can be used to distinguish between normal and abnormal feeding movements.

bottle feeding, tongue movement,

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TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS

TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Suely Barros[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Maria Julia Villela[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Nivaldo Alonso[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Maylla Manso[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Rosana Prado[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Eliane Arena[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Haline Miguel[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Armando Trettene[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Cleide Carrara[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Telma Felix[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Gabriel Peres[2], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Adriane Mendes[1], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Gisele Guerra[3], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Camila Ferreira[3], TRAINING FOR THE MOTHERS OF CHILDREN WITH CLEFT USING INSTRUCTIONAL MANUALS Cristiano Tonello[1]

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Infants with cleft require special care in order to adapt to the cleft and overcome insufficient suction, difficulties in breastfeeding, insufficient food intake, and malnutrition. Early nutritional intervention are important for them to achieve their potential in terms of growth, and preparation for surgery. Mothers should receive training to optimize their children's nutrition health, and survival rate.
Aims: To provide feeding assistance by training mothers, using the manuals prepared by our specialized multidisciplinary team.
Methods: Preparation and dissemination of educational manuals that are easy to understand, by the specilists team of HRAC/USP, that have been used since May 2021, in treatment centers all over Brazil.
Results: Breastfeeding Manual: the importance of breast milk; breastfeeding positions; expressing breast milk; bottle and nipple for each cleft; milk formulas and dilution, hygiene, and preparation techniques. Manual on Introducing Food and Post-Surgical Feeding : age, consistency,techniques and child positioning to introducing additional foods; care after lip and palate surgery, such as: raising the crib; using bracelets; when to change the food consistency; use of glasses and spoons; recipes. Guide to Anthropometric Measurements: teaching mothers to check their children's weight, height, head, thoracic and brachial circumference and to send this information to yhe team for monitoring and interventions, as needed.
Conclusions: Since the onset of the COVID-19 pandemic, the need to provide training to the parents of patients has become increasingly evident, so as to provide nutritional care at home needed. Considering that cleft babies begin to be submitted to surgical procedures at 3 months old, nutritional care must include growth, development, and preparation for these surgeries. Providing support for the mothers is essential for them to overcome challenges and to adopt best practices in feeding their children. Training them to do that is certainly the best way. This work was supported by Smile Train, Inc.
cleft, nutrition, care, training

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NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021

NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Suely Prieto Barros[1], NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Hilton Coimbra Borgo[1], NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Francine Pampani Borgo[2], NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Maria Julia Costa Villela[1], NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Gisele Dalben[1], NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Mariane Manfredini Goes[3], NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Alexandre Vieira[4], NUTRITIONAL EVOLUTION AND CHARACTERIZATION OF NEW CASES WITH CLEFT LIP AND PALATE ASSISTED DURING 2021 Cristiano Tonello[1]
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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: cleft lip and palate causes feeding difficulties that lead to malnutrition in the lack of early nutritional intervention.
Aims: to evaluate and compare the BMI and lenght of infants with cleft lip and palate at the first attendance and at study completion. Characterize the profile of patients.
Methods: measurement of weight, height and calculation of BMI at study onset (M1= mean of 26 days of life) and completion (M2 = mean of 164 days). Nutritional classification by the WHO, 2006. Profile characterization: time of birth, type of cleft and breastfeeding, accomplishment of lip repair. Paired t-test, SigmaStat, significant when alpha error <0.05.
Results: 26 patients; 69.2% boys; 34.6% cleft lip, 11.5% cleft palate and 53.9% cleft lip and palate. 21 were born full term, 5 premature. 15 underwent surgery, among which 14 were eutrophic and 1 at nutritional risk. All did not have anemia of the day of surgery (mean hemoglobin 11.8). Among the patients not operated by M2, 7 were not old enough for surgery, 7 were late due to the pandemic. Exclusive breastfeeding on the breast: 5 patients, with cleft lip (mean duration 93.2 days). Exclusive expressed breast milk: 4 patients (mean duration of 33.3 days). 17 patients feeding with formula since birth. The mean differences between M2 and M1 of the Z score for BMI/age was 1.33 (+ 1.57) and for length/age 1.47 (+ 1.22), $p<0.001$.
Conclusions: The early nutritional intervention allowed a significant marked improvement on nutritional evolution even in preterm infants and the growth of none of them felt the reflex of feeding difficulties caused by the cleft. It also allowed eutrophy and adequate hemoglobin at the time of surgery. Exclusive breastfeeding on the breast occurred in cleft lip, for 3 months. This work was financially supported by Smile Train, Inc.

nutritional assessment
cleft
neoborn
infants

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Proposal of advice and support in the feeding of patients with CLP during the first 6 months of age, at the Hospital del Niño DIF Hidalgo, México.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction.
Encouraging breastfeeding to achieve good nutrition is the first purpose, given the fear and inexperience of the mother, the suction compromised by the presence of CLP, or if breast milk is not the first option, actions must be taken.

2. Goals.
Share advice and support during feeding of patients with cracks that take place in the HNDH.

3. Methods.
CLP patients born during 2019 and 2020 who attended the HNDH for the first time. They were divided into 2 groups. Group 1: under one month of age. Group 2: patients between 2-5 months of age. Counseling is given, the weight at birth, the weight at the beginning of breastfeeding and at one year of age are recorded, in order to determine if there is a difference in weight at the beginning of the accompaniment with breast milk compared to milk formula.

4. Results.
The increase in weight and height is indicative of a correct diet. We have observed that the method is effective as it creates confidence and security in the mother to achieve a successful breastfeeding. Despite the efforts and advice, special bottles are used, breast milk being the first option of content together with advice.

5. Conclusions.
Breastfeeding is an activity that requires time and patience, so it can be abandoned. With comprehensive counseling and treatment, the presence of cleft should not be an impediment to achieving breast milk feeding. Counseling during the first month of age fosters confidence and security in the mother that avoids dropping out of breastfeeding and is reflected in the growth and development of our patients.

Breastfeeding
breast milk
formula milk

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RIGHTS OF PATIENTS WITH CLEFTS TO FREE FEEDING

Rights of patients with clefts to free feeding Suely Barros[1], Rights of patients with clefts to free feeding João Busqueti[1], Rights of patients with clefts to free feeding Iorrane Cunha da Silva Silva[1], Rights of patients with clefts to free feeding Giovana Rosa[1], Rights of patients with clefts to free feeding Daniela Ferreira[1], Rights of patients with clefts to free feeding Daniella Doreto[1], Rights of patients with clefts to free feeding Caroline Sposito[1], Rights of patients with clefts to free feeding Maria Julia Villela[1], Rights of patients with clefts to free feeding Mario Cesar Pinto[2], Rights of patients with clefts to free feeding Diego Villela[1], Rights of patients with clefts to free feeding Cleide Carrara[1], Rights of patients with clefts to free feeding Cristiano Tonello[1]
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Background: In Brazil, the Organic Health Law n. 8080/90 establishes that "in the case of children, their rights to life, health and food must be guaranteed with absolute priority" (item I, article 227); ratified by the National Program for the Improvement of Access and Quality of Primary Care, which aims to distribute infant formulas. However, it is not an easy task to obtain these products with support from the State. This becomes even more serious when the baby has cleft lip and palate, due to the increased risk of feeding disorders that lead to malnutrition.
Purpose: to characterize a sample of children born with cleft to identify the barriers related to feeding and transportation. Also, the study aimed to characterize, when there was any subsidy, if it was provided by the State or the private network.
Methods: 112 patients with cleft lip and palate, aged 0 to 2 years, who attended HRAC/USP for their first appointment, from January 10th 2021 to August 10th 2021; evaluated, by medical records, as to their socioeconomic status and the distance between their city and the health institution. By telephone, they answered if they received feeding aid and/or transportation and, if positive, who provided this subsidy.
Results: 112 contacted, 46.4% did not receive subsidy for transportation; 48 traveled between 300 and 600km to reach the institution and 75% had low socioeconomic level (US280.00 per month/family). 22.3% patients attempted to achieve feeding aid fromthe State and succeeded; 5.4% attempted and failed; 31.3% did not know their rights; 15.2% were breastfeeding and 10.7% received assistance from an American charity organization.
Conclusions: 78% did not receive support from the State, either because of State refusal or because of lack of knowledge on their rights. Among these, 75%) had low socioeconomic level. This work was supported in part by the Smile Train, Inc.

cleft, human rights, nutrition

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Breastfeeding a newborn with a cleft : prenatal therapeutic education workshop to support mothers, and couples, who want to breastfeed their baby

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

Cleft diagnosis causes a feeling of guilt, especially for the mother. When she wants to breastfeed and if she does not have a support, she probably won't be able to. She will experience an another failure and bonds of attachment and nutritive are disturbed. So, I decided to create breastfeeding workshop during prenatal period.

Aims

The aim of this study is to describe this workshop and to assess its impact on mothers of a cleft child who want to breastfeed.

Methods

I have set up around one workshop per month since January 2018. Each workshop brought together between two and four couples. I gave them informations about breastfeeding and the particularities related to the cleft. A mother comes to share her experience. This workshop aimed to create a convivial time where each person can ask questions and share their feelings. A survey was given to all participants at the end of the workshop and after the birth. I analyzed them taking cleft subtype into account. A complementary study highlights the duration of breastfeeding.

Results

111 mothers participated in 4 years. We included children with unilateral cleft lip and palate (n=57), bilateral cleft lip and palate (n=16), unilateral cleft lip (n=30), bilateral cleft lip (n=5) and Pierre Robin syndrome associated cleft palate (n=3).
102 mothers breastfeed at birth, 76 of whom used the breast pump.
And other results to find out how long these breastfeeds lasted.

Conclusion

Parents are happy to have been listened to, even those who ultimately decided not to breastfeed. Those who are breastfeeding tell how proud they are to succeed it. They also appreciate being supported and meeting other parents like them. It is important for them to choose by themselves how they feed their baby. As caregiver, we support them to find their place as a parent of a child.
Breastfeeding, cleft, newborn, therapeutic-education, prenatal-workshop

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Quality of Life of Patients with Cleft Lip, Palate based on the COHIP index. A Systematic Review

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Orofacial clefts influence an affected person's quality of life. The Child Oral Health Impact Profile (COHIP) is an instrument created to measure the Oral Health-Related Quality of Life (OHQRoL) of children between the ages of 8-15. The purpose of this systematic review was to identify studies that explore the quality of life of children with cleft lip and/or palate (CLP) based on the COHIP index of measurement off OHRQoL.
Aims: To determine if there is a discrepancy in CLP patients' OHRQol between different genders, age groups, and cleft types. To identify if the children's responses on their quality of life differ from those of their caregivers.
Methods: Ebsco Publishing, Cochrane, and PubMed/Medline databases were electronically searched to retrieve results in English on patients aged 7-19 years. The COHIP evaluated the child's oral health, functional well-being, social-emotional well-being, school environment, and self-image, as well as the child's overall OHRQoL.
Results: In total, the primary search produced 548 articles, and with duplicate removal, after the application of inclusion and exclusion criteria, 8 articles were eligible for this review. Parents ranked higher than their children on the "Oral Health" sub-scale (40.52 vs. 24.8) and lower on the "Functional well-being" sub-scale (16.1 vs. 35.6). Older patients were affected more than the younger, specifically on the "Emotional well-being" (25.3 vs.32.36) and "Oral Health" (11.7 vs. 40.04) sub-scales. Females have greater OHRQol than males except for oral health status. Bilateral cleft lip and palate patients had one of the lowest sub-scales and overall COHIP scores.
Conclusions: The younger cleft patients had better scores of OHRQol on the emotional well-being and oral health subscales, mainly. Females had a better OHRQol than males except for oral health. Children's sentiments varied from those of their parents, particularly on the oral and functional well-being sub-scales.

Cleft, quality of life, COHIP

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Outcomes of activities promoting the improvement of quality of life for children with cleft lip and cleft palate

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Background: Children with cleft lip and cleft palate aged between 6-19 years old are the age to develop relationships with friends and society have unique and dominant which is part of the quality of life (QoL), Therefore, activities are organized to promote QoL.
Objective: To organize activities to promote QoL.
Methods: The descriptive study by organizing activities to promote and improve the QoL for children in Khon Kaen province for 1 day, select a sample of 15 children, and 17 parents. In the morning, divide the children into 3 groups, turn around, if one day I changed, khun yay hmapa and good health base, 45 minutes each. Parents are divided into 2 groups, going to the base for watching videos to increase positive energy and knowing and being able to practice, each base is 60 minutes. Afternoon group activities a Nok noi su lok kwang, Mai phrm hunsa ,Word game, and I go to the market for 30 minutes per base. Data were collected by observing and assessing knowledge before and after watching the video and satisfaction. Using percentage statistics, averages, summarizing, and content analysis.
Results: Most of the 8 children were boys, all of whom had health evaluations. Most of them are ongoing orthodontic treatment. While participating in the activities, children are confident, dare to think, dare to express themselves, talk about their future, understand individual differences engage in thinking and planning, have concentration, memory training, teamwork, and fun. Parents' knowledge scores increased by 1.45 points. All of them had the highest level of satisfaction with the activities.
Conclusion: Organizing activities to promote QoL makes it possible to monitor health conditions build confidence, assertiveness, have relationships with others, participate in thinking and planning, harmony, and fun. Parents have the knowledge to care more

CLP, activities, Quality of life

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Evaluation of oral health-related quality of life of non-syndromic patients with cleft lip and/or palate, treated with fixed orthodontic appliances

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Non-syndromic (N/S) cleft lip and/or palate is the most common congenital anomaly undergoing long multidisciplinary treatment. It is essential to understand its influence on affected patients' daily life to prepare the most qualitative care for the complete physical, mental, and social well-being of an individual. Several studies were previously conducted to discover correlations between orofacial anomalies and oral health-related quality of life (OHRQoL). However, different population samples and age groups require new insights to prepare appropriate care.
Aims: To investigate how congenital N/S cleft lip and/or palate malformation and different fixed orthodontic appliances affect patients' daily life to ensure a better approach towards an individual's overall well-being.
Methods: Randomly selected patients with N/S cleft and/or palate treated in the Clinic of Orthodontics of Lithuanian University of Health Sciences filled a modified child perception (CPQ) and oral health impact profile (OHIP) questionnaire. The survey consisted of 60 closed questions, regarding undergoing treatment and its effect on patients' self-confidence level, mastication, fluent pronunciation, discomfort, ability to socialize, emotions, physical activity.
Results: Of the 20 patients (13-24 years old, mean age 16.2 years (SD 3.25)) 50% were females, 80% wore orthodontic braces, other 20% wore Quadhelix appliances. All 20 patients experienced pain during treatment, 60% of all patients avoided being among people, were bullied, 70% of all patients experienced difficulty in speaking, biting hard food. Disregarding their malformation type, 65% of surveyed respondents felt more confident and happy after orthodontic treatment began.
Conclusions: The study showed no difference between different fixed orthodontic appliances and patients' OHRQoL, although overall prolonged treatment and orofacial anomaly do affect a patient's regular daily functions, oral hygiene habits, self-confidence level, social life, and mental well-being.

cleft, quality of life, OHQRoL

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Assessing the Quality of Life and Nasolabial Appearance of Thai Preteen Patients with Cleft Lip and Palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Background: CLP affects the quality of life (QoL) and nasolabial appearance (NA), especially in patients aged 8-12 years who are interested in their own beauty and society in their peers.

Objective: To observe the QoL and NA of patients.

Methods: A Cross-sectional study with 30 preteen patients with CLP and treated at birth until the present from 2017 to 2019 at University Hospital. Their QoL and NA were reflected through their satisfaction from an interview and a 41-item with their parents. Five experts as inter-raters determined correlation values of the NA photographs with 5-rating scales using Fleiss's kappa coefficient scores. Data analysis were in percentage, mean and standard deviation with the reliability was 0.94.

Results: General findings showed 53.3% of patients were males with mostly UCLP (63.3). Most parents relied on government financial supports due to predominantly high school education (73.3%) resulting in only 15% earning 5,001 to 10,000 baht monthly. Their overall satisfaction with five dimensions was average at 3.26±1.39. The satisfaction with the center services, the overall treatments including the medical and additional costs were high at 4.30±0.98, 3.72±1.15, and 3.70±1.14 respectively while the parental satisfaction with psychosocial and the CLP effects on the family were average at 3.33±1.08 and 2.81±1.46. Also, the experts satisfactorily rated the NA of 53.3% of patients as "Good" with 1-2.5 scores and did of 43.4% as "Medium" with 2.6-3.5 scores but did of 3.3% as "Poor" with 3.6-5 scores. This satisfaction as cost effectiveness signified improved patients' QoL and their appearance.

Conclusion: The quality of care, cooperation among the team of the interdisciplinary, and financial support for the costs of commuting between hometowns and the center, medicines, and medical supply completely contributed to patients QoL approved by these preteen patients with the overall level of QoL satisfaction toward the treatment at "Medium" level.

CLP, QoL, Nasolabial appearance

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Being normal yet different: A qualitative study on the dualistic experience of living with unilateral cleft lip and palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Objective: The aim of the present study was to describe the experiences of young adults living with CLP and to explore potential gender differences.

Design: A descriptive qualitative study was designed involving semi-structured interviews. The interviews were analyzed using qualitative content analysis, as described by Graneheim and Lundman (2004).

Participants: A total of 9 women and 8 men, aged 22–26 years with UCLP.

Results: The main theme identified was: the duality of living with a cleft–being normal yet different, and two subcategories: “My cleft and me” and “My cleft and the World.” The participants described themselves as normal yet different, both in relation to themselves and in relation to others. They also stated that gender norms affected their lives and how they saw the cleft.

Conclusion: This study adds to the growing body of qualitative research on CLP. It highlights the dualistic experiences of feeling normal and different at the same time. The interviews indicated that this dualism was based on context and gender, showing the psychological complexity of an individual. The clinical implications of this study emphasizes the need of having an awareness of the potential dualistic experience that individuals with cleft can experience.

qualitative study, young adults, qol

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The Value of Patient Advocacy by the Team Social Worker: A Case Study

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

INTRODUCTION:
With the complexities of craniofacial care, families often face numerous barriers to receiving comprehensive team care. These barriers include language difficulties, citizenship issues, insurance/financial problems, and provider access. A Social Worker on the team is often key in navigating these challenges.

BACKGROUND:
Our patient CGL faced many such barriers. CGL was born in Guatemala, where he had initial repairs of his bilateral cleft lip and palate, and moved to Philadelphia at age 6. He was undocumented and uninsured, and his family spoke only Spanish. At age 9, CGL was brought to our Clinic by a community dental program after several attempts to access cleft care locally were unsuccessful.

METHODS:
CGL was given a team evaluation as part of our commitment to provide care regardless of a patient's ability to pay. Our team identified VPI, an ungrafted alveolar cleft, significant dental caries, and malocclusion. He needed extractions, alveolar bone grafting, phase I and II orthodontics, and secondary speech, facial revision, and orthognathic surgeries. The medical and dental needs were defined, but the psychosocial barriers remained. It was the Social Worker's commitment to working with the family that overcame these barriers.

RESULTS:
To date, the following interventions are complete: dental restorations and extractions, bone grafting, and lip revision. He is scheduled for palatal lengthening. Orthognathic surgery is in the future. Our orthodontists developed a treatment plan to be completed by orthodontic residents close to CGL's home under our supervision. This care only became possible for CGL because the Social Worker helped the family access state medical insurance, reliable transportation, and housing during surgical care.

CONCLUSIONS:
CGL's case demonstrates that team care of medically and psychosocially complicated patients is challenging. Yet the inclusion of a team Social Worker dedicated to helping families overcome social and financial barriers makes comprehensive team care available for all patients.

psychosocial, social worker, team, barriers

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Life skills in Adolescents with Cleft Lip Cleft Palate

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Life skills in adolescents with cleft lip and cleft palate are skills that can be developed by participating in activities to foster desirable behaviors and adjustments and be able to live happily with others.

Aims: The objective was to compare the life skills of adolescents with cleft lip and cleft palate 3 times during home visits, before and after participating in life skills development activities.

Methods: The quasi-experimental study involved 15 participants aged 12-18 who had cleft lip and cleft palate surgery. Then performed life skills training experiments 1 time of 6 hours, as measured by life skills assessment for teenagers during home visits, before and after participating in life skills development activities. The life skills score was compared between the 3 iterations using One-way repeated measures analysis of variance

Results: All components of life skills were changed without statistical significance (p-value> 0.05). The most effective activities were emotional and stress management, with the first average score was 24.87±2.99, the second time was 23.27±2.34 and the last time the score increased by 24.33±3.02, with 37% of internal change (Eta-Squared = 0.37, p-value = 0.0801).

Conclusions: Group activities slightly improve life skills in adolescents with cleft lip and cleft palate.
Life skills, RM-ANOVA

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Comprehensive Orthodontic, Surgical & Prosthodontic Rehabilitation of Cleft Lip & Cleft Palate Patients

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

- Oro-facial clefts are among the most common congenital anomalies requiring multidisciplinary care. Such anomalies include several handicaps such as :
  - Impaired suckling,
  - Defective speech,
  - Deafness,
  - Malocclusion,
  - Gross facial deformity and
  - Severe psychological problems.

Cleft lip and palate is one such condition that requires a multidisciplinary approach for its management. Alveolar Bone Grafting is an essential step in reconstruction of orofacial cleft deformity.

Aims

Aims of orthodontic treatment in the cleft patient should be the creation of a functional occlusion with well aligned dental arches which encourages the maintenance of long-term dental health while at the same time promoting good speech and obtaining the best possible dentofacial appearance.

Multidisciplinary Approach

Orthodontic treatment is usually started in mixed dentition period and accomplished by means of multibanded fixed appliances (PEA appliance) with wire sequence from highly flexible to rigid wires in a progressive approach with simultaneous expansion with the help of quad helix. Alveolar bone grafting (ABG) is an essential step in reconstruction of orofacial cleft deformity. Secondary alveolar bone grafting is a well accepted and preferred treatment modality to unify the maxilla and to provide orthodontic support in cleft patients. In patients whom space closure is not possible because of partial anodontia, prosthetic management should be considered.

Conclusion

There is a vital role played by orthodontist hand-in-hand with other specialist's especially oral and maxillofacial surgeon and prosthodontist to provide the best possible treatment outcome for the CLCP patients. In most patients the contemporary orthodontic treatment is completed by adulthood and a retainer is placed.This paper presents a systematic representation of all such procedures with the help of treated cases.

Alveolar Bone Grafting, PAE, Prosthesis,

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Developing and Assessing the Success of a Multi-Disciplinary Early Intervention Cleft Clinic

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Background

15 patients per 10000 are born with a cleft lip/palate in the United Kingdom (UK). In Northern Ireland (NI), this includes on average 40 babies per year.

Patients with a cleft, and their families, will require numerous appointments, assessments and surgeries with a range of specialists working in a cleft multi-disciplinary team (MDT).

Early intervention is crucial to provide these families with the support required, and to ensure typical development across multiple outcomes such as speech development and dental health.

Development

The NI cleft team proposed a new initiative; a monthly clinic based at a community health centre location. The aims are to provide initial contact with a specialist speech and language therapist and paediatric dentist and follow up with the cleft specialist nurse before the child's first birthday.

The functions of the clinic include;

- charting patient growth
- discussing typical/atypical speech development
- explaining surgical and dental care pathways
- delivering caries prevention advice
- discuss genetic results and CRANE participation

Outcomes

Benefits of the clinic include:

- Improved working relationships between MDT specialisms
- Improved flexibility of the cleft service, utilising community based site
- Earlier collaboration with primary care colleagues
- Early identification of high caries risk patients, allowing enhanced input and treatment
- Improved parental confidence in speech sound modelling and identification of atypical speech errors

Feedback

Primarily the clinic allows parents to meet Cleft Team members and address concerns promptly. The feedback results to date are overwhelmingly positive, illustrating the parents' appreciation of meeting MDT professionals at this early stage.

Service Improvement

- Teaching opportunities for healthcare students/trainees
- Assess impact on dental caries rate, currently 38% of 5 year olds have dental caries
- Identify children at risk of Velopharyngeal Incompetence (VPI) at an early stage
- Emphasise the importance to parents of attending future MDT appointments.

Early intervention, dental, speech

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Healthcare Utilization and Medical Costs in Clinical Cleft Practice

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Objectives: To describe observed healthcare utilization and medical costs for patients with cleft lip and palate, compare this to expected costs based on treatment protocol, and explore additional costs of implementing the International Consortium for Health Outcomes Measurement (ICHOM) Standard Set for Cleft Lip and Palate.
Methods: This retrospective study included 40 patients with unilateral cleft lip and palate, aged 0 to 24, treated between 2012 and 2019. Healthcare services, including medical consultations, diagnostic and surgical procedures, were counted. Multiplying the volume of healthcare services by the price of the healthcare product resulted in observed costs. Expected costs were calculated by multiplying the healthcare products as described in the protocol by its prices ("protocol"). In the same manner, additional expected costs due to implementing the ICHOM set ("protocol+ICHOM") were calculated. "Protocol" costs were compared with both observed and "protocol+ICHOM" costs.
Results: Highest mean number of consultations (10) and highest mean costs (€8,066) due to surgeries were found in the first year after birth. Mean observed costs (€49,724) for the complete treatment (0-24 years) were 1.97 times higher than the expected "protocol" costs (€25,198). Hospital admissions including surgery accounted for 70% of total costs. Expected costs of "protocol+ICHOM" were 6.7% higher than expected "protocol" costs.
Conclusion: The wide range of care outside the protocol doubled the observed costs compared to protocol costs, with highest costs in the first year after birth. Surgical procedures were main cost drivers. Implementing the Standard Set increased protocol based costs by 6.7%.

cleft, outcomes, PROMs, healthcare utilization

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CLP and craniofacial anomalies in Santa Cruz de la Sierra, Bolivia. Challenges for a rehabilitation team.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Infectious and parasitic diseases or even malnutrition are the main focus of attention of health professional authorities in Bolivia. The rehabilitation of oral clefts and craniofacial anomalies is a problem often neglected due to lack of knowledge and adequate information on these pathologies and their consequences. Many approaches to the provision of care exist around the world. In this particular case some NGOs provide care by forming surgical missions where teams of surgeons and ancillary staff make visits with focus specifically for surgical procedures.
Aims: This paper aims to describe the main challenges encountered by an interdisciplinary team of professionals while building a framework to provide free care for patients affected by oral clefts and/or craniofacial anomalies.
Methods: This was an observational retrospective cohort study. The sample included 18 individuals evaluated from September 2013 to September 2015.A group of 23 individuals were treated for free. They came from orphanages and needy families. Statistical analysis was used to evaluate global characteristics, namely age, presence of primary surgeries, type of cleft, presence of caries and social conditions.
Results: For this sample, descriptive statistics showed a mean age of 12.48 years old, 77.78% of the individuals had caries, and complete cleft lip and palate was the most common cleft type. All individuals who had an alveolar cleft had been submitted to primary surgeries. Medical missions or an eventual professional previously treated all patients, and no postoperative follow-up was performed.
Conclusion: This situation precluded the standardization of data, and simultaneously it shows the lack of access to a frequent and integral attention by a multidisciplinary team for these patients. The establishment of a structure to provide free assistance for patients with CLP and craniofacial anomalies has positively changed the situation of those individuals.

Cleft lip. Cleft palate.

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Improving craniofacial team collaboration: A multicenter interview study of effective team meetings

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Introduction – It is well established that the care of the craniofacial patient is best provided by a multidisciplinary team. In the USA, The American Cleft Palate Association-Craniofacial Association (ACPA-CPF) specifies guidelines to ensure craniofacial teams function in a multidisciplinary fashion to provide care in a sequence that mirrors the patient's needs. Among these guidelines is the expectation that teams hold regular multidisciplinary team meetings. In these meetings, professionals from entirely different fields must efficiently address a multitude of complex needs and coordinate longitudinal plans for their unique patient population. Despite the significance of this critical time point in the formulation of the treatment plan, few studies have dissected the elements of the team meeting to identify factors essential to successful team functioning.

Aims – Determine key factors that contribute to productive and purposeful craniofacial team meetings.

Methods – One-hour semi-structured interviews of 16 team members from three craniofacial centers were conducted via Zoom from December 2020 – January 2021. Participants were questioned about how their team meetings currently function and how they could be improved. Interviews were recorded, transcribed, and coded to identify common themes until thematic saturation was achieved.

Results – Several themes relating to successful team meetings were identified by interviewees – meeting logistics (admin, media, case order), meeting purpose and benefits, key content for case presentation and discussion, team dynamics and decision-making, lead role and responsibilities, integration of patient perspectives, communication with family and community, inefficiencies to avoid, absences, and more.

Conclusions - Diverse groups of disciplines are expected to come together during craniofacial multidisciplinary meetings to formulate intricate care plans for patients with tremendous social and medical complexities. In this study, craniofacial team members have identified several key factors to optimize team meetings. Further studies should evaluate how implementation of these factors affects team meetings and ultimately guides patient care.
craniofacial team, team function, multidisciplinary

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Measurement error using a structured light 3D scanning against an infrared system

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Three-dimensional (3D) surface imaging devices designed to capture and quantify craniofacial surface morphology are becoming more common in clinical environments. Aim of this study was to investigate accuracy and precision of two contact-free 3D measurement systems (Artec Eva: based on structured light vs. and Intel RealSense D415: based on infrared light)Methods
Analyzes were based on 10 consecutive patients with craniosynostosis. Results. The structured light system shows better accuracy at 0.2 s measuring time. The infrared system's accuracy is poorer and input time (10 s) longer. Similar precision was obtained with both devices. The structured light system requires less capturing time. It is therefore used more with children and developmentally impaired subjects

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Interdisciplinary Dental Treatment in the Comprehensive Approach of Patients With Cleft Lip and Palate in a Middle Income Context

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

In Colombia, the last National Oral Health Study (2014), reported 11.54 % of patients with CLP with no treatment and a third part of the diagnosed clefts in rural disperse population not comprehensively treated at age of 18

WHO guidelines about treatment of genetic, congenital disorders and birth defects in MIC countries state these patients should be managed in centers where they could have a comprehensive management. Dental treatment is very important and is present during a large period of patients with CLP comprehensive care time line ; integral treatment from different dental specialties is needed ,but is not a possibility for many patients in MIC contexts where main barriers for a comprehensive approach are : difficulty to afford dental treatments and lack of trained professionals to perform them (Smile Train Global Partner Survey 2020)

Aims
Introduce a Dental School Interdisciplinary Posgraduate Academic Program with emphasis in dental disciplines interaction as part of the comprehensive treatment of patients with CLP in Bogotá , Colombia

Method

Program will be performed giving special importance to 20 years of work statistics, the three working areas : patients attention,dental residents teaching and research and the exposition of two long term follow up, comprehensively managed and successfully completed cases showing disciplines interaction

Results

The academic model results an efficient alternative to provide a comprehensive dental treatment to patients with CLP; it allows the simultaneous benefit of having patients attended by different specialities,young professionals learning and team working , research opportunities , costs reduction ,interprofessional interaction and patient long term follow up .

Conclusions
Attendants will :

Identify practices to apply in dental team management

Learn strategies to overcome comprehensive approach challenges in these contexts

Create awareness of the importance of teaching young professionals to comprehensively manage these patients

Interdisciplinary dental treatment,comprehensive ,CLP

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Survey of orthodontic and surgical treatment in team care for patients with hemifacial microsomia

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Introduction: Hemifacial microsomia (HFM) is a congenital anomaly characterized by facial asymmetry and treatment requires interdisciplinary approach. However, the current situation on the treatment of HFM is unclear.

Aims: To determine status and treatment of HFM patients, a multi-institutional research was carried out by orthodontists

Methods: A total of 19 facilities in Japan participated in the survey. Surveys were conducted at each facility using a common examination sheet. Survey items included the followings; gender, affected side, Pruzansky classification, age of first visit, complications, and history of orthodontic and surgical treatment.

Results: Data from 584 cases were collected. Male was 54.5% and female was 45.5%. Affected sides were 45.9% on the right, 45.0% on the left, and 9.1% on both. As for Pruzansky classification, 37.5% were Grade I, 52.1% were II, and 9.2% were III, and 1.2% were unknown. The age at first visit is often 4 to 8 years old. Complications included microtia in 66.1%, CLP in 9.8%, facial cleft in 25.9% and epibulbar dermoid in 12.8%. Phase 1 orthodontic treatment was initiated mostly between age 4 and 9. The objectives were improvement of occlusal cant and facial asymmetry, and functional appliances were used. Orthodontic treatment for intraoperative and postoperative occlusal management in distraction osteogenesis was performed in 7.2% of cases (33 cases). During phase 2 treatment, surgical orthodontic treatment was performed in 41.9%. Distraction osteogenesis during growth phase was performed in 19.6% (82 cases) at the average age of 7.9 years. After the completion of growth, additional surgeries were performed in 28 cases, 18 cases did not require surgery, 25 cases required surgery but it was not desired by patients, and 11 cases remained undecided.

Conclusions: The current situation of team care for HFM in Japan was clarified and the information was considered useful for the standard treatment.

Hemifacial microsomia, a multi-institutional research

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A successful approach to navigate COVID 19 pandemic challenges by the Cleft lip and palate Team (CLPT) in Santiago del Estero

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
In March 2020, the world woke up to an unexpected health situation: The covid19 pandemic. Argentina was not exempt from this calamity, and the impact in rural areas of Santiago del Estero, a Northern Province, was devastating. I would like to mention that this Northern Province has the densest rural population.
Aims
I would like to share with you how our cleft team has continued offering effective and on-time care to those families and children affected with cleft during the pandemic. Our team developed care protocols not to suspend primary surgery schedules and rehabilitation sessions, which moved from face-to-face to virtual.
Methods
Determinant factors that helped us succeed are:
1. The Provincial government had been implementing a plan to improve the internet coverage in the province territory.
2. The Hospital in Termas de Rio Hondo, 68 km away from the Provincial Capital City, began operations. The new facilities offered safer conditions for families and staff to continue surgeries and rehabilitation sessions following COVID-19 protocols such as testing and social distancing.
Results
We performed One hundred primary surgeries (60 lips; 40 palates) in three hospitals where our cleft program operated in 2021. A significant increase compared with our performance in 2020, 70 surgeries, and 2019, 85 surgeries.
In 2021 we reached Two hundred virtual rehabilitation sessions and a hundred face-to-face sessions in speech therapy, psychosocial counseling, and dentistry and nutritional advice disciplines, covering 500 during 2021.
WhatsApp application was critical to reach parents and continue with our support and guidance to ensure rehabilitation processes at home.
Conclusion
The new functioning way includes a moving/expanding network in our province territory.
The purpose in 2022 is to expand our programs to a new hospital in the south of the province, providing accessibility more efficient, and effective care to all families and children affected by cleft.

Successful approach. Rural population. Accesibility.

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Development of the International CARE Registry for Craniofacial Microsomia

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Craniofacial microsomia (CFM), is a common craniofacial condition characterized by underdevelopment of the ear and jaw. Many affected individuals require longitudinal evaluations and assessments to optimize health and well-being. Little is known about the psychosocial and clinical experiences of individuals with CFM, or about patient and caregiver research priorities.

Aims: To establish an international condition-specific registry that generates new knowledge that improves the health and care of individuals with CFM and their caregivers.

Methods: Fueled by input from patient advocates, we created a mind map to inform the registry built in a dynamic webspace also serving as an educational resource to the CFM community. We delineated eligibility criteria, domains of inquiry, and case report forms for self-administration in a REDCap web-based registry. By design, the registry considers a broad range of research areas. Our development team includes an epidemiologist, pediatricians, informaticist, psychologists, and patient advocates with feedback from surgeons.

Results: Launching in 2022, the Craniofacial Microsomia: Accelerating Research and Education ('CARE') registry will enroll children and adults with CFM and caregivers and will collect patient-entered data from participants annually. The registry will initially be available in English and Spanish and collect data on (1) diagnosis, (2) birth and neonatal characteristics, (3) pregnancy experiences, (4) family history, (5) surgeries and specialty care, (6) hearing; (7) social interactions, (8) education, (9) care coordination, and (10) demographics. The website resource includes a glossary of CFM-related terms, a list of patient-relevant research articles, research opportunities and findings, and other supportive resources.

Conclusions: This is a one-of-a-kind global registry for individuals with CFM. It is open to individuals underrepresented in CFM research including adults with CFM, and individuals from low and middle-income countries. With robust enrollment, the CARE registry will be positioned to address diverse questions about the care, health, and research priorities of individuals with CFM.

registry, craniofacial microsomia, patient-oriented

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Children and adolescents with cleft lip and palate: predisposing condition to child abuse. Case Report.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: The condition of cleft lip and palate (CLP) is a predisposing factor for child abuse because the children and adolescents who are born with this condition face hard social and family environments. In these contexts, guilt, fear, rage, anger, and the figures of punishment are frequent among parents, who construct tense and conflictive social relations with actions that suggest emotional abuse, inattention, and negligence in their treatment.

Aims: to establish how the condition (CLP) might predispose children and adolescents to any type of child abuse.

Methods: a review of the available literature about this topic and portray a case report of a child with sequelae CLP from the interdisciplinary group of the Faculty of Dentistry of the
Pontificia Universidad Javeriana - Bogotá Colombia.

Results: The case report presented a 7-year-old boy with complete unilateral CLP who had suggestive of emotional abuse behaviors by his family and his social environment.

Conclusion: The condition of cleft lip and palate (CLP) predisposes the children and/or adolescents who developed a risk to any type of child abuse, especially emotional, neglect,
and negligent treatment. Hence, it is important to reinforce all abuse prevention and early intervention programs for these patients and their families.
Child abuse,CLP, psychosocial environment, neglect

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Approach to the perception of quality of life by children and adolescents with no-syndromic cleft lip and palate: a phenomenological study

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Nonsyndromic cleft lip and palate (NSCLP) is described as a congenital malformation that generates physical, functional, and psychosocial complications for these
patients, that have been identified through quantitative studies. However, the approach to the experiences and
experiences of them and their families with this condition and the impact on their quality of life has not been widely documented from qualitative research in oral health. From health psychology, it is compulsory to have an approach to the daily experiences of patients and their families to understand how their quality of life is affected.

Objective: Identify the perception of the quality of life of children and adolescents with NSCLP under comprehensive treatment at the Cleft Lip and Palate Javeriana University`S team.

Methods: Qualitative study of a phenomenological type, with eight
patients, five parents or guardians and four professionals from the Javeriana` s interdisciplinary CLP team, the use of Semi-structured individual interview was applied with each participant and
two focus groups, one for parents and the other for professionals guided by an expert. After transcription, the information was coded and classified according to the categories proposed
through the Atlas TI program, later the narrative reduction and the corresponding analysis were carried out.

Results: The participants provided their perspective on the impact of living with the NSCLP condition and how it influenced their quality of life. The dimensions within the greatest impact were social and psychological. Their narratives were influenced by their: pain, suffering, and shyness through their life apart from their desires and aspirations of being more sociable.

Conclusion: With the knowledge of the participants, the team reconstructed from their narratives how the condition of NSCLP has generated challenges, situations, and thoughts that have affected the quality of life, especially from the social and psychological perspectives.
Quality of life,phenomenological study, CLP

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INDIVIDUALISED ANAESTHESIOLOGY CARE IN NEONATAL CLEFT LIP PATIENTS

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction

Cleft lip is one of the most common congenital malformations. Intubation of these patients is often difficult because of patient´s age, especially neonatal age, and deformity of upper jaw. Therefore, a protective obturator for covering alveolar and palatal defect for children undergoing primary cleft lip surgery was created for increasing safety of intubation.

Aim

The goal of the preliminary study was to evaluate how the protective obturator (PO) affects an intubation process in neonates undergoing cleft lip surgery.

Methods:

In the preliminary study patients undergoing cleft lip surgery in neonatal age (1-28th day of life) with type of cleft affecting not only lip but alveolus as minimum were included. For evaluating intubation process with or without using PO following criteria were determined: the tissue injury, laryngoscopic image using the Cormack-Lehane score (CLS) (CLS types 2b, 3 and 4 represent difficult intubation), intubation time and occurrence of desaturation <90% SpO2.

Results and Discussion:

Total of 30 patients meet inclusive criteria between 8/2020 to 12/2021. The average patient´s age at the time of surgery was 11.4 days (min-max 4-25). PO was used in 14 patients (46.7%). None of children suffered tissue injury with using PO during intubation whereas tissue injury was observed in 4 patients (25.0%) without PO. Difficult intubation was in 5 patients (35.7%) with PO in contrast with 9 patients (56.3%) without PO, intubation time with PO 58.3 seconds in average, without PO 73.4 seconds, the occurrence of desaturation was in none of patients with PO and in 1 patient (6.25%) without PO.

Conclusion:

Using a protective palatal obturator is promising approach for increasing the safety of anaesthesiology management. With the protective obturator, no damage of the oral tissues after intubation, better intubation conditions according to the CL score, faster intubation and less occurrence of desaturations were observed.

newborn, cleft, anaesthesia, safety, obturator

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Infection rates of facial implants within a cleft population

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
Hypoplasia and asymmetry of the midface are recognised features of the cleft population. One technique employed for midface contouring is the placement of facial implants. However these carry a lifelong risk of infection.

Aims
Identify the rate of explantation of paranasal and malar facial implants due to implant infection.

Method
We have performed a retrospective analysis of Medpor facial implants placed between 2012 and 2021 at the Evelina Cleft Service, and identified those explantated due to infection. The patient cohort was identified from electronic hospital theatre records of facial implants placed in cleft patients. The insertion of at least one solid Medpor paranasal or malar implant was the inclusion criteria. Other facial implants including nasal Medpor implants were excluded.

Results
A total of 38 patient, 17 male and 21 female, were included. The had a total of 109 malar and paranasal implants placed between them.

7 patients required 1 or more implants removed. 5 of these (6 implants) were for occult infection, and 1 case (2 implants) was due to discomfort at the site of implant placement attributed to low grade infection. 1 patient required implant removal (2 implants) to facilitate placement of bone grafts.

A total of 8/109 implants were removed due to infection (7.33%). This affected 6/38 patients (15.7%). All implants requiring removal were paranasal.

Conclusion
Facial implants provide an effective tool for managing maxillary hypoplasia and asymmetry in selected patients. Paranasal implants carry an increased risk of infection requiring an appropriate consent process and careful surgical planning.
Facial implants, Medpor, Implant infection

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Evaluating experience and feasibility with daycase cleft rhinoplasty

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
Due to the complex nature of cleft septorhinoplasty, patients have traditionally been treated as overnight admissions.

Aims
- To evaluate overnight admission cleft rhinoplasty cases for analgesia requirements, post-operative complications and/or need to return to theatre justifying an inpatient admission.
- To evaluate current UK practice and experience with daycase cleft rhinoplasty.

Methods
A retrospective study was performed of patients who had a cleft rhinoplasty over a five-year period (November 2016 – October 2021) at the Queen Elizabeth Hospital, Birmingham. We evaluated the length of stay, complexity of surgery, post-operative complications and analgesia requirements. A random subset of patients were contacted to determine their experience with overnight admission. A national questionnaire was distributed to UK Cleft Surgeons to establish routine practice and experience with daycase cleft rhinoplasty.

Results
The study sample consisted of 62 patients (47 UCLP,13 BCLP,1 ICP and 1 Isolated lip). Sixty-five rhinoplasties were performed (9 day-case, 54 one night stay, 2 two night stay). Osteotomies were performed in 27 cases. Fifty cartilage graft harvests were performed. A primary rhinoplasty was performed in 47 cases, a redo/secondary procedure in 16 cases and a redo/tertiary procedure in 2 cases. No patients returned to theatre. Only 13.8% (9/65) of cases required oral morphine after 5pm. Two patients attended ED post discharge with pain and opiate side effects. Fifty eight percent of UK cleft surgeons would perform a day-case cleft rhinoplasty: 67% for tip work only, 50% for septal relocation, 42% for conchal cartilage, 17% costal cartilage graft harvest and 33% for osteotomies. No surgeons would perform an extracorporeal septal reconstruction as a daycase. The remaining 42% cited pain control, airway risk and the timing of surgery as reasons not to perform a daycase cleft rhinoplasty.

Conclusions
Day case cleft rhinoplasty is feasible and in routine practice across the UK

Cleft Rhinoplasty, Day-case

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SECONDARY CORRECTION OF NASAL DEFORMITIES IN CLEFT LIP AND PALATE PATIENTS: A SINGLE-CENTRE EXPERIENCE

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1. Introduction
Patients with bad outcomes of cleft lip and palate (CLAP), who have not followed a correct surgical procedure protocol, have severe anatomical alterations that can determine a revision surgery failure.

2. Aims
The aim of this study is to evaluate subjectively and objectively secondary cleft nose rhinoplasty outcome and patients' psychological satisfaction.

3. Methods
From 2010 to 2020 we have retrospectively analyzed a cohort of 118 patients that underwent surgery for CLAP correction at Città della Salute e della Scienza University Hospital, Torino, ITALY. 16 patients out of 118 underwent secondary cleft nose rhinoplasty by a single surgeon.
Pre operative and post operative photographic documentations were collected for objective and subjective evaluation. MiRa scale was used for the objective evaluation, it has been compiled by 5 specialists in craniomaxillo surgery. Furthermore, a google form qualitative questionnaire was realized with scores from 1 to 5 in increasing order of satisfaction with photographic images of the pre and post intervention. It has been compiled by 10 specialists and 10 medical students, seeing pictures in random order; and we analyzed the agreement with Cohen test.
For the subjective outcome and psychological satisfaction, patients have completed a tailored FaceQ questionnaire.

4. Results
The MiRa scale highlights a statistically significant improvement from pre to post surgery ($p < 0{,}001$); Our google form questionnaire shows an approval rating for post operative outcomes and the closeness of agreement estimated using K Cohen test between professionals and medical students was very good ($K = 0{,}73$) . Lastly, patients' satisfaction is high, based on the evaluation of FaceQ questionnaire ($p < 0{,}001$).

5. Conclusions
Our experience shows a statistically significant surgical success in facial appearance, confirmed by both the MiRa scale and google form, and a patients' important psychological satisfaction, despite the severely altered morphology due to an heterogeneous and suboptimal timing of the previous procedures.
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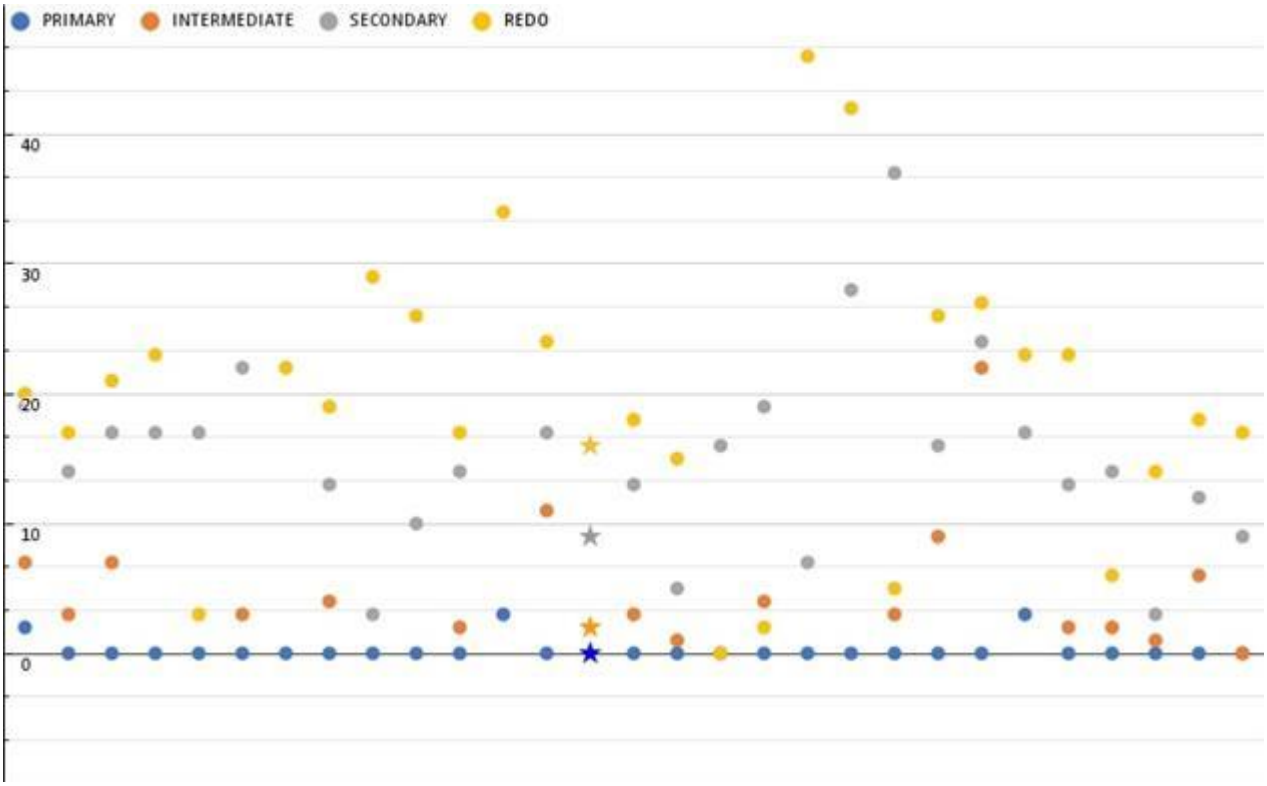

Rhinoplasty, aesthetic, challenge, deformities, correction

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Nasolabial proportions of BCLP patients: a photo-anthropometric study of long-term esthetic outcomes and improvements by the Abbe flap

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Symmetry is one of the most influential characteristics in the perception of beauty and health. During social activities, the areas of the face that get the most attention are the central ones: eyes, nose and mouth. Even minimal deviations from normality can affect the attractiveness of a face and body image.
Aims: Few studies have focused on the long-term esthetic outcome of bilateral cleft lip and palate (BCLP). The authors suggest a quantitative and objective method to evaluate how much the labial proportions of a group of adult BLCP patients deviate from the average of the normal population. Moreover, the outcome of a common secondary reconstructive procedure, the Abbe flap, is measured.
Methods: Photos at 16 years or more of BCLP patients operated on as babies, according to common surgical protocols, were retrospectively collected and screened for high quality criteria. Anthropometrical landmarks were marked on frontal and lateral photographs of 34 patients. Twenty-two patients presented a photographic record both before and after having the Abbe flap done. Proportions, angles and symmetry of the upper lip were measured and compared with values from a reference population similar for age, gender and ethnicity.
Results: At baseline labial proportions were, overall, subnormal and the projection of the upper and lower lip was reversed. The cupid bow showed a shallow shape and an interlabial gap was present in more than half patients. All parameters were improved by the Abbe flap, being the greatest correction in the profile of the upper lip, the outline of the cupid bow and the incompetence of the labial closure.
Conclusions: Current adult patients keep presenting with cleft lip stigmata and are still awaiting a definitive corrective procedure. The Abbe flap is an old-standing technique that have proved to be effective in improving the esthetic outcome of BCLP secondary deformities.

