

Managing Patients with Cleft Lip and Palate

Canadian Society for Disability and Oral Health

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Early Management in Patients with Cleft Lip and Palate (Pre-surgical Phase)

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INTRODUCTION

- Treatment for patients with cleft lip and palate starts in pre-term and continues through to adolescence and adulthood
- Many centres now have the technology to diagnose a patient with cleft in-utero. This is excellent for the patient's care, their parents, and the psychosocial support for the families
- Literature shows a decrease in parental anxiety when they have a pre-natal diagnosis and are connected to a cleft team early, especially when starting with pre-surgical care

THE CLEFT HOME

- Establishment of Dental Home can start earlier for a cleft child than a non-cleft child – often upon diagnosis in utero or at birth
- Many national guidelines are not in tune with the nuances of patients with cleft
- The Cleft Home is a combined medical and dental home that ensures care is provided in a coordinated, comprehensive and consistent manner and provides a home base to manage all appropriate referrals and follow up

- Establishing a Cleft Home elevates the sense of responsibility and commitment of the specialties involved
- The role of the pediatric dentist is one of anticipatory guidance and caries prevention

CLEFT LIP CLASSIFICATION

- Lip: Bilateral vs Unilateral/Complete vs Incomplete
- Nose: sill, ala, floor
- Alveolus: Complete vs Notch

PRE-SURGICAL OPTIONS

- NasoAlveolar Molding (NAM)
- Latham Appliance
- Taping alone
 - Lip Taping
 - Dynacleft/nasal elevator
- Two stage surgery
 - Lip Adhesion
- Pre-surgical approach is dependent on many factors:
 - Parents:
 - Can they attend multiple visits?
 - Is access to care an issue?
 - Are finances an issue?
 - How is the patient doing medically?
 - How are providers on the ground trained? What are their skillsets and resources to provide treatment?

LATHAM APPLIANCE

- Dental impression taken at 4 or more weeks
- Appliance inserted under GA no sooner than 5 weeks of age
- Appliance retained by 4 stainless steel pins – 18 mm in length
- Activating screw turned daily by parents
- Tension on elastomeric chain increased by 1-2 links at each follow up visit – 1 week, 3 week, 5 week

- After 5-6 weeks of activation, appliance is removed under GA along with lip adhesion +/- GPP or final lip repair procedures

TAPING ALONE

- Lip Taping – simple steristrip
- Dynacleft/nasal elevator – additional vectors of pressure and higher cost
- Can be managed by parents at home

TWO STAGE SURGERY

- Lip Adhesion
 - Turns a complete cleft lip into an incomplete cleft
 - ~ 2 weeks of age under GA
 - Final lip repair completed closer to 6 months of age

NASOALVEOLAR MOLDING (NAM)

- Objectives
 - To reduce the severity of cleft lip, nose and alveolus prior to surgery
 - Approximate lip segments
 - Decrease nasal base width
 - Achieve convexity of nasal cartilages
 - Elongate the columella
 - Approximate alveolar segments
- Removable appliance
- Secured to face with elastics and tapes
- Stays in 24hrs/day
- Baby sleeps and feeds with appliance
- Clean 1x day
- Change tapes 1 x day
- Weekly adjustments at clinic
- NAM Components
 - Nasal stent - to mold the nasal cartilages and elongate the columella
 - Button - for retention of appliance inside the mouth
 - Acrylic Plate – to mold the alveolar ridges and approximate them
- Impression taken at 2 weeks
- Insertion under 4 weeks of age while cartilage is flexible

- Stays in until surgery – 3-6 months

PSYCHOSOCIAL BENEFITS OF PRE-SURGICAL TREATMENT

- Opportunity to introduce parents to support organizations
 - Cleft team
 - Community
 - Facebook groups
 - National and international organizations
 - Other parents and support groups

Orthodontic Management of Alveolar Bone Grafting

DR. TIM FOLEY

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Active Dental Staff Member at Thames Valley Children's Centre

KEY FACTORS IN CLEFT CARE

- Teamwork
- Centralization
- Long term follow up
- Standardization

GOALS

- Speech
- Growth
- Appearance
- Hearing
- Breathing
- Mastication

ALVEOLAR BONE GRAFTING (ABG)

- An important type of reconstruction of the maxilla for patients with cleft lip and palate.
- Repair of the alveolar cleft defect occurs at dental ages 9-11, prior to the eruption of the maxillary permanent cuspid.

- The ABG procedure follows the lip surgery (3 months) and the cleft palate surgery (12 to 15 months).

TYPES OF ALVEOLAR BONE GRAFTING

- Primary bone grafting (at the time of lip repair at age 3 months) – GPP
- Early secondary bone grafting (between 2 and 5 years of age