Parameter		Reference value and SD	Baseline analysis			Qualitative analysis pre-post Abbe flap			Quantitative analysis pre-post Abbe flap	
			Baseline pop-noAbbe	Baseline pop-Abbe preop	p<0,05	Improved	Harmonic postop	p<0,05	Amount of improvement	p<0,05
upper lip height / total upper lip	M F	0,529 (±0,089) 0,527 (±0,090)	-0,309	-0,899	NS	36,8%	95,5%	*	0,79	*
upper lip height / lip lenght	M F	0,444 (±0,070) 0,418 (±0,067)	-0,525	-1,311	*	63,6%	72,7%	*	1,41	*
philtrum height / lip lenght	M F	0,308 (±0,060) 0,279 (±0,057)	-0,303	-1,711	*	59,1%	63,6%	*	1,46	*
philtrum width / lip lenght	M F	0,267 (±0,043) 0,245 (±0,062)	2,350	0,436	*	31,8%	50%	NS	1,46	*
upper vermilion height / upper lip height	M F	0,376 (±0,095) 0,394 (±0,088)	-0,843	0,478	NS	45,5%	63,6%	NS	1,32	*
lip index	M F	0,986 (±0,014) 0,980 (±0,018)	-1,434	-2,982	*	86,4%	50%	*	1,79	*
nasolabial angle	M F	105,20° (±13,28) 107,57° (±8,50)	-0,707	-0,285	*	36,4%	63,6%	NS	1,34	*
labiomental angle	M F	130,75° (±9,64) 131,45° (±11,01)	-0,380	-0,748	NS	40,9%	45,5%	*	1,15	*
cupid bow central angle	M F	127,47° (±12,74) 134,1° (±11,38)	1,940	3,464	*	63,6%	18,2%	*	2,46	*
cupid bow right angle	M F	131,48° (±9,44) 134,07° (±9,68)	0,558	1,363	NS	59,1%	36,4%	*	1,98	*
cupid bow left angle	M F	131,07° (±8,31) 132,38° (±10,04)	0,816	1,389	NS	45,5%	40,9%	NS	1,72	*
lateral angles symmetry	M F	0,41° (±12,57) 1,69° (±13,94)	0,500	0,750	NS	18,2%	100%	NS	0,60	*
cupid bow symmetry angle		≈ 0	2,954°	4,136°	NS	-	-	-	-2,39°	*
philtrum symmetry angle		≈ 0	9,579°	5,207°	*	-	-	-	-1,18°	NS
orthogonal distances ratio		> 0: harmonic ≈ 0: suboptimal < 0: disharmonic	-0,060	-0,662	*	-	-	-	1,47	*
interlabial gap		absent	58,3% **	22,7% **	NS	72,8%	95,5%**	*	-	-
upper lip position with respect to B line		protrusion	83,3% °	86,4% °	NS	13,6% °	100% °	NS	-	-
upper lip postion with respect to lower lip		protrusion	41,7% °°	0% °°	*	40,9%	40,9% °°	*	-	-

* significant p (p < 0,05)
** no gap percentage
° percentage of upper lip protrusion with respect to B line
°° percentage of upper lip protrusion with respect to lower lip

lip, secondary, outcomes, anthropometry, Abbe

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Cleft palate fistula: When to expect it and how to repair it?

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction:
Palatal fistula is a complication following cleft palatal repair that may cause hypernasal speech, articulation problems and food or liquid regurgitation from the nose.

Aims:
The aims of this study is to analyze the predictive factors of palatal fistula and to describe the technique for palatal fistula repair, frequently used by our team.

Material and methods:
Retrospective study of features and surgical repair techniques of cleft palate fistula from a population of patients followed in our department for alveolopalatal cleft from 2008 to 2015 (140 case). The minimal follow up was 3 years.

Results:
The incidence rate of palatal fistula in our series was 15%.
Most fistulas occurred in patients having complete and bilateral cleft lip and palate and a cleft width greater than 11 mm.
The most commun location of this complication was the junction of soft and hard palate.
For re-palatoplasty, our most used technique was the two flaps technique.

Conclusion:
Managing fistulas remain a major concern for cleft surgeons and minimal literature is available regarding the guidelines of management of palatal fistula.
Assessment of the functional aspect of the fistula and local tissue quality should guide the selection of the repair technique.

complication, fistula, surgical technique, secondary

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Treatment of cleft palate fistulas amongst craniofacial specialists: a cross-sectional survey study

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

INTRODUCTION
Oronasal fistulas are a well-known complication of cleft surgery, with incidences range from 1-40%. The anatomical location of the palatal fistula dictates the surgical intervention, with multiple reconstructive options. An overview of possibilities per anatomical location could serve as a toolbox for cleft surgeons resulting in optimal treatment for these patients.

AIMS
The objective of this study is to examine how craniofacial specialists would treat certain palatal fistulas and provide a summary of what is possible for each anatomical location (i.e., hard palate, soft palate, junction hard/soft palate).

METHODS
In this cross-sectional survey study, participants of an international webinar that focused on palatal fistula were included. The survey included nine cases of patients with palatal fistulas at different anatomical locations. For this study, we used three randomly selected cases to examine treatment pre and post webinar.

RESULTS
A total of 141 participants completed the questionnaires prior to the webinar and 109 participants completed the survey after the webinar. Table 1 displays all surgical options per location. For the soft palate patient, respondents preferred the mucoperiosteal flaps for nasal closure (43.6% pre versus 38.6% post). For oral closure mucoperiosteal flaps were preferred pre-webinar (37.1%) versus Furlow plasty post-webinar (43.0%). For the hard palate case, the mucoperiosteal flaps were preferred for nasal (89.2% pre versus 94.8% post) and oral (83.6% pre versus 86.9% post) closure. For the patient with a fistula at the junction of hard/soft palate, respondents chose mucoperiosteal flaps for nasal closure (41.4% pre versus 43.0% post) and a buccal flap for oral closure (42.1% pre versus 43.0% post).

CONCLUSIONS
This study demonstrates a wide variety of personal preferences concerning reconstruction possibilities for cleft palate fistulas. Moreover, a toolbox was created for each anatomical location for both oral and nasal closure possibilities.

	Soft palate pre webinar	Soft palate post-webinar	Hard palate pre-webinar	Hard palate post-webinar	Junction soft/hard palate pre-webinar	Junction soft/hard palate post-webinar
Nasal closure options						
Buccal flap	26 (18.5%)	12 (13.2%)	2 (1.4%)	1 (0.9%)	50 (35.7%)	40 (35.1%)
Furlow plasty	37 (26.4%)	43 (37.7%)	-	-	-	-
Oral mucoperiosteal flaps	61 (43.6%)	44 (38.6%)	125 (89.2%)	108 (94.8%)	58 (41.4%)	49 (43.0%)
FAMM flap	-	-	-	-	14 (10.0%)	8 (7.0%)
Other	16 (11.4%)	12 (10.5%)	13 (8.3%)	5 (4.4%)	18 (12.9%)	17 (14.9%)
Oral closure						
Buccal flap	37 (26.5%)	21 (18.4%)	6 (4.3%)	8 (7.0%)	59 (42.1%)	49 (43.0%)
FAMM flap	-	-	7 (4.9%)	1 (0.9%)	27 (19.3%)	16 (14.0%)
Oral mucoperiosteal flap	52 (37.1%)	39 (34.2%)	117 (83.6%)	99 (86.9%)	17 (12.1%)	12 (10.5%)
Furlow plasty	41 (29.3%)	49 (43.0%)	-	-	-	-
Tongue flap	-	-	-	1 (0.9%)	30 (21.4%)	28 (24.6%)
Other	10 (7.1%)	5 (4.4%)	10 (7.1%)	5 (4.4%)	7 (5.0%)	9 (7.9%)
Simultaneous VPI surgery if VPI is present?						
Yes	-	-	106 (75.7%)	85 (74.6%)	58 (41.4%)	50 (43.9%)
No	-	-	34 (24.3%)	29 (25.4%)	82 (58.6%)	64 (56.1%)
VPI Surgical Options						
Bilateral buccal flap	-	-	12 (11.3%)	13 (15.3%)	8 (13.8%)	7 (14.0%)
Furlow plasty	-	-	39 (36.8%)	33 (38.8%)	14 (24.1%)	10 (20.0%)
IVVP straight line closure	-	-	13 (12.3%)	10 (11.8%)	5 (8.6%)	7 (14.0%)
Pharyngeal flap	-	-	24 (22.6%)	12 (14.1%)	20 (34.5%)	16 (32.0%)
Z plasty including unilateral buccal flap	-	-	18 (17.0%)	17 (20.0%)	11 (19.0%)	10 (20.0%)

FAMM: Facial Artery Musculo-Mucosal flap; IVVP: intravelar veloplasty; VPI: velopharyngeal insufficiency

cleft palate, fistulas, treatment

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Clinical Application of Open Incision Approach Through Nasal Alar Margin to Correct Nasal Deformity After Unilateral Grade III Cleft Lip Surgery

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

1.Nasal deformity has been improved to a certain extent in patients with congenital unilateral cleft lip degree lII after early completion of cleft lip repair. Nasal deformity restoration is an important link in the sequential treatment of cleft lip and palate.
2.Aims:To evaluate the alar edge open incision to correct unilateral cleft lip nasal deformity degree lII surgery. 3.Methods:43 patients with unilateral cleft lip nasal deformity lll degree through the nose using an open incision edge of corrective surgery. 4.Results :43 cases of unilateral cleft lip nasal deformity degree lll patients retumed to the form of bilateral symmetry of the nose, and the results were satisfactory. There were no significant adverse complications, only one case of local infection occurs off-line, strengthen the local after dressing wound healing eventually postponed. 5.Conclusion:Alar margin by open incision to correct unilateral cleft lip nasal deformity degree lll postoperative treatment effect is obvious, patient satisfaction significantly improved the treatment of unilateral cleft lip nasal deformity lll reliable surgical approach.

表 1 单侧 III 度唇裂继发鼻畸形的修复疗效评价标准（疗效得分）

鼻畸形局部表现	疗效非常显著	疗效显著	疗效一般	疗效不显著
鼻尖形态	3	2	1	0
鼻翼形态	3	2	1	0
鼻小柱形态	3	2	1	0
鼻底形态	3	2	1	0
鼻孔形态	3	2	1	0
通气功能	3	2	1	0

Maxillofacial Surgery， Nasal Deformity

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Prevalence of Secondary Cleft Lip and Palate Surgery: The African Experience

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction
The burden of care for children with cleft lip and palate extends beyond primary repair. Children may need multiple secondary surgeries to improve appearance or speech
Objective: to assess the prevalence of secondary cleft surgery at African hospitals partnering with Smile Train
Material: All operations performed on patients with clefts of the lip, alveolus,α and palate from 2001 to 2020 at African Hospitals partnering with Smile train
Methods: We retrospectively assessed the prevalence of secondary cleft surgery. Data of operated patients with the support of Smile Train was retrieved from the Smile Train database and analyzed using SPSS version 25. The cleft surgery was classified as primary, secondary, and Alveolar bone graft. Patients were also classified according to the cleft type. The revision index related to the number of revisions for primary cleft surgeries was assessed.
Results: During the study period, 131,375 surgeries were performed. Of these, 11,258 (8.6%) were secondary surgeries. The commonest secondary surgery was lip-nose revision followed by secondary cleft palate surgery. Left-sided unilateral cleft lip only was the major cleft type 2930 (26%). No rehabilitative surgery like orthognathic surgery was done possibly due to the lack of awareness and shortage of expertise in the region. Of the total secondary surgeries, 52.8% were done in Eastern African Countries followed by Western African countries 38.1%. The overall revision index was 0.08 and significantly lower than other studies. This might be because of a lack of proper postoperative follow-up. Follow-up for patients born with orofacial clefts continues into adulthood.
Conclusions: The prevalence of secondary surgery of the repaired clefts is only 8.6% and much lower than reported in other studies. This may indicate the lack of proper counseling and post-operative follow-up. There is a need to work on improving preoperative counseling and follow-up.

cleft lip and palate, Africa

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Modifications to the WHISTLE Flap Procedure for Correction of Secondary Cleft Lip Deformities

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: The whistle deformity, a central vermillion defect of the upper lip, is a common sequela after primary cleft lip repair. Among multiple described reconstructive options, the WHISTLE (Wide-Hinged Island Swing Transposition Labial Enhancement) flap by Grewal et al. (2009) has been shown to be a versatile and reliable technique that restores the continuity of the orbicularis oris muscle and creates a more natural tubercle and central lip element.

Aims: To increase the versatility and improve outcomes of the WHISTLE flap, we propose two small modifications to this procedure: 1. tailoring the amount and position of the mucosal component of the flaps on an individual basis, 2. adding a z-plasty at the level of the lip scar to increase the length of the shortened upper lip mucosa.

Methods: A total of eleven patients with whistle deformity were included in this case-series study. All underwent the WHISTLE flap procedure with tailoring of the mucomuscular flaps and a mucosal Z-plasty. The patients were followed for a period that ranged from 6 to 36 months. Pre- and postoperative photographs were used for objective outcome comparison.

Results: From 2018 to 2020, a total of 11 patients with whistle deformity were operated on, including seven bilateral and five unilateral cleft lips with an average age of 14.5 years. Eleven cases (91.6%) resulted in an excellent to satisfactory postoperative cosmetic appearance and did not require further interventions. One patient with a very significant preoperative discrepancy between the upper and lower lip volumes had a post-operative residual deformity. None of the patients demonstrated any functional deficits associated with the procedure.

Conclusions: The WHISTLE flap procedure with the proposed individual tailoring of the mucomuscular flap and mucosal Z-plasty scar lengthening has outstanding cosmetic outcomes and should be considered as a primary treatment modality in the majority of patients with whistle deformities.
Whistle deformity, WHISTLE flap

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Anatomical Reconstruction in Bilateral Cleft Lip With Mendoza Technique

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

The bilateral cleft lip (BCL) is the most severe manifestation of orofacial clefts. Multiple techniques have been described to reconstruct BCL to obtain Good aesthetic and funtional results with minimal complications.
Objetive: Description of surgical technique for BCL reconstruction and present the postoperative results obtained.
Method: Patitiens with BCL of the cleft lip and palate at ABC Medical Center from June 2013 to June 2017 operated with Mendoza bilateral cheiloplasty were included. The procedure includes an anatomical reconstruction of the lip with minimal resection of tissue, alignment of the orbicularis muscle, vestibule cration, and complete use of the prolabium. The evaluation was carried out by photographs analyzing parameters of quality, carried out by photographs analyzing parameters of quality, symmetry, and alignment of lip ando nose structures.
Results: The authors included 36 patients, 15 women an 16 men. The average procedure time was 57 minutes. Photographs were evaluated 1 year postoperatively, symmetry in lip was observed in 91.6% of the patients, muscle continuity in 100% Deep gingivolabial sulcus in 94.5 % of cases, closed nasal floor in 100% with no presence of nasovestibular fistulas.
Conclusions: this technique allows an anatomical BCL reconstruction with Good aesthetic and functional results.

bilateral cleft lip and palate

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Treatment of different cleft lip squelae by using autologous fat grafting.

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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: Cleft patients usually undergo multiple steps of reconstruction throughout childhood and adolescence and, for this reason, secondary deformities of the nasolabial region of the midface may ensue. The reduced volume of the labial vermillion, hypoprojection of the alar bases and flat philtral columns are frequent surgical sequelae in these patients. Structural fat grafting is a technically simple procedure that may improve all the problems which were listed above.

Aims: The aim of this study was to describe the different applications of fat grafting in the management of not only aesthetic, but also the functional alterations in patients with cleft lip. We describe the three main indications of autologous fat grafting in cleft lip patients.

Methods: The procedure was performed under general anaesthesi. Fat was harvested from the thigh medially or from the periumbilical área. The harvesting was performed with liposuction under light negative pressure, as described by Coleman. For the treatment of the volume of the labial vermillion, two small stab incisions are made in the oral commissure. By using a small stab incisión in the alar base, we can treat the hypoprojection in the piriformis region. Injection volume may vary from 1–3 cc for a single región. To achieve good results, overcorrections of the defect is necessary.

Results: The use of autologous fat graft in cleft patients can improve the reduced volume of the labial vermillion, hypoprojection of the alar bases and flat philtral columns. Fat grafting as a means of cleft lip revision has been shown to result in high patient satisfaction.

Conclusions: Autologous fat grafting is an excellent tool for the treatment of cleft lip correction sequelae. Fat grafting may not only improve volumetric problems in these patients but also may soften the scars.

autologous fat grafting, cleft lip

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25 year Experience with the Treatment of Cleft-Lip Nasal Deformity

25 Year Experience With The Treatment Of Cleft-lip Nasal Deformity HENRY VASCONEZ[1]
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PS3 Wednesday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 13, 2022, 13:00 - 14:00

Introduction: The author has experienced many advances and technical refinements in the treatment of Cleft Lip and Nasal Deformities over 25 years.
Aim: To analyze the evolution of these advances over time including functional and surgical issues.
Methods: A review of cleft patients treated by the author over twenty-five years. Specifically those undergoing definitive cleft-lip nasal reconstruction. A listing and statistical analysis of the techniques employed over this period was made. The results in terms of aesthetic and functional outcomes (improvement in nasal airway obstruction) were evaluated.
Results: 50 patients underwent an open septo-rhinoplasty from 1997-2021. Functional and aesthetic problems were addressed. Specific techniques including spreader grafts, columellar strut grafts, osteotomies, and tip/lower lateral cartilage grafts varied by patient. 80% of patients complained of airway obstruction. CT scans were obtained over the years to document the internal nasal pathology. Spreader grafts were used in 90% of patients. Cartilage grafts were used widely to improve structural support and aesthetics. Bone grafting of the alveolus or maxilla was used widely in deficient cases (50% of patients) to provide a good and even platform for the overlying nasal structures.
Conclusion: Improvements in the treatment of patients born with cleft lip and palate have been evident in many aspects over the last quarter century. Early diagnosis, including prenatal ultrasound, followed by a referral to a comprehensive Cleft Center are key components to improved care. The introduction of several refinements and techniques both functional and aesthetic at all stages of repair, have added to much better results. With this study we show that the definitive cleft lip nasal reconstruction, which is usually the last operation for this patient population, can give good and even outstanding results that make a huge impact on the final outcome of the long journey of the cleft patient.

Alar-Flaring, Strut-graft, Cleft-Lip Nasal Deformity

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Addressing challenges to enable better use of routinely collected clinical photographs: evaluating the largest cleft dataset for machine learning analysis

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction/Aims:

Facial photographs are widely used in evaluating cleft lip severity and outcome. However, many cleft outcome studies are based on relatively small numbers of human-scored, standardised photographs and have limited ethnic diversity. Human scoring has limitations that may be addressed using artificial intelligence (AI); however, this requires large datasets that are ethnically representative, to minimise bias. This study aims to evaluate the suitability of routinely collected non-standardised two-dimensional photographs of patients with an orofacial cleft, for machine learning (ML) analysis.

Methods:

A database of over 1.5 million patients with over 5 million photographs, collected over 20 years and developed by the international non-governmental organisation Smile Train, was described and analysed using RStudio and Microsoft Excel. Data validation and cleaning included manual checking of a representative sample for consistency between diagnosis and photographs. Only frontal photographs were selected. Patients under 3 years old were selected based on their LAHSHAL code, in order to include patients with and without visible teeth.

Results:

Data included 7 ethnic groups from 90 countries. Most patients had at least a preoperative and postoperative frontal image. Some discrepancies between the LAHSHAL code and clinical photos were noted. As expected, many images were taken on the operating table with eye tapes and endotracheal tubes in-situ, and these were intentionally included. Most images were suitable for ML analysis. Images that were unsuitable informed recommendations for improved data collection.

Conclusion:

Globally, most clinical photographs were not well standardised. However, with some limitations, it is possible to use train ML algorithms to analyse these ‘real-world” photographs, thereby minimising data wastage.
Recommendations to improve photograph standardisation were made, that we believe are achievable, even in busy clinical settings.

Machine learning analysis, non-standardised data

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‘God created us in this way’: exploring children‘s explanatory models of cleft lip and palate in Colombia

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Research available on models of causation of cleft lip and palate (CLP) has been conducted with adults within Africa and South Asia contexts with no studies exploring children’s and young people’s models in other areas of the Global South. This is problematic as the prevalence of CLP is high in Latin America, there are important socio-cultural differences between regions and views of children may differ from adults.

Aims: to explore how children understand and make sense of the origin of their condition within a Latin America context (Colombia).

Methods: drawing on a qualitative approach that consisted of walking based and home based interviews, 20 children aged 6-12 from three Colombian regions were interviewed across three different encounters. All participants were active attendees of Operation Smile- Colombia.

Results: children’s understandings of CLP did not follow a biomedical discourse. They understood the origin of CLP as the result of certain life circumstances and events occurred before birth and in line with ‘God’s will’. Their causation models were culturally-socially shaped and greatly influenced by narratives available to them (mainly from parents).

Conclusion: the positive framework in which the origin of CLP is constructed presents a challenge to available research with adults reporting negative fatalist notions. We also consider the importance of exploring children’s accounts on their own and recommend clinicians be sensitive to lay knowledge when providing and discussing information about treatments and genetic counselling.

craniofacial, explanatory models, children, Colombia

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Do we need to assess patients with isolated cleft lip for alveolar bone grafting?

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction
Patients with clefts of the alveolus often require alveolar bone grafting (ABG) to enable eruption of either the lateral incisor or canine in the line of the cleft. Assessment is time sensitive and nationally patients with an alveolar cleft are assessed for potential ABG between 7 and 9 years of age. Patients with isolated cleft lip aren't routinely assessed for an alveolar bone graft (ABG) as there is no discontinuity in the alveolus, however are reviewed at 5 and 10 years of age in the multi-disciplinary clinic.

Aims
To determine whether any patients diagnosed with isolated cleft lip had alveolar bone grafting. To determine whether we need to assess patients with isolated cleft lip for alveolar bone grafting between 7-9 years old.

Methods
A retrospective review was undertaken at the Cleft Unit at Alder Hey Children's Hospital, Liverpool. All patients diagnosed with an isolated cleft lip, born between 1st January 1995 and 31st December 2005 were identified from the departmental database. The records and radiographs for patients were assessed and presence/absence of alveolar bone graft recorded in an Excel spreadsheet.

Results
55 patients with isolated cleft lip were identified from the database; 35 complete and 20 incomplete. No patients with isolated cleft lip needed alveolar bone grafting. 9% of patients were assessed in the multi-disciplinary clinic between 7-9 years of age and did not require an ABG. This was in addition to the appointments in the standardised review protocol. All patients had the correct LAHSAL diagnosis recorded in their notes from their initial multi-disciplinary appointment.

Conclusions
There is no benefit in assessing patients with isolated cleft lip for alveolar bone graft provided the original diagnosis is correct. Correct diagnosis and classification is crucial to ensure appropriate pathway is followed to prevent additional burden of hospital attendances for families.
cleft lip, alveolar bone graft

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Octacalcium phosphate collagen complex facilitates osteogenesis and eruption of permanent teeth in the alveolar clefts: A follow-up study

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Autologous bone grafting is the first option for reconstruction of the alveolar cleft in the treatment of cleft lip and palate. However, harvesting bone from the ilium or another part of the body is not only surgically invasive, but also only a limited amount of bone can be collected. Therefore, we reconstructed the alveolar cleft using octacalcium phosphate (OCP), a precursor of bio-apatite crystals in bone and teeth, instead of autogenous bone.
Aims: To evaluate post-operative bone formation and eruption of adjacent teeth after OCP granule and atelocollagen complex (OCP/Col) grafting in comparison with autogenous bone grafting for the treatment of alveolar cleft bone defects in patients with unilateral cleft lip with/without cleft palate (UCL±P).
Methods: Four patients with UCL±P who underwent OCP/Col grafting (OCP group) and 55 patients with UCL±P who underwent autologous bone grafting (AB group) were enrolled in this study. OCP/Col or autologous bone grafting was performed before the eruption of canines or lateral incisors and during mixed dentition, followed by orthodontic management. Patients in the OCP group underwent radiography before and 1, 2, 3, 6, and over 30 months after the surgery. The volume and area of the bone defect in the alveolar cleft area were compared between the OCP group and AB group before and 6 months after surgery.
Results: The bone bridge in all patients in the OCP/Col group formed, and by 6 months post-operatively, the permanent teeth adjacent to the alveolar cleft erupted at the site of the OCP/Col complex graft. Comparison of the pre- and post-operative bone defects between the two groups revealed almost the same extent of bone bridge formation.
Conclusions: OCP/Col grafting enabled bone bridge formation and facilitated permanent tooth eruption, and can be considered as an alternative to autologous bone.
alveolar cleft, octacalcium phosphate

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Alveolar Bone Grafts: A Retrospective Audit of Success

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Aims

The aim of this retrospective audit was to assess the radiographic success of all autogenous secondary alveolar bone grafts undertaken at the Evelina London Children's Hospital in a five-year time period.

Methods

All patients who had autogenous secondary alveolar bone grafting at the Evelina London Children's Hospital between 1st January 2014 to 31st December 2018 were included. Radiographs assessing the bone graft site before and after surgery were collected. This involved contacting peripheral units in order to retrieve missing radiographs. Patients were excluded if there was no post-alveolar bone graft upper standard occlusal radiograph of the bone graft site available or if the post-treatment radiograph was diagnostically unacceptable. The degree of bony fill in the cleft area was assessed to define alveolar bone grafting success. This was recorded following assessment of anonymised upper standard occlusal radiographs, using the Kindelan scale. 20 patients were examined twice, with two weeks between assessments, to determine intra and inter-examiner reliability.

Results

216 patients underwent autogenous secondary alveolar bone grafting within the defined time-period, with nine lead surgeons involved. We found success rates for alveolar bone grafting at this unit to be high, and greater than the success rates found in a similar national audit assessing alveolar bone graft success (CSAG). These results are of even greater significance, when considering the relatively little pre-surgical orthodontic treatment performed at our department prior to alveolar bone grafting. A limitation of this audit was the difficulty in assessing poorly standardised occlusal radiographs.

Conclusions

This audit highlights that high success rates can be found for patients who undergo alveolar bone grafting with relatively little pre-surgical orthodontic treatment. Therefore, the merits of pre-alveolar bone grafting orthodontic treatment must be weighed against the consequences of adding to the already substantial orthodontic burden likely to be faced by these patients.

Alveolar Bone Graft
Orthodontics

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Management of Early Secondary Alveolar bone grafting in patient with unilateral cleft lip and palate combined with rampant caries

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

1. Introduction
Bone grafting is an essential surgical procedure for management of residual alveolar cleft in cleft lip and palate patients after their primary surgery. Rampant caries is a lesion of acute onset involving many or all of the erupted teeth.

2. Aims.
The objectives of alveolar bone grafting include, providing continuity to the maxillary alveolar arch, providing bone matrix for erupting teeth in the line of the cleft site, closure of any oro-nasal fistula, promoting periodontal health with keratinized gingiva of adjacent teeth, improving speech, restoring facial symmetry and providing alar base and lip support.

3. Methods
This case report demonstrated 7 years old, Thai girl who had unilateral cleft lip and palate combined with rampant caries. Multidisciplinary and comprehensive treatment was approached for this case

4. Result
After complete treatment, the patient has improvement of quality of life.

5. Conclusion
Multidisciplinary and comprehensive treatment is the key for management of cleft patient who have rampant caries.
Rampant Caries Cleft

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The use of platelet rich fibrin in the alveolar graft in cleft lip and palate patients. The experience In Hospital La Paz

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Alveolar bone grafting, which is considered the gold standard for the reconstruction of maxillary alveolar defects in cleft patients, may be a challenging surgical technique due to the characteristics of cleft patients. Platelet rich fibrin used as a growth factor and protective barrier of the alveolar bone graft in patients with cleft lip and palate is a promising tool for obtaining better results.

Aims: The aim of this study was to evaluate the efficiency of a new alveolar bone grafting protocol using advanced-PRF (a-PRF) by describing the volumes of newly formed bone after a bone graft combining autogenous iliac crest bone with PRF and the quality of the surrounding soft tissues.

Methods: 20 patients presenting with unilateral or a bilateral alveolar cleft were included in this prospective study. Three PRF membranes were used to improve the quality of soft tissues: one in contact with the nasal mucosa, other one in contact with the palatal mucosa and the last one in contact with the vestibular mucosa. Moreover, we made a mixture by using cancellous iliac crest bone with PRF for grafting. CBCT scans were performed 3 months preoperatively and intraoral pictures were taken to evaluate the soft tissues.

Results: Accelerated healing, less postoperative discomfort and no dehiscence of the surgical incisions were observed in our patients. Moreover, satisfactory bone bridging formation was observed in all patients.

Conclusions: PRF may provide a higher bone density and the quality of the soft tissues in patients with cleft lip and palate in the long postoperative course.

Alveolar bone grafting; PRF

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Correlation between inferior turbinate and alveolar bone bridge following secondary bone grafting for unilateral cleft lip and palate patients

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Aims:
To investigate the correlation between vertical position of inferior turbinate, bone bridge morphology following secondary bone grafting (SBG) and alveolar cleft width.
Methods:
This study included 14 patients (7 males, 7 females) with unilateral cleft lip and palate (UCLP). They underwent SBG when they were 8- to 11-year-old (average; 9.4-year-old). One patient of them had partial inferior turbinate resection (PRx) during SBG. To evaluate the degree of inferior turbinate sagging (IT) and the vertical position of the alveolar bone bridge on the nasal side (AB), the pre- and post-operative postero-anterior cephalograms of each patient were used. The straight line connecting the intersection of the left and right orbital margins and the oblique orbital lines was used as a reference line (Lo-Lo'). From the pre-operative cephalograms, IT was calculated by the ratio between the distance from Lo-Lo' to the lower edge of the inferior turbinate on the cleft side and the base of the nasal cavity on the healthy side. From the post-operative cephalograms, AB was calculated by the ratio between the distance from Lo-Lo' to the lower edge of the nasal cavity on the cleft side and the base of the nasal cavity on the healthy side. Furthermore, for 7 cases, the width of alveolar cleft (WA) was measured from the reconstructed images of computed tomography taken before SBG. Scatter plot analysis was performed for IT, AB and WA. Statistical analysis was performed by using Spearman's correlation test.
Results:
Significant correlation was found only between IT and AB. Additionally, from analyzing the scatter plots of IT and AB, the depression on the bone bridge was reduced in a case with PRx.
Conclusions:
The vertical position of the inferior turbinate affects the bone bridge morphology of the nasal side in patients with unilateral cleft lip and palate.

SecondaryBoneGrafting, UnilateralCleftLipAndPalate, InferiorTurbinate, BoneBridgeMorphology

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Alveolar Distraction Osteogenesis in cleft lip and palate patients: a case series

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate is a congenital anatomical malformation in which bone grafting through autologous bone from the iliac crest is the gold-standard treatment. This therapy has some disadvantages namely, bone resorption in 40% of cases after one year of bone graft. Tissue regeneration appears as an innovative alternative approach to conventional bone grafts in cleft patients. However, when the cleft defect has large dimensions or the availability of surrounding soft tissue is deficient, distraction osteogenesis by alveolar bone transport should be considered.
Aims: The distraction osteogenesis is based on bone neoformation and adjacent soft tissue formation after gradual and controlled displacement of vascularized bone fragments. The aim of this paper is to present a series of cases of cleft palate in which alveolar distraction osteogenesis was performed.
Methods: Three clinical cases, aged between 13 and 21 years, submitted to bone distraction surgery by transport to closure of the cleft palate were presented. The osteo-anchored intraoral distractors (KLS Martin®LP) were placed distally to the 2nd premolar of the cleft hemi-arch. The appliance was activated for two weeks (1mm/day) after the latency period (5-days). The retention period was 2-3 months and, after removing the distractor, the patients underwent fixed orthodontic appliances to close the spaces.
Results: The percentage of cleft palate closure was about 55%, and there was transport of mucous tissue in the areas adjacent to the surgical areas. In one case, the constriction of the arcade shape occurred in the hemiarch that was distracted.
Conclusions: These case series demonstrated the bone gain, which can reach more than 10 mm without the need for bone transplantation. Distraction osteogenesis is an ideal orthodontic-surgical technique to recreate the missing tissue in the anterior esthetic zone, as in cases of cleft palate.

Cleft palate, Distraction osteogenesis,

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Secondary Alveolar Bone Graft Evaluation in Patient with Alveolar Cleft in Harapan Kita Hospital

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Alveolar cleft can effect the quality of life the patient due to aesthetic and functional problems. There are several techniques to close alveolar cleft such as orthodontic treatment, dental prothesis, and bone grafting. Secondary alveolar bone graft is the gold standard in alveolar cleft treatment. In order to get the optimum result of secondary alveolar bone graft, there are some factors need to be considered timing of operation, operation technique, width of the cleft, and condition of canine teeth. Some parameters were used to evaluate the secondary alveolar bone graft procedure, there are canine angle, vertical height of canine, and alveolar height. Aims: to evaluate secondary alveolar bone graft procedure using alveolar height by Bergland radiographic scale and canine angle and vertical height. Methods: 5 OPG and 12 occlusal radiographs were collected from patient alveolar cleft post secondary alveolar bone graft using retrospective analytic sampling from Harapan Kita Hospital. Result: Satisfactory results were obtained in 91% of cases. There are significant changes in canine angle and vertical height post secondary alveolar bone graft procedure. Conclusion: Formation of bone bridge due to mechanical force in alveolar cleft post secondary alveolar bone graft can be identified by the change of canine angle and vertical height.

alveolar cleft, bone graft

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Secondary bone grafting -comparison of using bone graft from spina iliaca and chin bone graft in combination with xenogenic material: preliminary study

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction Reconstruction of the alveolar defect in patients with complete clefts is a standard operation performed between 9-14. year./ secondary bone grafting /.The operation is indicated by an orthodontist after stabilization of the intermaxillary relations based on the position and pruning of the upper permanent canine. PAN evaluation is most often performed 6 months after surgery. Reconstruction of the alveolar defect in the range of 75% and more/ Bergland score / is considered a successful one. However, the classic 2D imaging does not allow us to evaluate the volume of implanted bone. Evaluation using CT with 3D reconstruction is a pilot study for imaging and evaluation of the volume of the alveolar defect before and after reconstruction.

Aims We compared 5 patients with complete unilateral clefts using cancellous bone graft from spina iliaca ant. Superior/group 1/ with 5 patients using cancellous bone graft from a chin with combination of xenogenic material/group 2/. We presumed better results with a graft from a chin, because of the same ossification of maxillary and mandibular bones.

Methods We evaluate the volume of the alveolar defect preoperatively using volumetry based on MSCT with 3D reconstruction. After implantation of cancellous bone, we evaluate the volume of implanted bone and the remaining defect 6-9 months after surgery.

Results: Group 1 had a greater bone resorption 9 months after the surgery

Conclusions:In the study we presumed better results in the group 2 due to the same type of bone ossification /intramembranous ossification/. We confirmed our hypothesis.

alveolus, graft, volumetry, 3D imaging

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INFLUENCE OF EARLY SECONDARY GINGIVOALVEOLOPLASTY ON PREVALENCE OF HYPODONTIA OF UPPER LATERAL INCISORS IN CHILDREN WITH COMPLETE UNILATERAL CLEFT LIP AND PALATE IN SLOVENIA

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

INTRODUCTION: The most frequently missing teeth in cleft patients are upper lateral incisors. Hypodontia of permanent upper lateral incisors was present in 43 % of 99 children with unilateral cleft lip and palate (UCLP), born in Slovenia between 1 January 1984 and 31 December 1998 (Fortuna, Kozelj, 2009). Early secondary gingivoalveoloplasty (ESGAP) was included in our surgical protocol in 2004. ESGAP is performed at 30 months of age during the stage of hard palate repair with subperiosteal preparation of nasal, vestibular and palatal flaps. Lateral incisor buds are located very superficially under the palatal periosteum and are prone to damage with more aggressive subperiosteal undermining in ESGAP.

AIMS: To evaluate the influence of ESGAP surgical protocol on the prevalence of hypodontia of upper lateral incisors in children with UCLP.

METHODS: We reviewed the records of 67 children with UCLP between 1 January 2002 and 31 December 2013 who underwent ESGAP surgical protocol. All children were born in Slovenia and treated at Department of Maxillofacial and Oral Surgery in University Medical Centre Ljubljana. Radiographs, cone beam computer tomography scans and clinical data were analyzed. Missing upper lateral incisors were quantified in deciduous and permanent dentition. The prevalence of hypodontia in ESGAP surgical protocol was compared to the results of Fortuna and Koželj (2009).

RESULTS: Hypodontia was present in 49.3 % of children with UCLP. Permanent upper lateral incisors were missing in 30 (44.8 %) children with unilateral complete cleft lip and palate treated with ESGAP surgical protocol. ESGAP surgical protocol does not statistically differ (p=0.864) from previous surgical protocol.

CONCLUSIONS: As surgical trauma has been suggested to damage forming teeth buds of permanent upper lateral incisor in children with UCLP, the results of these study indicate that ESGAP has no additive and devastating influence on development of upper lateral incisor in cleft region.

UCLP, upper lateral incisor, hypodontia

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Alveolar Bone Graft – Should They Stay or Should They Go?

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

INTRODUCTION
Alveolar bone grafting (ABG) is an important procedure that facilitates the dental rehabilitation of cleft lip +/- palate patients. Traditionally, these patients have been managed as inpatients. The COVID-19 pandemic has resulted in delays in the provision of elective surgical procedures with reduced inpatient bed capacity playing a significant role in the postponement of cleft procedures including ABG. This has led us to examine our current practice, analysing admission patterns on a contemporary data set and to ultimately ascertain if, and in what circumstances, ABG could safely be performed on a day case basis.

METHODS
All patients who underwent an ABG between Jan 2017 – Dec 2021 within a UK cleft unit were identified. Electronic records and medical notes were analysed to identify factors including age at surgery, laterality of defect, analgesia requirements, length of stay, postoperative complications and readmission rate.

RESULTS
116 paediatric cleft patients underwent an ABG during the study period. The donor site was the anterior iliac crest in all cases. There were 55 female and 61 male patients. 94 ABG procedures were unilateral and 22 bilateral. The mean age at surgery was 9 years 7 months. No patients were managed as day cases. 85% were discharged on the first postoperative day. 17 patients remained in hospital >1 night postoperatively. The mean postoperative stay was 1.25 nights, range 1-7 nights. Pain was successfully managed with paracetamol and ibuprofen in most cases. 1 patient who experienced post discharge nausea and vomiting required readmission.

CONCLUSIONS
Our results demonstrate that ABG is a safe and predictable procedure from which most patients have an uncomplicated recovery. Given the current logistical pressures on health services, it lends weight to a revised practice to allow day case management for selected patients after ABG. A pathway to support discharge on the day of surgery will be discussed.
Alveolar Bone Graft Surgery Analgesia

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Real-Time Image-Guided Navigation in the Surgical Procedure of Alveolar Cleft Repair

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Objectives: To investigate the application of dynamic navigation system in repairing alveolar cleft.

Methods: Three non-syndromic patients with unilateral alveolar cleft were involved in this study. Real-time computer-aided navigation were used to achieve restoration and reconstruction with standardized surgical technique.With the individual virtual 3-dimensional (3-D) modeling based on computed tomography (CT) data, preoperative planning
and surgical simulation were carried out with the navigation system. During preoperative virtual planning, the defect volume or the quantity of graft was directly assessed at the surgical region. With the system, the gingival periosteum flap incision
can be tracked in real-time, and the bone graft can be navigated under the guidance of the 3-D views until it matches the preoperatively
planned position.

Results: The surgical procedures were successfully performed in all patients under navigation guidance. Through the model alignment procedure, accurate matches between the actual intraoperative position and the CT images were achieved within the systematic error of 0.3 mm. The grafted bone was implanted according to the preoperative plan with the aid of instrument- and probe-based
navigation. All the patients were well-healed without serious complications.

Conclusions: It suggests that image-guided surgical navigation, including preoperative planning, surgical simulation, postoperative
assessment, and computer-assisted navigation is feasible and ensures good clinical outcomes.

Surgical technique, computerized tomography, maxilla

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An index for Scoring Cleft Canine Tooth Eruption Position and its Relationship to Post Alveolar Bone graft Radiographic Score and Orthodontic Burden of Care.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Management of the alveolar cleft is an integral part of the modern cleft protocols and successful alveolar bone grafting (ABG) is key for the completion of definitive orthodontic treatment in these patients. Anecdotally Radiographic success determined using the Kindelan Index score (KI) does not show a correlation with optimal cleft tooth eruption, limited orthodontic burden of care or optimal dental outcomes for the patient.
Aims: To assess whether a KI score on post bone graft radiograph correlates with cleft tooth eruption position using a Four-point Clinical Index Scale (CIS) and whether CIS impacts on burden of care and ultimate dental outcome.
Methods: This is a retrospective cohort study for children born 1997-2005 in the West of Scotland with complete, non-syndromic, unilateral/bilateral cleft lip who have undergone an alveolar bone graft procedure. For each graft site a KI and CIS were assessed. The number of orthodontic visits, treatment time (months) in orthodontic appliance care and whether dental space closure across the cleft site was achieved were recorded.
Results: 83 children representing 98 bone graft sites were identified. KI intra- and inter-rater reliability (2 assessors) was 0.83-0.62 and 0.38 respectively. CIS intra- and Inter-rater reliability (4 assessors) was 0.69-0.99 and 0.63-0.75 respectively. KI showed no correlation with the CIS Score. CIS score was associated with reduced number of visits (p=0.015), months in orthodontics (p=0.009) and likelihood of orthodontic space closure (p=0.006).

Conclusion:
Bone graft outcome measured using KI shows no correlation to CIS or orthodontic burden of care and dental outcome.
CIS shows a correlation with orthodontic burden of care and dental outcome.

Cleft,
bone graft
orthodontics

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BONE GROWTH CAPACITY OF HUMAN UMBILICAL CORD MESENCHYMAL STEM CELLS AND BMP-2 SEEDED INTO HYDROXYAPATITE/CHITOSAN/GELATIN SCAFFOLD IN ALVEOLAR CLEFT DEFECTS: An Experimental Study in Goat

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Objective
To evaluate bone regeneration in alveolar defects treated with human Umbilical Cord-derived Mesenchymal Stem Cells (hUCMSCs), Hydroxyapatite/chitosan/gelatin (HA/Cs/Gel) scaffold, and BMP-2 in Capra hircus models.
Design
Randomized post-test-only control group design
Setting
Animal Hospital at Bogor Agricultural Institute
Participants
Healthy and equally treated twenty-four female capra hircus/goats
Intervention
Animals were randomly assigned to three experimental group design (iliac crest autologous bone graft/ICABG [control], HA/CS/Gel+BMP-2 [Novosys], and HA/CS/Gel+BMP-2+UCMSCs). Graft materials were implanted in surgically-made alveolar defects.
Main Outcome Measures
Post-operative functional score and operating time were assessed. New bone growth, bone density, inflammatory cells recruitment, and neo-angiogenesis were evaluated based on radiological and histological approach at two timepoints, week 4 and 12. Statistical analysis was done between treatment groups.
Results. Operating time was 34% faster and functional score 94.5% more superior in HA/Cs/Gel+BMP-2+hUCMSC group. Bone growth capacity in HA/CS/Gel+BMP-2+UCMSCs mimicked ICABG, but ICABG showed possibility of bone loss between week 4 and 12. HA/CS/Gel+BMP-2+UCMSCs showed early bone repopulation and unseen inflammatory cells and angiogenesis on week 12.
Discussion & conclusion. HA/CS/Gel+BMP-2+hUCMSCs was superior in enhancing new bone growth without donor site morbidity compared to ICABG. The presence of hUCMSCs in tissue-engineered alveolar bone graft (ABG), supported with paracrine activity of the resident stem cells, initiated earlier new bone repopulation and completed faster bone regeneration. HA/CS/Gel scaffold seeded with UCMSCs+BMP-2 is a safe substitute of ICABG to close alveolar bone defects suitable for patients with cleft lip, alveolus, and palate (CLAP).

Table 1. Combined assessment for ICABG, HA/Cs/Gel+BMP-2+hUCMSCs, and HA/Cs/Gel+BMP-2 groups for all outcome parameters

	ICABG	HA/Cs/Gel + BMP-2 + hUCMSCs	HA/Cs/Gel + BMP-2
Operating Time	50,3 ± 8,6*	33,0 ± 4,7*	30,1 ± 6,1*
Functional Score(Hager, 2017)			
Day 1	3,9	0,6	0,6
Day 2	2,3	0	0,4
Day 3	1	0	0
Radiology Score			
Kindelan Score(Dobbyn, 2012)			
Week 4	2,7 (3;2–3)	3 (3)	3,2 (3;3–4)
Week 12	3 (3)	2,7 (3;2–3)	3 (3)
% New Bone Growth			
Week 4	24,7 (15.4;2.1–65.9)	24,03 (22.1;4–48)	5,93 (1;0–21.7)
Week 12	22,53 (20.6;13.9–35)	38,3 (39.8;0.9–72.8)	19,05 (16.2;10.8–33.1)
Hounsfield Unit (HU)			
Week 4	654,50 (621.5;608–767)	718,00 (696.5;608–871)	588,50 (730.5;100–793)
Week 12	617,75 (662.5;430–716)	741,25 (752.5;668–792)	732,00 (732.5;636–827)
Histology Score			
Mankani Score(Mankani, 2006)			
Week 4	1,7 (2;0–3)	3,2 (3.5;2–4)	1,2 (1;0–3)
Week 12	3,2 (3;3–4)	3,2 (3.5;2–4)	2 (1.5;1–4)
Inflammatory Cells (Athanasiou)(Athanasiou, 2010)			
Week 4	1,2 (1.5;0–2)	1,2 (1;1–2)	1 (1)
Week 12	1,7 (2;1–2)	2 (2)	1,7 (2;1–2)
Neo-angiogenesis (Athanasiou)(Athanasiou, 2010)			
Week 4	1 (1;0–2)	1,2 (1;1–2)	1 (1)
Week 12	1,5 (1.5;1–2)	2 (2)	1,7 (2;1–2)

Hydroxyapatite/chitosan/gelatin, mesenchymalstemcells, tissueengineering, alveolarbonegrafts

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Quality of life in preadolescent orthodontic patients before and after secondary alveolar bone grafting

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction
Secondary bone grafting (SBG) for alveolar bone defects in patients with cleft lip and/or palate (CL/P) is frequently performed before canine eruption along with orthodontic treatment. However, few studies have focused on how these treatments affect the quality of life in preadolescent orthodontic patients.
Aims
The present study was performed to evaluate the effects of SBG on oral-health-related and generic health-related quality of life (OHRQoL and HRQoL, respectively) in preadolescent orthodontic patients with alveolar bone defects.
Methods
We divided 101 orthodontic patients aged 8–10 years into three groups: 39 general orthodontic patients, 18 orofacial cleft patients who did not require SBG, and 44 alveolar defect patients who required SBG using particulate cancellous bone and marrow obtained from the iliac crest. The participants completed the self-report Child Perceptions Questionnaire 8–10 (CPQ) and Pediatric Quality of Life Inventory™ ver. 4.0 (PedsQL™) for OHRQoL and HRQoL, respectively, and their scores were assessed. The QoL of patients was examined before and at 1 and 6 months after SBG to assess longitudinal changes. The Steel-Dwass or Friedman test was performed for multiple comparisons or repeated measures, respectively. The relationships between OHRQoL/HRQoL and potential disease-related factors were also evaluated and assessed using the Wilcoxon rank-sum test. (significant level: $p < 0.05$)
Results
Physical HRQoL subscale scores worsened at 1 month after SBG ($p = 0.01$), while the total OHRQoL/HRQoL scores before and after SBG showed no significant changes. OHRQoL/HRQoL showed no significant differences among the three groups before SBG. The presence of oronasal fistula dramatically reduced the OHRQoL ($p = 0.003$) in patients with CL/P.
Conclusions
SBG along with orthodontic treatment had a relatively small impact on the QoL of the preadolescent children in this study. Understanding the influence of SBG and disease-related factors on QoL would enable better treatment and care for these patients.
orthodontics, alveolar bone grafting, QoL

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Alveolar Bone Grafts in adult Cleft Lip and Palate patients at The Royal London Hospital: A service evaluation.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Objective: The Royal London Hospital provides multidisciplinary dental care for adult cleft lip and palate patients in the North Thames region. An alveolar bone graft (ABG) may be required for many reasons as an adult for example, if they were not provided one as a child or as a secondary graft in order to support a prosthesis.
Method: Retrospective evaluation assessing the outcomes of ABGs in patients over 18, between 2018-19 using the Kindelan scoring method. The gold standard was a score of 1 or 2 for 90% of patients.
Results: 11 ABG procedures were carried out with a median age of 30 years (range 22-65 years). The median follow-up period with an upper occlusal radiograph was 7 months (range 3-16 months).
The majority of patients had absent lateral incisor (n=9; 81.8%) with a mean bone loss level recorded of 5.9mm following an ABG.
Out of the sample, 63.6% (n=7) had a successful outcome (Kindelan score 1 and 2), with remaining 36.4% (n=4) being unsuccessful (Kindelan score 3 or 4). Successful ABGs occurred almost equally in those ≥ 30 years old (n=3) and <30 years old (n=4).
Conclusion: There are a number of factors that can affect the success of an ABG, such as poor oral hygiene, periodontal disease, missing teeth, smoking and age; unfortunately these risk factors occur more in an adult population. In order to improve our outcomes, we aim to improve our patient information primarily encouraging better oral hygiene pre- and post-operatively.

Cleft, ABG, Grafting

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Prognosis of central incisors in bilateral cleft lip and palate

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction
Maxillary central incisors (MCI) in patients with bilateral cleft lip and palate (BCCLP) can have gingival recession and compromised periodontal bone. Alveolar grafting (ABG) provides bone for the cleft adjacent teeth. This study sought to assess the bony support of the MCI in patients with BCCLP after ABG.

Aims
1. Measure the clinical crown to root (C/R) ratio of MCI in patients with BCCLP.
2. Determine if syndromic diagnosis, age at time of ABG, presence of lateral incisor (LI), history of dentofacial orthopedics, maxillary expansion, and pre-maxillary osteotomy affect the C/R ratio of MCI.

Methods
Retrospective radiographic study of patients with BCCLP who had post-operative ABG computed tomography (CT) scans between 2002-2018. Patients were excluded if the medical records were incomplete or CT landmarks could not be identified. Clinical C/R ratios of MCI were measured on post-operative ABG CT scan and were compared across predictor variables using independent-samples median testing, chi-square, and fisher exact analyses. MCI with a C/R ratio >2.33 were classified as periodontally compromised based on accepted anatomic norms and McGuire and Nunn classification system. Significance was set as $P < 0.05$

Results
The study included 179 patients (59.8% male, median [IQR] age 12.3 [8.7-16.0] years). In 65.0% of MCI, the C/R ratio indicated periodontally compromised teeth. Presence of a lateral incisor improved bony support of adjacent MCI when compared to those missing a LI (51.4% vs 28.4%, p=0.010). There was no significant difference in C/R ratios for syndromic diagnosis, age at ABG, history of dentofacial orthopedics, maxillary expansion, and pre-maxillary osteotomy.

Conclusions
The majority of MCI have a poor long term prognosis even after ABG. Periodontal support of MCI is improved when cleft adjacent lateral incisors are present.

Cleft, Alveolar bone, Central incisor

1071

EVALUATION OF AUTOLOGOUS ALVEOLAR BONE GRAFT INTEGRATION WITH TOMOGRAPHY IN PATIENTS PRIMARY CLEFT PALATE WITH ALVEOLAR CLEFT AT THE CLEFT LIP AND PALATE CLINIC OF THE MEXICAN FOUNDATION FOR CHILDREN WITH CLEFT LIP AND PALATE IN THE PERIOD 2018-2019.

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Introduction. The ABG (Alveolar Bone Grifting) is a very important procedure in the short/long-term care and outcomes in children with alveolar clefts,
affecting the functional and aesthetic evolution the evaluation in CLP centers and clinics is carried out using 2D images, with the disadvantage of overestimating success due to overlapping images, it is safely evaluated with CBCT(Cone Beam Computed Tomography) studies, with quantitative analysis of the residual volume at one year of ABG, regulating the success of the procedure, improving
situations that alter the main functional and aesthetic objectives.

The objective is to determinate the degree of integration / success (by CT) of autologous ABG in operative patients of primary cleft palate with alveolar cleft at the Cleft Lip and Palate Clinic of the Mexican Foundation for Children with Cleft Lip and Palate in the period
2018-2019.

Methodology. Observational, descriptive, retrospective study from the cases of patients who underwent ABG, in patients with primary alveolar fissures in the Cleft Lip and Palate Clinic of the Mexican Foundation for Children with Cleft Lip and Palate in the period
2018-2019

Results. A total of 10 patients were included, 2 met exclusion criteria.
87.5% of patients present grade 3 or 4 (Liliequist and Lundeberg) before the
procedure with a preoperative fissure volume of 1.88 ± 0.77 CC. post-graft residual volume was 0.79 ± 0.28. Getting an average of success of 56.4% ± 8.75, being 68.4% the maximum value and 42.64% the minimum. The mean for successfully grafted bone volume was 1.09 ± 0.54 CC.

Conclusions. The success of the Alveolar Bone Graft is higher than the percentage
reported by the literature in its evaluation at one year, using as an assessment the
tomography.

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Alveolar Bone Grifting

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Oronasal fistula closure with anteriorly based tongue flap – a case report

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: After typical secondary alveolar bone graft surgery, an oronasal fistula can persist, resulting in functional difficulties such as regurgitation of fluids from the oral to nasal cavities. The adjacent flap usually presents a significant amount of scar tissue due to previous surgeries, which can lead to necrosis and palate cleft dehiscence.
Aim: The aim of this paper is to present a case report with a bilateral cleft lip and palate that underwent a tongue graft for the oronasal fistula closure procedure.
Methods: After three failed adjacent mucosa flap procedures, the patient which had bilateral cleft lip and palate, underwent reconstruction of oronasal fistula with anteriorly based tongue flap. Orthodontic treatment, mucosa and alveolar grafts for palate closure, and aesthetic restoration of the anterior maxillary teeth were performed subsequently as part of multidisciplinary treatment.
Results: After the treatment was concluded, the patient presented a bilateral Class I dental relationship. Smile esthetics was noticeably improved after the final restorations were performed, enhancing the patient's self-perception and confidence.
Conclusions: The pedicle tongue flap was a viable surgical option for the treatment of oronasal communication, especially in patients with larger cleft defects and extensive fibrous areas.

Tongue flap

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Transversal three-dimensional diagnosis in unilateral cleft patients prior to bone graft

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction
The treatment of transverse maxillary deficiency prior to alveolar graft is one of the goals that the orthodontist should cover during the preparation of patients for alveolar graft. In many cases the degree of compression of these patients is such that adequate results are not achieved, so it is essential to quantify this, to have a clear idea of how patients arrive at pre-surgical orthodontic preparation.

Aims
-Determine cross-sectional measures using 3D landmarks on scanners as Penn Protocol in paciente already treated with maxillary expansion during pre bone graft orthodontic preparation.
- Establish transverse measurements in maxilla and mandible.
-Relate measurements between maxilla and mandible
- Relate measures in between patients

Methods
10 patients between 6 and 12 years with unilateral cleft lip and palate
The measure in taken from Axial computed tomography between two points in the maxilla and two points in the mandible. This points were Mx-Mx in the maxillary and Md-Md in de mandible.

Results:In half of the patients severly compression was found, one third mild compression and only two cases the traverse dimension was adequate.

Conclusions:
Cleft palate patients present great maxillary compression and the maxillary mandibular relationship is severely altered in the transverse direction.
Orthodontics, diagnosis, three dimensional

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Comparing Trauma Incidence and Use of Mouthguards Between a Cleft Lip and Palate and Non-cleft Patient Cohort

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction

Dental trauma during orthodontic treatment can lead to soft tissue injury, debonding of brackets and deformation of arch wires. Dental trauma encountered whilst participating in sport accounts for 10-39% of all dental injuries and a meta-analysis showed the number of dental injuries while participating in sport is significantly higher in those who do not use a mouthguard.

Previous studies have reported on the adherence to mouthguard advice in the orthodontic patient population. However, no literature could be sourced to indicate if the adherence to mouthguard advice is similar in the cleft orthodontic population to the non-cleft orthodontic patient population

Aims
The aims were to compare a cleft lip and palate orthodontic and a non-cleft orthodontic patient base with regards to trauma incidence, sport participation, mouthguard use for contact sport, type of mouthguard used and reasons for not using a mouthguard

Methods
A previously published study was used as a baseline. The first 50 consecutive patients who attended routine fixed appliance adjustment appointments and consented completed a questionnaire.

Results
When comparing the cleft to the non-cleft population:
- Trauma prior to orthodontic treatment was similar
- Most played sport was football in both reports – increased participation in our sample
- Reduced participation in contact sports in our sample
- Using a mouthguard for contact sport during orthodontic treatment was similar
- Both studies showed a reduction of number of patients reporting to wear a mouthguard when playing contact sport since undergoing orthodontic treatment
- Shop bought 'boil and bite' mouthguards were most popular in both samples
- Most common reason for not wearing a mouthguard was similar 'not being told'

Conclusions
During orthodontic treatment there were no significant differences between the two patient groups with relation to: trauma incidence, compliance with mouthguards for contact sport or type of mouthguards used.

Orthodontic, Mouthguard, Sport, Cleft

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Oligodontia satisfaction and compliance

Dr Wendy Nicholls[1], Dr Steven Singer[1]
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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction –
Although the physical diagnosis of oligodontia may be simple, the psychosocial impact may not be as simple to appreciate or diagnose. Many studies have reported the aetiology, prevalence, and management of oligodontia and tooth agenesis, but very few have investigated the psycho-social and behavioural impacts of the condition.

Aims –
To investigate the satisfaction and compliance of long-term patients with oligodontia who have undergone prosthodontic procedures and appliances.. To evaluate the psycho-social and behavioural impacts of oligodontia and treatment impact for the condition across specific domains.

Methods –
A condition-specific questionnaire was compiled based upon the following domains; demographic and life details, treatment details, condition and treatment impacts, and service and care received and incorporated the OPID-14.

Results –
A response rate of 73% was achieved with 22 respondents returning completed questionnaires. Having Oligodontia as part of a syndrome was reported in 50% of respondents, with Ectodermal Dysplasia being the most frequently reported syndrome (45.5%, n=10), and one case each of unspecified Hypodontia and Pyles Disease respectively.
Responses of 'very often' from the OPID-14 questionnaire (table 1) for the impact of prosthodontics on their lives include improved pronunciation (31.8%), improved jaw discomfort (18.2%), improved eating ability (40.9%), improved smile (90.9%), and improved teeth appearance (77.3%). Fifty percent of respondents were embarrassed of the appearance of their teeth and their smile before treatment. Areas of their lives which were negatively impacted were meeting friends, public speaking and work / school participation...

Conclusions -

Prosthodontic treatment improved the function and aesthetic look of patients with oligodontia. This in turn improved their self-esteem and self-confidence. Prosthodontic treatment provides the opportunity for patients to live a life with more than might be experienced without treatment.

Table 1. OPID-14 Responses.

OPID-14	Rating as % (n)					
Question	0	1	2	3	4	(blank)
Trouble Pronounciation Before	45.5 (10)	22.7 (5)	18.2 (4)	4.5 (1)	9.1 (2)	0.0 (0)
Pros Tx Improved Pronunciation	9.1 (2)	9.1 (2)	18.2 (4)	9.1 (2)	31.8 (7)	22.7 (5)
Pros Tx Worsened Taste	81.8 (18)	4.5 (1)	4.5 (1)	0.0 (0)	4.5 (1)	4.5 (1)
Jaw Discomfort Before	77.3 (17)	4.5 (1)	9.1 (2)	9.1 (2)	0.0 (0)	0.0 (0)
Pros Tx Improved Jaw Discomfort	31.8 (7)	4.5 (1)	0.0 (0)	4.5 (1)	18.2 (4)	40.9 (9)
Difficulty Eating Before	27.3 (6)	0.0 (0)	45.5 (10)	18.2 (4)	9.1 (2)	0.0 (0)
Pros Tx Improved Eating	13.6 (3)	4.5 (1)	9.1 (2)	22.7 (5)	40.9 (9)	9.1 (2)
URD Comfortable	13.6 (3)	9.1 (2)	0.0 (0)	27.3 (6)	31.8 (7)	18.2 (4)
LRD Comfortable	18.2 (4)	9.1 (2)	9.1 (2)	4.5 (1)	13.6 (3)	45.5 (10)
Embarrassed of Smile Before	9.1 (2)	9.1 (2)	22.7 (5)	9.1 (2)	50.0 (11)	0.0 (0)
Pros Tx Improved Smile	0.0 (0)	0.0 (0)	4.5 (1)	4.5 (1)	90.9 (20)	0.0 (0)
Life Less Satisfying	9.1 (2)	18.2 (4)	9.1 (2)	22.7 (5)	40.9 (9)	0.0 (0)
SC Teeth Appearance Before	9.1 (2)	13.6 (3)	4.5 (1)	22.7 (5)	50.0 (11)	0.0 (0)
Pros Tx Improved Teeth Appearance	0.0 (0)	0.0 (0)	0.0 (0)	18.2 (4)	77.3 (17)	4.5 (1)

Oligodontia, prosthodontics, psychosocial

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Pre- and post- alveolar bone graft orthodontic approach in the complete cleft lip and palate in the permanent and mixed dentition: importance of previous vertical leveling and biomechanical considerations.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: The orthodontic treatment before the alveolar bone graft (ABG) needs a special attention. Dental arches with adequate alignment (transversal) and leveling (vertical) permit an ABG surgery with a better prognosis than arches with inadequate alignment and/or leveling. The transversal correction is part of the orthodontic treatment protocol routine since the morphological alteration caused by the cleft, associated with primary plastic surgeries, make the maxillary arch atresic and asymmetrical. The orthodontic vertical leveling before ABG, equally important, but not always necessary, is frequently neglected, worsening the prognosis of the ABG. Aims: This work aims to report cases of multiple patients in the mixed and permanent dentition with a severe lack of vertical leveling between the teeth adjacent to the cleft on which biomechanical sources were used that allowed to optimize the orthodontic treatment. Methods: A series of biomechanical alternatives will be demonstrated to promote leveling between teeth adjacent to the cleft before secondary and tertiary alveolar bone graft. The orthodontic treatment included comprehensive fixed orthodontic appliances. Results: The marginal ridges of the adjacent teeth to the cleft were leveled and, after ABG, the radicular divergence of these teeth was corrected, in some cases, with an unusual biomechanical resource. Then, interdental gingival papilla and a significant improvement of the periodontal condition were obtained. Conclusion: The orthodontic vertical leveling allowed the ABG surgery in ideal conditions and excellent results in the post-ABG follow-up visits. Post-ABG mechanics enhanced the correction of root divergence and significantly improved the periodontal condition of the teeth adjacent to the cleft.

Alveolar bone grafting; Orthodontics, Cleft

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Assessment of dental arch relationships in patients with complete unilateral cleft lip and palate by using GOSLON Yardstick index

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction:
GOSLON Yardstick index is the clinical tool use to evaluate the dental arch relationship which can indicate the treatment outcomes of primary surgery and presurgical orthodontic treatment.
Aim:
To evalute the dental arch relationships in patients with complete unilateral cleft lip and palate (UCLP) of Tawanchai craniofacial-cleft center, Khon Kaen University
Results:
The GOSLON Yardstick index was performed for evaluation of dental model of patients with UCLP. All of three examiners of this study are the orthodontists. Kendall's Tau correlaton coefficient statistic was used to evaluate the intra- and inter-examiner agreements which ranged from 0.82 – 1.00 in this study suggest the strong agreement of the study. Study models of 15 patients with UCLP, treated between 1997 to 2018 were included in this study. The mean age was 5.20±0.93 (mean±SD). The dental arch relationships were sequentially classified to the GOSLON group 1 to group 5 as 13.3% 10.0% 50% 20% and 6.7%. The mean GOSLON score was 3.01±0.80
Conclusion:
Most of patient in this study have dental arch relationship and severity of occlusion in fair group. Otherwise, this study was not found the statistical difference between patients with history of using nasoalveolar molding (NAM) and without NAM compared to dental arch relationship.

GOSLON Yardstick index, Cleft

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Perception of quality of life in cleft lip and palate patients and their caregivers during orthodontic treatment

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate is a congenital condition that may affect oral health-related quality of life (OHRQoL) since CLP patients had more orofacial dysfunctions. Additionally, Cleft lip and palate patients can experience physical pain and psychological discomfort during the comprehensive treatment received which may affect the OHRQoL. The caregivers also may have their OHRQoL effect due to the continuous demands during cleft treatment. The expectations, attitudes and support of the caregivers also may affect the perception of rehabilitation and the coping capacity of CLP children.
Aims: The aim of this paper was to evaluate if the condition of having a cleft affected the levels of OHRQoL in cleft patients undergoing orthodontic treatment and their families.
Methods: The sample in this study included 226 individuals (111 with cleft and 115 control) and their parents who were invited to complete the Oral Health Impact Profile-14 (OHIP-14) and Family Impact Scale (FIS), respectively. Quantitative variables were evaluated by the Mann–Whitney test while categorical variables were assessed by Fisher's exact test.
Results: FIS score revealed a significant difference between the two groups evaluated ($p < 0.001$) but no significant difference was found between groups in OHIP-14. Only the social limitation in OHIP score revealed a significant difference ($p = 0.001$). Concerning FIS score, the most affected dimensions were: family activities ($p < 0.001$), parental emotions ($p = 0.001$), and family conflict ($p = 0.011$).
Conclusions: Orthodontic treatment had a similar impact on OHRQoL in both CLP and non-cleft patients. Cleft caregivers had lower OHRQoL than what was perceived by their children and caregivers of non-cleft children.
quality life; orthodontics; cleft palate

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Orthodontic Management of Median Mandibular Cleft

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

INTRODUCTION
Tessier 30 cleft or Median Mandibular Cleft is a rare anomaly presenting in the soft and hard tissues over the central lower face. A literature search indicates fewer than 80 cases being reported so far. Owing to the rarity of cases, there is no universally accepted surgical or orthodontic management strategy. There is no literature focusing on the orthodontic treatment aspects of these clefts.

AIM
This paper presents a case report of a patient with median mandibular cleft. We aim to share perspective regarding clinical presentation and treatment for midline mandibular clefts with emphasis on the orthodontic aspect. We also report Tessier 30 clefts in 2 more patients who reported at our centre.

METHOD
The patient first reported to our Centre at 8 months of age, when she was operated for primary closure of the defect. Regular follow up was carried out. At 9 years of age Alveolar Bone Grafting was performed. A presurgical splint to stabilize the mobile mandibular segments was fabricated. Post ABG, phase 1 treatment was carried out with a fixed twin block to aid in orthopedic growth modification of the mandible. Presently the patient is undergoing phase 2 treatment with fixed orthodontic mechanotherapy.

RESULTS AND CONCLUSION
Our patient presented with median cleft of lower lip, alveolus and mandible with severe ankyloglossia. This case illustrates the importance of clinical examination and long-term regular follow up and a clear plan of management for undertaking orthodontic and orthopedic procedures. We also present challenges faced at various stages of treatment. There is a lack of concordance regarding nature and timing of corrective surgery, orthopedic and orthodontic procedures. There is a need for evaluating and predicting the nature of the mandibular growth in patients presenting with mandibular cleft.

Median mandibular cleft, orthodontic management

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Calcifying Odontogenic Cyst associated with an ectopic mandibular incisor: A Case Report

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: This case highlights an unusual dual histopathology of both a complex odontoma and calcifying odontogenic cyst impeding eruption of a mandibular central incisor. It shows a rare diagnosis for a clinical presentation of delayed eruption of incisor teeth.

It describes a single individual with retrospective analysis of the patient's records including radiographs and histopathology results.

Setting: Joint orthodontic-surgical treatment was conducted by the Maxillofacial department at St Richards Hospital, Chichester in November 2020.

Results: An 11-year-old patient presented to the Orthodontic Department at St Richards Hospital, Chichester with retained LRA and LRB, labially displaced LR3 and a non-palpable LR1. An orthopantomogram and Cone Beam Computed Tomography confirmed an irregular mass of tooth like tissue superior to the ectopic LR1 with a provisional diagnosis made of a complex odontoma. The retained primary teeth, ectopic LR1 and associated odontoma were extracted under general anaesthetic followed by fixed appliance treatment to close the resultant spacing.

The histopathology report for the odontoma follicle showed an appearance innkeeping with a benign calcifying odontogenic cyst. This is an uncommon lesion with remarkably good prognosis with less than 5% recorded recurrences. Malignant transformation is extremely rare.

Conclusions: This case proves that clinical and radiographic examination alone cannot always confirm a diagnosis. It demonstrates the importance of histopathological examination and the need to consider alternative pathologies in the patients examined and treated.
Complex odontoma, odontogenic cyst

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Assessment of Skeletal Stability after Maxillary Advancement using Internal Distraction Osteogenesis Device in Cleft Maxillary Hypoplasia

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Assessment of Skeletal Stability after Maxillary Advancement using Internal Distraction Osteogenesis Device in Cleft Maxillary Hypoplasia

Introduction: skeletal relapse is the main issue in cleft orthognathic treatment.

Aim:To evaluate the skeletal stability after maxillary advancement using intraoral distraction device in cleft maxillary hypoplasia.

Methods: The study was a retrospective study of maxillary distraction osteogenesis (DO) using intraoral distraction device in seven cleft lip/palate patients. Total 32 cases with cleft lip and cleft palate who had undergone maxillary advancement with internal distraction osteogenesis were involved in this study. However, only 7 cases met the inclusion criteria. Of these patients, there were 4 male and 3 female, mean aged at 17.57 (12-26) years. Five out of seven diagnosed with unilateral cleft lip and cleft palate, while the other two were bilateral cleft lip and cleft palate. The measurements of two angular (SNA, SN-PP) and a linear (A-N perp) on the lateral cephalometric radiograph at pretreatment (T1), immediate after removal of distraction device (T2), 6-month post-treatment (T3), and 1-year post-treatment (T4) of the study groups were measured and analyzed according to the individual time interval.

Results: The results showed that SNA increased whilst A-N perp decreased significantly at T1-T2 and T1-T4 ($p<0.001$). In addition, SN-PP also increased at T1-T2 and T1-T4 ($p>0.05$). The stability of distracted bone in cleft maxillary hypoplasia patients were satisfied with no any significant difference among T2, T3, and T4 in all measurements. The total maxilla advancement achieved was 7.39 mm. However, there were a small relapse at T2-T3 in all measurements ($p>0.05$) with slight improvement at T3-T4 in SN-PP ($p>0.067$). The relapse rate was 7.85% at T3 and 13.67% at T4.

Conclusions: Distraction osteogenesis using intraoral device showed the promising post operative stability that could withstand against the high potential relapse of maxillary advancement in the cicatricial scar cleft maxillary bone.

distraction osteogenesis, relapse, cleft, stability

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ANTERIOR MAXILLARY DISTRACTION IN TREATMENT OF MAXILLARY HYPOPLASIA IN GROWING CHILD WITH CLEFT LIP AND PALATE DEFECT

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction:
Maxillary hypoplasia is common in child with cleft lip and palate defect with an incidence rate of 15-50 %. Ross 1987 stated that 25 % of the patients would not respond to routine orthodontic treatment. Conventional orthognathic surgery was treatment of choice, but patient had to wait till he becomes an adult to get treated. Moreover, relapse was an issue with this surgical technique. The introduction of surgical procedures like distraction osteogenesis has led to successful management of maxillary hypoplasia secondary to cleft lip and palate. The procedure has positive psychological effects on the young patients.
Aim:
To correct hypoplastic maxilla by Anterior Maxillary Distraction using tooth born distractor device in growing children with cleft lip and palate defect.
Methods:
Patients with indications of AMD are identified and tooth born distractor device are custom fabricated and are subjected to surgical procedures after which distractor device is cemented intra orally. The device is activated for forward movement of the anterior maxilla.
Results:
The change in correction is measured using dolphin software. Anterior maxillary distraction is beneficial since it increases the arch perimeter in the maxilla by developing new bone formation that can be effectively used to align the crowded teeth in the maxilla.
Conclusion
Anterior maxillary distraction using tooth born distractor device is cost effective easy to fabricate and readily acceptable by the patient with greater compliance.
AMD can be used effectively to treat cases of maxillary hypoplasia along with mild midface deficiency. This procedure can be successful tool to correct skeletal as well as associated dental malocclusion such as crowding of the teeth.

ANTERIOR MAXILLARY DISTRACTION

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Dental arch space conditions in the deciduous dentition among children with non-syndromic cleft palate- a controlled study

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Spacing in the dental arches at the start of the eruption of permanent teeth appears to be fundamental for their proper alignment.
Aims: The aim of the study was to evaluate compare space conditions in the upper and lower dental arches among children with and without cleft palate.
Methods: Twenty-nine cleft children, 19 with cleft of the hard and soft palate (HSCP;aged 5.49±0.65) and 10 with cleft of soft palate only (SPC; aged 5.38±0.45) were included and compared to a control group of 30 children with normal occlusion (CG; aged 5.47±0.35). Children without complete primary dentition were excluded. The presence or absence of spaces was determined on the digital dental casts, based on the existence of proximal contact of the teeth. If proximal contact was visible or the teeth were overlapped, the site was classified as “no spacing”. If there was no proximal contact, the site was classified as “spacing”. If the upper dental arch had “spacing” in 2 or less sites, the arch was considered as “crowding”. In the lower dental arch “crowding” was defined by the presence of 3 or less “spacing” sites. Each cast was examined twice by one researcher.
Results: The intra examiner reliability assessed by Cronbach`s alpha coefficient was excellent (0.963). The prevalence of crowding was significantly higher among both the HSCP (39% and 37% in the upper and lower dental arch, respectively) and SPC (40% and 40% in the upper and lower dental arch, respectively) groups compared to the CG (12% and 14% in the upper and lower dental arch, respectively)($p<0.01$). No significant differences were observed regarding the prevalence of crowding between the HSCP and SCP groups.
Conclusions: The prevalence of crowding in both dental arches was significantly higher in children with non-syndromic cleft palate compared to children with normal occlusion.

space conditions, cleft palate

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Late maxillary protraction in cleft lip and palate - a clinical case

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

1. Introduction: Cleft lip and palate is the most common facial congenital defect, with an overall incidence of 1:700 to 1:500. Some of the most important clinical features in these patients result from the surgeries performed to the closure of the cleft namely, anteroposterior and transversal maxillary collapse. Thus, these patients often develop a midface deficiency, which may lead to class III malocclusion and/or posterior crossbite. Maxillary hypoplasia at a later age can be performed through surgical or non-surgical approaches, such as late maxillary protraction.
2. Aims: The purpose of this poster is to present a clinical case of a cleft lip and palate patient who underwent late maxillary protraction.
3. Methods: A female patient with nine years and ten months old of age presented to the Orthodontics appointment for malocclusion correction. The patient had a right cleft lip and palate, skeletal class III due to maxillary hypoplasia (ANB: -6º), class III angle malocclusion, anterior (overjet: -5 mm) and posterior crossbite (transverse discrepancy: -8.2 mm). The treatment plan included the correction of the posterior crossbite with a fixed appliance (Quad-helix) and the correction of the anteroposterior maxillary collapse applying the late maxillary protraction protocol through the Delaire facemask.
4. Results: After twelve months of orthodontic treatment it was possible to obtain correction of anterior (overjet: 1 mm) and posterior crossbites. Moreover, maxillary advancement was verified, being normopositioned in relation to the anterior portion of the base of the skull.
5. Conclusions: Late maxillary protraction can be an alternative for the correction of maxillary hypoplasia in advancement that does not exceed 5 mm. Furthermore, this therapy is more conservative than the surgical approach and has a lower rate of relapse.

Class III, Late Maxillary Protraction

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5 Year Old Index Outcomes for UK Patients born between 2008-2015 with complete UCLP

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction/Aims
Since development of the index for dental relationships of 5 year old patients born with a UCLP, as published by Atack et al 1997, UK cleft teams have sought to assess treatment outcomes following surgical repair for those born with a complete unilateral cleft lip and palate.

Methods
Orthodontists, supported by their cleft clinical teams, have gathered the clinical records (study models and/or clinical photographs) of the occlusion of 5 year olds born with a UCLP for independent assessment. Through the Orthondontic Clinical Excellence Network, these records have been assessed annually using the 5 Year Olds' Index (Atack et al 1997) with feedback to individual cleft centres. These outcomes have also been compared with CSAG and CCUK findings.

Results
The records of over 1100 5 year olds have been assessed in this time period. Outcome gradings have ranged from 25-35% in the excellent/good categories, 23-32% in the fair category and 17-25% in the poor/very poor categories. Pre COVID, record availability varied from 75-84% across centres but took more significant dips in some centres during COVID restrictions.

Conclusions
Annual results continue to show variation in terms of record availability, cleft centres participation and outcome gradings. There is a gradual trend for increasing numbers of clinical photographs to be submitted as a proxy for study models but the authors have found limitations in their usage.

UCLP, outcomes, 5 yr index

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Three - dimensional digital evaluation of maxillary width of cleft patients operated by two surgical techniques.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction:
The functional goals of the cleft palate surgery are to facilitate normal speech and hearing without interfering with the facial growth. Using our electronic medical record for facial anomalies – EMRFA we manage to follow up patients and to use retrospectively the written information. The first technique used for palatoplasty was Wardill-Kilner and the second one is modified as minimal incision technique.
Aim: The aim of this study was to measure and compare the transversal dimensions of the upper dental arch on three-dimensional digital study models in children with cleft lip and palate operated by two surgical techniques before orthodontic treatment.
Methods:
The sample consists of 386 children between 4-11 years divided into 3 groups: cleft palate, unilateral cleft lip and palate, and bilateral cleft lip and palate. The dental casts underwent a process of scanning through 3D intraoral scanner, or we prepare digital models after digital impression taking. We measured the distance between upper canines at the cusps and in the middle of palatal surface and the distance between molars at the cusps and the middle palatal surface.
Results:
We measure 186 dental casts of cleft lip and palate patients. Our measurements show that difference of the dental arch width is not significant between the unilateral cleft lip patients at the same age, operated by the two techniques. There are many factors affecting palatoplasty that should be taken into consideration.
Conclusion:
Maxillary arch is narrower in both unilateral and bilateral cleft lip palate as compared to cleft palate. Comparison and assessment of maxillary width of the two methods of palatoplasty we must use strict criteria and correlations for evaluation the pure technique and to exclude the affecting factors. There is a significant need of longitudinal analysis which describes differences between arch dimensions both at pretreatment and post treatment stages.

3D measurements, maxillary width

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Artificial intelligence system that estimates the GOSLON Yardstick index in patients with unilateral cleft lip and palate

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: The GOSLON Yardstick is widely used to categorize a child's occlusal outcome into one of five categories (excellent [GY1] to poor [GY5]) based on similarity to reference study models. Because this index is a subjective classification, an artificial intelligence (AI) system that objectively categorizes models would be beneficial for providing a stable assessment.
Aim: To develop an AI system that automatically determines the GOSLON Yardstick index in patients with unilateral cleft lip and palate (UCLP).
Methods: A total of 107 digital dental models obtained from patients with UCLP (age, 7-12 years old) were used. An experienced orthodontist manually categorized the models into 5 categories (10, 30, 37, 13, and 17 for GY1, 2, 3, 4, and 5, respectively) for use as annotation data. To augment the data to 50 samples in each category, a statistical model was used. A Graph Convolutional Network was used to train data when 49 samples were used as training data and the remaining 1 sample was used as a test datum. The accuracy was calculated for each category.
Results: The accuracy of the developed AI system was 100%±0%, 25%±26%, 50%±23%, 30%±35%, and 100%±0% for GY1, 2, 3, 4, and 5, respectively. The mean accuracy was 61.0%±12.0%. Weight for recognition was observed in cleft sites as well as relationships between upper and lower arches.
Conclusion: The AI system that objectively assesses the GOSLON Yard stick was proposed, and cases at both extremes (1: excellent and 5: poor) were perfectly categorized; however, the intermediate categories showed relatively large errors for the categorization task. Further research will be necessary to compare the AI system findings with those of human experts.

CLP, orthodontics, prediction, diagnosis, model

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Factors affecting the duration of presurgical orthodontics in individuals with cleft lip and palate who underwent orthognathic surgery: preliminary results

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Presurgical orthodontic treatment duration is expected to be more extensive for individuals with cleft lip and palate (CLP) because of all the complications related to this condition. Aim: To provide a better understanding of factors involving presurgical orthodontic duration such as alveolar bone graft, clefts affecting the alveolar ridge and geographical factors. Methods: 169 individuals were included in this retrospective study. Data collected was: CLP type, distance between patients city of origin and the center where treatment was conducted, duration of orthodontic preparation for orthognathic surgery and its relation to the alveolar graft. Inferential statistics were applied to evaluate presurgical orthodontic treatment duration for individuals who underwent alveolar graft before surgery and individuals who did not. Results: mean duration time from orthodontic treatment until surgery was 9.73 years; and the mean time between the day of surgery request and the day surgery was undergone 3.14 years. The alveolar ridge was affected in 86.04% of individuals. No statistical significant difference was found between the groups with and without alveolar bone graft. However, it was observed a clinically difference between those groups, with mean time duration of presurgical orthodontic treatment faster of 1.36 years for the group of individuals who underwent the alveolar graft before orthognathic surgery. 44.58% of individuals needed to travel from other states to the center where treatment took place, yet no statistically significant differences were found between these groups. Conclusion: duration time of presurgical orthodontic treatment is more extensive for individuals with CLP. Even though no statistically significant differences were found between the presurgical orthodontics duration and the presence of alveolar bone graft, more research is necessary to better understand this variable.This work was supported by Smile Train,Inc.
Cleft palate. Orthodontics. Orthognathic Surgery.

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Dental anomalies and malocclusion in patients with Williams–Beuren syndrome

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Williams-Beuren syndrome (WBS) is a genetic disorder caused by a microdeletion in chromosome 7, characterized by congenital cardiovascular abnormalities, mental retardation, growth disturbances and variable abnormalities in different systems. Facial dysmorphism, also known as “elfin face”, is typical for WBS, and is often associated with various orthodontic anomalies.
Aim: Our aim was to evaluate the occurrence of dental anomalies and malocclusion in a group of individuals with WBS.
Methods: Nine patients (5 males, 4 females) were investigated at the Department of Orthodontics and Cleft Anomalies of the Královské Vinohrady University Hospital by a single experienced orthodontist. The mean age when records were taken was 16.6 years (age range 10-31 years). Extraoral and intraoral examinations and photos, dental scans, and OPG were performed in all patients, and anomalies of teeth and bite were determined. Cephalometric x-rays were indicated in two patients; therefore, craniofacial anomalies were not identified in the study group.
Results: Five individuals exhibited teeth agenesis of two or more permanent teeth (3rd molars not evaluated), with maxillary lateral incisors missing in three cases. Overall, smaller teeth with excessive interdental spacing were found in six individuals. Eight patients out of nine had malocclusion – six of them Class III with anterior cross-bite, two had Class II, and one had Class I. Dental midline deviation was found in two individuals.
Conclusion: No single dental finding was common in all patients; however, the most frequent findings were smaller teeth and excessive interdental spacing, agenesis of two permanent teeth and anterior crossbite. Only one individual had adequate size of teeth and optimal bite with insignificant lower incisor crowding. Further research on a larger patient sample is needed in order to determine the pathognomonic dental features for WBS and the factors (e.g., genetics, abnormal growth, oral habits, etc.) that influence such results.

Williams-Beuren syndrome, dental anomalies, malocclusion

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Effect of Facemask and Maxgym on cleft maxilla of growing child- A comparative study

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1.INTRODUCTION
Midface deficiency due to Cleft Lip and Palate(CLP) can be modified by protraction therapy in growing child. A comparative study on the changes in the growth of cleft maxilla was conducted using a heavy-intermittent force philosophy as against the routinely followed slow-continuous orthopedic forces. The study was conducted using a Facemask (FM) appliance, and Maxgym (MG), a new protraction device that delivers heavy forces for a shorter duration of time.FEM models and clinical outcomes were assessed using 3D analysis of the CBCT images.
2.AIMS: To evaluate the effect of protraction therapy on the craniofacial structures in patients with Non Syndromic unilateral CLP (NSUCLP) using FM and MG.
3.METHOD CBCT scans of individuals with NSUCLP (n=42) before commencement of orthodontic therapy were analyzed to compare the craniofacial structures of cleft and noncleft sides. Changes in craniofacial structures were assessed and compared using lateral cephalograms, soft tissues thickness, pharyngeal airway volume and maxillary sinus airspace volumes derived from CBCT.
4.RESULTS Maxillary arch width canine(MAWC), maxillary arch width first premolar(MAWPM1), maxillary arch width second premolar(MAWPM1), and maxillary volume of cleft side was lesser and maxillary height at nasal aperture was more on the cleft side ($p<0.05$).
Displacement of dental structures on cleft side was more than the skeletal structures in FEM. Maxillary advancement was more with MG therapy while SNB was decreased in FM. The ML, MAWC, and MAWPM1 increased with FM and MG, whereas MAWPM2 and MAWM1 increased with FM.
5.CONCLUSIONS MG produced greater displacement compared to FM. Protraction with expansion enhanced displacement and reduced counter clockwise rotation. The FM group demonstrated better expansion as compared to MG and the nasal width expanded more in MG group. We conclude that MG can be a good alternative for maxillary protraction.

Facemask,Maxgym,cleft lip and palate,CBCT

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The Use of Vacuum Formed Retainers in Mixed Dentition Patients with Cleft Lip and Palate

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Introduction:
Phase I orthodontic treatment in patients with cleft lip and palate include the preparation for a secondary bone graft, anteroposterior correction of the maxilla (in mild cases), and alignment of the anterior dentition. The vacuum formed retainer is a clear, removable device introduced in 1993. Its treatment capabilities range from the retention phase after orthodontic treatment to minor movements of a tooth during limited treatment. Another capability includes the correction of the anterior posterior relationship of the dentition.
Aims
The purpose of this case report is to present the use of a vacuum formed retainer to assist in the correction of a dental anteroposterior discrepancy in three patients with cleft lip and palate in the mixed dentition.
Methods
Three patients with cleft lip and palate were treated orthodontically using partial fixed appliances in the maxillary arch and a vacuum formed retainer in the mandibular arch. Hooks were placed on the retainer mesial to the mandibular canines, and the patients were instructed to wear the appliance full time along with CIII elastics. Treatment was evaluated using clinical photos and lateral cephalogram radiographs before and after treatment.
Results
The use of a vacuum formed retainer and CIII elastics resulted in a complete correction of the anterior crossbite, resulting in a positive overjet using minimal appliances. Over-correction was achieved, and a stable result was maintained two years post Phase I orthodontic treatment.
Conclusion
With proper case selection, the vacuum formed retainer in combination with elastics is a viable option for the correction of the anteroposterior dental discrepancies in mixed dentition patients with cleft lip and palate.

Orthodontics, mixed dentition, early treatment

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CLINICAL AND MORPHOLOGICAL JUSTIFICATION OF THE INFLUENCE OF THE TOUNGE ON THE FORMATION OF DENTOGNATHIC DEFORMITIES

CLINICAL AND MORPHOLOGICAL JUSTIFICATION OF THE INFLUENCE OF THE TOUNGE ON THE FORMATION OF DENTOGNATHIC DEFORMITIES Alona Melnyk[1], CLINICAL AND MORPHOLOGICAL JUSTIFICATION OF THE INFLUENCE OF THE TOUNGE ON THE FORMATION OF DENTOGNATHIC DEFORMITIES Liudmyla Yakovenko[2]
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CLINICAL AND MORPHOLOGICAL JUSTIFICATION OF THE INFLUENCE OF THE TOUNGE ON THE FORMATION OF DENTOGNATHIC DEFORMITIES
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Introduction. Tongue is a powerful muscular organ located in a cavity. Changes in the tongue (shape, tone, size) and jaws affect their position and interposition, which is important when planning orthodontic treatment for children with dentognathic deformities.
Aims. To determine the clinical and morphological parameters of tongue in children without orthodontic pathology and in violation of intermaxillary ratio.
Methods. The study involved 42 children aged 11-12 years with distal and distal, complicated deep bite and without orthodontic pathology, who underwent CT, electromyography, morphometric measurements of the tongue.
Results. The thickness indices of the anterior, middle and posterior third of the tongue in 12 children without orthodontic pathology had average values of 29.1±0.16 mm, 42.3±0.06 mm and 44.4±0.08 mm, respectively. Length m. genioglossus was 17.9±0.81 mm, and the total length of the tongue was 60.6±0.12 mm.
In 30 children with distal and distal complicated deep occlusion, the morphometric indicators of the tongue of the corresponding thirds were 22.9±0.11 mm, 42.1±0.09 mm, and 44.1±1.05 mm. Length m. genioglossus was 19.7±1.08 mm, total length of the tongue was 54.1±2.16 mm.
The results of electromyographic studies of the muscles of the floor of the oral cavity indicate an increased muscle tone of the tongue in children with a distal and distal complicated deep bite.
Conclusions. The revealed changes clinical and morphological parameters of tongue are rationale for moving its root to posterior-lower position, reducing the volume of oral cavity and the length of lower dental arch. Clinical and morphometric characteristics of the tongue in children with distal and distal complicated deep bite indicate a cause-and-effect relationship and the need to correct its position in this category of patients.

dentognathic deformities, tongue

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Non-Aggressive Orthodontic Treatment in Cleft Lip and Palate Patients with Class III Skeletal and Dental Pattern

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Cleft lip and palate are common birth defects accompanied with various malformation. Class III skeletal with hypoplastic maxilla is commonly found in cleft lip and palate patients. Growth modification by using protraction facemask before prepubertal growth spurt can improve the relation of jaws by promoting forward, downward movement of maxilla and restrict growth of mandible. Two patients with unilateral cleft lip and palate are described a nonsurgical approach by using rapid maxillary expansion devices (RME) and facemasks follow with fixed orthodontic treatment. Cephalometric analysis was measured at pre and post facemask as well as post fixed orthodontic treatment. Significant change of skeletal relation was demonstrated. However labial tipping of maxilla teeth was observed. In summary rapid maxillary expansion followed by facemask and camouflaged treatment with fixed appliances can reduce class III skeletal discrepancy which yielded the successful result.
growth modification, cleft, ClassIII skeletal

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Dental Compensation in Cleft lip and Palate

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Introduction: Cleft lip and palate patients have a class III malocclusion with a retrognathic maxilla. Most skeletal class III patients have a compensation with proclined upper incisors and retroclined lower incisors. Aims: To assess the compensation if any in cleft lip and palate patients. Methods: Lateral Cephalograms of 30 cleft lip and palate patients was assessed using Steiner's cephalometric analysis for the incisor inclination. Results: The mean upper incisor inclination was (linear) 7.94 mm (SD±3.22), angular 37.71(SD 7.47) and the mean lower incisor inclination was linear 4.96 mm (SD±3.09), angular 28.17(8.35) in the Cleft lip and palate patients. When compared with the normative data of Steiners cephalometric analysis, it can be observed that the upper incisors exhibited dental compensation while it was minimal in the lower incisors and the lower jaw. Thus, compensation occurs more in the maxilla than in the mandible with Cleft lip and palate patients. Conclusions: These findings have major implications in the orthodontic and orthognathic management of the cleft lip and palate patient, especially Surgery first orthodontic approach. Cleft lip papate compensation

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A Two Cycle Audit Evaluating the Use of Sports Mouthguards During Orthodontic Treatment in a Cleft Lip and Palate Patient Cohort

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Introduction
Dental trauma during orthodontic treatment can lead to soft tissue injury, debonding of brackets and deformation of arch wires. Dental trauma encountered whilst participating in sport accounts for 10-39% of all dental injuries and a meta-analysis showed the number of dental injuries while participating in sport is significantly higher in those who do not use a mouthguard.

Previous studies have reported on the adherence to mouthguard advice in the orthodontic patient population. However, no literature could be sourced to indicate if the adherence to mouthguard advice is similar in the cleft orthodontic population to the non-cleft orthodontic patient population.

Aims
The primary aim of these audits was to investigate whether patients undergoing fixed appliance orthodontic treatment are wearing a mouthguard for contact sports.

The secondary aims of these audits were
- discover for which sports patients used mouthguards
- assess whether patients were advised to use a mouthguard whilst playing contact sport
- ascertain which mouthguards are currently being used
- determine the barriers for mouthguard use

Methods
The first 50 consecutive patients with a repaired cleft lip and palate who attended and verbally consented completed an anonymous questionnaire in both cycles. Following the first cycle an awareness campaign ran for 6 months. This was followed by a period of 3 months of normal practice prior to commencing data collection for cycle 2.

Results
Early results indicate that compliance with mouthguards for contact sport improved during cycle 2, however it is still not meeting the gold standard set. Early results for the secondary aims indicate similar results for most outcomes and an improved awareness of the need for mouthguards. The number of participants playing contact sport decreased between Cycle 1 and Cycle 2 but mouthguard use increased. In Cycle 2 more patients were able to recall being advised to use a mouthguard. Participants used mouthguards bough on the internet and shop bought (boiled) mouthguards. Several barriers for mouthguard use were identified, the most common was not being able to recall being told to wear one.

Conclusions
The awareness campaign raised awareness of the need to use a mouthguard when playing contact sport. Compliance with mouthguard use significantly increased but the gold standard was still not met and more need to be done to reach this standard.

Orthodontic, Sport, Mouthguard, Cleft

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MULTIDISCIPLINARY TREATMENT OF AN ADULT PATIENT WITH UNILATERAL LABIOPALATAL CLEFT AND SKELETAL CLASS III AND UPPER LATERAL INCISOR AGENESIS.

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1. INTRODUCTION
One out of every 750 newborns in Spain presents cleft lip and palate. This anomaly is accompanied by a series of dentofacial alterations, being the agenesis of the upper lateral incisor on the side of the cleft and the presence of supernumerary teeth, the hypoplasia of the maxilla being the most common. In parallel, 37% of these patients require orthodontic treatment combined with orthognatic surgery.
2.AIMS
We present a case of an 18-year-old female patient with left unilateral cleft lip and palate
3. METHODS
The initial extraoral photographs showed a patient with a dolichofacial pattern and a concave profile, while the intraoral photographs showed a molar class I, a canine class III and an anterior crossbite in the sagittal plane; in the vertical plane, a diminished overbite is appreciated; while, in the transverse plane, a crossbite and deviation of the upper midline due to the agenesis of 2.2. The panoramic radiograph showed agenesia of 2.2 while the lateral skull radiograph showed a skeletal Class III of maxillary origin.
4. RESULTS
The treatment was a multidisciplinary; orthodontic treatment with the extraction of 1.4 and the closure of the space of 2.2, together with bimaxillary orthognathic surgery. Composite veneers on the six upper anterior teeth and infiltration of hyaluronic acid on the lips to hide the scar from the cleft lip and achieve greater symmetry in the cupid's bow.
5. CONCLUSIONS
A stable, functional and aesthetic occlusion was achieved and the patient was very satisfied with the final result.

CLEFT
ORTHOGNATIC SURGERY
AGENESIS
ORTHODONTICS

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Orthodontic treatment outcomes in patients with hemifacial microsomia at The University of Tokyo Hospital

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Introduction: Hemifacial microsomia (HFM) is the second-most common facial anomaly after cleft lip and/or palate. Facial asymmetry and various malocclusions are found in HFM, requiring orthodontic treatment with or without surgical correction. Aims: This study examined occlusion outcomes for patients with HFM at University of Tokyo Hospital. Methods: Subjects comprised 24 patients with HFM after active orthodontic treatment during 1991 to 2018. Characteristics of subjects and treatment outcome were examined using treatment records, dental models, and photographs. Results: The left side was affected in 54.2%, the right side in 33.3%, and both sides in 12.5%. Pruzansky classification was Grade I in 25.9%, Grade II in 70.4%, and Grade III in 3.7%. Associated complications were cleft lip and/or palate (16.7%), transverse facial cleft (20.8%), facial palsy (20.8%), and hearing loss (37.5%). Phase I orthodontic treatment in the growing period was performed in 10 cases (41.7%), comprising functional appliances in 9 cases and a maxillary protraction appliance in 1 case. Orthognathic surgery and other cosmetic surgeries were performed in 17 (70.8%) and 19 cases (79.2%), respectively. Orthognathic surgery was required in 8 patients treated with a functional appliance. After treatment, occlusion was acceptable in all cases. However, posterior crossbite of the first molar was found in 1 case and crossbite of the second molar 3 cases. Midline discrepancy between maxillary and mandibular incisors exceeding one-quarter of mandibular incisor width was found in 4 patients (16.7%). Conclusion: Occlusion after orthodontic treatment was satisfactory in all cases. Functional appliance treatment could not avoid orthognathic surgery.

Hemifacial microsomia, orthognathic surgery

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Evaluation of permanent teeth dimensions of non-syndromic cleft lip and palate patients

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Introduction: Non-syndromic (N/S) cleft lip and/or palate (CLP) is the most common congenital anomaly in the head area and can be associated with other multifactorial disorders. Studies have shown that people with CLP are more likely to have dental anomalies such as dental agenesis and delayed tooth eruption. The association between teeth size discrepancies and N/S CLP is still controversial. This systematic review compared the results of different studies that investigated the mesiodistal and buccolingual permanent teeth discrepancies in patients with CLP. The comparison was done among CLP patients between cleft and non-cleft sides and with the non-cleft control group.
Aims: To determine whether non-syndromic cleft lip and/or palate is a factor that influences the permanent teeth' mesiodistal and buccolingual dimensions.
Methods: Electronic searches on PubMed, Oxford Journals, SAGE Journals Online, and EBSCO Publishing databases were used to retrieve articles in English. Studies related to N/S CLP that measured mesiodistal and buccolingual sizes of teeth were included in this review.
Results: Initial search resulted in 677 articles of which 6, after duplicate removal, fit the inclusion criteria for the systematic review. Mesiodistal dimensions of teeth were compared between cleft and non-cleft groups in 5 of the studies. Buccolingual dimensions of teeth were investigated in 3 of the studies included in the review. Mesiodistal and buccolingual dimensions of teeth in the cleft side tend to be smaller in general, particularly on the lateral incisors where the smallest average reduction was 0.4mm in both dimensions compared to the non-cleft side and control group. Patients with bilateral CLP tend to have smaller teeth dimensions than patients with unilateral CLP.
Conclusions: Mesiodistal and buccolingual dimensions of teeth in cleft lip and palate patients were generally smaller, with the most significant reduction of upper lateral incisors.

Cleft, teeth dimensions

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Quantitative measurement of palatal mucosa in cleft lip and palate using elastography

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Introduction: Cleft lip and palate (CLP) are the most common congenital abnormalities in the craniofacial region. Patients with CLP usually have palatoplasty in early childhood, which causes scar tissue on the palatal mucosa. Scar tissue prevents growth of the maxilla. As a result, patients with CLP often present with crossbite and collapse of the maxillary dental arch. However, no studies have quantitatively evaluated the characteristics of the palatal mucosa.
Aims: The aim of the present study was to evaluate quantitatively the physical characteristics of the palatal mucosa after palatoplasty in patients with CLP using elastography. We also aimed to investigate the association of physical characteristics of the palatal mucosa and the use of maxillary protraction therapy (MPA), which is usually used for patients with undergrowth of the maxilla.
Methods: We enrolled 57 patients with CLP (mean age, 20.82 ± 3.50 years; 35 men, 22 women) and 30 control subjects without CLP (mean age, 26.97 ± 2.06 years; 12 men, 18 women) and measured the stiffness of the palatal mucosa using elastography. Among the patients with CLP, we investigated the association between the use of MPA and the stiffness of the palatal mucosa.
Results: The palatal mucosa in patients with CLP was significantly stiffer than that in control subjects. Moreover, the palatal mucosa in the MPA group was significantly stiffer considering the cleft type compared with the group with no MPA.
Conclusions: Our findings suggest that there are characteristic differences in the palatal mucosa between patients with CLP and subjects without CLP and between those with and without MPA use. Elastography might be new effective diagnostic tool in orthodontic treatment for patients with CLP.
elastography, scar tissue, quantitative measurement

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Use of functional orthodontic treatment in cleft. Preliminary results

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Introduction: Functional orthodontic treatment emphasises muscle strengthening and soft tissue formation through movement. They also change skeletal position during growth. There are no direct forces exerted, which makes the treatment comfortable and gentle.
Patients with cleft tend to underdevelop the middle third of the face, so they can benefit from functional orthopedics to stimulate growth of the maxilla. Reducing the sequelae during growth and therefore preventing the need for maxillary distraction or orthognathic surgery. Or if surgery is required, making it less complex
Method: Two cases of cleft patients who started using functional appliances at seven years old will be discussed. Comparing initial and current cephalometries, as well as the bite achieved with the treatment.
Results: Both patients showed maxillary growth in the sagittal and transversal planes, which is reflected in the type of bite achieved and in the advancement of point A measured in cephalometries.
Conclusion: The use of these intraoral devices is an effective method that manages to stimulate maxillary growth, allowing to achieve stable bites that can be maintained over time. Reducing sequelae in the medium term and avoiding complex corrective surgeries.

orthopedic functional cleft maxilla

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MINOR AND MAJOR ANOMALIES AMONG RELATIVES OF PATIENTS WITH CLEFT LIP AND PALATE IN A SAMPLE OF A POPULATION IN BOGOTA, COLOMBIA.

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Introduction The presence of two or more craniofacial anomalies may be related with congenital syndromes and defects. The identification of anomalies facilitates early detection, remission and diagnosis of malformations, which may be related to congenital conditions. Aims The aim of this study is to determine the presence of minor and major anomalies among first-degree relatives of patients with a sequel of cleft lip and palate (CLP) in a sample from Colombia. Methods An observational descriptive study was carried out among a sample of 50 first-degree relatives of patients with CLP sequels without any syndromic condition or systemic disease. All patients were clinically evaluated observing the craniofacial characteristics and anthropomorphic dimensions using a format which specifies the characteristics of each structure. The CCI calibration and the accordance degree with the Lindis and Kosh scale was 0.81-1.00. The analyses were made with descriptive statistics, frequency, percentage analysis and the type of cleft was considered. Results The children of participating relatives had a predominant left unilateral cleft of 35.29%. The anomalies found were facial asymmetries in 39.22% of the sample, nasal asymmetries in 98.04%, flattened facies in 36.84%, upper lip anomalies in 35.29%, epicanthal folds in 36.84%, asymmetry of ears with 82.35% and deep overbite in 5.26%, while the entire sample had permanent dentition. As relevant findings, 5.26% of the sample had a uvula with sub-mucous cleft, 21.04% had the presence of an atypical upper lateral and 5.26% had enamel hypoplasia. The most relevant finding was the strong correlation between patients with left cleft and the left narine of their parents being larger. Conclusions Craniofacial malformations must be differentiated from family features as well as racial characteristics. Furthermore, identification of minor and major anomalies provides an early detection for diagnosis and on-time treatment of malformations. Further studies are suggested in order to establish correlations between phenotypes and genotypes.
Craniofacial Anomalies, Congenital Syndromes

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Comparative Study of Presurgical Infant Orthopedics by Modified Grayson Method vs. Dynacleft With Nasal Elevators vs. aligners in Patients With Unilateral Cleft Lip and Palate—A Clinical Prospective Study

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Objective: To compare the effects of presurgical infant orthopedics using 3 different methods, that is, the Dynacleft with Nasal elevator system versus the modified Grayson's technique versus aligners in patients with complete unilateral cleft lip and palate.
Design: Prospective comparative cohort study.
Materials and Methods: Thirty patients were divided into 3 groups, that is, Group A consisting of 10 patients who underwent correction with DynaCleft with Nasal elevator system and Group B consisting of 10 patients undergoing correction using the modified Grayson technique.Group C consisting of 10 patients who underwent correction with aligners with Nasal elevator system and Maxillary cast measurements were taken at 2-time intervals (pre- and posttreatment) to assess various parameters using a laser scanning machine (C500 Solutionix) and 3D software (GOM Inspect). Similarly, standardized anterior–posterior and worm's-eye view photographs using a custom box were taken and imported to Adobe Photoshop CS6 for measurements. Paired t test and independent t test were used to compare intra- and intergroup changes, respectively.
Results: The analysis of cast (primary outcome) and photographic (secondary outcome) measurements showed improved nasal asymmetry and alveolar correction in both groups which showed no significant intergroup difference when assessed using the independent t test ($P > .05$). Group A showed higher chances (42.8%) of causing a T-shaped defect (due to excessive mesialinward rotation of the minor segment)
Conclusion: All 3 methods proved effective in improving the nasal asymmetry, reducing the alveolar cleft gap, and approximating the lips together; but care must be taken when applying the alveolar molding vector in the Dynacleft system.
nasoalveolar molding, presurgical infant orthopedics,aligners

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Comprehensive and Holistic Approach in Cleft Lip and Palate Patient: A Long Term Case Report

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Introduction
The treatment in patient with cleft lip and palate requires several phases of treatment from birth to adulthood due to multi problems. Comprehensive and holistic cleft care by multidisciplinary cleft- team to the patients can provide the better quality of life to the patients.
Case review
A boy with right unilateral complete cleft lip and palate was involved in cleft care process since birth to 19 years old. Follow the protocol: feeding help and advice, lip repair surgery, palate repair surgery, hearing and speech assessment, alveolar bone graft, growth modification using facemask and fixed orthodontic treatment were involved the treatment process. Oral health promotion programmes were done since deciduous dentition. The cooperation and attitude of both patient and his parents are very good. After 19 years of treatment and care, good facial appearance, optimal occlusion, better phonation and speaking as well as social relationship are obtained.
Conclusion
Multidisciplinary cleft-team, holistic approach, treatment timing and patient's compliance are the key successes of the treatment in this patient.

comprehensive care, holistic, multidisciplinary, cleft

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DEBULKED SIMPLIFIED EXPANSION & ALIGNMENT APPLIANCE FOR CLEFT LIP & PALATE PATIENTS

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Introduction:
In cleft lip and palate patients, Maxillary deficiency occurs in sagittal, transverse and vertical planes. The maxillary arch constriction due to the scarring can lead to palatal tipping of the dentition resulting in crossbite. The maxillary expansion is achieved with either slow or rapid palatal maxillary expansion devices. These palatal maxillary expansion appliances use heavy force or they are bulkier or can lead to ulcerations and discomfort to the patients. All the conventional devices are attached on the palatal aspect. Already the speech is compromised in cleft palate patients which can further compromise speech.
Aim:
Hence, we have a come out with a debulked simplified expansion & alignment appliance called the Jockey wire appliance for palatal expansion
Materials:
In order to avoid the bulky palatal expansion devices, we had decided to use a Jockey wire on the buccal side to expand the maxillary arch.
The jockey wire is made of 19 Gauge (1.1 mm) Stainless Steel wire. 0.014 Niti Arch wire was segmented near the cleft region. Arch wire & Jockey wire ligated together with ligature ties. The Jockey wire goes into the Head Gear slot.
Results:
Adequate expansion was achieved with the jockey wire expansion. Here we are presenting a case report of the Jockey wire expansion in Bilateral cleft lip palate patient.
Conclusion:
There are various options to treat maxillary constriction like Hyrax & Quad helix. Jockey wire expansion is an economic & viable alternative for arch expansion in cleft patients.

Cleft Palate, palatal expansion, innovation

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PREDICTORS OF DENTOGNATHIC DEFORMITIES DEVELOPMENT IN CHILDREN WITH CLEFT LIP AND PALATE

Predictors Of Dentognathic Deformities Development In Children With Cleft Lip And Palate Valerii Filonenko[1],
PREDICTORS OF DENTOGNATHIC DEFORMITIES DEVELOPMENT IN CHILDREN WITH CLEFT LIP AND PALATE Liudmyla Yakovenko[2]
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PREDICTORS OF DENTOGNATHIC DEFORMITIES DEVELOPMENT IN CHILDREN WITH CLEFT LIP AND PALATE
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Introduction. The causes of dentognathic deformities (DGD) in children with cleft lip and palate (CLP) are predictors that lay the foundation for their formation. They can be divided into primary congenital defects of soft and hard tissues, the influence of the tongue and cheek muscles, feeding method, primary surgical interventions.
Aims. To determine the primary pathogenetic predictors of the formation of DGD in children with CLP.
Methods. Photogrammetric and morphometric measurements and scanned models of the upper jaw of 54 children with CLP were carried out.
Results. The study of predictors due to the presence of CLP showed that the largest soft tissue defect was established in the area of the nasolabial complex, nonunion fragments of the soft palate, their deficit was 20-25%. The largest defect in hard tissues was found on the verge of hard and soft palates. The distance between the ends of the maxillary ridge ranged from 2.31 to 15.32 mm.
In 80% of children with CLP, which nipple, the fragments of the alveolar process of a large fragment in the sagittal plane and the horizontal plates of the palatine bone were displaced to a vertical position by 15-20°. It has been proven that primary surgical interventions affect the distance between the distal edges of the canines and the place of transition of the gingival mucosa into the hard palate in the area of first molars, reducing it by 4.67±0.22 and 8.69±1.63 mm, respectively, forming risk zones for DGD.
Conclusions. DGD in children with CLP is cause-and-effect, depending on the type of defect in the nonunion tissues of the nasolabial complex and tissues of the palate, the method of feeding, and methods of surgical interventions.

cleft lip and palate, predictors

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Dentofacial effect of Modified Tandem Appliance in patients with complete cleft lip and palate

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction:
Patients with cleft lip and palate (CLP) usually have abnormal facial and maxillary growth due to maxillary hypoplasia or surgical correction. Anterior and posterior crossbites are common findings due to discrepancy between the maxilla and the mandible with a tendency to skeletal class III malocclusion because of skeletal and dental etiology. Maxillary protraction is required to correct the anteroposterior discrepancy. Facemask (FM) therapy has been an effective tool in maxillary protraction for CLP. However, due to poor patient compliance intraoral appliances for correcting Class III malocclusion are gaining popularity. The tandem traction bow appliance (TTBA) is an appliance that has been used successfully to treat growing Class III patients as is more esthetic and comfortable than conventional devices.
Aim:
To assess the dentofacial effect of modified TTBA in patients with complete CLP.
Methods:
This study was conducted on 20 patients who were randomly allocated into two groups. G1 treated with FM appliance and G2 treated with modified TTBA. Both groups were preceded by rapid maxillary expansion with hyrax expander for two weeks or until posterior cross bite is corrected. Treatment was continued for 12 months or until the anterior cross bite was corrected or an edge-to-edge incisor relation was reached during which the patients was recalled for monthly follow-up. A cone beam computed tomography (CBCT) was taken before and after protraction.
Results:
Mean standard deviation values for anteroposterior skeletal measurements and paired t-test was used to study the significance of the change. There was a postoperative increase in SNA measurement that was statistically significant in both groups.
Conclusion:
TTBA is an effective modality for the correction of midface deficiency in patients with CLP. The skeletal anteroposterior measurements revealed significant forward movement of the maxilla.

cleft
maxillary protraction
ClassIII correction

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Comparison of maxillofacial morphology between modified Furlow's and modified two-flap palatoplasty in orofacial clefts during the primary dentition period

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Introduction: Furlow's and two-flap palatoplasty are widely used around the world. To best our knowledge, there are no studies comparing the maxillofacial morphology of these two different procedures at same facility in patients with orofacial clefts in the primary dentition. Evaluation of maxillofacial morphology in individuals with orofacial clefts before orthodontic intervention, such as during the primary dentition period, is the first step in understanding the effect of palatoplasty on maxillofacial growth and also important to determine the optimal surgery.
Objective: We aimed to compare the effects of Farlow's palatoplasty and two-flap palatoplasty on maxillofacial morphology in patients with orofacial clefts. In addition, the effects of these two palatoplasties on maxillofacial morphology will be compare to determine the optimal surgical procedure for each patient with orofacial clefts.
Methods: 106 children with non-syndromic cleft lip and palate who visited Showa University Dental Hospital Orthodontics. We enrolled patients who had undergone cheiloplasty and palatoplasty at Showa University Hospital and who were between the ages of 4 and 5 years at their first visit to Showa University Dental Hospital department of orthodontics. One surgeon used a modified Furlow's palatoplasty and another surgeon used a modified two-flap palatoplasty. Lateral cephalograms were extracted from the patient's medical records at Showa University Dental Hospital.
Results: There was a significant difference between the N-A, N-ANS, and ANS-PNS distances and the SNA and ANB angles between the groups. However, in many cases, there were significant differences depend on the cleft type.
Conclusion: Our results suggest that Furlow's and two-flap procedures under a unified protocol on the same cleft type resulted in no significant difference in maxillofacial morphology during the primary dentition period.
Furlow's-palatoplasty,
two-flap-palatoplasty,
craniofacial morphology,
preschoolers

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Orthodontics in primary dentition. Primary canine orthodontic guided movement to regenerate a bone graft,to reconstruct the alveolar cleft.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction

Advances in molecular biology and biotechnology offer the possibility of accelerated healing and tissue regeneration. Our practice incorporated these new advances for the treatment of cleft lip and palate patients. Orthodontic movement of primary teeth adjacent to the cleft, after bone graft combination with plasm rich in fibrin, has shown excellent clinical outcomes; reconstruction of the alveolar cleft, allows dental eruption. 125 cases have been treated in this fashion, with a follow-up of 8 and 12 years.

Aims

Early orthopedic and orthodontic treatment at this stage align the maxillary segments, correct dental malposition, improve arch form and facilitate access to the cleft alveolus at the time of bone graft surgery. Reconstruct the alveolar cleft with the orthodontic guided movement of the primary canine, taking advantage of the osteogenic regenerative capacity of the periodontal ligament and allowing permanent teeth to erupt.

Methods

125 patients with alveolar clefts (102 unilateral, 23 bilateral) between 4 and 8 years of age have been treated with maxillary expansion and protraction, bonded braces in primary dentition and preparation for graft of homologous lyophilized bone graft combined with plasm rich fibrin. After 1 month of bone graft, the primary canine is moved towards and through the recently reconstructed alveolar cleft site, with light orthodontic forces (60 grs.).

Results

The movement of the primary canine through the bone grafts regenerates the newly grafted bone and increases the alveolar ridge bone volume in 123 patients. Provides and maintains vertical and horizontal alveolar bone level, until the permanent teeth erupt naturally into the reconstructed alveolar bone. Allows anterior aesthetic, preserve teeth, provides adequate attached gingiva and periodontal health; improve self-esteem. Reduce surgery times.

Conclusions

The orthodontics in primary dentition combined with early graft and the osteogenic regenerative capacity of the periodontal ligament during orthodontic tooth movement, are an alternative treatment for cleft palate patients.

Primary canine orthodontic guided movement

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Effects of rapid palatal expansion on facial growth of children born with cleft lip and palate

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction :

Achieving harmonious facial growth in cleft lip and palate children is a challenging task. Rapid palatal expansion (RPE) is a common orthodontic treatment used in the management of maxillary growth in these young patients. However, studies on the effects of RPE on the facial growth of children born with cleft lip and palate are lacking.

Aims :

The main objective is to study the effects of RPE on the transverse, vertical and anteroposterior growth of both the maxilla and mandible of children born with cleft lip and palate.
Secondary objectives are to compare these effects with those of the same treatment on children born without cleft lip or palate, and to study the effect on the upper airway dimensions.

Methods :

30 children with cleft lip and palate being treated by the Orofacial Deformities Comity at the University Hospital Center in Quebec City and in need of an RPE are being recruited for this study.
Lateral and anteroposterior cephalometric studies, both pre-treatment and 6 months post-treatment are going to be analyzed and compared using standards cephalometric landmarks.
The same comparison will be made using the radiographic studies of a previously treated cohort of children born without cleft lip or palate.
These two cohorts will then be compared with one another using Student T-test analysis.
All cephalometric analyses will be performed by a formed Oral and Maxillofacial Surgery resident and an intra-evaluator reliability coefficient (k) will be established using superimposition of serial cephalometric studies repeated at different time frames.

Results : Unavailable at the moment

Conclusion : Conclusions of this study will allow for a more comprehensive RPE treatment planification for cleft lip and palate children and improve the accuracy of the information given to these patients and to their families.

Rapid, Palatal, Expansion, Maxilla, Growth

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Occlusion characteristics according to the Huddard and Bodenham index in 5-year-old children with non-syndromic cleft palate and with unilateral cleft lip and palate – a controlled study

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Introduction: The establishment of adequate craniofacial growth and good dentolaveolar relationships are among the treatment goals of cleft care.
Aims: The aim was to compare the occlusion characteristics of cleft and non-cleft (non-C) subjects in the deciduous dentition.
Methods: A total of 53 non-syndromic cleft subjects in the deciduous dentition were included clustered according to the type of cleft into the soft and hard cleft palate (SHPC), soft palate cleft (SPC), unilateral cleft lip (UCLP). The SHPC group consisted of 21 subjects aged 5.52±0.72 years, the SPC group of 17 subjects aged 5.49±0.35 years, and the UCLP group consisted of 15 subjects aged 5.5±0.28 years. The non-C group consisted of 30 subjects aged 5.47±0.35 years with normal occlusion. Digital dental casts of each subject were analysed according to the Huddard and Bodenham index (HBI). All measurements were repeated twice.
Results: The intra examiner reliability assessed by Cronbach`s alpha coefficient was excellent (0.923). The total mean score of HBI for the for SHCP group -1.63±3.35, for SPC group -2.05±3.00 and for the UCLP group was -4.60±3.40, while the non-C group scored 0.00±0.00. Statistically significant differences were observed between the SHPC and non-C groups for the posterior and the total HBI score ($p = 0.006$ and 0.005, respectively). While comparisons between the SPC and non-C groups evidenced a significant difference in the mean anterior HBI ($p = 0.0005$), posterior HBI ($p=0.004$) and total HBI ($p=0.003$). Similarly, for the UCLP group, significant differences were observed in all the examined parameters (anterior, posterior and total HBI, all $p < 0.0001$) compared to the non-C group. Among the cleft groups, significant differences of anterior, posterior and total HBI were observed between the SHPC and UCLP groups ($p < 0.01$).
Conclusions: Occlusion characteristics of cleft subjects significantly differ compared to the non-C group.

cleft palate, occlusion, HB score

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Orthodontic evaluation using Electronic Medical Record for facial anomalies in Bulgaria

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Orthodontic treatment in Bulgaria is co-funded. The Electronic medical record for facial anomalies (EMRFA) that we use has been a database and a communication tool between specialists and patients since 2013.
Over the years our database increases with more than 1500 registered cleft patients. The need for a long-term evaluation of the growth changes and the post therapy orthodontic results, leads to an update of the orthodontic criteria for evaluation and the created information in our EMRFA. We want to improve the therapy control, the reports to our partner organization and to improve the follow up of the patients.
Aims: The aim of this study is to use EMRFA as a model of communication between orthodontists, patients, and other specialists and to present the primary parameters for orthodontic evaluation. Our aim is to involve the patient as an active participant during the cleft care and the orthodontic treatment.
Methods:Using the platform of the EMRFA we illustrate orthodontic evaluation and dentofacial growth assessment for specific age periods. There is an update for orthodontic posts ''consultation'' and ''therapy'' that has been done according to the international standards for documentation and a new post ''global evaluation'' is created for ages 5-7, 8-11, 12-14, 16-18 and 19+.
Results: The global evaluation scores of 300 cleft patients have been evaluated by two orthodontists, members of the cleft team, retrospectively using the information included in the EMRFA.
Conclusions: The need to use standardized samples periods for assessment of the dentofacial development is for validation with most important parameters. With this evaluation we want to improve the follow up and the cleft care and to reduce the excessive or insufficient orthodontic treatment.

orthodontic evaluation, electronic medical record

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Most effective approaches to regeneration of bone defects in cleft palate patients – umbrella review

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Introduction: Cleft lip and/or palate (CLP) is a craniofacial malformation with a prevalence in newborns of 14 per 10,000 live births worldwide. The etiology is not fully understood, but some genetic and environmental factors have been associated, namely, maternal smoking, gestational diabetes, and IRF6, VAX1 and PAX7 genes. One of the main goals of CPL treatment is palate closure through secondary bone grafts, in which iliac crest bone graft remains the gold-standard. Bone graft allows the support of unerupted teeth, alar bases (promoting nasal and lip symmetry), closure of oronasal fistulas and cleft maxillary segments stabilization. However, the failure of the conventional bone graft may occur so new tissue regeneration approaches have been employed and their outcome reviewed, but no conclusions have been made.
Aims: The present study aimed to review the most effective current approaches in the regeneration of bone defects in non-syndromic patients with cleft palate.
Methods: PubMed, Cochrane Library, Scopus, Web of Science and EMBASE databases were used for research. This search included systematic reviews of randomized and non-randomized controlled trials with and/or without meta-analysis.
Results: Nine articles were selected for the qualitative analysis and five for the quantitative analysis. The studies' quality was evaluated with AMSTAR2.
Conclusions: Similar results were obtained between bone morphogenic protein 2 and iliac crest bone graft regarding bone volume, filling, and height.
autogenous graft,biomaterials,cleft palate,bone grafting,regenerative

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The prevalence of dental anomalies in patients with isolated cleft lip

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction
Patients with cleft lip and palate are known to have an increased number of dental anomalies however there is little research on the milder end of the clefting spectrum. In theory, as there is no disruption to the alveolus the dentition in those with isolated cleft lip would develop normally.

Aims
The aims of the study were to determine the prevalence, and quantify the type, of dental anomalies in patients born with an isolated cleft lip over a 10-year period and to assess whether there were any predictive factors for anomalies in the permanent dentition.

Methods
A retrospective cohort study with a review of the clinical case records was undertaken at the Cleft Lip and Palate Unit, Alder Hey Children's Hospital, Liverpool, UK. The case notes and radiographs of 55 consecutive non-syndromic patients (37 males; 18 females) with unilateral or bilateral isolated cleft lip born over a 10-year period between January 1995 and December 2005 were reviewed. The presence of dental anomalies in the primary and permanent dentition were recorded.

Results
The incidence of dental anomalies in the deciduous dentition was 49% (n=27), and in the permanent dentition 51% (n=28), with 36% of patients experiencing anomalies in both dentitions. 94% of maxillary anomalies were on the ipsilateral side to the cleft. The most common anomaly in both dentitions was a supplemental lateral incisor on the cleft side. The odds ratio for patients who experienced a supplemental deciduous lateral incisor having a supplemental permanent successor was 28.1 (95% CI 5.3, 149.2), p=0.0001.

Conclusions
Patients with an isolated cleft lip have a higher incidence of dental anomalies compared to the general population. Those with a supernumerary lateral incisor in the deciduous dentition are more likely to have a similar anomaly in the permanent dentition and should undergo regular dental review.
anomalies, dental, cleft lip, orthodontics

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ANALYSIS OF DENTAL ARCH SYMMETRY OF CHILDREN WITH UNILATERAL CLEFT LIP AND PALATE: SEVEN-YEAR FOLLOW-UP

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Introduction: Although the rehabilitation promotes the anatomic, function and esthetic repair, it is difficult to associate facial appearance and self-perception with complete social and esthetic satisfaction. The symmetry analysis after cleft lip and palate rehabilitative treatment is important because the size and shape symmetry is associated with facial and occlusal symmetry.Aim: The present study aimed to evaluate maxillary dental arch symmetry of children with unilateral cleft lip and palate before and after primary surgeries. Methods: 27 dental casts were analyzed at: (T1) before primary surgeries; (T2) one year after primary surgeries; and (T3) inter-transitional period – mixed dentition. Paired t test, Pearson Correlation, ANOVA followed by Tukey test verified statistical analysis. The palatal asymmetry was confirmed by I-C vs I-C' for all periods, while I-T vs I-T' showed at T1. Pearson correlation test showed significant values for Δ1xΔ2, and Δ1xΔ3, but not for Δ2xΔ3. Results: The longitudinal analysis showed I-C' mean was greater at T1 than at T2/T3 ($P<0.001$). I-C means was smaller at T1 than at T2/T3 ($P<0.001$). I-T' was greater only at T3 ($P<0.001$). And I-T, C'-T', and C-T means were greater at all periods. Conclusion: Based on the methodology and results of this study, it can be concluded that the maxillary asymmetry of children with unilateral cleft lip and palate is inherent to the cleft type, evidenced by the maxillary hypoplasia in the smaller segment, probably higher in the anterior region (I-C'). The primary surgeries can worse this asymmetry. Notwithstanding, both the smaller and greater segments had the capacity for maxillary development.

"This work was supported by Smile Train,Inc.
Cleft lip/palate. Maxilla growth.

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SECONDARY CORRECTION IN CLEFT PALATE PATIENTS BEARING ANATOMICAL CHALLANGING DEFORMITIES AND SUBOPTIMAL SURGICAL TIMING ANAMNESIS.

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1.INTRODUCTION:

The patients object of this study presented a complex surgical history not in line with the common treatment protocols of this malformation; thus constituting a surgical challenge both at technical and aesthetically level.

2.AIMS:

The aim of our study is to evaluate the aesthetic and social results of serious surgical outcomes about patients affected by cleft lip and palate, subjected to orthognathic surgery and following rhinoplasty. This protocol has been performed in 7 patients in the period from 2010 to 2020 at the "Città della Salute e della Scienza" hospital, Turin, Italy.

3.METHODS:

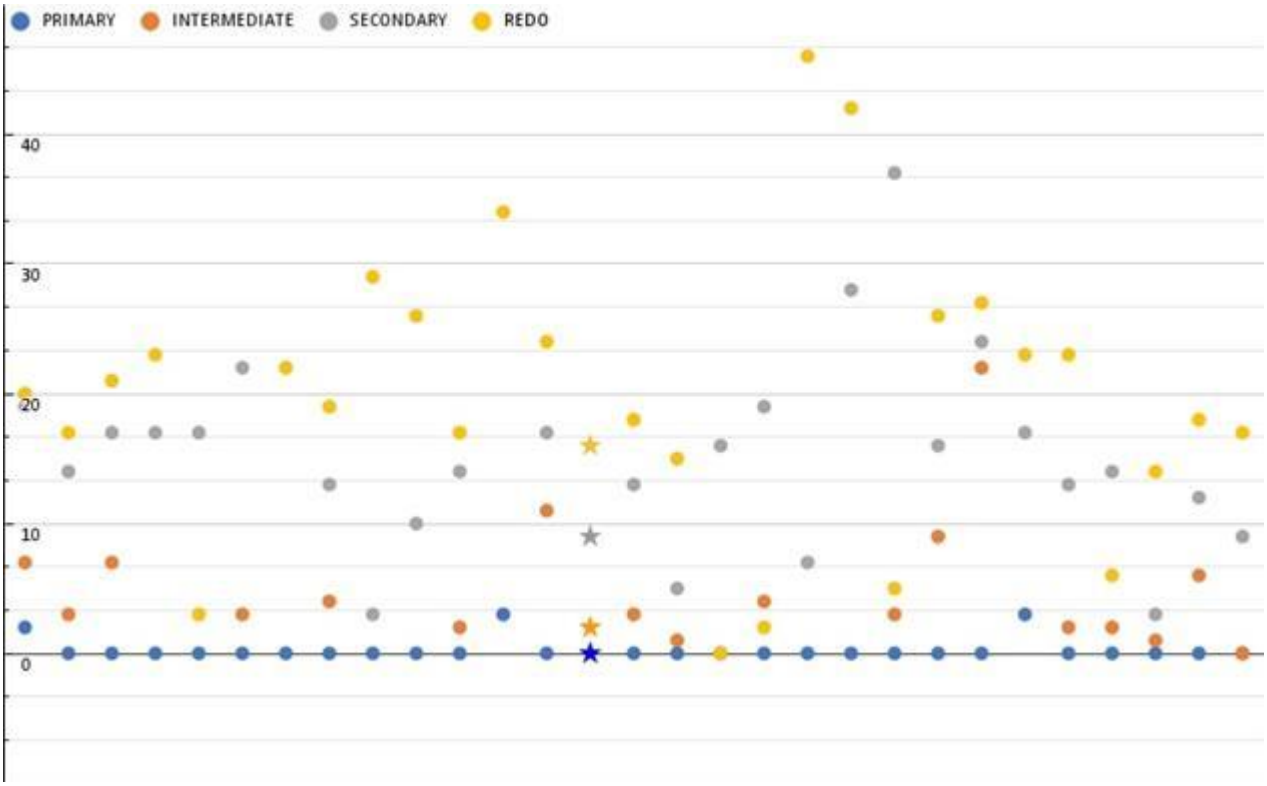
The surgical outcome of the nose has been evaluated with the MiRa Scale, based on pre-operative photographic images and on the patient medical examination carried out at least one year after surgery, compiled by personnel experienced in the surgery in question. The results of orthognathic surgery were evaluated taking into consideration the dentoskeletal class, the overjet and the starting overbite and their modifications obtained with surgical treatment, lacking a validated scale for the evaluation of the outcomes of this type of surgery . To evaluate the psychosocial outcomes and the satisfaction index of the results obtained, patients have been subjected to a personalized Face-Q questionnaire on the area of interest.

4.RESULTS:

The Mira scale highlighted a difference statistically significative between the pre and post surgery, as well as the occlusal results detected and the satisfaction measured through the Face=Q Questionnaire.

5.CONCLUSIONS:

Considering the serious surgical outcomes of the patients who come to our hospital, the results we achieved, considering the severely altered morphological picture, were excellent, not only for the important surgical outcome achieved, but above all for the improvement of quality of life of patients.



Orthognatic, Rhynoplasty, Aesthetic, Middle Third

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Pre- and post-surgical interdisciplinary evaluation in Chilean adolescents, following maxillary advancement surgery. Case study.

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Introduction: Dentomaxilaty anomalies cause diverse speech and orofacial function disorders in patients with cleft lip and palate (CLP). Maxillary advancement surgeries are performed by interdisciplinary teams. In each case, evaluation of speech, velopharyngeal function (VF) breathing, chewing and swallowing are fundamental, however, few reports exist in the literature.

Aims: To present the results of an interdisciplinary evaluation protocol, performed before and after maxillary advancement surgery, throughout a case study.

Methods: 21-year-old male, diagnosed and operated for CLP, underwent mandibular distraction with RED (21 mm advancement) and 18 months afterwards with orthognathic surgery (4 mm advancement). At each surgical stage, an interdisciplinary evaluation protocol was carried out (both surgical and speech and language therapy based): speech sound inventory, perceptual evaluation of VF, nasometry, videonasopharyngoscopy, evaluation of breathing, chewing, swallowing and oral-health related quality of life (OHIP-14).

Results: Before surgery, he presented speech sound distortions in /f/, /s/, /d/ y /ch/; adequate perceptual, nasometrical and nasopharyngoscopical VF, lateral incision and unilateral masticatory pattern, swallowing with tongue thrust; moderate impact on OHIP-14. After distraction, nasalance values increased and nasopharyngoscopy showed a similar circular pattern to pre-op, but with bubbling. Other orofacial functions remained unchanged. One year after orthognathic surgery, a rhinoseptoplasty and speech and language therapy, the nasalance values decreased, the bubbling disappeared and speech sounds, breathing chewing and swallowing were corrected. Finally, his OHIP-14 score decreased.

Conclusions: Interdisciplinary evaluation allows the determination of functional aspects related to speech, velopharyngeal function and other orofacial functions, which is decisive before and after maxillary advancement surgeries.

Interdisciplinary teams, Maxillary advancement, Protocol

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Subapical alveolar osteotomy in distraction for premaxilla deficiency in a patient with cleft: technical note

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Kole first described the anterior subapical segmental osteotomy in 1959. One of the applications of this technique, is the advancement of the maxilla in adolescent patients with cleft, to correct the maxillary hypoplasia.
The main goal in these patients, is to correct the residual class 3 of Angle and to preserve the delicate velopharyngeal function; thus important advancement is not possible to achieve without impairing the function.
We hereby describe our application and declination of Kole's technique and orthodontic appliance in a complex patient at skeletal maturity presenting also with severe scarring of the perioral tissues due to microstomia undergone several attempts of surgical correction and camouflage. This patient is affected by Popliteum Pterigium Syndrome, a rare entity which is charaterised by microstomia, bilateral cleft lip and palate, ankyloblepharon, labia anomalies and typical popliteal lesion.
The patient, aged 19, was presenting with microstomia undergone several attempts of correction in the past causing extensive scarring of the lower third of the face.
The patient has undergone postoperative orthodontics and dental implant rehabilitation.
In Authors' experience, this technique was realiable and effective, in terms of functional and aesthetic outcomes.

subapical osteotomy, maxilla, cleft, VPI

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Custom-made midface plate for fixation the traction wires in Le Fort III osteotomy. A case report

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Introduction
Distraction osteogenesis (DO) with a rigid external distraction frame has become an established method for treating midface hypoplasia in syndromic faciocraniosynostosis. 3D imaging, computer assisted surgery (CAS) and the use of personalized bone anchoring and osteosynthesis systems has enhanced the ability of the surgeon to deliver a more precise treatment and achieve better outcomes.
Aims
We present a technical aid that increase surgical accuracy using 3D printed cutting guides, personalized RED device and a new single midface customized plate of fixation of distraction wires.
Methods
Based on a fine-cut craniofacial CT scan, we designed the customized cutting guides for subcranial Le-Fort III osteotomy in an 11-year-old patient with Apert syndrome with severe midfacial retrusion and bilateral exorbitism. With these cutting guides we performed medial wall and orbital floor osteotomies safely with a piezoelectric scalpel. Oblique design of the guide in the nasofrontal region prevents damage to the CNS during nasal osteotomy. The designed “star footplates” fixed to the parietal regions determined the final position of the RED device adapted to de distraction vector planned. Traction wires were connected to the transcutaneous screws in the paranasal region screwed to a single custom 2.0 mm osteosynthesis plate (KLS Martin) which is fixed uniformly to the midface.
Results
Distraction was started on the 5th postoperative day at a rate of 0.5 mm twice daily, completing an advance of 15mm after reaching a bilateral mild enophthalmus. No major complications were reported.
Conclusions
CAS planning and customized cutting guides help to design the Le Fort III osteotomy and the distraction vector avoiding adverse complications. Customized osteosynthesis and traction systems are useful, reliable and easy to apply saving costs and complications.
Le-Fort III, distraction, 3D planning,

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The journey to orthognathic surgery for patients with cleft lip and palate: a pilot study

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Introduction
Cleft orthognathic surgery constitutes an important part of cleft care. It may be one of the last functional and aesthetic interventions patients with a cleft lip and/or palate may require. Their care is overseen by a multi-disciplinary team including maxillofacial surgeon, speech and language therapist, psychologist, plastic surgeon, restorative dentist and orthodontist to achieve a common goal.

Aims
To assess the orthognathic pathway of patients with a cleft lip and/or palate at a cleft centre in the United Kingdom. The pilot study aimed to gain an overview of patients' treatment, identify areas of delay in care and identify outcome data which may be useful to monitor the effectiveness of the care provided.

Methods
Retrospective pilot service-evaluation undertaken in a cleft centre in the UK. Ten consecutively treated patients who had been operated on between October 2017 and October 2018 were selected for data collection.
Cleft diagnosis, operation type and treatment time were recorded as well as velopharyngeal insufficiency (VPI) investigation results, psychological wellbeing outcomes and occlusal outcomes through the Peer Assessment Review (PAR) score.

Results
The 10 patients included in the study showed a wide variation in their orthognathic treatment journey which lasted on average 4.5 years (range 2 years to 7.5 years).
4 patients had a diagnosis of bilateral cleft lip and palate, 4 with a unilateral cleft lip and palate and 2 with a cleft of the palate. The majority underwent bimaxillary osteotomies (80%) and the reported VPI deterioration post-operatively was low. The patients who experienced increased treatment times were patients who had been identified as needing additional psychological support prior to undergoing an osteotomy.

Conclusions
The orthognathic journey of patients with CLP requires multi-disciplinary input throughout. The increased treatment time in our cohort may be explained by the complexity of treatment and need for additional psychological support.

orthodontic, orthognathic, care pathway, outcomes

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Using modified hyrax expansion screw to achieve anterior maxillary distraction in a patient with Unilateral Cleft lip and Palate : A case report.

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Introduction: Patients with CL/P can present with maxillary retrution after cleft repair. Anterior Maxillary distraction Osteogenesis (AMD) is a technique that provides simultaneous skeletal advancement and expansion of soft tissues related to anterior segment of maxilla. This case presented is a case of AMD. Advantage of this technique is that the occlusion in posterior segment can be maintained and only the segment in cross bite is advanced for correction of midfacial deficiency. The disadvantages of the Le Fort 1 include higher risk of morbidity, requirement of fixation, relapse tendency and unexpected changes in the nasal form. These complications were eliminated by AMD technique. A complete surgical, orthodontic and prosthodontics rehabilitation of the patient was done by interdisciplinary approach.

Methods: Patient presented with repaired UCL/P of the right side with midfacial retrution. Intro-oral examination revealed a good occlusion in the posterior arch and anterior Crossbite from canine to canine and missing laterals The study models when scored according to GOSLON yardstick received a score of 4. After pre-surgical orthodontic phase was completed an intraoral distractor was fabricated by modification of HYRAX expansion screw. After surgery low subapical osteotomy cuts were placed and the distractor was fixed. Latency period of 5 days was observed after which the distraction was started. Total distraction of 12 mm was done. Radiographic examination confirmed mature bone formation in the distracted segment.

Results: Total distraction done was 12mm and after relapse it was 8mm. After consolidation phase the radiographic examination revealed a B2 quality of bone according to the Misch's classification and sufficient height from the maxillary sinus. Thus resulting in a complete rehabilitation of a cleft patient by an interdisciplinary approach.

Conclusion: Anterior maxillary distraction can be used as an alternative method instead of complete distraction osteogenesis or Lefort 1 advancement of maxilla in cases where the advancement needed is minimum.
Anterior Maxillary Distraction

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Experience of a variety of rare facial clefts treated in Fujita Health University

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Median facial cleft and oblique facial cleft are very rare compared to cleft lip and palate, and there are only a few reports of these cases, so the treatment is not well established. The clinical condition varies depending on the type of cleft and covers a wide area of the cranium and face. In addition, clefts are not limited to the soft tissues but often involve the bones, and may be accompanied by orbital hypertelorism, orbital dystopia, and anophthalmos or microphthalmia. The basic treatment is closure of the soft tissue clefts early after birth using a combination of Z-plasty and local skin flaps, but also requires cosmetic reconstruction including symmetry of the eyelid fissures, lip and external nose, and sometimes reconstruction of the lacrimal canal. In addition, it is not uncommon to need hard tissue reconstruction as well as soft tissue correction while waiting for growth, and osteotomy and bone grafting are performed. We have treated 12 rare facial clefts over the past 15 years, including 6 median clefts, 1 paramedian cleft, and 5 oblique facial clefts. Tessier's classification based on clinical experience is well known as a classification of facial clefts, and we have been treating our patient group based on this classification. The cases we experienced included Tessier number 2 cleft, which is considered to be one of the rarest of the oblique facial clefts, as well as cases of multiple facial clefts and craniosynostosis. We will present our representative cases and outline the treatment we have performed.
facial cleft, Tessier's classification

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Orthognathic Surgery with tunnelled approaches in severe hypoplasias of the midface secondary to Bilateral Lip-Maxillo-Palatine Cleft.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Hypoplasia of the middle third of the face in patients with bilateral Maxillo Palatine cleft lip (BLMPF) is severe in most cases and indicates complex surgical treatment (Orthognathic Surgery or histodistraction). Its decision-making has various influences (clinical, technical, logistical and social).
We present cases of severe hypoplasia (more than 9 mm of retrusion) in BLMPF in which, due to surgical and logistical conditions, we performed orthognathic surgery with great advance (10-11mm), with tunnelled approaches and elastic intermaxillary fixation and strong postoperative physiotherapy. Stability at 6, 12 and 18 months was successful (1-1.5mm Relapse) maintaining an acceptable overjet, allowing a good setting for secondary surgeries.
Orthognathic surgery with tunnelled approaches, elastic intermaxillary fixation and powerful postoperative physiotherapy is a good alternative for severe hypoplasia of the midface in patients with Maxillo-Palatine Fissures.
Maxillary Hypoplasia, Orthognathic surgery,

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Prevalence of immediate respiratory complications in patients with cleft lip and palate who underwent orthognathic surgery and their relation to the duration of general anesthesia

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: orthognathic surgery is one of the procedures performed in cleft lip and palate treatment. Despite being considered safe and with controlled risks, some patients can have respiratory complications. Aim: to evaluate the prevalence of respiratory complications in the immediate postoperative period of orthognathic surgery and its relation to the duration of general anesthesia. Methods: A periodo of 6 years was evaluated and 256 medical records of patients that underwent orthognathic surgery by the same surgeon. Data were collected from respiratory assessment, admission for orthognathic surgery and cleft classification. Results: sample consisted mostly of men (64.06%), mean age of 24.45 years, bimaxillary surgery (52.34%), transforamen (227) and unilateral (172) cleft. Mean duration of general anesthesia was 166.12 minutes for one jaw surgery, and 170.25 minutes for bimaxillary surgeries. In the immediate postoperative period, 76.17% did not experience bleeding, 60.15% did not complain of pain and there was a prevalence of mild (68.75%) and diffuse (92.96%) facial edema. Pulmonary auscultation was reduced or absent in 56.25% of the sample and of this, 5.47% had adventitious sounds. 196 patients (76.56%) had cough in the immediate postoperative period. Upper airway secretion aspiration was required in 64.45% of cases. 57.81% of the sample required chest physiotherapy. The rate of immediate postoperative complications was 30.46%. It was observed a relation between duration time of general anesthesia and edema. Also, viscosity of upper airway secretions and need for chest physiotherapy in the immediate postoperative period was found. Conclusions: the postoperative respiratory complications observed were: decreased pulmonary auscultation, abolished and/or with adventitious sounds, productive cough and secretion in the upper airways. The duration of general anesthesia influenced facial edema formation, secretion viscosity and the need for chest physiotherapy.This work was supported by Smile Train,Inc.

orthognathic surgery, complications, respiratory

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Mandibular magnetic distractor: Preclinical validation

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Feasibility of magnetic activation for mandibular distraction had been demonstrated. In this study, we developed a biocompatible device, evaluated the feasibility of distraction in cadaveric subjects and the functionality of the device in bench tests.
Materials and methods
To confirm, considering the dimension of the distractor, that the torque applied on the internal magnet will be sufficient to activate the DO, we measured, for different distances, the transmitted torque between a magnet (internal and external), we evaluated the friction force of the device, and the resistance of the magnet to the sterilization.
To confirm the feasibility of distraction with this device, we proceeded to cadaveric tests, and evaluated the satisfaction of 4 surgeons.
Results
The force applied to the moving plate was greater than 50 N with a friction coefficient of η=0.2. We determined a friction torque of 65.10-3 N.mm in the distractor mechanism, and demonstrated that sterilization do not alter the magnet.
Mandibular distraction had been successfully achieved in cadaveric trials, and surgeons were satisfied.
Conclusion
This new device could be implanted in human, for clinical assay, after approval by the regulatory agencies. The use of this fully internalize device should improve patient comfort.

magnetic; distraction;

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Evaluation of the Maxilla Advancement with the New Hybrid Distraction Device in patient with cleft lip and palate

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Distraction osteogenesis technique (DO) has been advocated for craniofacial skeletal deficiencies such as craniofacial microsomia and patients with cleft lip and palate, especially for the patients with cleft lip and palate (CLP) who need more than 6 mm of maxillary advancement and the non-cleft patients who need advancements in excess of 10 mm.

Aim: To evaluate the maxilla advancement with the new hybrid distraction device in patient with CLP.
Method: The new hybrid distraction device (NHD) was utilized in a Thai male patient with CLP who had severe maxillary hypoplasia and prognathism of mandible. The NHD was designed for 8 mm of maxilla advancement and comprised of external and internal device components that worked together using short term external component during distraction period to control the distance and vector of the maxillary distraction. Once the satisfactory displacement was gained with distraction, the external component will be removed and the internal component will be used to stabilize the distracted maxilla during the bone consolidation period. Bilateral sagittal split osteotomy (BSSRO) was performed for correction of prognathism of mandible.

Results: Clinically have shown the positive effects of DO, patient has obtained more facial esthetic. From cephalometric analysis showed 8 mm of maxillary advancement according to treatment planning. The occlusion and skeletal were stable after operation.
Conclusion:
In patients with severe maxillary hypoplasia, the new hybrid distraction device is an alternative treatment option.

Distraction osteogenesis, Cleft

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Definition of surgical approach in the orthodontic treatment of individuals with CLP undergoing orthognathic surgery.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction:
The indications for choosing between a growth modification strategy at younger age or the orthognathic surgery in adulthood depends on many factors. These include age of the patient and timing at the definition of surgical approach, and it may influence the burden of care. From the Eurocleft study in 2003 some research has been evaluating the burden of care imposed by treatment protocols. Thus, this study discusses the importance of the definition of orthognathic surgical approach during the orthodontic treatment of patients with CLP.
Aims: To examines the relationship between the date of definition of surgical approach and the date of orthognathic surgery. The main objective is to identify the effectiveness of defining the surgical approach during the orthodontic treatment of patients with CLP.
Methods: This was an observational retrospective cohort study conducted in one reference rehabilitation center. All patients were operated by the same surgeon. Data were collected from the medical records of 200 patients submitted to orthognathic surgery between May 2012 and October 2018. Descriptive statistics were used to describe contextual and individual characteristics, such as mean age at the definition of surgical approach, mean age at the date of surgery and the number of punctual designations for a surgical approach.
Results: The mean time between the date of indication of surgical approach and the date of surgery was 11 years. The mean age at the date of orthognathic surgery was 28 years. The mean age at definition of surgical approach was 17 years. The mean value for punctual designation to a surgical approach was 56.58% versus 43.42% inaccurate surgical designations.
Conclusion: This investigation suggested that the delay in defining the surgical approach could influence the burden of care. Further studies are needed to determine the causes that delay the designation to a surgical approach. This work was supported by Smile Train,Inc.
Cleft palate. Orthodontics. Orthognathic Surgery.

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CORRELATION BETWEEN MANDIBULAR DYSMORPHOLOGY AND CLINICAL PRESENTATION IN TREACHER COLLINS SYNDROME

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction
A Treacher Collins syndrome (TCS) is a congenital disease, caused by a genetic factor, associated with craniofacial anomalies and impaired respiratory function. Among the most frequent clinical findings are downward slanting palpebral fissures, malar hypoplasia, hypoplasia of mandibula and conductive hearing loss.

Aims
This study aimed to classify a substantial sample of individuals with TCS according to the severity of the clinical presentation and to correlate severity as a predictor of mandibular malformation, the main cause of respiratory compromise.

Methods
Observational, descriptive, retrospective study carried out in a specialized center. 49 individuals were classified according to the severity of the clinical presentation with the Teber and Vincent classifications by means of medical record review and analysis of photographs and imaging exams. CT scans were used to analyze the mandibles of all patients using the Mimics software, for the collection of 7 cephalometric measurements.

Results
Among the most relevant results in relation to cephalometric measurements, is the relationship between the body and branch of the mandible, with the average, among all patients, of 0.65 on the right side and 0.69 on the left side, both with the standard deviation of 0.16.
The mean angulation of the mandibles was 140º on both sides with a standard deviation of 10º.
Teber and Vincent scores had a mean of 12 and 9 respectively, both with a standard deviation of 3

Conclusions
With the data obtained, it can be confirmed that the relationship between the branch and the body of the mandibles is a very important factor for problems in the airways. In addition, the scores were inversely proportional to the branch-body relationship. The lower the relationship, the higher the score, which indicates a worse patient's condition.

Treacher-Collins-Syndrome
congenital-anomalies
Jaw
Craniofacial-Abnormalities
Clinical-Laboratory-Techniques

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FEEDING MANAGEMENT IN A TREACHER COLLINS CHILD PRE AND POST MANDIBULAR DISTRACTION OSTEOGENESIS.

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Introduction: Oropharyngeal dysphagia is considered one of the main craniofacial anomalies children's problems. When airway obstruction is associated with complex cases, such as Treacher Collins syndrome, the risk for dysphagia increases. Aspiration is frequently encountered and chronic airway obstruction combined can cause pneumonia and failure to thrive. Clinical and instrumental swallowing evaluations determine whether safe oral feeding is possible or not. Mandibular distraction osteogenesis is an adequate surgical treatment and represents an alternative to tracheostomy.
Objectives: To describe the feeding process pre and post mandibular distraction in a Treacher Collins syndrome case.
Resumed Report: A 36-months-old Treacher Collins syndrome (TCOF 1) girl, with familial recurrence, admitted in our hospital when 10-months-old, accompanied by Craniofacial Surgery and Dysphagia Teams. The gastrostomy and tracheostomy were placed in other service at age 1 month. History of recurrent pneumonia, more than 6 episodes per year, and antibiotic therapy. Before mandibular distraction, she started tracheostomy occlusion and partial oral feeding with pasty foods. Surgery was performed at 29 months. After clinical and instrumental evaluation (videofluoroscopy) on 28th postoperative day, partial oral feeding was restarted. The distractors were removed along with tracheoplasty at 34 months. At 36 months, she was already on exclusive oral diet and gastrostomy was also removed.
Conclusion: Mandibular distraction eliminated airway obstruction and simultaneously corrected swallowing problems. It is essential to understand structures and stomatognathic system adaptations to better define treatment, as well as provide caregiver training to feed the child properly.
Smile Train partnership.
Treacher Collins, mandibular distraction, dysphagia

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Early surgical management of a Tessier 30 facial cleft with sternal cleft- A case report

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Early surgical management of a Tessier 30 facial cleft with sternal cleft- A case report

ABSTRACT

In 1819, Courone described one of the rarest craniofacial clefts known as symphyseal mandibular facial cleft or median mandibular cleft. It is classified as Tessier number 30 cleft and may be associated with deformities of the dentition, lower lip, mandible, tongue and neck.Till the year 2020, only about 72 cases have been reported worldwide.

Sternal cleft is also a rare malformation which has been reported in 1 out of 100000 births.An associated split sternum has been reported only in three cases. Surgical management in Tessier 30 patients has not been streamlined due to the rarity of the condition.Children have been operated in single or multi stages and at different ages, from 6 months to 16 years of age.Here we present a case of a one year old girl with severe mandibular cleft, bifid tongue,deficient floor of mouth, chin and neck with absent manubrium and body of sternum.

The surgical management was done in 3 stages. The first stage was done when the child was 1.5 years old. A single vector internal distraction was applied at the body of the mandible. The second stage was after 2 months in which the distraction was removed,callus moulding and reconstruction of bifid tongue,floor of mouth and lip were done. She underwent the third stage at 2.5 years. Here, we did a re-do of lip reconstruction and repair of the sternal defect with mesh and ALT fascio-cutaneous flap.

Currently, she is able to eat and speak by herself. She will require further corrective surgery for mandibular hypoplasia as well as sternal reconstruction as per the growth of the child.

Tessier 30, facial cleft, sternum,

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Surface electromyography evaluation of masticatory muscle in children with complete unilateral cleft lip and palate

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Introduction. In children with cleft lip and palate all surgical and orthodontic methods of treatment often do not solve complete the problem of occlusion, so skeletal changes occur in adolescents. Surface electromyography is the study of electrical activity of the muscle. The myoelectric activity in electromyography analysis is the sum of the action potentials of a group of motor units.
Aims: the aim of this study was to evaluate the changes in activity of masticatory muscles using surface electromyography in children with complete unilateral cleft lip and palate.
Material and methods: 10 children between the age of 5-10 years old with complete unilateral cleft lip and palate were evaluated. Assessment involved surgical treatment in three stages: primary repair upper lip, surgical repair soft and then hard palate and surface electromyography of the masseter and temporal muscles. Orthodontic rehabilitation and speech therapy were evaluated too.
Results. In all patients were found malocclusions in all three plans. The electromyographic activity of the masticatory muscle was appreciated with an insufficient activity of the muscle in unilateral complete cleft lip and palate, with an increasing in muscular activity during clenching on the affected side compare to the unaffected one.
Conclusions. In conclusion we can say that due to the importance of muscle functions to chewing, phonation, swallowing, the abnormal activity of the masticatory muscle could represent an additional factor that compromise the growth and development of the skeletal structures in maxillofacial region in children with complete unilateral cleft lip and palate.

cleft lip and palate, electromyography.

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The virtual surgical planning and customized positioning guide of maxillary distractors for maxillary advancement in the cleft patient: A case report

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Introduction : Maxillary hypoplasia is the most common problem found in cleft patients that need surgical correction by orthognathic surgery. Due to the scar formation from previous surgeries and the abnormal anatomy of the maxilla, maxillary advancement in a large distance becomes limited. Distraction osteogenesis solves this limitation by distracting bone and soft tissue simultaneously. To validate the proper position of the distractors, virtual surgical planning and patient-specific guides play essential roles.

Aim : This study aimed to report successful treatment of a cleft maxillary hypoplasia that underwent maxillary advancement with distraction osteogenesis using the customized positioning guide.

Methods : A 24-year-old Thai woman was diagnosed with cleft maxillary hypoplasia. She suffered from right unilateral cleft lip and palate and underwent cheiloplasty, palatoplasty, and alveolar bone grafting. After tooth alignment by an orthodontist, she was referred to perform orthognathic surgery to correct the malocclusion. The proper treatment plan was considered as maxillary advancement with distraction osteogenesis. The computed tomography and intraoral scan were taken before the surgery. These data were input into ProPlan CMF for virtual planning. The distractors positioning guide were designed by Materialise 3-matic and placed into the rapid prototype model for bending the anterior and posterior footplates pre-operatively. The prebent distractors and the specific guide were used in the operation. Clinical outcome, distraction duration, and complications were recorded.

Result : The maxillary advancement using the patient-specific positing guide for distractors was successful without a serious complication. The distraction duration was closed to the predicted protocol. The occlusion after distraction was satisfied and stable during the consolidation period.

Conclusion : The virtual surgical planning and patient-specific positioning guide for maxillary distraction are effective. The occlusion and distraction periods are accurate as planned. This protocol should be continued and further data collection is necessary to confirm the accuracy and the effectiveness.
Cleft, distraction osteogenesis, maxillary hypoplasia

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Endoscopic−assisted craniosynostosis surgery: First case series in the United Arab Emirates

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Introduction: Craniosynostosis is a craniofacial anomaly, resulting from premature fusion of the cranial sutures. There has been a continuous evolution of surgical correction techniques from an extensive open procedure to the new minimally invasive craniosynostosis technique.

Aims and Objectives: This novel surgical technique has never been previously done in the United Arab Emirates and this article documents the experience of the first team in the United Arab Emirates to endoscopically correct craniosynostosis with planning, surgical techniques, and customized helmet therapy to achieve ideal results.

Materials and Methods: A prospective case series of five non-syndromic patients with right uni-coronal craniosynostosis, sagittal craniosynostosis right coronal craniosynostosis and metopic craniosynostosis corrected endoscopically and followed up with a customized cranial helmet.

Results: The age of all patients at the time of surgery was 101 days (90-117 days), mean duration of surgery was 70 minutes (38 – 129 minutes), mean blood loss was 120 ml (100-150ml), and mean duration of hospital stay was 4 days (4-5 days). No complications and mortality were reported.

Conclusion: This case series has demonstrated that endoscopically assisted craniosynostosis correction is a safe, effective, and reliable technique in the armamentarium of a craniofacial surgeon. The minimally invasive nature allows early intervention in children. Parental compliance is important in helmet therapy, which forms an integral part of this surgery for correction of the abnormal head shape. We believe that every patient with non-syndromic single−suture craniosynostosis should be offered endoscopic correction before the age of 6 months.

craniosynostosis, endoscopic, minimally invasive, helmet

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Dental implants and prosthodontic reconstruction in cleft patients with Microsurgical Reconstruction of Maxillary Cleft Critical Size Defects in Adolescents and Young Adults

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PS4 Thursday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 14, 2022, 13:00 - 14:00

Purpose: Missing teeth are a major problem in cleft patients, who require specialized prosthetic management, including dental implants.
The aim of this study was to investigate the clinical application of endosseous implants placed in patients with cleft lip and palate after Microsurgical bone Reconstruction of Maxillary Cleft Critical Size Defects and to assess the outcomes of the inserted dental implants in this patient.
Patients and methods
Materials and methods: Retrospective review of patients
Results:
Conclusions: Dental implants in patients with cleft lip and palate show high success rates and allow for sufficient oral rehabilitation. However, because of a lack of sufficient prospective clinical studies on dental implants in cleft patients, the available evidence is poor and insufficient.
Patients and methods:
Fifteen patients (5 male/10 female) aged 14–23 years old with cleft-associated critical size defects.
Ten patients with bilateral cleft lip and palate ad four wit unilateral cleft lip and palate were studied.
All patients had a critical maxilla size defect provided with a microsurgical bone graft.
After bone bridge formation, orthodontic treatment and preparation for implant placement were performed. A total of 47 implants were placed in the Microsurgical bone Reconstruction of 15 patients.
In two patients with insufficient alveolar bone amount and position, another microsurgical bone graft was performed.
The follow-up period ranged from 1 year to almost 5 years after implant placement, and the clinical outcome was excellent in all e patients. In this study, the overall survival rate was 99,5%.
Conclusion: The Microsurgical Reconstruction of Maxillary Cleft Critical Size Defects were well suited to the placement of endosseous implants, and this treatment was shown to be a viable option for the dental reconstruction of alveolar clefts. However, the interdental alveolar bone height was insufficient for implant installation in a few patients – depends of type of grafts.

microsurgical bobe graft, implants restoration

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Fixed retainer with artificial teeth in patients with cleft lip and palate: Possibility as an adhesive bridge

Fixed retainer with artificial teeth in patients with cleft lip and palate: Possibility as an adhesive bridge
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After orthodontic treatment in patients with cleft lip and palate, a space is sometimes left. The subjects included 308 patients with cleft lip and palate who underwent active orthodontic treatment from 1993 to 2019. We retrospectively investigated the records about the cleft type, observation period, existence of residual dental space and application of fixed retainer with artificial teeth at the start of retention, change of other prosthetic appliance to and from fixed retainer with artificial teeth, the site and the number of artificial teeth, lingual wire fixation range, simultaneous use of plate-type retainer, breakdown (functional survival rate by Kaplan-Meier method), and occurrence of dental caries. Cleft types of the 308 patients were 72 unilateral cleft lip and alveolus, 9 bilateral cleft lip and alveolus. The mean observation period was 4 years and 1 month. At the alveolar cleft site, residual space was observed in 65 patients (21.1%) and this appliance was placed in 23 patients (35.4%). The change from this appliance to other prosthetic appliances was performed in three patients. The lingual wire fixation range was 3-8 teeth. Twenty-six of 28 patients (92.9%) used a plate-type retainer simultaneously. The functional survival rate was 72.2% at 13 years and 6 months. Five patients (17.9%) had dental caries. This appliance is useful for the retention of anterior teeth without shaving of the adjacent teeth and can be regarded as a kind of adhesive bridge. Appropriate maintenance with a regular follow-up of four–six months was considered necessary for long-term use.
clp, space, prosthetic, artificial, adhesive

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Anatomical Subunit Repair with primary nose correction

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction

The anatomical Subunit Repair is applicable to Primary Unilateral Lip repair. This workshop will help surgeons understand the nuances of the repair that will lead to successful use of the technique for all severities of cleft lip presentations

Learning Outcomes
1. Markings for Unilateral Lip repair
2. Sequence of surgery including pearls to assist a successful outcome
3. Approach to primary nasal repair to achieve consistent long term outcomes

Content
Presentation and interactive workshop to assist surgeons in understanding and performing the Anatomical Subunit repair suitable for both the novice surgeon as well as experienced surgeons who would like to understand the paradigm shift. Particular emphasis will also be placed on primary nasal correction

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The inner nose repair (vomeropalatoplasty): a cornerstone in the construction of normal anatomy and the prevention of cleft palate fistula formation. Reviewing the results of 678 primary palate repairs in children over a 20-year period

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction

In normal anatomy, the vomer and the hard palate join during development and form a scaffold, separating both nasal ducts and anchoring the soft palate. In cleft palate, this fusion does not occur, and the malformation often continues within the hard palate, in an open or submucous fashion, and may reach as far as the incisive foramen. In cleft palate repair, integrating the vomer into the hard palate (vomeropalatoplasty) has two benefits: it guarantees complete separation of both nasal ducts. Secondly, it provides a stable anchor for the soft palate and lifts the hard-soft palate junction cranially, narrowing the velopharyngeal space. The created periosteal envelopes lead to bone formation between vomer and the hard palate shelfs. A single center retrospective review revealed a fistula rate from 0.44% in 678 children undergoing primary repair, including children with 257 isolated cleft palate repair, 280 children undergoing unilateral and 141 undergoing bilateral cleft lip and palate repair.

Learning outcomes

The workshop presents a technique that integrates the vomer into cleft palate shelves during cleft palate repair. The authors would like to focus specifically on the importance of the inner nose construction and maxillary repair. The technique is part of an inside-out sequence in cleft lip palate and nose repair.

Content
The session includes aspects of the anatomy of cleft palate and vomer and a specific classification system. A main part of the presentation is focusing on the preparation for tension free repair. It allows integration of the vomer in an "inside-out" sequence for cleft lip and palate with almost no fistula formation and creating lead structures for the development of normal anatomy. The presentation continues to discuss and compare long-term speech results and midfacial growth of the "inside-out" technique and vomeropalatoplasty with long-term results of recognised and well evaluated standards in cleft lip and palate treatment.

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Concurrent Primary Rhinoplasty in Primary Cleft Lip Repair

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Nasolabial cleft lip deformities, with or without cleft palate, are the most common facial birth defects. Correction of cleft lip nasal deformity is often delayed until mid to late adolescence to prevent facial growth disturbances. With recent advancements in rhinoplasty techniques, numerous studies have shown that nasal repair at the time of primary lip repair does not affect skeletal maturation and nasal growth. In addition, early repair of the nose may result in improved long-term psychosocial development and decrease the number and complexity of future procedures.
Learning Objectives: To describe principles and goals of primary cleft lip rhinoplasty. Special focus will be given to describe the techniques utilized for nasal repair in unilateral or bilateral cleft lip.
Content: Workshop session is divided into 2 parts: in the first part we will discuss primary rhinoplasty in the unilateral cleft lip repair, and in the second part we will cover primary rhinoplasty in the bilateral cleft lip repair. Slides will be presented with detailed description of surgical techniques, along with custom-created figures and illustrations. Surgical videos will be presented with live feedback commentary.

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BNP PEDAGOGY SYSTEM:

APPLIED TO THE PRE-SURGICAL FUNCTIONAL PALATAL OBTURADOR IN INFANTS WITH LABIAL-ALVEOLAR-PALATAL CLEFTS

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Training with pedagogical models for different professionals and parents who manage patients with labial-alveolar-palatal clefts (LAPC), before the rhinorraphy-cheilorraphy and palatorraphy is very limited. Worldwide, support is based on education and direct observation, applying the different clinical experiences and techniques done by schools and professionals with or without supervision. As a result, procedures are needed to facilitate understanding of the different subjects in the technique of pre-surgical functional maxillary orthopedics for professionals and parents. Our goal is to show through a pedagogical system, with the facial simulator and maxillary orthopedic models for labial-palatal cleft, that they improve and facilitate the teaching of professionals and parents, through training which is based on diagnosis, construction, placement, hygiene, and control of pre-surgical maxillary orthopedic equipment. The system creates a knowledge-based, safe therapeutic which differentiates specialties from the interdisciplinary care team for a patient with LAPC.
Contents: The Phantom (facial simulator), gnathostatic model and measuring ruler are pedagogical elements used in different materials. It is explanatory fieldwork, using a scientific method to care for patients with labial-palatal cleft.
Learning Outcomes: Using this pedagogical system with academic training, called the scientific method, it facilitates teaching professionals and parents on 8 issues: 1. Diagnosis; 2. Treatment plan; 3. Accompanying professionals and parents; 4. Taking impressions; 5. Casting the model; 6. Taking of gnathostatic models; 7. Functional wax-up; 8. Construction and placement of pre-surgical functional orthopedic obturator in the infant. Breastfeeding which is basic in suction, swallowing, and growth of jaws.

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Individual Cleft Corrector (ICC) protocol as possible alternative to NAM protocol: clinical and laboratory aspects

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction

Contemporary medicine achieved significant progress in a surgical treatment of cleft lip and palate. But bilateral cleft lip and palate (BCLP) cases with severe premaxillary protrusion and asymmetry still require special pre-surgical orthopedic treatment in order to get the better result of cheilorhinoplasty. While nasoalveolar molding (NAM) protocol proved itself to be efficient in many cases it has some limitations and drawbacks. We created a new ICC (Individual Cleft Correctors) using modern CAD and 3D-printing technologies that address those issues and also makes this kind of treatment available for wider range of patients. One of the goals was to make our method economical and easy to replicate.

Learning Outcomes

Understanding the differences and similarities of the NAM and ICC protocols, being able to choose the right one
Knowing indications and contraindications of the ICC protocol
Understanding required clinical and dental laboratory set-up
Understanding the clinical and laboratory sequence
Being able to explain the method to a dental technician/make an appliance her/himself

Content

A. Introduction
B. Clinical part
-differences and similarities of the NAM and ICC protocols
-indications and contraindications of the ICC protocol
-required clinical set-up and medical team
-making impressions
-instructing parents
C. Laboratory part
- required lab set-up
-making stone models
-3d-scanning models
-CAD software choice and modelling
-3d-printing models, post cure
vacuum-forming, acrylic work, finishing
D. Conclusion
E. Q&A session

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The RRE System (Redirecting and Repositioning Effectively): A very simple and effective way to bring all the structures of the lip and palate clefts to its right position in a short period of time and in a easy way.

DHC, Orthodontist Ricardo Elizondo[1], Pediatric Surgeon Adam Mol[2]
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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

1. Introduction
A modified, simpler, cheaper, and faster PSO for clefts named RRE System according to the way it works (Redirecting and Repositioning Effectively) is taught.

2. Learning Outcomes
* Understand the biological and mechanical bases on which the RRE System is based.

* Learn the design of the RRE System in the most common complete unilateral and bilateral cleft lip and palate.

* Learn the application of the RRE System in the most common complete unilateral and bilateral cleft lip and palate.

3. Content
Growth and Development Theories.

Pathophysiology of CLP
* Unilateral
* Bilateral

Mechanical principles:
* Levers and Vectors

Examples of the application of the RRE System and results

Fabrication of the unilateral RRE plate

Fabrication of the bilateral RRE plate

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Efficiency and safety of using monoclonal antibodies in the treatment of cherubism

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Juvenile giant cell reparative granuloma, or cherubism, is a rare benign lesion of the bones of the skull, characterized by total involvement to the upper and lower jaws with facial deformities similar to cherubs from Renaissance paintings. Radical surgery, especially in children prepuberal stage, is impossible or irrational, as it leads to serious disability.
Aims:Search for alternative gentle treatments for cherubism
Materials and methods: For the period from 2016 to 2021, in the Department of Craniomaxillofacial Surgery of the Russian Children's Clinical Hospital, 6 children, aged 5 to 9 years and 3-4 degree affected jaws, were treated a course of monoclonal antibodies for 6 months. In all cases, there was a slowly progressive increase in the deformity of the jaws, which in one case led to exophthalmos. After histological verification of the diagnosis, therapy with monoclonal antibodies was started with an individual selection of the dose based on weight-growth parameters. Denosumab was injected subcutaneously at days 0, 8, and 15, and then every 4 weeks thereafter for 6 months.
Results: The clinical effect was noted from the third month - sharpening of the angles of the jaws, a decrease in their volume. A control study of biopsy material taken at the end of a 6-month course of treatment, in all cases, a complete pathomorphosis was obtained. When evaluating the computed tomography data, an increase in bone density at the end of therapy was noted from 70 to 600HU with an additional increase during the next 6 months of observation.
Conclusion: For extensive and aggressive cherubism in case early onset, therapy with monoclonal antibodies allows you to stop the pathological process with the restore of the affected area, on the premise of all lytic areas are completely filled at the end of the treatment.

cherubism, denosumab, bisphosphonates

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Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association.

Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Ritsuo Takagi[1], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Yasumitsu Kodama[1], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Seiji Iida[2], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Naoko Inoue[3], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Shinji Kobayashi[4], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Takayoshi Sakai[5], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Takafumi Susami[6], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Naoto Suda[7], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Norifumi Nakamura[8], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Takeshi Miyawaki[9], Clinical characteristics of the patients with cleft lip and/or palate in Japanese Cleft Palate Association. Mikihiko Kogo[10]

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

1. Introduction

There is no nation-wide cleft lip and/or palate center in Japan; therefore, there are few clinico-statistical studies of large numbers of patients with cleft lip and/or palate.

2. Aims

To evaluate the clinico-statistical features in each type of cleft lip and/or palate.

3.Methods

The study consists of 965 cases obtained in 2019 from 49 cooperating facilities belonging to the Japanese Cleft Palate Association.

We checked 1) Types, 2) Sides, 3) Gender, 4) Body weight at birth, 5) Prenatal diagnosis, 6) Age of parents, 7) Positive familial history of cleft, 8) Accompanying anomalies or syndromes.

4. Results

1) CL; 110 cases (11.4%), CLA; 206 cases (21.3%), CLAP; 388 cases (40.2%), CP; 193 cases (20.0%), SMCP;52 cases (5.4%), Others; 16 cases (1.7%). 2) Left 368 cases (51.0%), Right 188 cases (26.1%), Both 162 cases (22.5%). 3) Female; 432 cases (44.8%), Male; 533 cases (55.2%). 4) SMCP is slightly higher ratio (8.9%) under 2,000 g than others. 5) About 50% of the patients with cleft lip is diagnosed prenatally. 6) Father's age is a little bit higher than Mother's age. 7) About 6-8% of each type. 8) CP and SMCP are relatively higher ratio than that of others.

5. Conclusions

We obtained valuable results from a relatively large number of patients with cleft lip and/or palate in one year. It is necessary to continue these evaluations regularly in Japanese Cleft Palate Associations in the future.

Abbreviations
CL; Cleft Lip, CLA; Cleft Lip and Alveolus, CLAP; Cleft Lip, Alveolus and Palate,
CP; Cleft Palate, SMCP; Submucous Cleft Palate

		Side			Gender			
Type	cases	left	right	both	female	male	BW	PD
CL	110	65	39	6	51	59	2,995	28
CLA	206	131	55	20	100	106	2,983	97
CLAP	388	166	89	134	149	240	2,889	203
CP	193				99	93	2,895	11
SMCP	52				23	29	2,788	0
Others	16				10	6	2,794	5
Total	965				432	533		

BW; Body Weight(average, g)
PD; Prenatal Diagnose (cases)

Table; Distribution of each type

Cleft Type Characteristics, Japanese

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Epidemiological study of cleft lip and cleft palate present in a sample of 120 patients with Treacher-Collins syndrome

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Trecher Collins syndrome is a genetic syndrome with variable phenotypic expression. The syndrome can combine the rare clefts of the face 6, 7 and 8. Aims: To investigate the prevalence of cleft lip and cleft palate in the population with Treacher-Collins syndrome attended at the Hospital for Rehabilitation of Craniofacial Anomalies at the University of São Paulo. Report the presence of unilateral and bilateral cleft lip in this population. METHODS: A cross-sectional study was carried out in the population with syndrome that is being treated at our hospital. Medical records, photographic and radiological files were reviewed and patients were characterized for the presence or absence of cleft lip and palate, the age of surgical treatment of cleft palate and the incidence of complications were analyzed, the age of cleft lip repair. RESULTS: In the studied population, cleft palates were identified in 47 patients, representing 38% of the sample. Surgical treatment of cleft palate in patients with syndrome occurred with a higher mean age when compared to surgical treatment of patients with cleft palate isolated or cleft lip and palate. The incidence of complications was also higher, and is probably related to deformities present in the maxilla and palate. Lip clefts were identified in 7 patients (4 bilateral cleft lip, 2 unilateral lip cleft on the left, 1 unilateral lip cleft on the right). Cleft lip is present in 0.05% of the sample. The treatment of cleft lip occurred in accordance with the protocols established for non-syndromic cleft. Cleft lip and palate are present in 5 patients in the population and represent 0.04% of the sample. Conclusion: Although rare, the occurrence of cleft lip and palate can compose the clinical picture of Treacher-Collins syndrome, which configures the association of rare clefts of the face (6, 7 and 8) and cleft lip and palate.
Treacher-Collins, cleft lip and palate.

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Taking Speech therapy beyond Correction of Cleft Speech with VOCAB and Dr Speech Software.

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction:

The voice is a primary means of expression and oral communication, which initiates from the cry of an infant, eventually becomes the voice of an individual. The components of the entire speech production system are of relevance to voice disorders. Various studies have done in past in identifying the various voice problems in groups of children with cleft palate, or with unilateral cleft lip, alveolus and palate. All of them has common nasalized speech with misarticulation personality disorders and other language disorders. In the management parents and caregivers plays a significant role in applying voice therapy along with speech pathologist. Various software are developed and made available which can help overcoming the difficulties parents and the child faces in today's competitive world. Use of Dr Speech Software program – Assessment and Therapy module with VOCAB can jointly helped the children to develop effective comprehendible communication within 3 years and raise their competent and confidence level.

Learning Outcome:

1. Participants will learn use of various assessment and therapeutic program used with Dr Speech Tiger DRS software
2. Participants will learn use of VOCAB and Generating expansion of their own
3. Participants will develop competent in using the tools in regular speech therapy session through the easy mode of learning
4. Making use of the tool in supporting development of professional speech and voice in cleft children besides conventional speech therapy
5. Helping the parents to achieve goal of effective communication

Content:

Dr Speech Tiger DRS soft ware and VOCAB software, Laptop, Microphone and programming keys.

Literature and Manual of Usage and Trouble shooting solution.

Live demonstration and hands on practice with live and recorded speech stimulus.

Demonstration and teaching techniques with parents of cleft child and involving the child interest using mother tongue.

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Public knowledge of cleft lip and infantile hernia survey; two frequent pediatric malformation.

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction :

Cleft awareness is one major component of comprehensive cleft care. The parent's knowledge and understanding of cleft leads to a better commitment to the proposed care. However, many parents still lack knowledge about their children's pathology. Infantile hernia is a malformation that is as frequent as cleft lip and palate in terms of performed pediatric surgery. This study was designed to assess public knowledge about these common malformations.

Aims:

We wanted to assess the ability of our population to give a short definition of these two malformations.

Methods :

Sixty random persons were interviewed face to face, without asking if they are concerned about these malformations or not. A questionnaire was developed to give a simple definition of the malformation using «Harold Lasswell 5W's». No other information was collected, and the data collection was totally anonymous.

Results :

Seven persons (12%) could give a complete, correct answer and it was all for cleft, 9 persons were totally wrong (16%, all about hernia).

Cleft result : 87% of subjects could answer the «what and where», 68% knew «who» were affected and 60% knew that it is a congenital condition. Less person could tell «why and how», which was predictable.

Hernia result : 68% knew about «what», 75% correct answer on «where», 17% knew that it is congenital, 12% were correct on «why» and 13.04% on «how».

There was no significant difference between the knowledge of our population about cleft or about hernia (p-value>0.05)

Conclusions :

Four persons out of five could not define correctly both cleft and hernia. According to our study, the main gap in our population's knowledge concern the cause and the pathophysiology of the malformation.

Cleft lip, awareness, knowledge, public

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Global research priority setting in orofacial clefts: A modification of the CHNRI protocol to increase inclusivity and diversity

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Introduction:
Progress in orofacial cleft research is constrained by infinite avenues of research interest and varying burdens of disease between high and middle/low-income countries. As it stands, research needs often exceed available resources and competing research options will require relative prioritisation as a unanimous agreement between the options is unlikely. The Child Health and Nutrition Initiative (CHNRI) method provides a transparent framework to rank competing research options using set criteria. Till now, there were no CHRNI exercises in orofacial clefts. The Cleft CHRNI group created a global exercise with a modified methodology, focusing on increasing inclusivity, as cleft care is lifelong and requires multi-disciplinary team input throughout. This paper presents the modified CHNRI methodology.

Methods:
Traditional CHNRI exercises took only researchers' top questions in the field of interest. This CHNRI exercise considered the 'lay' voice and invited representatives from national patient-parent cleft organisations. In addition, invitations to submit questions were done through email and WhatsApp. Previous CHNRI exercises also used Microsoft Excel to input research questions, this paper created and trialled a JISC online survey for these purposes. A steering group was invited to discuss and evaluate the survey's inclusivity.

Results:
The JISC survey was created and available in French, Spanish and English to improve inclusivity. There was a version for lay individuals and researchers, with different phrasings. Each submitted question was stratified by the occupation of the survey responder, the age category that the question pertained to, and pre-determined patient-centred themes including breathing problems, facial appearance, scar care etc.

Conclusions:
This survey is unique and replicable. It demonstrates the importance of including every voice in a research priority setting exercise. This is especially relevant in other congenital abnormalities as the 'lay' voice is a valuable one that is often unintentionally excluded from research exercises. Future exercises should consider translation into Mandarin also.
orofacial clefts, global research prioritisation

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Support for and promotion of high quality research in inter-disciplinary cleft care: how a charity can help.

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1. Introduction: High quality research is essential for answering the many questions that remain relating to cleft care. Such research is complicated by the interdisciplinary nature of cleft care, the many confounding factors that can affect outcomes, the lack of reliable, validated outcome measures, and the difficulties in finding funds to support research efforts.
CLEFT: Bridging the Gap (CLEFT) is a UK charity. The CLEFT Research Steering Committee (RSC) is a multidisciplinary group which includes academics, parents and patients, and clinicians. The aim of the RSC is to support cleft clinicians and academics interested in research in interdisciplinary cleft care. Such support will include assisting with fundraising for specific projects, funding calls for research projects, and feedback on project applications from the research steering committee.
2. Learning Outcomes:
Cleft specialists will learn about different sources of research funding, what CLEFT in particular is looking for in an application, and what would help CLEFT raise money for cleft research.
Cleft specialists will learn from members of the CLEFT charity about what a strong application for research funding to CLEFT needs to include, and what pitfalls to avoid.
3. Content:
There will be:
Presentations by the CLEFT team on ways of raising funds, the types of information needed to help with fundraising, and how CLEFT can assist in fundraising.
Presentations by clinician researchers from the UK and Ireland about what they have learned about the difficulties of developing high quality research in cleft lip and palate. This will include discussion of:
-ethical permissions and considerations,
-the many confounding factors affecting cleft lip and palate outcomes and how to manage these,
-finding or establishing robust and externally validated outcome measures,
-statistical planning
-dissemination planning
-identifying funding support.
There will be dedicated time for discussion and exchange of ideas.

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Achieving Successful Alveolar Cleft Grafting: An Achievable Goal

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

INTRODUCTION: Alveolar cleft grafting (ACG) is part of the general management of patients with cleft lip and palate (CLP). It is considered an essential procedure for functional and esthetic rehabilitation of CLP patients. ACG is considered a technique sensitive procedure as its outcome is affected by several cumulative local and general factors. To improve the ACG procedures, it requires full awareness of all aspects and factors that contribute to its final outcomes and how to assess and manage. Neglection of these factors will compromise the prognosis of ACG.
AIM: To highlight the factors and parameters affecting the ACG outcomes.
METHODS: The cases attended and operated at our cleft care center, affiliated to the oral and Maxillofacial Surgery department, Faculty of Dentistry, Ain Shams University. These cases underwent micro-nutritional assessment in the pre-preparation phase as well as adjustments through necessary nutrition and supplements both pre- and post-operatively. Attention to oral hygiene and dental condition was also pursued pre-operatively. Moreover, healing adjuncts were used intraoperatively as biological barriers which were assessed both clinically and radiographically post-operatively. The post-operative follow-up phase was compromised of nutritional adjustments, supplementation, strict oral hygiene measures in addition, to patient motivation.
RESULTS AND CONCLUSION: Preoperative micro-nutritional assessment and improving oral hygiene of the patient have a direct influence on soft tissue healing over the ACG. The use of biological barriers such as autologous fat graft or periosteal grafts as well as low-level laser therapy both play a significant role in the prognosis of ACG. In addition to micronutrients assessment and oral hygiene during the phase of bone healing are all critical parameters that contribute to the outcome and improve the prognosis of ACG.

Alveolar Cleft Grafting

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Protocol and Evaluation of 3D-Planned Microsurgical and Dental Implant Reconstruction of Maxillary Cleft Critical Size Defects in Adolescents and Young Adults

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Functional and esthetic final reconstruction of the cleft maxilla is still challenging. Current reconstructive and augmentation techniques do not provide sufficient bone and soft tissue support for the predictable rehabilitation with dental implants due to presence of maxillary bone critical size defects and soft tissue deficiency, scaring and poor vascularity. In this article the protocol for the use of 3D virtual surgical planning and microvascular tissue transfers for the reconstruction and rehabilitation of cleft maxilla is presented. Twenty-five patients (8 male/17 female) aged 14–41 years old with cleft-associated critical size defects were treated by 3D-virtual planned microvascular tissue transfers taken either from fibula, iliac crest, radial forearm, or medial femoral condyle. Follow-up lasted 1–5 years. No significant bone resorption ($p > 0.005$) nor volume loss of the graft was observed ($p = 0.645$). Patients received final permanent prosthetic reconstruction of the anterior maxilla based on 2–5 dental implants, depending on the defect severity. This is the first study presenting the use of virtual planning in the final restoration of the cleft maxilla with microvascular tissue transfers and dental implants. Presented protocol provide highly functional and aesthetic results

microsurgery, alveolar graft

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AUTOGENOUS ALVEOLAR BONE GRAFT FOR ALVEOLAR CLEFT REPAIR: BRIDGING THE GAP IN CLEFT CARE

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Patients with clefts of the lip and palate, with an unrepaired alveolar cleft, pose challenges including nasolabial and oronasal fistulae, collapsed alveolar segments, a mobile pre-maxilla (bilateral cleft), deficient bony support under the nasal alae, loss of periodontal support for permanent teeth as well as missing, malpositioned and supernumerary teeth. As a solution to these challenges secondary alveolar bone grafting using cancellous bone from iliac crest which is attributed to Johanson and Ohlsson (1954) and popularized by Boyne and Sands (1972).

Aim: To evaluate the post-operative outcomes following ABG by particulate grafting of cancellous bone from iliac crest in a low-resource country.

Methods: This is a case series study of 10 cases done from 2019 to 2021. The following variables were recorded: sex, age (at the time of ABG), side of cleft (right, left, bilateral) and outcomes (uneventful or complications including wound infection, wound dehiscence with graft exposure, graft resorption, fistula and need re-operation).

Results: There were 6 male and 4 female patients. Mean age at surgery was 10 years (range 7-15). All cases were unilateral alveolar clefts (7 cases on left side). Minimum follow up period was 3 months. 8 cases had an uneventful recovery and post-operative outcomes. There was 1 case of wound infection which was managed conservatively. There was 1 case of graft resorption post-operatively. There were no cases of wound dehiscence, graft exposure or fistula formation.

Conclusion: As the role of GPP alone remains controversial, alveolar bone grafting in the mixed dentition phase using cancellous bone from the iliac crest remains the gold standard. Despite the difficulties in countries such as Bangladesh, the operation can be successfully carried out with appropriate orthodontic support in a comprehensive multi-disciplinary cleft centre.

Alveolar cleft, ABG, Iliac crest

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Alternative measurement method in the diagnosis and treatment of nasoalveolar cleft through the OnDemand software

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction.
The alveolar cleft affects approximately 75% of patients with cleft lip and palate, its proper diagnosis and management with bone graft allows to provide a bed for the descent of teeth near the cleft or for the placement of dental implants, support for the affected nasal floor, stabilize the maxilla in preparation for orthognathic surgery.
Objectives
-Provide an acceptable measurement method without the need for specific or expensive software.
-Demonstrate the effectiveness of the measurement method for decision making when choosing the type of graft through the volume to be used.
- Demonstrate the use of specific measurements in the alveolar cleft through a measurement with the area or surface tool.

Methods

Use of volumetric tomography of the facial mass with the OnDeman™ image exploration software in its lite version or as a viewer tool is sufficient to make measurements by area or surface.
It is proposed to carry out three coronal measurements (Vestibular, medial, palatal) and three axial measurements (alveolar crest, medial, nasal). The sum of the values between each of the two measurement axes is made and a percentage is made through of the sum of totals for each axis divided by 100 (coronal + axial / 100).
Three-dimensional printed models of patients receiving treatment at the Peralvillo Pediatric Hospital were used.
Play Doh™ Colored Putty
Modified 20 ml siringes

Results
The clinical application of the proposed method was corroborated with the application of putty measured with 20 ml syringes on three-dimensional printed models of studies requested from patients undergoing treatment.

Conclusions
The application of the OnDeman™ software allows determining with certainty the need for volume and making decisions for the application of the ideal graft in the treatment of alveolar clefts

volumetric tomography, nasoalveolar fissure, graft

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Cleft Lip & Palate Treatment in Developing Countries like Bangladesh

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate (CLP) is one of the most common congenital abnormalities reported in Bangladesh. In developed countries there are standards for cleft care delivery regulating individual practices nationally but such standards are missing in most developing countries. In Asia, there is a high prevalence of clefts around 6000 children with CLP are born in Bangladesh each year of total population164 million. Many of these patients don't have access to qualified cleft treatment or can't afford. Aims: The aim of this study is to analysis of proper treatment of CLP patients in developing countries like Bangladesh. Methods: Two hundred forty-six CLP patients were treated in different hospitals of Bangladesh, from 2017 to 2021 under the Smile Brighter Program. Forty four (17%) patients were of adult size, and aged 16 to 30 years. Two hundred two (82%) patients were aged 6 months to 2 years. Unilateral cleft lips were repaired with a Millard advancement-rotation technique. Bilateral cleft lips were repaired via 1-stage procedure. Cleft palates were repaired using a 2-finger flap method. Results: Overall 12 of 140 patients (8.5%) had infection or wound dehiscence requiring subsequent revision surgery. The adult patients had clefts of significantly increased size secondary to patient growth, as well as maxillary expansion transversely. Adult cleft-lip repair required significant soft tissue dissection to close the cleft adequately. However, this procedure sometimes resulted in placement of the lip cicatrix in an anatomically disadvantageous position. In addition, with the increased transverse dimension of the adult cleft palate, tension-free 3-layer closure was difficult. Conclusion: In Bangladesh, there is a high need for correction of clefts for social as well as for functional reasons. Future actions should be directed to training of surgeons and development of craniofacial centers. Improvements in technique and efficiency have made this valuable in developing countries.
Cleft lip and palate, Repair

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THE USE OF GLASSBONE vs AUTOGENOUS BONE GRAFT FOR ALVEOLAR RECONSTRUCTION IN CLEFT SURGERY: PRELIMINARY RESULTS

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
The ideal reconstruction of an alveolar cleft defect should ensure an adequate bone component in terms of quality and position, and should be performed in the correct timing and with the least donor site morbidity. Over the years, bioengineering tools offered different alternatives to autogenous bone grafting to avoid donor site morbidity, with limits related to the quality and entity of the newly formed bone, infections and costs of the materials used.
Aims
The aim of this study is to compare the use of autogenous iliac bone graft with the use of GlassBone 45S5 Bioactive Glass Synthetic Bone Substitute composed of silicon oxide, sodium, phosphorus and calcium, in the reconstruction of alveolar cleft defects.
Methods
Patients with alveolar cleft defects candidate for reconstruction were selected and randomly treated using iliac crest bone grafts or GlassBone grafts. A Preoperative volumetric study using a CT Cone Beam scan was performed to evaluate the alveolar defect. The postoperative course in terms of length of stay, pain and complications were recorded. Bone regeneration was evaluated at 3 months from surgery with an orthopantomography (OPG) and at 6 months with a CT Cone Beam.
Results
6 patients were treated in 2021 for an alveolar reconstruction, 3 of which had an autogenous bone graft and 3 a GlassBone graft. The postoperative course was uneventful for both groups. A higher level of pain (Median of Visual Analogue Scale VAS=5) was reported by the patients treated with an iliac bone graft. Follow up at 3 and 6 months from surgery showed an adequate ossification of the maxillary alveolar ridge for both techniques.
Conclusions
The use of GlassBone provided similar results as traditional iliac bone graft, showing an uneventful postoperative course and consistent bone regeneration at 6 months in the small court under review.

Bone graft, GlassBone, alveolar reconstruction

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Volumetric Analysis of Allograft and Autograft for Alveolar Bone Grafting Pre and Postoperatively Using Cone Beam Computed Tomography

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

1.Introduction
Bone grafting is a common procedure to augment an edentulous area in preparation for placement of an osseointegrated implant to restore function and appearance. Autologous grafting with iliac crest bone is a standard surgical procedure widely used for alveolar reconstruction for patients with clefts. An alternative technique involves grafting with allogenic bone. It is intended to achieve equal or improved outcomes relative to bone volume without significant side effects of the autologous technique. These include sensory disturbances, postoperative pain and infections, and delayed recovery with a defective silhouette.

2. Aims
The aim of this study is to compare these two bone graft techniques with respect to pre and post graft bone volume.

3. Methods
Seventy-five patients underwent alveolar bone grafting in anticipation of dental implant placement. Thirty cases used autogentous iliac crest bone and forty-five cases used allograft. Presurgical cone beam ct scans (cbct) were taken in each case. A postsurgical cbct was taken 5 months later. Volumetric analysis to compare pre and postsurgical conditions was performed using 3D medical imaging software.

4.Results
Results indicated a slight increase in bone volume in the allogeneic bone group but our data were not strong enough to yield a confidence level to make our results statistically significant

5.Conclusions
Alveolar bone grafting with allogeneic bone material yields comparable results to similar procedures using autogenous bone graft. There were less real and potential complications using allogeneic bone.

bone graft comparison, autogenous, allogeneic

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Report of Idiopathic Fistula in an Unrepaired Submucous Cleft Palate (SMCP) and Review of Relevant Literature

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Palatal fistulae are a recognised complication in individuals who have undergone surgical repair of a cleft palate however, congenital or idiopathic palatal fistulae are rare. We present a case of idiopathic fistula in an unrepaired SMCP and the results of a literature review.

Aims
Present a case of spontaneous palatal fistula heralded by new hypernasality occurring in a 16-year-old female with a submucous cleft palate (SMCP) and no previous surgical intervention.
Undertake and present a literature review for congenital and idiopathic palatal fistulae.

Methods
Retrospective case note review was undertaken. An online literature search of congenital and idiopathic palatal fistulae was conducted, with inclusion of all relevant articles identified, to identify potential pathogenesis and preferred treatment.

Results
Over 40 cases of congenital and idiopathic cases of palatal fistulae have been reported in the literature. These are most frequently identified in patients with an existing SMCP (29/42 identified cases) and minor oral trauma in these patients can result in development of such palatal fistulae. Surgical management of the fistulae often addressed any underlying abnormality of the palate, such as muscle dissection with retropositioning and palatal lengthening to provide effective velopharyngeal function.

Conclusions
Even though it is a rare phenomenon, patients and their families should be informed of the risk of developing an idiopathic palatal fistula in association with a SMCP. Advice should be given regarding symptoms, signs and risk factors for formation. Patients presenting with a new fistula of unknown origin should be assessed for the presence of a SMCP and as these fistulae are often associated with a SMCP, management should address abnormal musculature of the palate as well as closure of the fistula.
Submucous cleft palate, palatal fistula

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Histopathology of the cleft palatal muscles: A systematic review

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction

Numerous studies were published in the last decades dealing with a morphology of cleft palate. Previous studies have described the significant morphological abnormalities of cleft palatal muscles. The cleft palatal muscles showed to be hypotrophic, with a poorer vascularization and more extensive fibrotization. However, the studies were heterogeneous in terms of examined factors, the number of included patients, the examined cleft types, area of biopsy and multiple other aspects.

Methods

A systematic review search was done via Pubmed, Web of Science and Google Scholar databases. Following keywords were used to search in selected databases: cleft, palate, muscle, morphology, histology. Inclusion criteria were as they follows histological structure of cleft palate muscle in children before primary palatoplasty. All studies involving adult patients, secondary surgeries or morphological evaluation by CT/MRI imaging were excluded.

Results

Out of the 338 articles retrieved in the literature surveys, only 4 studies met all inclusion criteria and were selected for qualitative analysis. In total, 66 patients were included in the review, while 23 children were patients with cleft lip, alveolus and palate, 15 with isolated cleft palate and 28 with submucous cleft palate. The age of involved patients was 2 to 21 months, except for the case of submucous cleft palate, where the age was from 5 months to 11 years.
All selected studies show significant abnormalities in histology of muscles. All 4 studies explored muscle fiber type and diameter, other studies showed disorders in vascularization, fibrosis and muscle fascicle structure.

Conclusions

The common result of all work was disorder in the histopathological structure of the cleft palatal muscle in comparison with the healthy population and its potential influence on the clinical outcome.
Not entirely satisfactory conclusions show the need for further research and a deeper understanding of pathology and in the light of constantly improving scientific methods.
cleft palate, muscle, morphology, histopathology

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Brosco-Dutka Classification System: A proposal for a new palatal fistula cassification

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

INTRODUCTION: Occurrence of oronasal fistula(ONF) is an undesirable and challenging outcome post-palatoplasty, also difficult to classify.
MAIN: To present a protocol for the classification of palatal fistula based on embryological and morphological criteria including symptomatology.
METHODS: The following stages were followed for the elaboration of the protocol: establishing a definition of ONF; identifying anatomical references; establishing embryological and morphological criteria and including symptomatology.
PROTOCOL: The protocol includes strategies to favor the identification of anatomical references such as incisive foramen (IF) and the transition area between hard and soft palate. Using the embryological criteria a fistula may be classified as PREFI (located anterior do the IF), POSFI (located posterior do the IF), PREPO (involving area anterior and posterior do the IF). The morphological criteria establish as the location of occurrence: Region-1: pre-alveolar and/or at the alveolar arch; Region-2: hard palate anterior to IF; Region-3: hard palate posterior to IF; Region-4: transition between hard and soft palate; Region-5: soft palate. Symptomatology includes hypernasality, otitis, and nasal reflux. Adequate intraoral photography optimizes the use of the protocol, and an adequate image requires viewing the palatine face of the superior incisive teeth.
CONCLUSION: The Brosco-Dutka Classification System for Palatal Fistula was elaborated for use by the craniofacial team during live evaluation or during the analysis of photographic images. The proposal includes illustrations to guide the adequate use of the criteria proposed.

Cleft palate; Oral fistula; Protocol

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Mislocalization of ACTB in epithelial cells underlies the etiology of facial cleft in Baraitser-Winter syndrome.

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

【Introduction】
Baraitser-Winter syndrome (BWS) is caused by mutation of ACTB gene and characterized by systemic symptoms which include high incidence of facial cleft.

【Aims】
The aims of present study is to reveal molecular and cellular etiology of facial cleft in BWS.

【Materials and methods】
In cooperation with Initiative on Rare and Undiagnosed Diseases (IRUD), we performed trio exome sequencing of the family with the patient who exhibit systemic phenotypes which include bilateral cleft lip and palate, hypertelorism and atrial ventricular septal defect. Expression pattern of ACTB during embryonic craniofacial development were assessed by in situ hybridization and immunohistochemistry. MDCK cell and Xenopus were used to assess the biological significance of the mutation in ACTB.

【Results】
Exome sequencing revealed novel pathogenic ACTB mutation in the patient (c.1043C>T:p.S348L) and thus genetically diagnosed as BWS. Immunohistochemistry and whole-mount in situ hybridization revealed tissue specific expression pattern of ACTB in developing epithelium of secondary palate. Moreover, localization of ACTB at epithelial cell junction was disturbed both in cell line and Xenopus embryo with this mutation.

【Conclusions】
We identified novel pathogenic variant in ACTB (p.S348L) which could result in BWS. This variant seems to influence the function of ACTB which resulted in mislocalization and in turn could cause facial cleft during embryogenesis.

BWS, ACTB, facial cleft, embryology

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Retinoid signaling is essential for upper incisor development

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction:
Retinoid signaling is critical for embryonic craniofacial development and its disturbance result in wide variety of craniofacial defects. In our previous study, we discovered upper incisor defects in the mouse with disturbed retinoid signaling at the early stage of embryogenesis. Tooth is derived from epithelial cells as well as cranial-neural crest cells and the interactions between them drive tooth development. However, the relationship of retinoid signaling and tooth development is largely elusive.
Aims:
We aimed to explore the role of retinoid signaling in odontogenesis especially for upper incisors.
Methods:
We reduced retinoid signaling by deleting Rdh10, a rate limiting enzyme for producing active all-trans retinoic acid with tamoxifen inducible Cre mouse line during embryogenesis. Micro CT and hematoxylin-eosin staining are used to investigate the morphological features. To determine the molecular basis of the phenotype, we performed in situ hybridization and immunohistochemistry.
Results:
We found that Rdh10 is expressed in the craniofacial region from the initiation to the bud stage (E8.5-13.5). Rdh10 mutants treated with tamoxifen at E7.0 frequently exhibited missing upper incisors.
However, split upper incisors were observed in mutants treated with tamoxifen at E7.5. Furthermore, the upper incisors that did develop in mutants were hypoplastic compared to controls.
Futher analysis revealed that reduced retinoid signaling resulted in lack of invagination and decreased cell proliferation of the SOX2 expressing dental lamina which gives rise to all epithelial cell lineages of the incisor. Additionally, disturbed retinoid signaling lead in downregulating several genes which are essential for development of dentition such as Shh, Bmp4, Pax9, Pitx2.
Conclusions:
Our data indicate that proper retinod signaling is essential for upper incisor development through activating critical genes for embryonic tooth development.

Retinoid signaling, Tooth development

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A newborn with bilateral cleft lip and palate and congenital hypoplasia of depressor angularis oris muscle

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Congenital hypoplasia of depressor angularis oris muscle (CHDAOM) is a rare cause of asymmetric crying facies in newborn. The association of CHDAOM with bilateral cleft lip and palate has not been reported.

Aims: We report a case of a neonate with bilateral cleft lip and palate and CHDAOM.

Methods: A full term female neonate with bilateral cleft lip and palate was transferred to our hospital for centralized care of cleft anomalies. She was born by spontaneous vaginal delivery with a birth weight of 2.4kg and no history of birth trauma. Clinical examination showed complete bilateral cleft lip and palate. Upon further evaluation, while her facial features remained symmetrical at rest, there was drooping (downward and lateral movement) of the left sided lower corner of the mouth on crying, with preserved upper face symmetry. MRI brain confirmed normal brainstem structure. Genetic test did not reveal any micro-deletion of the chromosome 22q. Echo -cardiogram showed no significant cardiac structural anomalies. As the baby was unable to tolerate oral feeding with significant choking and recurrent aspiration, endoscopy was performed and it showed right partial vocal cord paralysis. Ultrasound of the lips showed thinner and smaller right depressor angularis oris muscle, confirming the diagnosis of CHDAOM on the right.

Results: As the baby remained tube-feeding dependent, elective laparoscopic gastrostomy and surgical repair of the bilateral cleft lip were performed at 4 months of age. Post-op recovery was uneventful.

Conclusions: While surgeons might be well aware of the pre-operative management of baby with cleft lip anomalies, it is important to observe the baby for other facial anomalies which may only become apparent when she is crying. Timely documentation, appropriate investigations and counselling are important when managing patient with cleft lip/palate anomalies and CHDAOM.
cleft lip, depressor angularis oris

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Velopharyngeal insuffiency and surgical resolution, evaluating our experience

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

1. Introduction. Velopharyngeal insufficiency (VPI) corresponds to a closure defect of the velopharyngeal sphincter. The main cause is cleft lip and palate (CLP). 20-30% of operated patients can evolve with VPI that requires corrective surgery, adjusted to the needs of each patient for its correct resolution.

2. Aims.
- Describe characteristics of VPI patients who underwent to corrective surgery
- Evaluate result of multiple VPI surgery techniques develop between 2011-2021

3. Methods. Retrospective descriptive study. The clinical records of all patients with a history of cleft palate and surgical management of VPI with at least one year of follow-up, who had a clinical / speech therapy evaluation. the technique selection was defined por each particular patient, acording to their closing pattern inform in nasofibroscopy and videofluoroscopy.

4. Results. 91 clinical records were reviewed, 60 incomplete records were excluded. Thirty patients were studied, 60% (N = 18) were male anf 40% female (N=12). The range age for surgery was 35-160 months (median 78). 25 patients required 1 procedure for resolution and 5 required 2 procedures. The pharyngeal flap was the most frequent technique with 50% (N = 15), 18% orticochea (N=5), 7.4% re-repair (N=2) y velar plasty (N=2), 12% between Furlow and lipoinjection. The success rate for the first surgery was 83% (N = 25), while for the second it was 100% (N = 5). 1 patient presented partial dehiscence of the flap.

5. Conclusions. Surgical treatment of VPI is safe and effective. No technique solves the problem by itself, so a complete clinical and speech therapy evaluation is necessary to choose the technique that best suits each case.

Velopharyngeal insufficiency, CLP, surgery techniques

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Treatment of Velopharyngeal Dysfunction(VPD): A practical workshop teaching when to use and how to perform available treatment options, including tissue replacement options (example, palate lengthening with Buccal Flaps) and other Anatomic Cleft Restoration Philosophy (ACRP) reconstructions.

Dr Robert Mann[1], Dr Joseph Losee[2], Dr k Patel[3], Dr Jordan Steinberg[4], Dr Mamdouh Aboulhassan[5], Dr Sundereshwer Sood[6], Dr Corstiaan Breugem[7], Mr Samuel Mann

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction

Traditional Velopharyngeal Dysfunction (VPD) treatments include pharyngeal flaps, sphincteroplasties and pharyngoplasties. These operations do not restore natural velar closure, instead constructing a different closure mechanism driven by compensatory muscle movement and alterations in airway size and shape.

The result is that many patients never achieve truly normal sounding “corrected speech.” Patients can also suffer lifelong nasal obstruction, halitosis, hypo-nasality, and sleep apnea. Immediately post-op, sleep apnea can be deadly, or it can present years later, affecting work, family life, and even shortening the life span.

The Anatomic Cleft Restoration Philosophy (ACRP) is an additive approach to cleft reconstruction. The ACRP incorporates a modern understanding of cleft embryology, combined with reconstructive principles from other surgical specialties. For VPD, this means focusing repairs on the restoration and maintenance of normal velar function.

In this workshop an international faculty will each share how this philosophic shift has changed their management of VPD. Each faculty will outline their personal experiences using ACRP-based repairs, the outcomes, challenges, and how challenges were managed.

Learning Outcomes

Delegates will be able to describe;

- differences between traditional and ACRP treatment of VPD.
- the work-up required to identify the anatomic deficiency leading to VPD and how to choose from the available reconstructive options.
- how to perform a double-opposing buccal flap palate lengthening procedure.
- how to perform a repalatoplasty using a Z-plasty.
- how to lengthen a palate by shifting a buccal flap already used at primary repair.
- when a single buccal flap lengthening procedure is appropriate.
- possible complications and how to manage.
- the next step if the first VPD surgery is unsuccessful.

Content

The faculty will use individual and panel discussion with videos, photographs, and diagrams, while encouraging Q&A. Virtual and Augmentative Reality teaching options will be introduced as a future teaching path.

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A graded approach to management of Velopharyngeal Dysfunction (VPD)

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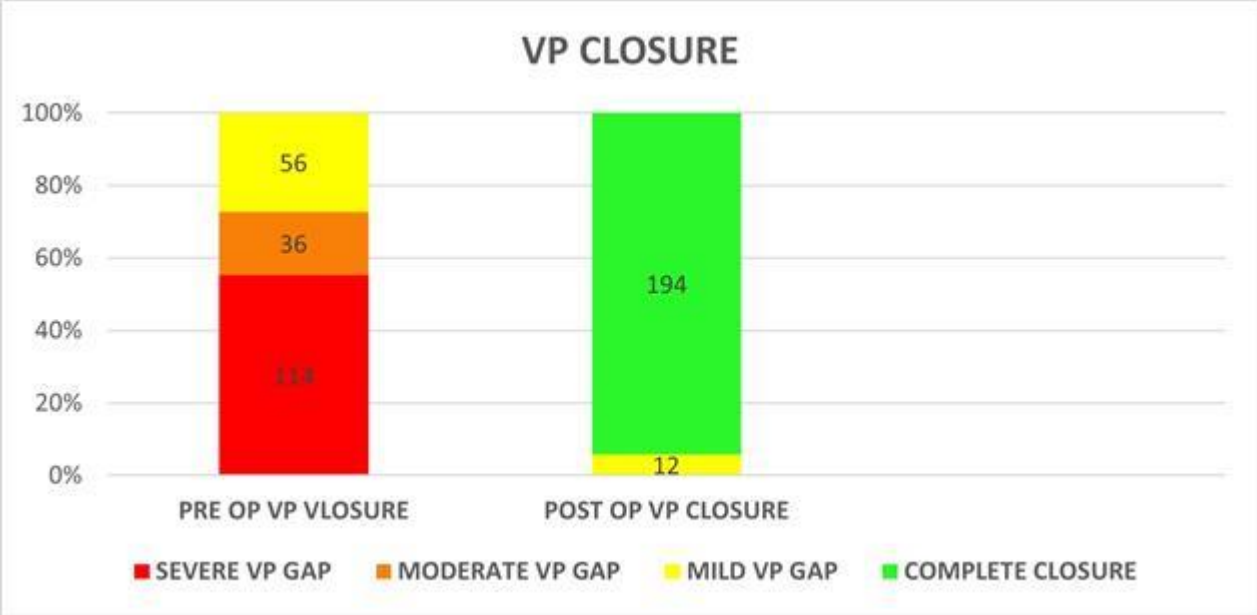
PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction:
Velopharyngeal Dysfunction (VPD) occurs due to inadequate restoration of the soft palate structure and function, which is essential before speech therapy can effectively rehabilitate these patients. The available procedures vary widely including anatomical repairs which may be ineffective in severe cases and pharyngoplasties which distort anatomy and have consequences to the airway and midface growth. A suitable procedure has to be selected according to the severity of VPD, while balancing its advantages and disadvantages .
Aim:
We put forward a comprehensive protocol with a graded approach for the management of structural VPD.
Methods:
300 patients treated at our center over a period of 15 years were included in our study. All Patients with clinical VPD underwent nasoendoscopy, and diagnosed as having either structural or functional VPD. Patients with structural VPD were further graded according to severity of VP deficit as mild, moderate, or severe based on Kushner grading system. Selection of an appropriate operation from a repertoire of interrelated and incremental corrective procedures was made by a two-stage process. The initial decision based on nasoendoscopy was further refined by intraoperative findings of tissue loss and scarring.
Results :
Out of the 300 patients, 246 had structural VPD. 206 of them underwent surgery. 56 patients had mild deficit, 36 patients had moderate deficit and 114 patients had severe deficit. Appropriate corrective procedure was decided by the two step process as mentioned above. 45 patients underwent Palate Re-repair, 23 patients underwent Hynes' Pharyngoplasty and 138 patients underwent Modified Malek's Pharyngoplasty. Speech therapy was initiated in all patients after the surgical pain subsided. Post operative VP function was evaluated by Nasoendoscopy at 6 months.94% of patients managed according to this protocol showed restoration of VP function
Conclusion:
The complexities of the decision-making process and outcomes in terms of speech parameters, Obstructive Sleep Apnoea (OSA) etc. are discussed.



Cleft speech ,Velopharyngeal dysfunction, Protocol

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Orthodontic Management of Patients with Orofacial Clefts from Infancy to Adulthood

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: This workshop will discuss orthodontic treatment for patients with orofacial clefts from infancy to adulthood. In addition, sequencing and timing of orthodontic/orthopedic and surgical treatment will be elaborated.
Content: Current presurgical infant orthopedics treatments options will be presented, and their long-term outcomes will be discussed. In addition, indication and contraindication and the burden of care associated with PSIO will be addressed.
Orthodontic preparation for successful secondary alveolar bone graft surgery will be presented. In addition, the use of ultra-low-dose 3D imaging to evaluate alveolar bone defects and the outcome of bone graft surgery will be reviewed. Furthermore, orthodontic management of transverse and anteroposterior discrepancy during pre-adolescence will be described. Finally, the use of computerized surgical planning in premaxillary reposition surgery in patients with bilateral cleft lip and palate will be presented.
An orthodontic treatment planning approach based on the severity of the maxillomandibular relationship will be presented in early adolescence. Diagnosing patients with favorable growth patterns and providing comprehensive orthodontic treatment while performing the limited orthodontic treatment in patients with moderate and severe skeletal discrepancies will be elaborated. This approach reduces the orthodontic treatment time, burden of care, and patient burnout.
In late adolescents, factors determining orthodontic camouflage for mild skeletal discrepancy will be discussed. Adjunctive surgical procedures to complement the orthodontic camouflage treatment will also be reviewed. In patients with moderate and severe skeletal discrepancies, orthodontic preparation for orthognathic surgery to optimize surgical correction and reduce skeletal relapse will be discussed. Finally, the outcome of skeletal stability of significant maxillary advancement will be presented.
During adulthood, developing a patient-centered multidisciplinary treatment plan to address patients' concerns will be reviewed.
Learning outcomes: The presentation will show long-term treatment outcomes of a series of patients and present the supporting research data so that the participant can apply that knowledge to practical patients.

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CRANIOFACIAL PHENOTIPYCAL VARIABILITY IN COLOMBIAN PACIENTS WITH REPAIRED-UNILATERAL CLEFT LIP AND PALATE EVALUETED WITH GEOMETRIC MORPHOMETRICS

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
The functional and aesthetic implications of facial clefts represent a challenge for the clinical team. Evidence discusses whether the craniofacial morphological variations in CLP-patients are a consequence of the intrinsic cleft defect and/or of the treatment
Objective
To describe the anteroposterior and vertical morphological patterns in the craniofacial skeleton of patients with repaired non-syndromic unilateral cleft lip and palate (UCLP) by means of 2D geometric morphometrics
Method
Retrospective study of 208 standardized digital-lateral radiographs of 129 patients with UCLP (114 left and 94 right) treated in Fisulab-Bogotá-Colombia, 40 women (mean age 12.71 years, range 4-27) and 89 men (mean age 12.77 years, range 4-40). 18 cephalometric points were digitized on each image, representing the base of the skull, maxilla and mandible. Procrustes Superposition and Principal Component analysis were performed to describe the shape variation of the sample. Linear models (multivariate regression and ANOVA) were also used to test the shape changes with age and the effect of sex and diagnosis on facial shape.
Result
In the shape space of the first two principal components a wide morphological variation of the vertical and anteroposterior facial skeleton is evidenced. Shape variation along the first component is related with age, with older age groups showing patterns with more retrognathic maxillae and more vertical mandibles than younger ages. The associacion was confirmed by the multivariate regression, which shows a significant effect of age on facial shape. No clear differences between sexes is captured by the first two components, although the ANOVA indicates a significant but small effect of sex on shape. Finally, no differences in shape were found between left and right UCLP.
Conclusions
Treated LPHU-patients present various patterns of morphological variability in relation to age, going from a horizontal trend in childhood to a more vertical trend in adult life.

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Emergency Response Protocol for Overseas Outreach Settings

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Cleft burden surpasses cleft capacity in endemic regions and in low- and middle-income countries. In recent years, there has been an increase in humanitarian cleft outreach initiatives to accommodate this unmet and rising need. The unfamiliar environment of an outreach setting invites potential safety and medical risks for team members, volunteers, and patients. Therefore, standardized protocols to maximize individual safety and ensure optimal quality control are needed.
Learning Objectives: To describe a standardized emergency response protocol for overseas outreach settings. The protocol was first developed and published by Global Smile Foundation (GSF) in 2013 and has been recently updated in 2021 (Plastic and Reconstructive Surgery & Cleft Palate Craniofacial Journal). It is based on the authors' 35 years of experience in outreach cleft care. Emergency measures and recommendations are categorized into pre-departure, on-site, and post-visit. Cleft teams conducting surgical outreach will benefit from this protocol and be able to easily adapt it to their unique outreach sites.
Content: Pre-departure measures include team selection and careful site selection. An overseas outreach Emergency Crash Cart will be displayed and its contents detailed. Initial on-site setup and team unpacking practices are discussed. A sample virtual hospital tour and GSF's simulation curriculum for team emergency preparedness are shared. Best practices for post-outreach debriefing are discussed. We explore potential hazards and safety measures in the operating rooms. Plans for prospective emergency evacuation are detailed. Finally, the authors discuss crisis management under special circumstances, including natural disasters, acts of terrorisms, and infectious disease outbreaks.

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Considerations in Management of Nasolabial Clefts During the COVID-19 Global Pandemic: Safety Recommendations and Implications

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: With the emergence of the COVID-19 pandemic, both local and international delivery of cleft care was greatly reduced. Cleft lip and palate repair were classified as low acuity and deferred while accompanying NasoAlveolar Molding (NAM) clinics were shut down. In addition, safety concerns and travel restrictions disabled foundation-based cleft outreach programs in low- and middle-income countries that rely on visiting teams to provide cleft care. This has increased the backlog of untreated children and extended cleft morbidity. In a bid to safely resume the administration of cleft care during an infectious disease outbreak, a modified approach for management of nasolabial clefts is essential.
Learning Objectives: We present a multi-faceted, interdisciplinary approach with a detailed framework for conducting safe cleft lip and palate surgery during a global pandemic. Recommendations are substantiated by leading health organizations and peer-reviewed literature. Experience in adopting various protocols and guidelines are shared in both a high-resource (academic pediatric hospital) and low-resource (overseas outreach) cleft center. We aim to lay the groundwork for a standardized COVID-19 safety protocol to guide safe delivery of care during high-risk circumstances, both locally and internationally.
Content: A system of protocols and recommendations for safe cleft care delivery during a global pandemic is detailed, with emphasis on interdisciplinary teams and international outreach. Content will be divided into 3 sections: pre-operative screening, intraoperative management, and post-operative follow-up. The authors also share their experience and retrospectively discuss their results and other recently published outcomes.

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The development and impact of an international clinical mentorship program to expand practitioner competency and cleft speech care

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

1. Introduction

A primary challenge in global cleft care lies in the limited opportunities for cleft-specific training and mentorship available to speech practitioners around the world, particularly in low- and middle-income countries (LMICs). The inaccessibility of cleft-specific clinical instruction impacts the effectiveness of intervention and subsequently, the speech-language development and community integration of individuals with cleft lip and palate (CLP) worldwide. To address this problem in comprehensive cleft care provision, the Smile Train Mentorship Alliance for Global Speech (MAGS) was established.

2. Aims

The objective of the Smile Train MAGS is to facilitate the expansion of practitioner expertise in cleft palate speech therapy worldwide through a structured clinical mentorship program.

3. Methods

MAGS mentors are selected based on their clinical competence in cleft palate speech assessment and treatment and must be fully certified speech-language pathologists (SLPs). MAGS mentors and mentees participate in live monthly mentorship meetings in which mentees receive research-based clinical guidance, feedback, and resources in the area of cleft palate speech therapy. MAGS mentees are required to complete a Comprehensive Needs Assessment (CNA) to assist them in identifying areas of growth and developing individual goals to be addressed within the mentorship period. The CNA consists of a 5-point scale with which mentees self-rate their competency in various cleft palate speech assessment and treatment skills. The CNA self-ratings are completed both at the beginning and conclusion of the mentorship period to document progress in clinical skills. The CNAs will be analyzed to determine the effectiveness of the Smile Train MAGS in expanding practitioner competency in cleft palate speech care.

4. Conclusions

A structured clinical mentorship program such as the Smile Train Mentorship Alliance for Global Speech may be a critical component in expanding access to cleft-specific training and increasing speech practitioner skill worldwide.

speech, international, mentorship, training, cleft

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Creation of a Simple, Algorithmic Universal Identifier for Longitudinal Patient Tracking in a Cleft Lip and Palate Surgical NGO

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Intro:
Surgical non-governmental organizations (s-NGOs) have historically focused on service delivery through short-term surgical programs (STSPs). These disparate interactions, coupled with little available technology for longitudinal patient tracking in low-resource settings, complicate the ability to have a cohesive, comprehensive, and accurate medical history for patients seeking care on STSPs. Operation Smile, a cleft lip and palate s-NGO, has prioritized building an on-going presence within partner countries to support the lifelong healthcare needs of patients with cleft lip and/or palate. This created a need for a patient tracking solution.

Aims:
-Create a unique identifier (UID) for all patients receiving services from Operation Smile

-Create the UID using information that patients can easily recall, to allow straightforward connection of new to past data

-Test and validate UID creation and implementation during STSPs

Methods:
Our UID algorithm was evaluated on a retrospective database of 33,174 patients with CLP from 30 countries screened during STSPs between 2010 and 2020. Numerical and character combinations of patient identifiers were assessed for percentage of overlap. Overlap was defined as having an identical UID for two or more unique patients. We defined a successful UID algorithm as one that attained an overlap percentage of <2% within the database. During STSP field testing, each UID was converted to a QR code and placed on all patient charts. QR codes were then recognized through OMR software, thus allowing patient data to be stored on a HIPAA compliant cloud database.

Results:
The final UID consisted of a patient's gender (m/f), DOB (number format: ddmmyy), country of birth (first 3 letters) and the first 2 letters of their forename and surname. This combination of characters achieved an overlap of 0.02% (7/33,174).

Conclusion:
Our UID algorithm is one solution for connecting longitudinal patient data that was successfully modeled, validated and is currently in use globally for Operation Smile.
Longitudinal Patient Tracking, Unique Identifiers

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A Multidisciplinary use of Hybrid Clinical Healthcare Delivery in Cleft Lip and Palate - implementation, reflection and vision.

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1, Introduction
In the "needs must" post Covid19 emergent pandemic healthcare environment of early 2020, in common with many providers we had to rapidly adapt our Multidisciplinary Cleft Clinic delivery, utilising and integrating new and evolving technologies
2. Aims
A delve down into the process, organisation, operational delivery, clinical outcome measures, patient satisfaction data, reflection on, adaptation of and implementation going forward of a hybrid model of Multidisciplinary Cleft Clinic care.
3.Methods
Analysis of workstream planning, technology choice, pre/during/post clinic processes, patient flow data , clinic uptake data, quality of clinic experience, robustness of data gathered in clinic, challenges and opportunities, solutions and obstacles, client and clinician perceptions and opinions will all be examined.
4.Results
The model has evolved and it is anticipated it will continue to do so. There are strengths - some expected some not, and weaknesses, Some of the weaknesses are not easy to resolve and need future thought and consideration. However we feel the hybrid model offers benefits and we intend to keep it going forwards.
5.Discussion
The evolution of the delivery of the service into a hybrid model of using technology and the more traditional healthcare mode of face to face delivery will be discussed with reflection to the data gathered. How the model could be used in different healthcare environments/systems will be considered alongside discussion of how people, tools and technologies can drive this model further in terms of function, reliability and both cost and clinical effectiveness.

Hybrid, telemedicine, multidisciplinary, effective, transferable

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APPLICATION OF MULTIMEDIA MATERIAL ON VELOPHARYNGEAL DYSFUNCTION TREATMENT IN CASES OF CLEFT LIP AND PALATE WITH UNDERGRADUATE ODONTOLOGY AND SPEECH AND LANGUAGE THERAPY STUDENTS

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: velopharyngeal dysfunction is characterized by a failure in closing the velopharyngeal sphincter due to causes related to structural and/or functional issues and its treatment may be by surgery, palate prosthesis and/or speech therapy follow-up. Thus, it stands out the joint action of the odontology and speech and language therapy (SLT) areas in the velopharyngeal dysfunction in cases of cleft lip and palate, which should be approached in Odontology and STL graduation. One way of teaching/learning content may be using multimedia material.
Aims: Analyze the effectiveness of the use of multimedia material in the appropriation of knowledge with undergraduate odontology and SLT students.
Method: Data collection with Odontology and SLT students from a university located in the south of Brazil, in two stages, before and after the application of multimedia material about velopharyngeal dysfunction in cases of cleft lip and palate, with a one-week interval between these stages, in order to check for a statistically significant difference in the mean number of correct answers between the two courses.
Results: 58 undergraduate students participated, 38 from the Odontology course and 20 from the SLT course. As far as these students' knowledge about velopharyngeal dysfunction in cleft lip and palate is concerned, we noticed that in stage 1 there was a statistically significant difference between the two courses, the SLT students had more knowledge when compared to those from Odontology. However, in stage 2 there was an increase in the knowledge of students from both courses.
Conclusion: Multimedia material increased the knowledge of the participants of this research about velopharyngeal dysfunction in cases of cleft lip and palate, as certified by the increase of correct answers in the questionnaire applied after watching the multimedia material. Therefore, the effectiveness of using multimedia tools in the university teaching/learning process is evident.
Education, multimedia, speech therapy, odontology

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Telehealth Strategies for Augmenting Comprehensive Cleft Care

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Introduction:
The Circle of Cleft Professionals (CoCP) network supports the development of comprehensive cleft care (CCC) in low and middle-income countries (LMICs). In 2020, the CoCP hosted a virtual conference on sharing best CCC practices in response to COVID-19. As a result of this, “Augmenting CCC Telehealth” was chosen as a key topic for the 2021 CoCP virtual conference (S4CCC:COVID and Beyond).

Aims:
(1) Identify and synthesize key topics related to telehealth and CCC in LMIC contexts and (2) Explore practical telehealth solutions in LMICs for delivering CCC.

Methods:
A cohort of nine cleft professionals from various organizations across disciplines were selected as a solution group (SG). Drawn from four continents, each SG member was part of a local cleft care team. Before the conference, SG members met via videoconferencing six times to discuss their experiences utilizing telehealth and to identify core areas for discussion during the conference. An analysis of strengths, weaknesses, opportunities, and threats (SWOT) of telehealth for CCC and two online polls were undertaken with the audience.

Results:
The SG identified three areas for discussion (1) telehealth challenges/solutions, (2) ethics of telehealth, (3) defining telehealth and its uses. Key information from the SWOT indicated telehealth presents opportunities to reach more patients and reduce travel costs for families; however, affordability of technology and limited research on telehealth in LMICs are current limitations. Polls during the conference indicated 54% of professionals did not receive telehealth training and 39% did not have any previous experience utilizing telehealth prior to pandemic. The majority indicated they felt comfortable facilitating telehealth services (77%) and felt their region was ready for telehealth services (76%).

Conclusions:
The SG synthesized telehealth strategies and innovations utilized by cleft teams. Discussion around use of tele-technology indicated the need for both low and high tech options, depending on resources of providers and families.

telehealth, telemedicine, comprehensive cleft care

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Chula Cares, even miles away, we stay connect through video calls

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Princess Sirindhorn Craniofacial Center, King Chulalongkorn Memorial Hospital, Thai Red Cross Society provides the Mutidisciplinary team comprising craniofacial surgeons, neurosurgeons, geneticists, registered nurses, psychologists, speech pathologists, and social workers, for the holistic care. Due to the pandemic of COVID-19 worldwide, traveling to see the doctor at the hospital increases the risk of COVID-19 transmission. Therefore, Our center use online follow-up visits to minimize the travel of patients, reduce the risk of transmission of the coronavirus, and facilitate the appointment.
Aims: 1.To facilitate the continuity of treatment
2.To minimize the travel during the pandemic and avoid the overcrowding in the hospital
3.To mitigate the patients and family's anxiety

Methods: 1.Provide the information for the patients, families, and Multidisciplinary teams.
2.Plan for online follow-up visits:
3.Design the Google Sheets containing the essential information for the interdisciplinary team;
- Explain the steps of online follow-up visits to the patients or parents and inquire about the convenient channels i.e. Line or Facebook Messenger to make an appointment;
- Check the patients on the scheduled date and time, and send an appointment card after seeing the doctor.

Results: From Janurary 4th to November 22nd, 341 patients were scheduled for online visits at our center; all patients with nurses, 315 with craniofacial surgeon, 110 with neurosurgeon, 9 with orthodontist, 51 with pathologists, 34 with psychologists, and 25 with geneticists. The satisfaction of patients and families was at the highest level (53.1%). They believed that this approach helped to reduce the risk COVID-19 transmission the most (77.1%). 58.3% agreed that the introduction to the examination steps was very appropriate. They also considered that the waiting time and appointment scheduling after examination were appropriate (45.8 and 61.5% respectively).
Conclusion: Delivering follow-up care via video calls is a useful approach in providing continuous care during a pandemic era.

COVID-19, Multidisciplinary team, online follow-up

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IMPLEMENTATION OF THE PROGRAM OF TELEHEALTH IN SPEECH-LANGUAGE AND HEARING THERAPY FOR PATIENTS WITH ABNORMALITIES CRANIOFACIALS IN PANDEMIC TIMES, IN PERNAMBUCO, NORTHEAST OF BRAZIL

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: After the declaration of a Public Health Emergency of International Concern (ESPII) by the WHO, Brazil began to prepare for the situation. In early February, the Ministry of Health declared a Public Health Emergency of National Importance (ESPIN), and has already started to prepare the National Contingency Plan for COVID-19. The need for social distancing and extreme care to reduce the speed of contagion by COVID-19 anticipated changes that were already possible and necessary in relation to the application of telehealth. Objective: To describe the implementation of the Teleheath Program of a reference center for craniofacial anomalies in the northeast region. Method: Patients registered and undergoing at the Speech and Language Therapy (SLT) Service. The Telehealth Program was created to enable the continuity of speech therapy assistance to patients in the service, sponserd by Smile Train. The implementation comprised: meeting with the SLT team, identification of the platform that is easily accessible to patients, training of SLT regarding the technology used to perform teleconsultation and patient selection. The actions carried out in the period of 15 weeks were structured as: guidelines directed to the dietary aspects of babies with isolated cleft lip and palate and craniofacials abnormalities, guidelines regarding to the development and stimulation of the child's language, speech therapy aimed at adapting the articulatory production of atypical speech sounds and group activities with adult patients, conducted by SLT and psychology. Result: 56 patients were included, generating 843 teleconsultations and 171 orientations, totaling 984 teleconsultations. Conclusions: During the period of the consultations, we observed that this resource proved to be efficient for the demand of our service, enabling remote service with a quality equivalent to that of face-to-face. The telehealth enabled the care of patients who lived in distant regions and with a shortage of specialized professionals.
Speech, Remote Consultation; Telemedicine; Coronavirus

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Update cleft care method during Covid19 pandemic from Children Hospital,Thailand.

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Queen Sirikit National Institue of Childhealth ,Thailand known as Children Hospital. Serve as a public hospital and referral center for special diseases include “Cleft “. So we would like to show some parts of our cleft patients situation update and some statistics results in the past 5years(include covid19 pandemic period)

Aims
Clear communication between teams and patients is an important issue.So we adopt technology to help making our tasks run smooth and easily.

Methods
Last 4-5 years,other than patients routinely visiting at plastic surgery clinic we start asking them to use free (non commercial)application gadgets to help for non urgent communication issues (such as documents, postpone appointment date etc.)with the surgeon.We have at least 300 patients agree to use this method by voluntarily. And we evaluate satisfactory from the parents ,our staffs by interview and questionnaires.

Results
Most of the patients like this method to contact their surgeon.It is easy and friendly use without any extra cost.Some neglect or accidentally delete the contact due to not use it routinely so they can not remember or recall the contact. They happy that they can reach the team or postpone the appointment easier if compare to the using of telephone calling.

Conclusions
Cleft team of Children Hospital try to increase applying this kind of communications or any other practical tools to help our work run with reference record and in this 2-3 years we found it really help especially when Covid19 limit unnecessary patient visiting to our clinic.

Application gadget ,Covid19 pandemic,Cleft

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Tele Practice, The New Challenge in Speech Therapy for People with Cleft Palate among Covid -19 Pandemic in Thailand: A Case Study

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: People with cleft palate have much more difficulty than before accessing speech therapy services in Thailand since the pandemic of the Covid-19. All hospitals focused their services to serve only emergency clients. Persons with cleft palate who still need speech therapy were abandoned at home.
Aims: The purpose of the present study was to ascertain an appropriate strategy to provide speech therapy to the cleft palate patients during the pandemic of Covid-19.
Methods: The subject was a 22-year-old woman who has bilateral cleft lip and palate with articulation and resonance disorders. She could not access speech therapy services at the hospital due to the pandemic of the Covid-19. The intervention was the application of the hybrid tele-practice through the ZOOM media provided by the SLP where the client could perform the program by herself at home. The practice programs consisted of listening from the PowerPoint program and self-voicing. The client recorded her voice and submitted it to the SLP before the following appointment. The program also included the use of place map, the practice of auditory discrimination, minimal oppositions, internal and external sensory feedback, and oral motor exercise for improving articulation. Studied outcomes were auditory discrimination skill, resonance, and the CADs, which were measured at pre and post-intervention.
Results: The client has made a good progression in the auditory discrimination skill, improvement in VP function, and all the CADs.
Conclusion: Tele-practice provides more opportunity for the cleft palate patient to access speech therapy services during the crisis of the Covid-19. It is also an effective alternative treatment media for speech therapists to improve auditory and voicing skills in the client.

Tele-practice, Cleft Palate

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Surgical Options in Treating the Hypoplastic Maxilla in Adult Cleft Patients

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Introduction:
Cleft patients presented with a hypoplasitc collapsed maxillary arch associated with dental crossbite. There has been debate regarding the surgical treatment to achieve a normal anterior posterior and transverse relation.
Maxillary surgery in cleft patients can be performed as a single-piece or multi-piece osteotomy. Several options are possible if there is adequate alveolar continuity, Le Fort I advancement or distraction osteogenesis.
In case of residual fistula or lack of bone in the cleft area two piece Le Fort should be considered. In cases of wide cleft area segmentalization via lesser segment osteotomy and mobilization technique or distraction oteogensis of the lesser segment should be applied.
Aims: To describe advantages and disadvantages of different surgical techniques of the upper jaw in cleft patients.
Methods: We will describe the surgical techniques of distraction osteogenesis, conventional Le Fort one advancement and two-piece maxillary advancement. Segmantelization of the lesser segment or distraction osteogenesis in case of wide alveolar gap.
Results:
Different surgical techniques may improve the skeletal relation, but every technique has a different effect on velopharyngeal function, surgical relapse and stability, soft tissue healing and dental rehabilitation. We will describe the techniques and the advantage and disadvantage of each technique.
Conclusions:
We have presented outcomes of different surgical techniques. In mild maxillary deficiency a Le Fort one surgery is preferable. However, in patients requiring moderate to large advancements with significant structural deficiencies of the maxilla, or in growing patients, the distraction technique is preferred. In wide alveolar gap there is no preferred technique - both have sufficient results.

Maxilla Distraction Le fort segmantelization

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Difficulty of cleft maxillary orthognathic surgery; a proposed grading system

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Introduction:
It is well known to most cleft surgeons that the maxillary orthognathic surgery for cleft patients is not a standard procedure. It has its own set of difficulties and obstacles that needs to be addressed pre-operatively, intra-operatively and post-operatively. Several modifications and techniques have been published in the literature that address the special case of the cleft maxilla.
Aim:
In this presentation we aim to introduce an assessment score that could be used pre-operatively to predict the difficulty grade of cleft maxillary orthognathic surgery. Such grading system might be helpful in planning of any necessary surgical modifications.
Methods:
Based on a case series of patients who had undergone orthognathic surgery; the following points are correlated together:
1- Nature and classification of the cleft deformity
2- Number and techniques used for surgical repair if available
3- Previous orthodontic therapy
4- The quantity and quality of bone in the maxilla and surrounding structures
5- Soft tissue condition and lip scarring
6- Number of teeth and alveolar bone condition
7- The amount and trajectory of movement needed for the maxilla
7- Intra-operative difficulties encountered
Results and Conclusions:
Based on our experience, a 3 point grading system that classifies the cleft maxillary orthognathic surgery into grades based upon expected difficulty .

Orthognathic, Cleft maxilla, Grading system

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Sand Dollar and Staves Technique for Treatment of Unilateral

Lambdoid Craniosynostosis: A Comparative Pilot Study

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Introduction

Switch cranioplasty (SC) is the gold standard technique for treating unilateral lambdoid craniosynostosis (ULS); however, postoperative results often leave much to be desired. The Sand-Dollar and Staves technique (SDS) is a novel technique that employs virtual surgical planning to correct parietal bossing following suturectomy.

Aims

The purpose of this pilot study is to compare operative metrics and aesthetic outcomes in patients with ULS treated with SC and SDS.

Methods

Retrospective chart review was performed to identify patients with ULS who were treated with SC and SDS at our institution. Patient clinical data along with operative metrics for their procedure were collected. Pre- and postoperative photographs were distributed to two panels of reviewers (one consisting of surgeons and one consisting of non-surgeons) to grade the aesthetic outcomes.

Results

A total of 13 patients (5 with SC, 8 with SDS) were included in our study. When comparing SC to SDS, we observed no differences in median operative length and postoperative length of stay. A statistically significant reduction in the number of patients that required transfusion during SDS when compared to SC was observed (38% and 100%, p=0.02). Twelve patients had postoperative images with 10 having both pre- and postoperative images. Only 24% and 19% of respondents reported that patients had normal head shape following SDS and SC, respectively. Interestingly, 42% and 15% of respondents reported that patients treated with SC and SDS had a very abnormal head shape following surgery, respectively. When comparing pre- and postoperative images, 58% and 53% of responses stated that patients treated with SDS and SC had moderate-to-significant improvement of their cranial morphology after surgery.

Conclusion

Our findings suggest that SDS is a safe and effective method for treating patients with ULS. Further studies with larger sample sizes and reviewer panels are warranted to provide conclusive data regarding the efficacy of SDS.

	Sand Dollar			Switch Cranioplasty		
	Total (%)	Surgeon (%)	General (%)	Total (%)	Surgeon (%)	General (%)
Significant Improvement	7 (8%)	5 (14%)	2 (4%)	4 (11%)	4 (27%)	0 (0%)
Moderate Improvement	45 (50%)	21 (60%)	24 (44%)	16 (42%)	5 (33%)	11 (48%)
No Change	31 (34%)	7 (20%)	24 (44%)	15 (40%)	5 (33%)	10 (44%)
Moderate Worsening	7 (8%)	2 (6%)	5 (9%)	3 (8%)	1 (7%)	2 (9%)
Significant Worsening	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Craniosynostosis, Pediatric, Reconstruction, VSP, Reconstruction

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Algorithm for Aesthetic reconstruction of the Bifid Nose in Tessier 0 Cleft: 15 Years Experiences

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Craniofacial Clefts are rare. The exact incidence is not known but estimates range from 1.4 to 4.9 per 100000 live births. Nasal deformity associated with Tessier no. 0 cleft is unique and causes severe disfigurement for the patient. The reconstruction of these deformities represents a great challenge, and their reconstructions represent a challenging problem. The result should be aesthetically pleasant to allow for the patient to be involved in the community with confidence.
Aim of the work: To obtain the best aesthetically pleasing nose and good functional result for different degree of nasal deformity in Cleft 0 using a best suitable technique.
Methods: Bifid nose with Tiesser 0 cleft can be presented by variable degree of tissue deficiency. Sometimes there is no or minimal tissue deficiency and brining the lower lateral cartilage together by suture (intrerdomal and transdomal sutures) is enough . When more tissues are deficient additional height can be achieved by adding layers of onlay graft tip graft. In more advanced tissue deficient with loss of the dorsal Height, a cantilever graft with the columellar strut is needed to achieve the desired outcome
Result: A Total number of 20 patients were included. All patients had a minimum follow – up of 6 months. There were 14 female and four male. Two cases had cleft lip previously treated in other center.
Ten patients were managed by just suturing and six patients by onlay graft and four patients by a cantilever graft with the columellar strut.
The result was excellent in all cases except in two cases.
Conclusion: Each case of Bifid Nose had its unique interference based on missed part and availability of tissues.

1. Clinical Examination (Age , Availability of Skin, cartilage, Bone) 2. CT Finding	The Algorithm for Aesthetic Reconstruction
1. Excess fatty tissue or bony cartilage	1. Excision Of Excess fatty Tissue or Bony Cartilage
2. Bifid deformed Nasal Tip	2. Intradomal & Transdomal Sutures
3. Deficient domal cartialge	3. Onlay Conchal Graft
4. Deficient of bony cartilagnous structures	4. Cantilever graft with columellar strut (like to like tissue)(costochondral graft)

Tessier 0 cleft
Bifid Nose

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Speech following Le Fort I maxillary advancement in cleft maxillary hypoplasia – A prospective, objective, and subjective outcome analysis.

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Lefort I advancement in the management of maxillary hypoplasia is considered to have detrimental effect on speech in cleft patients by increasing the velopharyngeal incompetence. Lack of objective evidence in literature combined with the presumed potential for worsening of speech forces surgeons to limit the advancement of the maxilla, preventing optimal aesthetic correction.
Aim
To objectively evaluate the effect of maxillary advancement on speech and VPI using video-fluoroscopy (VFS), direct nasal-endoscopy (DNE), and speech evaluation and subjectively assess patients and their peer's perception regarding the outcome.
Material and methods
28 cleft patients who underwent Lefort 1 maxillary advancement were included in the study. VFS in lateral view, DNE, and speech recordings were performed pre and 6 months postoperatively. VFS assessed the relative position of velum in relation to the pharyngeal wall, speech was evaluated for changes in emission, resonance, and articulation, endoscopy to assess the overall function of the velopharyngeal valve. Subjective speech evaluation was done with a Patient Reported Outcome Measure [PROM] questionnaire.
Results
VFS measured a mean increase in post-operative velar length of 1.25 ± 1.196 mm, decrease in velar width 0.77 ±0.69mm, increase in passavant's ridge length 0.13±0.11mm and velopharyngeal gap at rest of 1.29±1.23mm. DNE values showed no change in closure pattern in 80%, improve in 12%, and deteriorate in 8%. There was statistically significant increase in purse string closure postoperatively suggesting increased pharyngeal wall movement. Dental and labiodental articulation statistically improved [$p<0.05$] after surgery. PROM reported 85.7% patients with improved speech, 82.1% improved sound quality along with 89.3% improvement in articulation.
Conclusion
The primary cause for functional impairment and poor aesthetics in cleft deformity is the maxillary hypoplasia and therefore, should be the focus during correction. This study has established that maxilla can be advanced without significant change in VP function albeit with an improvement in overall speech.

Response	Do you feel your speech has changed?	Do you feel the voice quality has changed?	Do you think your articulation/ intelligibility has changed?	What is the opinion of peers regarding your speech?
Speech maintained	14.3%	14.3%	10.7%	10.7%
Speech deterioration	0	3.6%	0	0
Speech Improved	85.7%	82.1%	89.3%	89.3%

Cleft, orthognathic, speech, PROM

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Vectra 3d evaluation of orthognathic surgery in cleft patients

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Cleft lip and palate (CLP) is still one of the most frequent diseases today, with a prevalence of about 1 case out of 700 live births in Europe.
Main complications associated with CLP are related to phoniatric disorder and occlusion. Among the secondary deformities observed after corrective surgery of CLP are wide alar implantations, short and flat upper lip, hypoplastic maxilla leading to upper lip retrusion and flat nose. These issues have a crucial influence on facial attractiveness and psychosocial well-being.
Among these complications, facial appearance impairments are considered the most challenging to address. Scar formation is the most likely candidate, as it results from collagen fiber synthesis and alignment in the presence of a tensile stress field generated by wound contraction from prior cleft repair Orthognathic surgery (OGS) is a powerful procedure for reshaping bone structures of the midface and mandible in patients with congenital or developmental dentofacial deformities
Aims: Our study aims to evaluate soft tissue movement in the perioral region and nose with 3D Photogrammetry, comparing the surgical plan assumed with Dolphin System and the result obtained with 3D VECTRA™ System, assessing the discrepancy. The null hypothesis was that there is no significant difference between measurements taken by post-surgical 3D VECTRA™ imaging system and presurgical Dolphin System.
Methods: 5 patients who had undergone Le Fort I maxillary and Bilateral Sagittal Split Osteotomy with repositioning were retrospectively included in this study.
Results: We compared Dolphin™ Sistem surgical Simulation and VECTRA™ post surgical assessment, observing a discrepancy in nose region and perioral area, related to the effect of traction exerted by the residual scar of CLP.
Conclusions: We have therefore deduced that it is necessary to program a presurgical overstatement in order to compensate scar traction effect in long term results.

orthognatic Surgery, Vectra, 3D, Dolphin,Cleft

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INDICATION OF INTERCEPTIVE MAXILLARY DISTRACTION IN CLEFT LIP AND PALATE

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Severe maxillofacial hypoplasia with dento-skeletal class III is often observed in syndromic and non-syndromic cleft lip and palate conditions even before puberty. To determine the indication for maxillary distraction, other therapeutic possibilities must be eliminated: orthopedic and orthodontic treatment. Maxillary advancement by distraction is different from orthopedic advancement, because it advances the bony bases and at the same time the alveolar processes with creation of bone in the pterygomaxillary region, guaranteeing the stability of the advancement achieved. This procedure can be performed during growth without leaving any osteosynthesis material.
Materials and methods: We consider children before puberty, from about 9.5 years of age, with severe hypomaxillia, who present a significant negative overjet, greater than 8 mm, which will inexorably worsen due to lack of maxillo-mandibular coordination. Children for whom orthodontic treatment or dento-alveolar compensation is impossible or fails. The child's request for a morphological improvement allowing a better integration of the child in the school and social life without waiting for the end of puberty should not be neglected. Once the indication for distraction has been established, it is necessary to specify the layout of the osteotomy, which must consider the roots and the dental germs. This is an intraoral distractor. A second operation should be planned at 3 months of consolidation for the removal of the distractor.

Conclusion: Maxillary distraction allows the correction of severe hypomaxillia, in cases where orthopedic and orthodontic treatment will not be effective, and to improve the morphology of the face without waiting for the end of growth for a better integration of the child in society.

osteogenesis distraction; cleft; LeFort ,

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Epidemiological and Clinical Study of Craniofacial Clefts in Bangladesh

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Understanding the epidemiology is crucial for prevention of craniofacial clefts.
Aims: To identify possible causes of craniofacial clefts by looking at possible factors and comparing them with non-syndromic cleft lip and palate patients and non-cleft controls.
Methods: A detailed history of 90 cases, 30 with craniofacial clefts, 30 with cleft lip-palate and 30 healthy controls were collected on the basis of a questionnaire.
Results: Consanguinity was more in craniofacial cleft (4 cases -13.3%) cases in compare to cleft lip-palate control (3 cases-10%) and healthy control (0 cases-0.0%). Positive family history was reported in equal number i.e., 3(3.3%) cases in both craniofacial cleft and cleft lip-palate group. However, no positive family history was reported in case of healthy control (0 cases-0.0%). 28(93%) cases didn't receive preconceptional folic acid in Craniofacial Cleft group in compare to 20(66%) and 22 (73%) cases respectively in healthy control and cleft lip-palate control. Our study found that maternal nonsmoking tobacco exposure was more common in craniofacial clefts (16 cases- 53.3%) in comparison with Cleft lip-palate control (9 cases - 30%) and with non-cleft controls (7cases - 23.3%). Similarly, paternal non-smoking tobacco was found to be more common in craniofacial clefts (15 cases - 50.0%) in compare to healthy control (3 cases-10%) and cleft lip-palate control (6 cases- 20%).We found craniofacial cleft were associated with ring constriction (4 cases - 13.3%), There was associated microtia (5 cases-16.7%), choanal atresia (5 cases-16.7%), and eye defect (22 cases-73.3%) with craniofacial cleft.
However, maternal occupation, comorbidities, contaminated drinking water, hazardous waste, air pollution, pesticides, GDM, fever, stress had no impact on craniofacial clefts.
Conclusion: Our study found consanguinity, positive family history, periconceptional folic acid, habitual use of nonsmoking tobacco had an impact on development of craniofacial cleft.

Craniofacial cleft, Consanguinity, Healthy control

984

Comprehensive treatment in craniofaciosynostosis: stability of the results after orthognatic surgery

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: The continuum of care of a patient affected by craniofaciosynostosis is usually complex because it is aimed at the resolution of the well-known features of the pathology, such as the retrusion of the upper and middle third of the facial skeleton, which is associated with an increased risk of intracranial hypertension, exorbitism and airway obstruction. The therapeutic approach is based on surgical procedures such as cranioplasty and Le Fort III osteotomy, followed by orthognatic surgery at the end of the growth, in order to correct residual malocclusion and improve facial aesthetics.
Aims: Considering the greater technical complexity in performing surgery, due to the stigmata of these syndromes and the presence of scar tissue resulting from previous surgical procedures, our study wants to evaluate entity and stability of the movements of the jaws in patients affected by craniofaciosynostosis, in order to evaluate the possibility for orthognatic surgery to correct abnormalities in intermaxillary relation and jaws position.
Methods: Among the 122 patients affected by craniofaciosynostosis currently receiving treatment at the Operative Unit of Maxillofacial Surgery - San Gerardo Hospital - University of Milano Bicocca, 68 of whom underwent Le Fort III osteotomy, we selected 17 patients (9 affected by Crouzon Syndrome, 6 affected by Apert Syndrome and 2 affected by Pfeiffer Syndrome), treated with orthognatic surgery subsequent to midfacial advancement (Le Fort I osteotomy, mandibular osteotomy, bimaxillary osteotomy, surgical assisted rapid palatal expansion), for whom we could retrospectively collect cephalometric X-rays performed during follow-up. Cephalograms and cephalometric superimpositions were carried out and surgical movements and short- and long-term stability were evaluated.
Results and conclusions: Sagittal short- and long-term stability was remarkable. Transversal dimensional changes seemed to have an higher tendency to relapse. Data and analysis will be presented during the congress.
Craniofaciosynostosis, Orthognatic surgery, Long-term stability

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Functional and Cosmetic correction of cleft maxillary hypoplasia with Anterior Maxillary Distraction

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction : A common stigma of Cleft Lip and Palate repair is Maxillary Hypoplasia. Missing teeth, the discrepancy in the occlusal table and speech concerns compound the problem. A procedure that can address the anteroposterior discrepancy, the dental discrepancy and not change the soft palate relationship is Anterior Maxillary Distraction.

Aim : This paper describes the case selection criteria for the procedure and its aesthetic correlation to Lefort - I advancement in Cleft Maxillary Hypoplasia.
Method: Patients who underwent skeletal correction for Cleft Maxillary Hypoplasia, secondary to unilateral cleft lip and palate, were included in the study. Patients with bilateral cleft, those who needed mandibular/genial procedures or incomplete data, were excluded from the study.The patients with missing teeth, crowded arches or palatally trapped premolars were offered Anterior Maxillary Distraction, and the others received Lefort I advancement. Two maxillofacial trainees assessed the six-month postoperative profile pictures to evaluate the postoperative outcomes on a Visual Analogue Scale.
Result :Result will be discussed in terms of rehabilitating the dental arch by moving the premolar teeth into occlusion or with implants. The speech sounds were improved interms of the placement which was not significant
Conclusion: This paper effectively describes the functional and aesthetic benefits of anterior maxillary distraction and its role in addressing cleft maxillary hypoplasia.
orthognathic, distraction of cleft maxilla

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Prosthetic Management of Children and Adults with Cleft or Other Craniofacial Conditions

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Surgery alone may not be adequate to establish normal function and appearance for individuals with craniofacial conditions. Prosthetic treatment, either as an interim or definitive measure may be necessary to enhance patient outcomes and quality of life.

Aim
The presentation will describe oral and craniofacial prostheses and the role each may play in the habilitation of children and adults with craniofacial conditions. The learning objective is to provide attendees with an awareness of the variety of prostheses and their appropriate applications and an appreciation of the value that prosthetics may play in enhancing the overall outcome of patient care.

Methods
A PowerPoint presentation depicting each type of prosthesis and case examples will be used to demonstrate applications. Where time permits, attendees will be invited to share their own patient experiences related to prosthetic care.

Prosthodontics, Maxillofacial Prosthetics, Oral/Craniofacial Implants

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Modern minimally invasive dentistry in the management of patients with CLP

Dr Sandip Popat[1]
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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Improving the appearance of teeth can give a massive psychological boost to patients with CLP.

Patients with CLP often present with missing teeth and/or misshapen teeth.

Historically, conventional crown and bridgework would have been used to restore/replace these teeth. This is where the teeth are drilled down, often significantly, to mask poor tooth positions which can lead to irreversible pulp damage and the need for root canal treatment. Root canal treatment can further weaken the teeth and lead to catastrophic failure and ultimately tooth loss. This type of treatment can be costly for the patient, not only in terms of tooth structure and financially, but also psychologically. These patients already have a heavy burden of care and reducing unnecessary treatment is crucial.

The restorative dentist, therefore, has a vital role to play within the multidisciplinary team in planning the ideal tooth position prior to restoring the teeth. Moreover, the use of modern minimally invasive techniques should always be the first choice when planning to restore/replace teeth in these patients in order to protect the natural teeth from irreversible damage.

Aims

The aim of this presentation is to give a clinical overview of the role of modern minimally invasive techniques such as the use of composite resin and resin-bonded bridges in the management of CLP patients.

The presentation will look at clinical cases to illustrate these concepts and evaluate the best methods available for restoration.

Methods

N/A

Results

N/A

Conclusions

Note to Assessors: as this is a clinical presentation aimed at prosthodontists who see and treat cleft patients and not original research, I have not included a “Method” or “Results” section

Restorative Dentistry, psychological impact, Bridges

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Exome sequencing for diagnosis patients with familial syndromic cleft palate, with multiple and/or complex phenotypes : family report

Pr Caroline François[1,2,3,4,5], Emilie Landais[6], Lucas Herissant[6], MD Céline Poirsier[4,6,7], Pr Marie-Laurence Poli-Merol[3,4,5], Pr Carl Arndt[5,8], Pr Alexandre Denoyer[5,8], Pr Martine Doco-Fenzy[2,4,5,6,7]
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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Cleft palates can be part of syndromic forms that are sometimes difficult to diagnose. Genetic counseling then has an important place to play. Exome sequencing makes it possible to study all the coding parts of the genome. The exome alone appears to contains most of the diagnosed mutations implicated in genetic diseases

Aims
The objective was to highlight the value of exome in the context of the genetic diagnostic aid of patients with familial syndromic cleft palate, with multiple and/or complex phenotypes.

Methods
We report a family case of one mother, and his 3 boys, and her girl, who presented all of them cleft palate, and congenital bilateral cataract. None of them had cardiac abnormalities. The more younger boy presented in addition a mental retardation. The more older boy presented in addition retinal detachment, microphtalmia, and nystagmus. The family history has shown abnormalities over four generations, and affected 21 people with congenital bilateral cataract, with or without cleft palate. The transmission was autosomal dominant. Children had a sister without cleft and cataract but she had facial dysmorphy.
In all patients and heur sister we had use Trio Exome sequencing (KAPA Hyper Exome, Roche, 20859 gènes, 130X)
Results
A pathogenous heterozygous variation in COL2A1 was diagnosed (NM_001844.5:c.3106C>T,p.Arg1036Ter) inherited from the mother and present in all affected children. This result enabled us to confirm the diagnosis a STICKLER Syndrome type 1 with uncomplete penetrance.

Conclusion
The exome sequencing approach has proven to be very fast and efficient in identifying this genetic mutation. This technique can be of great help in establishing an accurate genetic diagnosis in cases of syndromic cleft palate with a variable and / or complex phenotype.

exome, genetic, cleft palate, COL2A1

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The Ras signaling effector gene, Rreb1, is required for the dissociation of MEE cells in palatogenesis.

Associated Professor Toshihiro Inubushi[1], Dr Ayaka Fujiwara[2], Dr Takumi Hirose[1], Dr Toshihiro Uchihashi[2], Dr Naoki Yoshida[1], Dr Yuki Shiraishi[1], Associated professor Hiroshi Kurosaka[1], Professor Susumu Tanaka[2], Professor Takashi Yamashiro[1]

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Cleft palate is one of the major congenital craniofacial birth defects. The etiology underlying the pathogenesis of cleft palate has largely remained unelucidated. In the normal palatal fusion process, the medial edge epithelium (MEE) at the contacting region of palatal shelves is removed to allow mesenchymal continuity. Dissociation of MEE and subsequent migration or apoptosis of MEE cells is required for the proper MEE removal. Ras Responsive Element Binding Protein 1 (RREB1), a RAS transcriptional effector, has recently been shown to play a crucial role in developmental EMT, in which loss of epithelial characteristics is an initial step, during mid-gastrulation of embryonic development by integrating TGF-β3 and Ras signals. Interestingly, the involvement of Rreb1 in cleft palate has been indicated in humans. Considering that TGF-β3 signaling is critical for causing cleft palate through regulating epithelial fusion in mice and humans, RREB1 mediation of Ras signaling would be involved in the palatal fusion process via cooperation with the TGF-β3 pathway. Here, we demonstrated that Rreb1 is expressed in the palatal epithelium during palatal fusion, and knockdown of Rreb1 in palatal organ culture resulted in palatal fusion defects by inhibiting the dissociation of MEE cells. These results demonstrated that RREB1-mediated Ras signaling is indispensable for the dissociation of MEE cells during palatogenesis. Our present findings provide evidence that RREB1-mediated Ras signaling is required during palatal fusion. Aberrant RREB1-mediated Ras signaling might be involved in the pathogenesis of cleft palate.

Ras, Rreb1, MEE cells, Palatogenesis

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Genome analysis of nonsyndromic cleft lip and/or palate trios from Madagascar using whole-exome sequencing

Dr. Zarko Manojlovic[1], Dr. Allyn Auslander[2,3], Yuxin Lin[1], Sharon Chang[1], Devin Feigelson[2], Sylvia Rakotoarison[8], Xiyu Liu[1], Yili Xu[1], Sue Ingles[7], Dr. Ryan Schmidt[5,6], Melissa DiBona[2], Kathleen Magee[2], Anjaramamy Ramamonjisoa[8], Dr. William Magee III[2,3,4]

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Operation Smile (OS) and their global network have performed cleft surgeries in over 30 low- and middle-income countries (LMICs) for the past 39 years. The International Family Study (IFS) began to identify genetic risk factors associated with nonsyndromic orofacial clefts (NSOFC) in LMICs. Because cleft is predominantly studied in high-income countries, risk factors unique to LMICs may be dramatically underreported in the current body of literature.

Aim: To that goal, we aim to perform genetic analyses to identify variants associated with risk for NSOFC using the case-control and familial trios design where the case child has NSOFC and the control parents do not have NSOFC or any other congenital disabilities from Madagascar.

Methods: IFS is an ongoing population-sampled case-control study with corresponding parental trio data in eight OS program countries. We performed deep whole-exome sequencing on 78 individuals (n = 26 families) in Madagascar with no family history of NSOFC.

Results: Both global and local ancestry percent across Madagascar families show an increased percent of East Asian and African admixture. Our study has also identified damaging x-linked variants in TBX22 (one family), BCOR (one family), autosomal recessive variants in FGFR4 (one family), co-occurrence in JUP (5 families), and IRF6 (one family). Interestingly, the IRF6 variant was located on homozygous Asian ancestry locus.

Conclusions: Our pilot data across Madagascar genomes may suggest an ancestral component that explains geographical incidents of the olfactory cleft syndrome. A better understanding of ancestral impact may allow for improvements in management and may explain hereditary complexities in admixed populations. Further studies in a larger cohort will be critical to identify mechanistic implications. Studies conducted in under-researched populations, such as Madagascar, are essential to the deeper understanding of the causal mechanisms of NSOFC to eventually prevent disease- especially in countries lacking access to surgical care. genetics, whole-exome sequencing, variants, ancestral

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A comprehensive genomic evaluation of cleft lip and palate using whole exome sequencing in an Indian cohort – A pilot study

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Oral cleft is the most common craniofacial anomaly and may be syndromic or non-syndromic. The latter is more common and have complex aetiology. It is therefore worth to investigate genomic variants in well characterised families with oral clefts .

Aim
To identify causative genomic variants using exome sequencing in families with clustering and/or clear inheritance patterns in the occurrence of cleft lip/palate (CL/P).

Methods
Patients were enrolled from the Department of orthodontics, Centre of dental education and research AIIMS, New Delhi and Department of Plastic Surgery, King George Medical University, Lucknow between 2017-2020. After obtaining an informed consent, demographic and clinical details were filled in a predesigned proforma and blood samples were analysed using paired end Whole Exome Sequencing (WES), using Illumina SBS kits and reagents on Illumina HiSeq 2500 at a minimum coverage of 50X. Variants were validated and segregation analysis was performed using Sanger Sequencing.

Results
Out of 512 families of CL/P, 15 unrelated families, with 31 affected individuals, particularly with classical Mendelian inheritance pattern were analysed using WES. Genomic variants of CL/P could be identified in about half of the families. In three families, pathogenic/likely pathogenic biallelic and monoallelic variants were identified in ITGB6 and GLI2 , IRF6 respectively. Other four families had monoallelic variants of uncertain significance in CDH1, WDR11 , SIX3 , and GOLGB1. Out of seven, five were novel variants. No candidate variant was found in 8 families.
Conclusions
Presence of novel genomic variants in a significant proportion in the analysed cohort, highlights the need for larger multicentric studies to create a genomic database for non-syndromic oral clefts for Indian population.

Cleft lip/palate, Exome sequencing, Genomics

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The CRISPLD2 Gene Is Involved in Cleft Lip and/or Cleft Palate in a Chinese Population

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

1.Aims： Nonsyndromic cleft lip and/or cleft palate (NSCLP) are common congenital anomalies in humans, the etiologies of which are complex and associated with both genetic and environmental factors. Previous data suggested single nucleotide polymorphisms (SNPs) of rs1546124, rs4783099, and rs16974880 of the CRISPLD2 gene were associated with an increased risk of NSCLP; however, subsequent studies have yielded conflicting results. This study aims to evaluate the associations of the aforementioned polymorphisms with NSCLP in a Northwestern Chinese population.
2.METHODS: Three CRISPLD2 SNPs were genotyped in a case-control study (n = 907), including 444 NSCLP patients and 463 healthy individuals, using polymerase chain reaction-denaturing high-performance liquid chromatography (PCR-DHPLC). 3.RESULTS: The genotype and allele frequencies of rs1546124 (odds ratio [OR], 2.30; 95% confidence interval [CI], 158-3.34;p = 1 X 10^{-5}) and rs4783099 (OR, 0.73;95% CI, 0.54-1.00;p = 0.05) were different in NSCLP patients compared with controls. Furthermore, the CC genotype at rs1546124 was associated with increased risk for cleft lip with or without cleft palate (CL/P; OR, 2.11; 95% Cl, 1.41-3.15; Pcorrect = 1.5 X 10^{-4}) and for cleft palate only (CPO; OR, 2.93;95%CI,1.69-5.07;pcorrect = 5.4x10^{-4}), whereas the T allele of rs4783099 was associated with decreased risk for CPO. Further gender stratification showed that the statistical association of these two loci is mainly in the male patients, and not in female patients.
4.Conclusion: Our results suggest that the CRlSPLD2 gene contributes to the etiology of NSCLP in the Northwestern Chinese population. SNP rs1546124 is significantly related to NSCLP, associated with both CL/P and CPO groups, and SNP rs4783099 is significantly associated with CPO.

表3 唇腭裂的类型及构成比

Table 3 The classification and constituent ratio of patients

项目	单侧唇裂			双侧唇裂			单侧唇裂伴腭裂	双侧唇裂伴腭裂	不完全腭裂	完全腭裂	合计
	I度	II度	III度	不全	混合	完全					
例数(例)	124	1 712	1 292	90	36	292	2 520	1 368	1 968	318	9 720
构成比(%)	1.28	17.61	13.29	0.93	0.37	3.00	25.93	14.07	20.25	3.27	100.00

craniofacial birth defect, CRISPLD2, SNPs

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Correlation between nonsyndromic cleft lip and palate and MTHRF, MTRR gene polymorphisms and folic acid supplementation in Gansu Province

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

1.Introduction:Cleft lip and palate (CLP) can be divided into syndromic cleft lip and palate and non syndromic cleft lip and palate (NSCL / P). In recent years, the research on folate metabolism related genes has become the focus of NSCL / P etiology research. At present, MTHFR , MTRR and so on. In this study, folate fluorescence kit was used to detect the polymorphisms of C677T, A1298C and A66G of 5,10-MTHFR gene in Gansu Province, so as to explore the correlation between MTHFR gene, MTRR gene and NSCL / P genetic susceptibility, and whether there is a joint pathogenic effect between gene folate environmental factors.
2.Aims: To study the relationships of polymorphism of MTHFR gene C677T, A1298C, MTRR gene A66G and folic acid supplementation with nonsyndromic cleft lip and palate in Gansu Province.
3.Methods: A questionnaire survey was conducted to detect the mothers who received folic acid supplementation 1-3 months before pregnancy and 3 months after pregnancy. Finally, 76 mothers who hold infants with nonsyndromic cleft lip and palate and 76 controls were enrolled. Folic acid metabolic capacity (fluorescence method) was used to detect gene polymorphism, including MTHFR gene C677T, A1298C and MTRR gene A66G.
4.Results: The frequency distribution of MTHFR gene C677T and A1298 genotypes was in line with Hardy-Weinberg genetic balance ($P > 0.05$). The rates of TT genotype and T allele were significantly higher in the cleft group than in the control one ($P < 0.05$).
5.Conclusion: The incidence of nonsyndromic cleft lip and palate in Gansu Province appeared to be related with the mutation of MTHFR gene C677T, but not to MTHFR gene A1298C and MTRR gene A66G. Maternal folic acid supplementation during pregnancy can effectively reduce the risk of nonsyndromic cleft lip and palate. TT genotype and CT genotype had interactive effects on folic acid deficiency during pregnancy.

Table 1. Characteristics of patients and differences among the repair procedures.

	Modified palatoplasty with FZP	von Langenbeck repair	Two-flap palatoplasty	Total	*P*-value
Sex, *n*					0.723
Male	28	24	12	64	
Female	32	27	19	78	
Age at repair (years), mean ± SD	1.4 ± 0.6	1.5 ± 0.6	1.6 ± 0.6	1.5 ± 0.6	0.386
Cleft width (mm), mean ± SD	13.3 ± 3.6	13.7 ± 3.8	14.2 ± 3.6	13.6 ± 3.7	0.497
Veau type, *n*					0.365
Type II	36	26	14	76	
Type III	24	25	17	66	
Total cases, *n*	60	51	31	142	

FZP, Furlow Z-plasty; SD, standard deviation. $P < 0.05$ is a significant value.

nonsyndromic cleft lip and palate

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The role of Chst11-mediated sulfation of chondroitin sulfate during palatogenesis

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

[Introduction] Chondroitin sulfate (CS) is a sulfated glycosaminoglycan composed of alternating N-acetylgalactosamine and glucuronic acid units. It exists in the extracellular space and on the cell surface as a proteoglycan. There are some indications regarding the involvement of CS in the development of cleft palate. However, the functional role of CS in palatogenesis remains unclear. The degree of CS sulfation, specifically their negative charge, is the main driver of the biological and physiological function. CHST11 is the sulfotransferase 2 family protein which catalyzes the transfer of sulfate to position 4 of the N-acetylgalactosamine (GalNAc) residue of chondroitin.
[Aims] The aim of the study is to examine the role of CHST11 catalyzed CS sulfation in palatogenesis.
[Methods] We used wild type and Chst11 knockout (Chst11-KO) mice. The mouse embryos were collected at embryonic day (E)14.0, 14.5 and E18.5, then morphologically analyzed by microscope and micro CT. Histological evaluation was performed in the paraffin sections. The expression pattern of Chst11 was examined by in situ hybridization. RNA sequencing was performed to analyze the expression pattern. Mitochonic acid MA-5 was used to rescue mitochondrial dysfunction.
[Results] We showed that chst11 deficiency cause abnormality in palatal architecture including high palate with or without cleft palate. The growth of palatal shelf is substantially impaired in chst11 mutant embryo, thus causing the defects or delays of palatal shelf elevation. The oral epithelium and mesenchyme targeting conditional knockout mice study clearly demonstrates the predominant role of chst11 in palatal mesenchyme during palatogenesis. A comprehensive transcriptome analysis suggests the abnormality in mitochondria function in chst11 knockout palatal shelves. In addition, a therapeutic mitochondrial drug, mitochonic acid MA-5, treatment prevented the development of the cleft palate.
[Conclusions] Our present data might provide new potential targets in the prevention and pharmaceutical intervention for cleft palate.

Chondroitin sulfate, cleft palate, mitochondria

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TIMP2 Gene Polymorphisms as Risk Factors for Cleft Lip and Palate in West Java Population

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

TIMP2 Gene Polymorphisms as Risk Factors for Cleft Lip and Palate in West Java Population

Introduction: Non syndromic cleft lip and palate (CL/P NS) is a congenital defect that has quite significant in number. CL/P cases occur every 1/700 birth rates globally. The pathogenesis of CL/ P is believed to be multifactorial, involving genetic and environmental factors. The results of experimental tests on test animals show the role of the TIMP2 gene in the occurrence of CL/P.
Aims: Analyse the polymorphism of the rs8179096 TIMP2 gene with the occurrence of non-syndromic cleft lip and palate in West Java population.
Methods: This research is a case control study with a sample of 63 research subjects consisting of 30 subjects with CL/P NS and 33 normal control subjects. The RS8179096 TIMP2 gene genotype was investigated by PCR technique and DNA sequencing. Statistical analysis was performed using the chi square test ($\chi 2$) to evaluate the RS8179096 TIMP2 gene polymorphism in CL/P NS subjects and control subjects, then measuring odds ratios (OR) to determine risk factors for CL/P NS in West Java populations.
Results: The results showed the frequency of T mutant alleles in subjects with CL/P NS was 36.67% which was higher than the control subjects that was 3.64%. This difference was statistically significant ($\chi 2$ = 8,986; p = 0.003 or p <0.05). Odd ratio (OR) values of mutant alleles found in this study were statistically significant (OR = 3.667 or OR> 1), so TIMP2 mutant gene alleles were risk factors for CL/P NS.
Conclusion: This study shows that RS8179096 TIMP2 gene polymorphism is a risk factor that causes CL/P NS in West Java populations.

cleft, rs8179096 TIMP2, West Java

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CORRELATION BETWEEN CLEFT LIP AND PALATE WITH HEREDITER,ANTE NATAL CARE, FOLIC ACID SUPPLEMENTATION, SMOKING, AND TERATOGENIC DRUGS EXPOSURE DURING PREGNANCY IN SOUTHEAST SULAWESI, INDONESIA: 4-YEARS DATA

Correlation Between Cleft Lip And Palate With Herediter,ante Natal Care, Folic Acid Supplementation, Smoking, And Teratogenic Drugs Exposure During Pregnancy In Southeast Sulawesi, Indonesia: 4-years Data M. Idris Ibnu Ikhsan[1], CORRELATION BETWEEN CLEFT LIP AND PALATE WITH HEREDITER,ANTE NATAL CARE, FOLIC ACID SUPPLEMENTATION, SMOKING, AND TERATOGENIC DRUGS EXPOSURE DURING PREGNANCY IN SOUTHEAST SULAWESI, INDONESIA: 4-YEARS DATA Saktrio Darmono Subarno[2], CORRELATION BETWEEN CLEFT LIP AND PALATE WITH HEREDITER,ANTE NATAL CARE, FOLIC ACID SUPPLEMENTATION, SMOKING, AND TERATOGENIC DRUGS EXPOSURE DURING PREGNANCY IN SOUTHEAST SULAWESI, INDONESIA: 4-YEARS DATA Yeremia Maruli Togatorop[3]

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Background
Labiopalatoschisis is a congenital disorder characterized by a cleft in the lip or palate or a combination of both. The risk factor for Labiopalatoschisis is a combination of genetic mutation factors, environment, and teratogen exposure.

Aim
The purpose of this research is to find out correlation between cleft lip and palate with herediter,ante natal care, folic acid supplementation, smoking, and teratogenic drugs exposure during pregnancy in southeast sulawesi, indonesia

Method
This research is analytic observational with cross sectional design. There are 200 samples consists of cleft lip palate and other patient without cleft lip palate based on medical records from Aliyah hospital and other satellite hospital at January 2019 until December 2021 in Southeast Sulawesi,. Dependent variable is cleft lip palate and independent variable is herediter, ante natal care, folic acid supplementation, smoking, and teratogenic drugs exposure during pregnancy. The data is analyzed by Chi square test.

Result.
The results of bivariate analysis showed that herediter (p=0,007), ante natal care (p=0,000), folic acid supplementation (p=0,000), smoking (p=0,006) and teratogenic drugs exposure during pregnancy (p=0,149).

Conclusion.
There are correlation between Cleft lip Palate with herediter, ante natal care, folic acid supplementation, smoking during pregnancy. There is no correlation between Cleft lip palate with teratogenic drugs exposure during pregnancy.

Risk Factor, CLP

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Epidemiology of orofacial clefts in Indonesia: A five-year retrospective study on surgical profile and morbidity

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Background: Until now, no study has conducted epidemiological research on surgical profile and morbidity of orofacial clefts in Indonesia. This study aims to observe the epidemiological characteristics, surgical profile, and surgical morbidities in orofacial cleft surgeries in a single center in Indonesia.

Method: A retrospective data analysis of all cleft patients presenting to the national referral Cleft and Craniofacial Centre Cipto Mangunkusumo Hospital, Indonesia who underwent cleft and cleft-related surgery from January 2015 to December 2020.

Results: A total of 539 orofacial cleft surgeries were performed in 424 patients, with genders distributed equally. Cumulatively 44 (10.3%) were accounted for syndromic patients,. There were 60 (14.2%) of isolated cleft lip, 43 (10.1%) isolated cleft palate, 217 (51.2%) unilateral and 86 (20.3%) bilateral cleft lip and palate, and 18 (4.2%) facial clefts. Types of surgeries were 195 (36.2%) labioplasties, 204 (37.8%) palatoplasties, 34 (6.3%) rhinoplasties, 32 (5.9%) alveolar bone grafts, 35 (6.5%) fistula repairs, and 39 (7.2%) revision surgeries, with mean surgery duration 156, 154, 145, 203, 170, and 151 minutes; and median age at the time of surgery 5, 16, 74, 137.5, 57, and 74 months respectively. Surgical morbidities were uncommon, with fistula formation at 3%, infection 0,19%, one flap necrosis after palatoplasty, other complications at 1.7%, and death in 2 patients with comorbidities. Logistic regression models found significantly more bleeding in alveolar bone graft surgeries (OR=43.5). There was no significant correlation between congenital risk factors and immediate surgical morbidity.

Conclusion: Our national referral cleft and craniofacial center harbors a high prevalence of syndromic and complex clefts with acceptable surgical outcomes. Risk factors for congenital anomalies were not significantly correlated with immediate surgical morbidities.
orofacial cleft, epidemiology, morbidity, Indonesia

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The epidemiology of cleft lip in twins: 11-years follow-up

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction

Cleft lip represents one of the most common congenital malformations worldwide. Multidisciplinary care is essential to achieve good clinical outcomes. At The University Hospital Brno (UHB) cleft care is centralized in the Cleft Center, where cleft lip repair is mostly performed in neonatal age.

Aims

The aim of this study is to describe the epidemiology of the cleft lip patients during the past 11 years at UHB. The primary goal was to determine the twinning rate in cleft lip patients, in comparison with the general population of the Czech Republic. The next goal was to analyze the relationship between twins and cleft types and the differences in the timing of surgery between cleft lip neonates and the group of cleft lip twins.

Methods

Out of 350 children treated with cleft lip at UHB between the years 2010-2020, 12 were born as a twin. Epidemiological data from medical history were collected retrospectively. Cleft type, information of occurrence of twins and timing of surgery were prospected.

Results

In our study group out of 350 patients, 12 cleft patients (3,52%) were twins while long-term twin birth rate persists at around 1,5% in the general population of the Czech Republic. From all 12 cases of twins, no clefts occurred in both siblings.
The results have not showed any significant differences in the number of twins among the cleft types. The age at primary surgery was 8 days for all cleft lip patients and 11 days for twins. However, these results are not statistically significant (p=0.55).

Conclusions

The twin rate in non-cleft population was found to be more than twice lower than for cleft lip patients. There are not any significant differences in number of twins among cleft types. The primary lip surgery was performed on average 3 days later in the group of twin patients.

cleft lip, twins, epidemiology

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Clinical features and maxillofacial morphology in patients with Kabuki syndrome who visited our center.

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Introduction: Kabuki syndrome is a characterized by typical facial features, skeletal abnormalities, growth retardation, psychomotor developmental delay and a variety of other abnormality. The occurrence of cleft lip and palate or high-arched palate has been reported, but the frequency is wide-ranging.
Aims: This study reported of clinical features and the maxillofacial morphology of Kabuki syndrome (KS) who were diagnosed and managed at Osaka Women's and Children's Hospital.
Methods: Clinical characteristics were evaluated from 43 patients, and maxillofacial morphology was assessed from 7 patients for whom cephalometric radiography was available for orthodontic diagnosis.
Results: Mild to moderate psychomotor retardation was observed in 63% of patients. The most common complications were, in order of frequency, congenital heart disease (53.5%), cleft lip and palate (51.2%), renal disease (34.9%), recurrent otitis media (30.2%), eye disease (27.9%), and precocious puberty in girls (26.1%). The maxillofacial morphology was characterized by a flat cranial base, a large mandibular angle, and a tendency toward skeletal open bite.
Conclusions: There was a wide range of complications of Kabuki syndrome, each of which prevalence was compatible with that in previous reports. However, the prevalence of cleft lip and cleft palate was higher in the present results. Of these, cases with cleft palate alone, including submucosal cleft palate, accounted for 86% of the cleft types. This may be attributed to the fact that our department collaborates with other related departments in the prenatal and postnatal period, making it easier to identify abnormal findings in the oral cavity, especially in the palate. The skeletal open bite with hyperdivergent of the maxillary and mandibular bones, especially with a long anterior height of the lower face, observed as the characteristic maxillofacial morphology in our patients group can be used as an index to understand the skeletal characteristics of Kabuki syndrome.

Kabuki syndrome, craniofacial morphology

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Associations between comorbidities in children with unilateral cleft lip with or without palate and laterality

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Previous research has shown different cleft subtypes have distinct aetiologies and epigenetic profiles. It is widely reported that laterality in unilateral cleft lip (UCL) and unilateral cleft lip and palate (UCLP) has a 2:1 ratio with a left sided UCL and UCLP being more common. This ratio would suggest that laterality is non-random. The full aetiology of these cleft subtypes is unknown and therefore it important to explore whether there are associations between laterality and comorbidities to help inform genetic analysis.
Aims
To determine whether there is a difference in the prevalence of comorbidities according to laterality among UCL and UCLP patients.
Methods
The UK's Cleft Collective Cohort Studies is a large, multicentred, longitudinal cohort study of children with cleft and their families. Data on a child's comorbidities are collected via parental questionnaires at numerous different timepoints. Data on laterality of a child's UCL or UCLP was obtained from multiple different sources including parental and clinician report. Data were available for 202 UCL and 245 UCLP children. Logistic regression was used to explore associations.
Results
Evidence was found to suggest that children with a right sided UCLP were 3.7 times more likely (OR 3.68, 95%CIs 1.22-11.13, p=0.021) to experience difficulties with their vision compared to children with a left sided UCLP. We did not find any strong evidence to suggest an association between other comorbidities explored to date and laterality of cleft.
Conclusions
We found evidence to suggest a difference in the prevalence of vision problems between laterality of UCLP. Further analysis will be conducted to explore associations between developmental milestones and laterality. Results will be used to inform genetic analysis within the Cleft Collective.
Laterality, comorbidities, The Cleft Collective

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Presence of congenital anomalies and comorbidities among children born with a cleft according to syndromic status

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction
Around 30% of children born with a cleft have a syndrome, although this differs substantially by cleft subtypes; of those with a cleft palate around 50% have a syndrome versus only 5-10% of those with a cleft lip only. The etiology, treatment and care of children is informed by syndromic status. However, syndromes are not always diagnosed and even if they are this can take several years.

Aims
To examine the extent to which children born with a cleft in the U.K. have other congenital anomalies, to determine their distribution by cleft type, gender and by syndrome diagnosis and to use this information to identify groups of children who are likely to have an undiagnosed syndrome within the Cleft Collective study.

Methods
We used data on anomalies/comorbidities and cleft subtypes recorded in questionnaires collected when the child was 18 months, 3, 5, 8 and 10 years old. We used Chi-squared analyses to determine whether there was statistical evidence of differences in the presence of other anomalies by cleft subtype and syndromic status.

Results
We had information on comorbidities and syndromic status for 1939 children in the Cleft Collective study, of which 281 (14.5%) had been diagnosed as having a syndrome. Children born with a cleft palate only were more likely to have a syndrome (39.8%) that those with other cleft types -cleft lip only (5.7%); cleft lip with cleft palate (10.5%). Anatomical anomalies, heart, lung and immune system problems and neurological and sensory conditions were all more prevalent among those diagnosed with syndromes, but were also present in some children not currently diagnosed as having a syndrome.

Conclusion
Syndromes are under diagnosed in the cleft collective, however we have identified anomalies associated with cleft syndromes which may help to identify other children with a probable syndrome.

syndromes, comorbidities, anomalies

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Risk factors associated with cleft lip and palate in Mexico.

A 209 patient analysis

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Introduction:

Cleft lip and palate (CLP) are associated with several factors including demographic and genetic factors among others. The estimated prevalence of the disease is 1-600 worldwide. In Mexico, the CLP is considered the first facial skull malformation in newborns.

Methodology. A total of 209 patients with CLP (isolated or combined) were included. Patients were referred from both public and private hospitals. Data were collected through direct interviews and questionnaires with the patient's parents.

Analysis. We present the variables in percentages and use Chi-square test for comparison of the data.

Results.We include a total of 209 patients. The mean age of the patients was 8.9 ± 7.3 years. Of the total sample, 163 patients (78%) had a diagnosis of cleft lip and palate, while 46 (22%) had isolated cleft lip or palate.

In the comparison of the prenatal data. The abnormal duration of pregnancy (>36 weeks or <40 weeks), was significantly more frequent in mothers of patients with cleft lip and palate than in the mothers of patients with isolated cleft lip or palate (59.5% versus 43.5% respectively).

Likewise, the mother's age at the time of Pregnancy influenced the higher prevalence of cleft lip and palate. Mothers who were pregnant > 30 years had more frequency of children with lip & cleft palate (75.8%), while a higher percentage of women <30 years had children with isolated disease (63%)

The history of facial clefts in the family was also directly related to the presence of a combined cleft, in contrast to an isolated cleft. (41.1% vs 26.1% respectively).

Conclusion

In general, age-related high-risk pregnancy, and the family history of these affectations increased risk of CLP. We must take into account this area of study to prevent the incidence of these pathologies and to be able to provide them with adequate treatment.

TABLE 2. COMPARISON OF THE PRENATAL DATA OF THE MOTHER OF PATIENTS WITH A DIAGNOSIS OF CLEFT LIP PALATE AND CLEFT LIP OR PALATE.

	Cleft lip and palate Frequency (%)	*Cleft lip or palate Frequency (%)*
Prenatal Control	153 (93.9)	44 (95.7)
Number Of Medical Consultations (≥ 5)	143 (87.7)	43 (93.5)
Age at Time of Pregnancy (Years)**		
< 20	32 (19.9)	8 (17.4)
20 – 29	90 (55.9)	21 (45.7)
30 – 35	29 (18.0)	12 (26.1)
≥ 36	10 (6.2)	5 (10.9)
Body Mass Index		
Underweight	1 (0.6)	1 (2.2)
Normal	43 (26.4)	10 (21.7)
Overweight	64 (39.3)	17 (37.0)
Obesity	55 (33.7)	18 (39.1)
Folic Acid Consumption	143 (87.7)	43 (93.5)
Multivitamin Consumption	58 (35.6)	22 (47.8)
Drug Use	38 (23.3)	8 (17.4)
Complications	95 (58.3)	22 (47.8)
Family Background**		
None	96 (58.9)	34 (73.9)
First Grade	18 (11.0)	4 (8.7)
Second Grade	45 (27.6)	6 (13.0)
Both	4 (2.5)	2 (4.3)
** $p \leq 0.05$		

Cleft lip,Cleft palate,Cleft lip-palate,Epidemiology,Mexico

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Utilizing two dynamic cleft databases to elucidate differences in genetic and environmental risk factors across high- and low-resource settings

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction:
Risk factors for cleft lip with/without palate (CL/P) have been widely studied, especially in high-resource settings. Due to limited case numbers, resource availability, and feasibility, genetic and environmental risks have not been studied across a large sample of diverse patients from high- and low-resource settings.

Aims:
Our large-scale collaboration aims to study a broad range of genetic and environmental hypotheses to identify differences between CL/P risk factors in high- and low-resource settings.

Methods:
The International Family Study (IFS) is an ongoing population-sampled case-control study with corresponding parental trio data in eight LMICs. Cases are sampled at multiple locations and controls are healthy newborns from public, regionally-based birth centers. The Cleft Collective is a longitudinal cohort comprised of both a birth and a five-year-old cohort of cleft patients and their families from the United Kingdom. Data is collected at various National Health Service sites. The two study teams will collaborate on a comprehensive analysis and are currently assessing feasibility by risk factor.

Results:
Existing data from IFS and Cleft Collective cohorts can be harmonized to analyze genetic and environmental hypotheses using the current infrastructure of each study. Cumulatively, there are 8,031 patients with CL/P with corresponding parental samples as well as 3,194 controls for the LMIC databases. The collaboration is powered to analyze genetic, demographic, lifestyle, and socioeconomic risk factors of CL/P including ethnicity, education, occupation, income, medical history, prenatal care, vitamin use, smoking, alcohol use, nutrition, and drug use. GWAS and GWIS analyses have also been confirmed feasible.

Conclusions:
This partnership, and ones like it, will enable a deeper understanding of the complex mechanisms that contribute to CL/P development across ethnicities, lifestyles, and phenotypes. Data sharing and collaboration is necessary to ensure true equity in research and preventative initiatives- ensuring findings include those at highest risk of living with disease.
partnership, genetic, environmental, data sharing

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Patterns of orofacial clefts and associated risk factors in Pakistan: an institutional review

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction: Orofacial clefts are one of the most common congenital anomalies worldwide. The etiology of cleft is complex and is thought to be a combination of genetic and environmental factors.
Aims: The purpose of present study is to identify the incidence of different types of orofacial clefts and presence of known risk factors among cleft cases.
Methods: A retrospective study was conducted at the Cleft Hospital in Gujrat, Pakistan and data was collected from patient files from December 2017 to July 2021. Only cases of cleft lip and/or cleft palate (CL/P) that presented to Cleft Hospital were included. The data collected included details like patient demographics, type of cleft, maternal pregnancy history and family history of disease. SPSS was used for data analysis and risk factors associated with CL/P were identified.
Results: The study included 1269 patients with CL/P. Of the total, 677 (53.3%) patients had cleft lip with cleft palate, 211 (16.6%) had cleft lip only and 365 (28.7%) had cleft palate only. The most common defect was bilateral complete cleft lip and palate (n=276) and midline incomplete cleft palate (n=215). 106 (8.3%) of the cases were syndromic and among the remaining non-syndromic cases, 240 (18.9%) had other associated anomalies. Chi-Square tests revealed the following risk factors for orofacial cleft: consanguinity among the parents ($p<0.001$), a complication during pregnancy ($p<0.001$), medication use during pregnancy ($p<0.001$), maternal smoking or exposure to smoking ($p=0.002$), history of miscarriage ($p=0.02$) and positive family history ($p<0.001$).
Conclusion: While previous studies have shown many risk factors to be associated with development of CL/P in the child, the present study provides a quantitative estimate of the risk posed by each individual factor in the Pakistani population. These findings emphasize on the development of proper peri-natal counseling programs for this population.
orofacial cleft, cleft, risk factors,

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Epidemiological presentation of patients with Lip-Maxillus-Palatine Cleft (LMPC) in the Tarapacá Region, Chile.

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The Lip-Maxillo-Palatine Cleft (LMPC) in the Tarapacá Region in Chile have a significant presence from the surgical quantitative point of view, a high social deficiency and in the final impact of the functional results of the patients.
Since the advent of the Explicit Health Guarantees (GES) in Chile in 2005, 167 children have been registered with LMPC, many of whom have been managed by 3 non-local surgeons, with different surgical techniques, with many secondary surgeries (touch-up or reprise) and non-compliance with surgical times, negative factors for the correct final functionality of the patients.
The epidemiology of the LMPC, the functional sequelae and an alternative solution in the Regional Hospital of Iquique - Chile are presented.
Lip-Maxillo-Palatine Cleft (LMPC), Epidemiology, Chile,

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A RETROSPECTIVE STUDY TO ASSESS THE RISK FACTORS ASSOCIATED WITH CLEFT LIP AND CLEFT PALATE PATIENTS AT A TERTIARY CARE HOSPITAL IN KOLKATA, INDIA

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Various factors cause cleft lip and cleft palate disorders.The wide diversity of culture, ethnicity and genetic pool results in variation in occurrence of congenital defects in different regions of India.Yet, cleft children are not treated on right time due to absence of proper reporting and registry. This results in adverse effect in health and social condition of the children with cleft disorders

AIMS AND OBJECTIVES:

1. To study the risk factors associated with cleft lip and cleft palate among those who have been operated.
2. To study the association, if any, exist between these factors with cleft lip and cleft palate.

MATERIALS AND METHODS:

Study Area:
The study will be conducted at the department of plastic surgery, South Eastern Railway Hospital, Kolkata.

Study design:
It will be a record based retrospective study design.

Study samples and population:
It will be those who underwent cleft lip and cleft palate surgeries in the past 5 years.

Sample size:
The total number of patients who has underwent cleft lip and cleft palate surgeries between the years 2016 to 2021 is 400. Hence N=400.

Study Tool:
A pre-designed semi structured Mission Smile Questionnaire will be used to collect data by accessing the records.

Study Methodology:
After obtaining appropriate approval from the Institutional Ethical Committee, the records of all the patients who have underwent cleft lip and cleft palate surgeries will be scrutinized and data will be tabulated.
The risk factors included in study are Parental age, Family history, History of consanguineous marriage, maternal co-morbid illness, smoking and tobacco exposure, maternal alcohol exposure, peri-conceptional folate intake, peri-conceptional drug intake, exposure to indoor smoke, exposure to chemicals, water consumption and socio-economic status.

RESULT:
Results to be published during final presentation. Please do consider.

risk factors,cleft disorder, india

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CHARACTERISTICS OF THE PATIENT'S LENGTH OF STAY AND WEARING PERSONAL PROTECTIVE EQUIPMENT DURING CLEFT LIP AND PALATE SURGERY DURING THE COVID 19 PANDEMIC AT ALIYAH HOSPITAL, INDONESIA

Characteristics Of The Patient's Length Of Stay And Wearing Personal Protective Equipment During Cleft Lip And Palate Surgery During The Covid 19 Pandemic At Aliyah Hospital, Indonesia Yeremia Maruli Togatorop[1], CHARACTERISTICS OF THE PATIENT'S LENGTH OF STAY AND WEARING PERSONAL PROTECTIVE EQUIPMENT DURING CLEFT LIP AND PALATE SURGERY DURING THE COVID 19 PANDEMIC AT ALIYAH HOSPITAL, INDONESIA Saktrio Darmono Subarno[2], CHARACTERISTICS OF THE PATIENT'S LENGTH OF STAY AND WEARING PERSONAL PROTECTIVE EQUIPMENT DURING CLEFT LIP AND PALATE SURGERY DURING THE COVID 19 PANDEMIC AT ALIYAH HOSPITAL, INDONESIA M. Idris Ibnu Ikhsan[3]
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Background : During the pandemic, hospitals are trying to reduce admissions, outpatient appointments and routine surgical procedures and length of hospital visits. This also happens to patients with cleft lip and palate to protect patients and medical staff from exposure to the Covid-19 virus.

Aim: The purpose of this research is to find out frequency of patient's length of stay and wearing personal protective equipment during cleft lip and palate surgery during the covid-19 pandemic at Aliyah Hospital, Indonesia from January 2019- December 2020.

Method: This Research is a retrospection description. Data collection techniques based on secondary data from medical records and interviews with the cleft lip and palate surgical team at Aliyah Hospital, Indonesia.

Result: The total patients who underwent cleft lip and palate surgery were 110 patients. presentation of patient's length of stay is : One day treatment 80%, two days treatment 17,3%, three days treatment 1,8% and four days treatment 0,9%. frequency of wearing personal protective equipment during pandemic Covid-19: Headcap 100%, Face shield 87,3%, Surgical Mask 10,9%, N95 Mask 89,1%, Medical Scrub 100%, Coverall 84%, Surgical gown 100%, and Apron 100%.

Conclusion: During the pandemic period, the length of stay has to be reduced to only one day of treatment and wearing appropriate personal protective equipment during cleft lip and palate surgery is very important because it can generate aerosols to reduce the transmission of the COVID-19 virus.

CLP, PPE, Covid-19 pandemic, Indonesia

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A CLINICAL AND EPIDEMIOLOGICAL PROFILE OF CLEFT LIP AND PALATE PATIENTS IN WEST BENGAL,INDIA: A Retrospective Study

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PS5 Friday Lunchtime Poster Session, Cromdale Hall, EICC - Onsite Only, July 15, 2022, 13:00 - 14:00

Introduction:
Cleft lip and/or palate are a most common facial congenital anomaly, and its aetiology has been attributed to various environmental, genetic and unknown factors.
Objective:
To study the epidemiology and clinical profile of cleft lip and palate patients
Methods:
The age of operative intervention, sex distribution, type of cleft, laterality, type of surgery, and duration of stay were studied.

- Study area: At various hospitals in kolkata under mission smile
- Study duration: August 2016 to Feb 2020
- Study design: Retrospective study
- Study population: Cleft lip and palate patients(primary and secondary)
- Sample size: 421

- Inclusion criteria:
- Patients were grouped into various types as per Nagpur and Veau classification.
- Hb of >10 g/dl,
- The weight of >6 kg
- Age of > 6 months

- Exclusion criteria:
- Weight <6 kg
- Hb <9 gm%
- Age <6 month

Other congenital anomalies

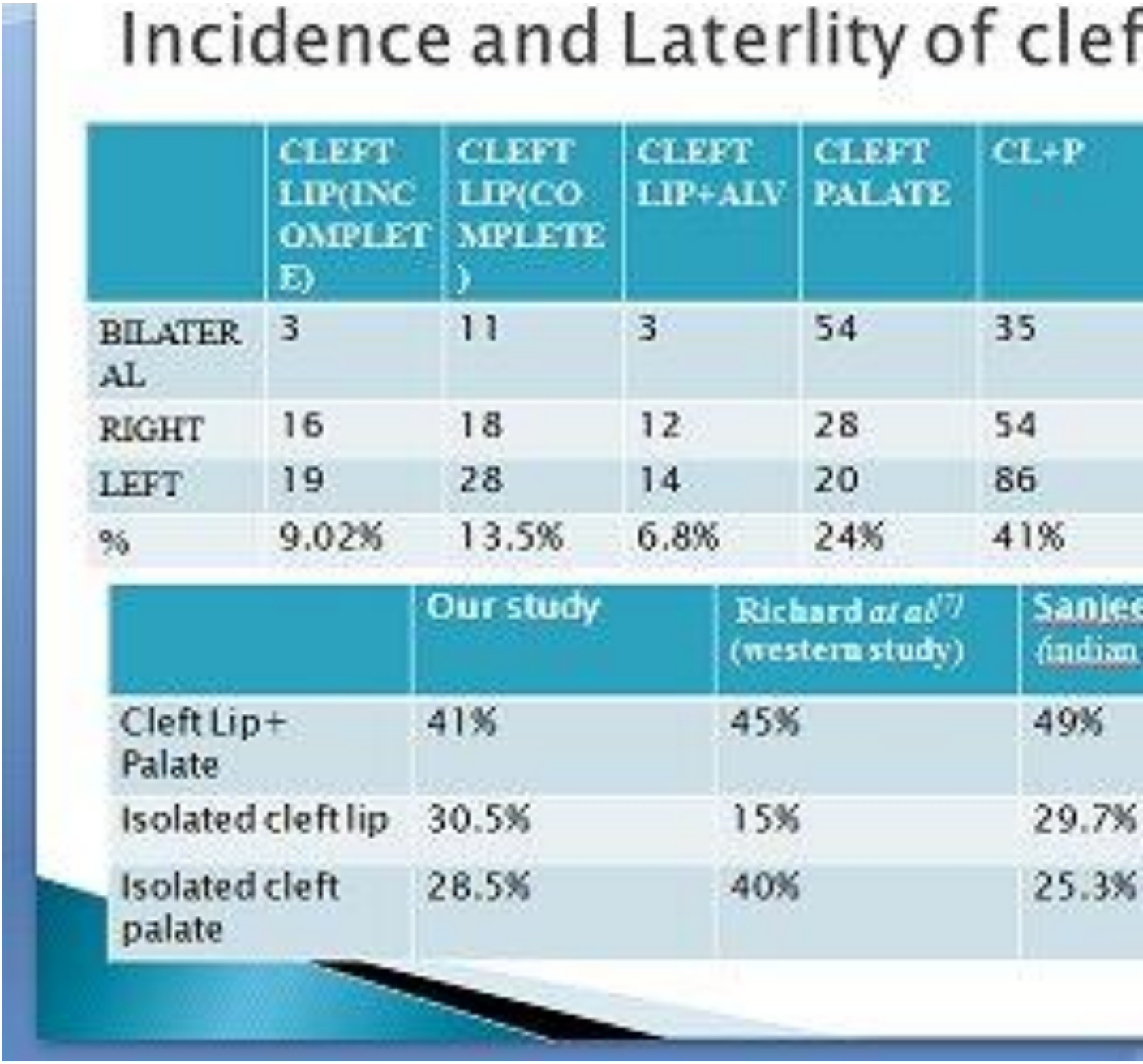
Results:

1) The ratio of male and female (Male:Female) was 1.4:1.0.
2)left-sided defects(39.5%) were more common than those of right-sided(30.4%)
3) 55.5% patients were operated < 1 yr
4)6.6 % patients were operated after 10 yrs
5)Unilateral cleft(70.5%) were more common than bilateral(31.5%)
6)Left-sided defects(39.5%) were more common than those of right-sided(30.4%)

Conclusions:

- Clefts were found more in male as compared to females.
- Isolated cleft palate more common in females
- Left sided clefts were found to be more common than right.
- Incidence of cleft palate found to be less than western population
- Patients of cleft are brought for surgery later than the ideal surgical time.
- Majority of patients were from rural area and belonged to low socioeconomic status.
- North and south 24 pgs districts were major contributors of cleft patients in West Bengal.

->Religious distribution of occurrence of clefts is similar to state demographic data.



cleft lip,cleft palate,epidemiology,west bengal

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Microcytic anaemia among cleft lip and/or palate patients: A Single Centre 5-Year Experience in Bangladesh

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Introduction: Prevalence of anaemia among cleft patients has been reported between 39.4 and 83.1% in previous studies. Microcytic anaemia is the most common.
Aim: To investigate the prevalence of microcytic anaemia among CLP patients and to evaluate association of microcytic anaemia with gender, urbanization, consanguinity of marriage, type of cleft, association with other anomalies and its impact on perioperative cleft care.
Methods: This is a retrospective cross-sectional analysis of data collected from a Comprehensive Cleft Centre in Bangladesh from 2016-2020. Data of CLP cases aged upto 5 years were included, excluding craniofacial and syndromic clefts. Study group consisted of CLP cases with microcytic anaemia while comparison group consisted of CLP cases without microcytic anaemia.
Results: 387 records were selected as cases. 111 cases (28.7%) had microcytic anaemia in blood film. 95 (24.2%) cases had moderate or severe and 16 (4.5%) had mild anaemia. Microcytic anaemia was found to be more common in males (64%) than females (36%). 27% of urban and 30% of rural babies with clefts had microcytic anaemia. Only 18.2% cleft babies of consanguineous parents had microcytic anaemia. Microcytic anaemia was found most prevalent among babies with cleft lip only (46.8%). Microcytic anaemia in CLP babies was not found to be significantly associated with other congenital anomalies, but it had an odds ratio of 1.6. There were 16 cases where surgery had to be delayed due to anaemia among which 87.4% had microcytic anaemia. 29 of 387 cases needed peri-operative blood transfusion among which 22 patients had microcytic anaemia ($p<0.05$). 6.3% of babies with microcytic anaemia had post-operative wound dehiscence compared to 4.3% among control group.
Conclusion: In a low middle income country such as Bangladesh, timely blood film analysis, early iron supplementation and peri operative anaemia optimization can make comprehensive cleft care more successful.

Microcytic anaemia, Cleft lip/palate

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Decrease in prevalence of cleft lip, alveolus and palate after nationwide introduction of the second-trimester anomaly scan in the Netherlands

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INTRODUCTION
Previous international studies have suggested that introducing a second-trimester anomaly scan (SAS) leads to an increased rate of terminations of pregnancy in fetuses with orofacial clefts (OFCs). Globally, however, the nationwide impact of the SAS on the prevalence of OFCs has never been examined.

AIMS
The main objective of this study is to investigate the prevalence and demographics of OFCs and their three categories in the Dutch population over a period of 23 years. In addition, the potential relationship between the nationwide introduction of SAS, these OFC groups and the rate of TOP in the Netherlands is examined.

METHODS
In this retrospective cohort study, patient data were extracted from the national Dutch database. A total of 7,412 patients were included between 1997 and 2019. Patients were divided into three categories: cleft lip with or without alveolus (CL/A), cleft lip, alveolus and palate (CLAP) and cleft palate (CP). Data before and after the nationwide introduction of the SAS on January 1, 2007 were compared.

RESULTS
In total, 1 in 2,255 OFC patients were diagnosed with CL/A (n=1,889), 1 in 1,647 with CLAP (n=2,586) and 1 in 1,455 with CP (n=2,927). Prevalence of clefts before and after 2007 did not differ (1/575 versus 1/576, P = 0.67). Prevalence of CLAP decreased after 2007 (P = 0.03), CL/A remained stable (P = 0.11) and CP increased after 2007 (P = 0.01).

CONCLUSIONS
This study demonstrates a significant decrease in the prevalence of CLAP after the nationwide introduction of the standardized SAS. However, due to an increase in the number of patients born with a CP, the prevalence of all patients born with OFCs in the Netherlands did not change.
Cleft lip; orofacial clefts; ultrasound

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Development of a patient information film for pediatric cleft patients undergoing alveolar bone graft (ABG)

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Virtual Posters

Introduction: Facing the prospect of surgery during middle childhood may be traumatizing and anxiety-provoking for both child and parent, which in turn may affect surgical outcomes. This psychological burden may be alleviated by effective pre-operative education, preparation and information.
Aims: A regional UK Cleft Service lead and project managed by the cleft psychology service developed an online pre-operative film resource for the benefit of pediatric cleft patients between 7 and 9 nine years of age who are undergoing an ABG.
Method: The medical illustration team in the NHS Trust and the multi-disciplinary team co-designed the film with patients and families in order to develop a patient information film which explained the ABG procedure using an approach and incorporation of content which was appropriate for the intended audience.
Results: An animated patient information film tailored to paediatric patients undergoing ABG was produced and widely disseminated. Positive feedback from young patients, families and healthcare professionals was obtained.
Conclusion: Involvement of the multidisciplinary team and service user representatives led to the development of an accessible resource to mitigate the risk of anxiety and traumatic stress in pediatric cleft patients. The film has been successfully incorporated into routine clinical practice to inform the treatment pathway. Patient, parent and staff feedback will be collated as part of an evaluative process. A short excerpt from the film at conference will help illustrate it's content .

Pre-operative preparation, film, psychology, co-design

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REPAIR OF PROTRUDING BILATERAL CLEFT LIP AND PALATE WITH STAGED PREMAXILLA SETBACK OSTEOTOMY, CHEILOPLASTY AND PALATOPLASTY IN TRISOMY 17p PATIENT

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Virtual Posters

Introduction. Chromosome 17 duplication is correlated with increased risk of developmental delay, birth defects, and intellectual disability. Here, we reported a female patient with trisomy 17 on the whole short arm with bilateral complete cleft lip and palate (BCLP).

Aims. This study will review the surgical strategies to reconstruct the protruding premaxillary segment, cleft lip, and palate in trisomy 17p patient.

Case Presentation. The patient had heterozygous pathogenic duplication of chromosomal region chr17:526-18777088 on almost the entire short arm of chromosome 17. Beside the commonly found features of trisomy 17p, the patient also presented with BCLP with prominent premaxillary portion. Premaxillary setback surgery was first performed concomitantly with cheiloplasty. The ostectomy was performed posterior to the vomero-premaxillary suture (VPS). The premaxilla was firmly adhered to the lateral segment and the viability of philtral flap was not compromised. Two-flap palatoplasty with modified intravelar veloplasty (IVV) was performed 4 months after.

Conclusion. Successful positioning of the premaxilla segment, satisfactory lip aesthetics, and vital palatal flap were obtained from premaxillary setback, primary cheiloplasty, and subsequent palatoplasty in our trisomy 17p patient presenting with BLCP. Postoperative premaxillary stability and patency of the philtral and palatal flap were achieved. Longer follow up is needed to evaluate long-term effects of our surgical techniques on inhibition of midfacial growth. However, the benefits that the patient received from the surgery in improving feeding capacity and facial appearance early in life outweigh the cost of possible maxillary retrusion.

bilateralcleftlippalate, trisomy17, premaxillaryosteotomy

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African Cleft GWAS Signal Replication in an Independent African Cohort

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Virtual Posters

Introduction: Orofacial clefts (OFCs) are congenital birth defects where the independently derived facial primordia that form the orofacial complex fail to fuse properly during embryonic development. Affecting ~1.2/1000 live births world-wide, these OFCs impose significant social and financial burdens on affected individuals and their families. OFCs have a complex etiology resulting from genetic variants combined with environmental covariates. Recent African genome-wide association studies (GWAS) for OFCs identified 170 near significant SNPs (p=10^-5). We genotyped these SNPs on DNA sample cohorts from Africa using Fluidigm Integrated Fluidic Circuits (IFCs).
Aims: The aim of this study was to replicate GWAS signals (p=10^-5) and identify new signals by combining the replication and discovery using meta-analysis for SNPs that are p=10^-5.
Methods: 170 GWAS derived SNPs were genotyped on 3000 replication samples from participants in Ethiopia, Ghana, and Nigeria. Genotyping was done using Fluidigm IFCs and results were recorded, integrated with previous GWAS data, and implemented in further meta-analyses. Association analyses were done using PLINK and meta-analyses using METAL.
Results: Of the 170 GWAS suggestive significant SNPs (p≤10^-5), we genotyped 96 SNPs and identified three significant SNPs in our new cohort after Bonferroni corrections. rs186309721 was significantly associated in all cleft types with a p-value of 0.0003234. Further subdivision of the cohort showed that rs2295012 was significantly associated with cleft lip with or without palate (p=0.0003424). rs186309721 was found to be significantly associated with cleft palate only (p=0.0005241). Meta-analysis between the prior GWAS and new cohort data showed that rs10257343 (p=3.30E-08) was significantly associated with cleft palate only, with the same direction of effect in both GWAS and replication datasets.
Conclusions: Through our replication study and meta-analysis, we identified additional genetic risk factors for OFCs that can be included in future clinical translational work for improved patient care.
Craniofacial Abnormalities, GWAS, Meta-analysis, OFC

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To assess the success of alveolar bone grafts in cleft lip and palate patients at Great Ormond Street Hospital for Children spanning over 13 years

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Virtual Posters

Introduction
Alveolar bone grafting is performed in cleft lip and palate patients to restore the osseous defect, eliminate oro-nasal fistula, maximise bone support for tooth eruption and orthodontic treatment and to establish ideal morphology. The overall literature supports treatment when the canine roots are between one-third and two-thirds formed and successful outcomes are described by both clinical and radiographic measures. The three main radiographic methods of success were described by Kindelan, Bergland and Chelsea.

Aims
To assess the quality and consistency of alveolar bone grafts performed in patients with a cleft lip and palate at Great Ormond Street Hospital for children from three audit cycles spanning from 2008-2021.

Method
Retrospective audit using electronic patient records for patients with unilateral or bilateral cleft lip and palate who had undergone alveolar bone grafting procedures within the three audit cycles from 2008-2021. Radiographic success was determined via the Kindelan method utilizing the pre-op radiograph and the 6-month post-op radiograph.

Results
The first cycle (2008-2014) showed 95% of unilateral and 97% of bilateral cleft lip and palate patients had Kindelan scores of grade 1 or 2. The second cycle (2015-2017) showed 98% of unilateral and 96% of bilateral cleft lip and palate patients had Kindelan scores of 1 or 2. The third cycle (2019-2021) showed 92% unilateral cleft lip and palate patients and 72% of bilateral cleft lip and palate patients had Kindelan scores of 1 or 2.

Conclusions
This study highlights consistent outcomes spanning three audit cycles but with a potential drop in the latest audit. The potential impact of COVID-19 with delays in treatment and follow up are considered and the limitations of methods measuring radiographic success alone. Further investigations are required into the factors which have influenced the data in the third cycle.

Cleft, COVID-19, Alveolar bone graft,

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Speech visualisation using a novel neural network before and after fistula closure surgery in patients with cleft palatevir

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Virtual Posters

Introduction
Currently, the degree of articulation disorder is mainly assessed based on perceptual assessment by a speech-language pathologist (SLT). However, objective evaluations using equipment have also been reported. Herein, we developed a speech analysis system based on neural networks (NN) to visualise and analyse speech data.
Aims
To visualise and analyse the articulation function of patients with cleft palate (CP) who have undergone fistula closure surgery using the NN-based articulation analysis system (NN-system).
Methods
Ten patients with repaired CP who underwent palatal fistula closure and speech therapy were enrolled. Moreover, three healthy Japanese infants, matched for age, were used as controls. First, to examine the reliability of the NN-system, the identification rate was determined. Next, perceptual speech outcomes were reviewed in all patients. The changes in the place of articulation of word data, including [s] and [t], at three time points (pre-operation, post-operation, and after speech therapy) were analysed using the NN-system for the six patients who presented with backward positioning of articulation. Furthermore, the correlation between perceptual assessment by an SLT and the NN-based assessment was examined.
Results
The mean identification rates were 77% or higher. In the perceptual assessment, the nasal airflow and cleft-type characteristics decreased, respectively. In the NN-system analysis, the percentage of alveolar sounds (normal place of articulation) after speech therapy increased, closer to that of the normal group. In the relationship between the perceptual and NN-system assessment, a moderate positive correlation was observed for [s] with a correlation coefficient of 0.6676, p=0.003.
Conclusions
The novel NN-based speech analysis system was shown to be reliable and valid. Furthermore, visualisation of the changes in the place of articulation of patients with CP could be applied to visual feedback in speech therapy in the future.
speech assessment, neural network

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22Q11.2 Deletion Syndrome in Colombian Patients with Syndromic Cleft Lip and /or Palatevir

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Virtual Posters

Introduction
22q11.2 deletion syndrome (DS) is frequently associated with syndromic palatine abnormalities. 23 cases of DS were reported in Colombia during 2019 and 28 during 2020 with a frequency of 0.2 per 10.000 births. In Bogotá 11 cases were reported in 2019 and 5 in 2020. We seek to establish this association in the Colombian population.

Aims
To determine 22q11.2 DS in patients with cleft lip (CL) and/or cleft palate (CP), with other characteristics.

Methods
Cross-sectional study of patients with CL/P exhibiting clinical characteristics associated with 22q11.2 DS selected from the Malformation Surveillance Database in Bogota, Javeriana University's Genetic Institute and School of Dentistry's CLP Program and Healing the Children Mission. A clinical analysis was performed by a genetist, and a cytogenetical analysis using high-resolution karyotyping, multiplex ligation-dependent probe-amplificative molecular analysis of the 22q11.2 region, and Gene Scan version 2013. Two groups were established: 22q11.2 D carriers and non-carriers. Statistical comparison of clinical characteristics was determined by w2 test with a significance level of 5% ($P < .05$).

Results
A total of 49 patients with CL/P and clinical findings associated with 22q11.2 DS were included. 25 (51%) had CP, 15 (30.6%) had CLP and 4 (8.2%) had CL. Deletion was detected in 7 cases (14.3%). 4 had CP, 2 had velopharyngeal insufficiency, and 1 bifid uvula. All these patients exhibited facial dysmorphism and frequent infections, as opposed to 7 patients in the non-carrier group. 6 cases had cognitive impairment and 5 presented congenital cardiac malformations.

Conclusions
An important number of patients with palatine abnormalities may be 22q11.2 deletion carriers. DS should be considered in individuals with any palatine anomaly accompanied by congenital facial or cardiac malformations. Testing should be performed to achieve definitive diagnosis, treatment, and provide genetic counseling.

Table 1. Cytogenetics and Clinical Findings in 22q11.2 Deletion Carrier Patients With Syndromic Cleft Lip and/or Palate.

N	Age	Sex	Karyotype	MLPA Result	Fissure Type	Cardiac Anomaly	Facial Dysmorphism	Immunological Phenotype	Development Alteration/Cognitive Alterations	Other Clinical Findings	Analysis of Parents
1	12	M	46, XY	3 Mb TDR	Cleft palate	Absent	Midfacial hypoplasia, triangular facies, overfolded helix	Recurrent respiratory tract infection	Learning impairment and speech disorders	Microcephaly, cutaneous syndactyly on hands, hallux valgus	NA
2	30	F	46, XX	3 Mb TDR	Cleft palate	VSD	Epicanthic folds, midfacial hypoplasia, prognathism	Frequent respiratory and dermatological infections, immunological analysis revealed partially combined immunodeficiency	Speech disorder	von Willebrand disease type II, symptomatic focal epilepsy, hypothyroidism, keratitis, chronic sinusitis, bilateral conductive hearing loss, bipolar affective disorder	NA
3	5	F	46, XX	3 Mb TDR	Cleft palate	VSD	Microcephaly, brachycephaly, hirsutism, oblique palpebral fissures, telecanthus, micrognathia	Recurrent respiratory tract infection and otitis media	Psychomotor development retardation	Generalized hypotonia	ND
4	4	F	46, XX	3 Mb TDR	Cleft palate velum	VSD	Posteriorly rotated ears, upturned nares, upturned palpebral fissures	Recurrent respiratory tract infection	Psychomotor development retardation, speech disorder	Absent	ND
5*	49	M	46, XY	1.8 Mb LCR-D to -F deletion	Palate velum insufficiency	Absent	Upturned palpebral fissures, midfacial hypoplasia, high nasal root	Recurrent herpes zoster infections, immunological analysis revealed partially combined immunodeficiency	Psychomotor development retardation and mild cognitive impairment	Sensorineural hearing loss, hypothyroidism, bilateral inguinal hernia	ND
6	5	M	46, XY	3 Mb TDR	Bifid uvula	Tetralogy of Fallot interventricular communication	High nasal bridge, midfacial hypoplasia	Repetitive respiratory tract infection	Speech impairment	Absent	NA
7	5	M	46, XY	3 Mb TDR	Palate velum insufficiency	VSD	High nasal bridge, elongated facies, almond-shaped eyes, external ear malformation	Recurrent respiratory tract infection	Absent	Short stature, bladder wall thickening	NA

Abbreviations: F, female; LCR, low copy repeats; M, male; MLPA, multiplex ligation-dependent probe amplification; NA, not analyzed; ND, not deletion; TDR, typical deleted region; VSD, ventricular septal defect.
*Patient with 22q11.2 distal deletion.

22q11.2, palatine abnormalities, genetics

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Association between stigma experience and self-perception related to facial difference in Japanese youths with cleft lip and/or palate

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Virtual Posters

Objective: To examine the association between stigma experience and self-perception related to facial difference in Japanese youths with cleft lip and/or palate.
Material and methods: This study was composed of a sample of sixty-nine Japanese youths with CL/P (age, 11-18 years old) who were recruited through our hospital and asked to complete the Japanese version of the youths Quality of Life Instrument-Facial Differences Module (YQOL-FD). We assessed that subjects' stigma experience (7 items) and their self-perception (5 domains; stigma, negative consequences, negative self-image, positive consequences, and coping) related to facial differences by using YQOL-FD. We used a structural equation modeling (SEM) analysis to determine the association between subjects' stigma experience and self-perception related to facial differences.
Results: A total of 16% of participants reported experiencing stigma, including "having their faces stared at in the past week" and "hearing comments about their faces in the past month". An SEM analysis determined that stigma experience and self-perception, had a strong relationship (r=0.79). An SEM analysis also detected a strong relationship between stigma experience and perceptions of a negative self-image as well as proactive coping related to facial differences, indicating that stigma experience had both negative and positive effects on subjects' self-perception related to facial differences.
Conclusions: Both negative and positive effects on one's self-perception related to facial differences were confirmed when Japanese youths with CLP encountered stigma. This indicates that youths with CLP have the potential to sublimate their experienced stigma into coping skills and adaptation.

YQOL-FD, CLP, QOL, Face, Stigma

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Disability Caused by Cleft Lip/Palate: A systematic review and critical appraisal

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Virtual Posters

Introduction:
An unrepaired or inadequately repaired cleft lip or palate (CLP) can be highly disabling functionally and socially. Quantifying this disability often relies on disability weights (DWs) and Disability-Adjusted Life Years (DALYs) to assess burden of disease (BoD) and appropriately allocate healthcare resources. However, it is not clear that DWs are well-established for CLP, nor the degree to which treatment alleviates such disability.

Aims:
To systematically review studies assessing disability health valuation metrics for CLP and identify methodological variation and knowledge gaps.

Methods:
A systematic search strategy was developed with a licensed librarian to query all manuscripts describing quantification of cleft disability, especially as it relates to DALYs and DWs. Covidence systematic review manager was used by two independent reviewers to screen abstracts and full texts.

Results
Systematic search in December 2021 yielded 1,067 studies, of which 7 were included (Table 1). Three studies calculated DALYs using the traditional equation*. One study suggested an alternate integral equation for DALY calculation, one study offered an alternate methodology for calculating DWs, and two studies presented non-DALY measures of disability**. The most common sources for DWs were the GBD 2010 (n=2), 2016 (n = 1), and 2017 (n=1) studies ("GBD"). Another study calculated DWs for pediatric surgical conditions using experts and laypeople to derive mean time trade off values ("pediatric surgical.") DWs ranged widely for isolated cleft lip (0.0-0.245) and cleft palate with or without cleft lip (0.0-0.372.) Average DWs were greater for both cleft lip (0.245) and palate (0.372) using the pediatric surgical method, compared to the GBD method (0.07 and 0.12, respectively.) No assessment of disability-alleviation by standard cleft treatments were identified.

Conclusions:
Estimation methodologies of CLP disability and BoD are wide-ranging and poorly defined. Disability valuation is dominated by GBD methodologies; however, newer pediatric-specific metrics appear to better incorporate more extensive manifestations of disability.

Author	Year	Country	Disability Calculation	DW Source	Study Aim	Study Methods	Study Results	Study Conclusion
Hackenberg	2015	India	$f_x = \Delta DALY(r,1,\beta) = \int_x^{x'} (\Delta DW \cdot e^{-r(x-a)} \cdot C$ $= \Delta DW \cdot C \cdot \int_x^{x'} (e^{-r(x-a)} \cdot x \cdot e^{-\beta x}) dx$	GBD 2010	Assess the cost-effectiveness of medical missions and comprehensive cleft care centers.	Evaluate medical records and costs for 17 medical missions (MM) and a comprehensive cleft center (CCC)	MMs averted 6.00 DALYs per intervention and the CCC averted 5.96 DALYs per intervention	Cleft care is a very cost-effective
Balaji	2016	India	DALY = YLL + YLD	GBD 2016	Identify the prevalence, burden, and unmet need of orofacial clefts	GBD 2016 approach and its assumptions to estimate DALYs, YLL, YLD, and death due to clefts	DALYs lost were 2.34 for both sexes. Total unmet cleft need was estimated at 18.76% of the Indian cleft population	Emphasizes the need for high-quality observational studies to estimate the burden of clefting in India
Higashi	2015	LMICs	DALY = YLL + YLD	GBD 2010	Quantify the burden of selected congenital anomalies in LMICs amenable to surgery	GBD 2010 approach to assess DALYs	An estimated 328,867 DALYs are lost due to orofacial clefting in LMICs	There is an important and neglected role for surgery in LMICs
Neumann	2012	-	International Classification of Functioning, Disability, and Heath-Children and Youth Version (ICF-CY)**	-	Identify codes from the ICF-CY relevant for use among children with CLP	The scope of CLP literature was evaluated and linked via a five-step procedure to ICF-CY terms	List of ICF-CY terms provided in the manuscript	When used, the ICF-CY terms go beyond treatment and outcomes focused solely on the child to focus on the environment and familial context
Massenburg	2021	Global	DALY = YLL + YLD	GBD 2017	Identify areas of increased disease burden or inadequate surgical workforce	Model the disease burden of orofacial clefts using the GBD methodology	There is an estimated 652,084 DALYs lost worldwide due to orofacial clefting	Burden of orofacial clefting has a strong negative association with the size of the surgical workforce.
Ponsaers	2014	-	BoID = incident met need + prevalent need + unmet incident need + unmet prevalent need + unmetable need**	-	Certain aspects of the GBD methodology are questionable and or impractical.	Refines other conceptual approaches based on met and unmet population need for services by considering incident and prevalent need as well as backlogs	Measurement of disability incurred by delays in care may also be estimated through these approaches and has not previously been estimated through a validated model	These concepts provide more practical information for individuals and organizations to advocate for scaling up surgical programs. Further exploration of these approaches is merited.
Ponsaers	2017	Kenya and Canada	DALY = YLL + YLD with incorporation of novel DW	Paired comparison (PC) scores anchored to mean time trade off (TTO) values from 78 Kenyan and 76 Canadian lay people and experts	Establish DWs for a subset of key pediatric congenital anomalies using a range of health valuation metrics with caregivers in both high- and low-resource settings.	DWs for each of 15 health states were elicited using four health valuation exercises (preference ranking, visual analogue scale (VAS), paired comparison (PC), and time trade-off (TTO)). The PC data were anchored internally to the TTO and externally to existing data to yield DWs for each health state on a scale from 0 (health) to 1 (dead).	154 participants were included. Overall calculated DWs for 15 health states ranged from 0.13 to 0.77, with little difference between countries (intra-class coefficient 0.97).	This study derived country specific DWs for pediatric congenital anomalies using several low-cost methods and inter-professional and community caregivers. The TTO-anchored PC method appears best suited for future use.

*DALY = YLL + YLD where YLL = Years of Life Lost; YLD = Years Lived with Disease

disability, DALY, burden of disease

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Association between orofacial cleft and mother-to-infant bonding: a cross-sectional study in the Japan Environment and Children's Study

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Virtual Posters

Introduction: Orofacial cleft is among the most prevalent congenital birth defects, and negatively affects maternal psychological status. However, the association of childbirths of infants with cleft lip and/or palate with maternal bonding disorders still remains unclear.
Aim: We examined the association between childbirths of infants with cleft lip and/or palate and mother-to-infant bonding, using data from the Japan Environment and Children's Study, a nationwide birth cohort study.
Methods: A cross-sectional study of the dataset jecs-an-20180131 was performed. The Mother-to-Infant Bonding Scale, a self-report scale consisting of 10 items, was used to evaluate maternal bonding at one year after childbirth. Participants consisted of 79,140 mother-infant pairs, of which 211 mothers of infants with cleft lip and/or palate were included in our analyses. Multivariable logistic regression analysis using multiple imputation for missing data was performed to calculate the odds ratio and 95% confidence interval in the estimation of the association between bonding disorders and childbirths of infants with cleft lip and/or palate.
Results: The increased risk of bonding disorders was not observed among all the mothers of infants with cleft lip and/or palate (odds ratio [95% confidence interval]; 0.97 [0.63-1.48], p = 0.880), however, advanced maternal age or multiple parity may adversely affect the associations between bonding disorders and cleft lip and/or palate, respectively. After stratification with a combination of maternal age and parity, a significant association of cleft lip and/or palate with bonding disorders was found only among advanced-age multiparae (odds ratio [95% confidence interval] = 2.51 [1.17-5.37], p = 0.018), but it was weakened after additional adjustment for maternal depression.
Conclusions: Childbirths of infants with cleft lip and/or palate may increase the risk of maternal bonding disorders among advanced-age multiparae. This finding provides valuable information for the provision of multidisciplinary cleft care.

Table. Association of bonding disorders with the prevalence of CL/P.

<35, Primiparae,	**Healthy** (n = 25,628)	**CL/P** (n = 71)	p value
Bonding disorders, n (%)	3,528 (13.8)	5 (7.0)	
Crude	1.00	0.51 (0.21-1.26)	0.146
Model 1[a]	1.00	0.44 (0.18-1.09)	0.076
Model 2[b]	1.00	0.44 (0.18-1.12)	0.085
<35, Multiparae	**Healthy** (n = 31,693)	**CL/P** (n = 85)	p value
Bonding disorders, n (%)	3,104 (9.8)	9 (10.1)	
Crude	1.00	1.11 (0.55-2.23)	0.780
Model 1[a]	1.00	1.03 (0.51-2.07)	0.946
Model 2[b]	1.00	1.03 (0.50-2.10)	0.941
≥35, Primiparae	**Healthy** (n = 6,536)	**CL/P** (n = 18)	p value
Bonding disorders, n (%)	895 (13.7)	3 (16.7)	
Crude	1.00	1.26 (0.67-2.38)	0.714
Model 1[a]	1.00	1.14 (0.61-2.15)	0.836
Model 2[b]	1.00	1.24 (0.66-2.33)	0.739
≥35, Multiparae	**Healthy** (n = 15,072)	**CL/P** (n = 37)	p value
Bonding disorders, n (%)	1,503 (10.0)	9 (24.3)	
Crude	1.00	2.90 (1.58-5.34)	**0.006**
Model 1[a]	1.00	2.51 (1.17-5.37)	**0.018**
Model 2[b]	1.00	2.18 (0.96-4.95)	0.062

Odds ratio (95% confidence interval) (all such values) for bonding disorders were compared with the reference participants.

[a]Adjusted for maternal factors (smoking and drinking habits, feeding pattern, and infant sex).

[b]Additionally adjusted for maternal depression with Model 1.

P values representing significant differences (<0.05) are indicated in bold.

Mother-to-infant bonding,Nationwide birth cohort,Cross-sectional study

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Satisfaction and quality of life after orthognathic surgery in unilateral cleft lip and palate: a comparative cohort study

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Virtual Posters

Introduction: Orthognathic surgery has been shown to have a positive effect on facial appearance and quality of life in noncleft class III dentofacial deformity; however, the effect of orthognathic surgery in cleft deformity remains unknown.

Aims: The purposes of this study were to investigate the satisfaction and quality of life after cleft orthognathic surgery, and to compare these data with those obtained after noncleft orthognathic surgery.

Methods: This comparative prospective study was performed from consecutive patients with skeletal class III deformity who had a unilateral cleft lip and palate (cleft cohort, n = 40) or a noncleft class III deformity (noncleft cohort, n = 51) and underwent two-jaw surgery at a craniofacial center in Taiwan between 2017 and 2019. Self-report questionnaires evaluated satisfaction with facial appearance and quality of life. Patients' expectations of treatment results were also reported.

Results: All patients reported moderate-to-high satisfaction with facial appearance and quality of life. The cleft cohort reported lower satisfaction on overall facial appearance ($p < 0.001$), lip and teeth appearance ($p = 0.01$ and $p = 0.04$, respectively), and self-confidence ($p = 0.018$) than noncleft cohort. The cleft cohort also reported lower treatment results relative to their expectation than noncleft cohort ($p = 0.033$).

Conclusions: This comparative study showed lower satisfaction and quality of life in cleft orthognathic surgery than noncleft orthognathic surgery.

UCLP, Class III, OGS, QoL

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Tissue and stage-specific role of Gata3 in embryonic craniofacial development

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Virtual Posters

Introduction】Development of a head is a complex process and comprised of a number of distinct cellular sources including cranial ectoderm, endoderm, mesoderm, and neural crest cells. In our previous study, we revealed the synergistic role of retinoic acid and Gata3 signaling during embryonic craniofacial development by showing disturbing these factors would result in choanal atresia. However, the role of Gata3 in embryonic craniofacial development especially for nasal septum is still largely elusive.

【Objectives】 This study tried to investigate the role of Gata3 during nasal septum development.

【Methods】 In order to investigate the expression pattern of Gata3 in embryonic craniofacial development, we performed In situ hybridization and immunohistochemistry by using antisense probes and antibodies which recognize Gata3. We also performed morphological and histological analysis of mice that removed Gata3 in an embryonic stage and tissue-specific manner.

【Results】Strong expression of Gata3 could be observed in developing craniofacial area especially in developing primary palate which includes the majority of cells for developing the nasal septum. Interestingly, when Gata3 was eliminated in the early embryonic stage (E11.5,12.5), the knock-out mouse resulted in nasal septum deformity. Neural crest-specific elimination of Gata3 also showed craniofacial defects which includes malformed nasal septum. Additionally, both in these mutants, disturbed cell proliferation and death could be observed.

【Conclusions】These results indicate important roles of Gata3 during nasal septum development by regulating cellular behaviors. We have also performed comprehensive gene expression analysis of Gata3 mutant and selected possible novel downstream gene which works in craniofacial development and would like to discuss future directions.

GATA3, Nasal septum,Craniofacial development

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Pre- and post-operative assessment of the psychological impact of orthognathic surgery on patients with clefts

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Virtual Posters

Introduction:
In the UK, patients undergoing orthognathic surgery are routinely supported by cleft psychology services as part of a standardized pathway which includes screening for concerns pre- and post-surgery, liaising with colleagues and providing support as required. There is a paucity of research in this area.
Aims: To analyze pre- and post-operative data, explore the overall psychological impact of orthognathic surgery and the support required by patients
Method:
The Hospital Anxiety and Depression scale (HADS), Orthognathic Quality of Life Questionnaire (OQoL) and Cleft hearing, appearance and speech questionnaire (CHASQ) are routinely completed before and after surgery at up to four time points . Pre- and post-operative scores were statistically compared using non-parametric methods (Wilcoxon Signed Rank Test) for a total of 53 patients. Descriptive, demographic information and the timing of psychological support are recorded.
Results:
The percentage of the cohort requiring pre- and post-surgery psychological support is 43% and 15% respectively. Significant positive changes were found for the OQoL ($T = 302.5$, $Z = 3.084$, $p<0.05$, $r = 0.441$) , all of the CHASQ categories relevant to orthognathic surgery such as changes to the chin ($T = 106.5$, $Z = 3.956$, $p<0.05$, $r = 0.633$) , nose ($T = 408.5$, $Z = 1.230$, $p>0.05$, $r = 0.183$), profile ($T = 109$, $Z = 4.814$, $p<0.05$, $r = 0.702$) and speech ($T = 200.5$, $Z = 3.578$, $p<0.05$, $r = 0.533$) with no negative impact on pre-operative levels of anxiety and depression as measured by the HADS with some significant improvement in mood ($T = 134$, $Z = 2.234$, $p<0.05$, $r = 0.401$)
Conclusion
Overall, the results indicate that orthognathic surgery improves the quality of life for these patients. Ensuring concerns are identified, psychological support is provided when required and inter-disciplinary liaison is part of the pathway are important facets of the care provided.

Orthognathic surgery, psychology , impact

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LIMA Protocol for Cleft Palate Repair in Cleft and Craniofacial Centre Cipto Mangunkusumo Hospital Indonesia: A Preliminary Study

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Virtual Posters

Introduction. The techniques of cleft palate repair has faced significant evolutions. More importantly, no surgical protocol has been significantly associated with lower incidence of post-operative complications such as fistula formation, velopharyngeal insufficiency, or speech hypernasality. As cleft width is a strong predictor of outcomes, The Lima Protocol was introduced to select suitable surgical technique based on the degree of severity measured by palatal index.

Aims. To evaluate the efficacy of the newly established Lima Protocol in lowering post-operative complications in primary cleft palate repair surgery in Cleft and Craniofacial Center, Cipto Mangunkusumo Hospital, Jakarta, Indonesia.

Case Presentation. This study is a case series featuring 6 patients with cleft palate treated with primary palatoplasty. Surgical techniques were selected based on the degree of severity measured by Palatal Index. The average age of performing primary palatoplasty was 14 months. 50% of the cases was classified as Veau 2 and the rest was Veau 3. Half of the patients fell into severe category based on Palatal Index and the other half was in moderate group. None of the patients developed fistula formation 3 months post-palatoplasty.

Results and Conclusion. We confirmed that the 1-flap technique provided adequate closure comparable with the 2-flap technique without risking mucoperiosteal flap necrosis and fistula formation. Using the strengths of different surgical techniques individualized for each case based on the palatal index and grade of severity is indisputably a practical strategy. Trials with longer follow-ups are required to widely implement The Lima Protocol.

Table 2. Characteristics of patients with cleft palate operated using the Lima Protocol

Patient	Age (mo)	Veau Classification	Cleft width (mm)	Right flap (mm)	Left Flap (mm)	Palatal Index	*Lima Classification*	Surgical Technique	Fistula*
1	13	Veau 3	9,0	12,0	10,0	**0,41**	Severe unilateral CP	Hybrid Palatoplasty**	(-)
2	16	Veau 2	10,0	12,0	12,5	**0,41**	Severe incomplete CP	Von Langenbeck Palatoplasty	(-)
3	24	Veau 3	10,0	14,0	13,0	**0,37**	Moderate unilateral CP	One Flap Palatoplasty	(-)
4	9	Veau 2	10,0	11,0	12,0	**0,43**	Severe incomplete CP	Von Langenbeck Palatoplasty	(-)
5	10	Veau 2	5,0	12,0	10,0	**0,23**	Moderate incomplete CP	Hybrid Palatoplasty***	(-)
6	12	Veau 3	8,0	13,0	11,0	**0,33**	Moderate unilateral CP	Hybrid Palatoplasty**	(-)

Legend: CP=Cleft Palate; mo= month; *= Fistula evaluated 3 weeks post-operation; **= 1-flap palatoplasty + lateral relaxing incision; ***= Furlow technique + lateral relaxing incision

LIMAprotocol, palatoplasty, fistula, Veau

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Surgical Results at The Royal Children's Hospital Cleft Centre: A Ten-Year Review

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Virtual Posters

Introduction
There is little international consensus on the surgical management of patients born with cleft lip and palate (CL&P) with controversies remaining as to the optimal timing, staging and surgical repair techniques.

Aims
The aims of this study were to audit the timing, staging and surgical repair approaches utilised at a single Cleft centre. Perioperative outcomes and rates of secondary Cleft surgery were also explored.

Methods
Retrospective data from 193 patients born with non-syndromic CL&P undergoing primary repair at a single Cleft centre over a ten-year period were analysed.

Results
33% (n = 64) of the cohort were born with bilateral CL&P, and 66% of the patients born with unilateral CL&P (n = 129) had a left sided cleft (n = 85). There were 2.5 times more males than females. 56% of patients underwent pre-surgical orthopaedic interventions. Four primary repair approaches were adopted by six surgeons during this audit. Timing of cleft lip closure (median 162-204 days old) and cleft palate closure (median 204-504 days old) varied between and within the four surgical approaches. Postoperative complications grade three and above on the Clavien Dindo classification scale were uncommon (n = 14). Rates of velopharyngeal insufficiency (VPI) surgery (8.7% at five years of age; 14.3% at eight years of age) and oronasal fistula (ONF) surgery (10.5% at five years of age; 14.3% at eight years of age) varied across repair approaches and were similar to those reported in other international Cleft centres.

Conclusions
Despite widespread variation with regards to the surgical care of patients born with CL&P, rates of postoperative complications and secondary Cleft surgery were uncommon in this ten-year audit. Inherent to Cleft care, determining the influence of different surgical protocols requires further research centred on robust long-term follow up and a multidisciplinary analysis of patient care and outcomes.
cleft surgery, postoperative outcomes

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The Impact of COVID-19 on the Delivery of Paediatric Maxillofacial Surgical Cleft Care; a Service Evaluation of Regional Cleft Care over a 3-year period, examining patient attendances and clinical follow ups.

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Virtual Posters

Introduction

COVID-19 has had a significant impact on healthcare services. Cleft patients are particularly vulnerable, for timely clinical assessment and surgical interventions.

Aims

The aim of this evaluation is to assess the impact of COVID-19 on the delivery of paediatric maxillofacial cleft care within a regional clinic.

Methodology

Retrospective study over a 3-year period (from 2019-2021 over a 6-month period between January and June). Inclusion of all paediatric patients seen by the maxillofacial team on cleft clinic.

Results

Between 2019-2020, there was nearly a 50% drop in total number of patients seen. The average age of patients has risen from 10.19 to 10.64. A larger proportion of males have been seen consecutively. There has been an increase in failure to attend rates from 9%, 13% and 20% between 2019, 2020 and 2021 respectively. Virtual appointments accounted for 4% of sessions in 2021.

Over 70% of patient attended with a unilateral cleft between 2019 and 2021. The percentage of pre alveolar bone graft assessment patients seen, increased in 2020 to 35%. The number of post-operative alveolar bone graft patients seen dropped to 13% in 2020. The number of 6-month alveolar bone graft patients peaked at 24% in 2019 and subsequently dropped to 11% and 12%.

Conclusion

The average age of patients has increased since COVID-19 and we must recognise this impact in terms of timing of surgical intervention and orthodontic provision. There has been a decrease in the number of patients seen and this has been compounded by higher failure to attend rates.

It is vital that cleft centres are aware of the impact of COVID-19 and the long-term implications for surgical and orthodontic outcomes. Cumulatively, this is likely to exacerbate current demands on cleft services, however innovative methods for delivering care have been utilised to good effect and present an exciting opportunity for service provision.

COVID-19, maxillofacial, cleft, telemedicine, service-evaluation

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The impact of race and ethnicity on preoperative risk and 30-day postoperative surgical outcomes in patients undergoing primary palatoplasty:
An analysis of the NSQIP Pediatric database

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Virtual Posters

Introduction: It has been established in the literature that racial and ethnic disparities can affect access to surgical care and lead to worsened postoperative outcomes.
Aims: We sought to determine how race and ethnicity affect palatoplasty 30-day outcomes in patients with cleft palate.
Methods: We used the 2012-2019 National Surgical Quality Improvement Program (NSQIP) Pediatric database to identify patients ≤2 years who underwent primary palatoplasty. We compared patient demographics, comorbidities, and 30-day outcomes following palatoplasty among different racial and ethnic groups. Logistic regression was used to determine independent risk factors, including race/ethnicity, for any complication, readmission, and prolonged length of stay (LOS).
Results: A total of 8,537 patients were identified in the NSQIP-Pediatric database. African American patients had a higher proportion of infants with a Body Mass Index <15% at the time of repair, the highest proportion of premature patients and patients with an American Society of Anesthesiologists class ≥3 compared to patients from other backgrounds. Asian patients underwent palatoplasty at a later age compared to other races/ethnicities (12.7 months vs 11.7-12.1 months). Postoperatively, the odds of a complication were significantly higher in Asian patients (aOR=1.73, 95% CI: 1.17-2.57) and Other/Unknown patients (aOR=1.40, 95% CI: 1.05-1.86) compared to Caucasian patients, but not significantly higher among African American (aOR=1.02, 95% CI: 0.70-1.47) or Hispanic (aOR=0.93, 95% CI: 0.69-1.26) patients. Other/Unknown patients were more likely to require any postoperative ventilation (aOR=2.34, 95% CI: 1.38-3.95) and the odds of readmission were highest in Asian and Other/Unknown patients. African American, Hispanic, and Other/Unknown patients were more likely than Caucasian patients to be hospitalized >2 days postoperatively.
Conclusion: Overall, this study highlights racial/ethnic differences that exist in both presentation and postoperative 30-day outcomes following palatoplasty. Further evaluation of racial/ethnic disparities in cleft care should be performed in order to provide solutions to improve healthcare access and surgical outcomes following palatoplasty.

Palatoplasty, racial disparity, healthcare access

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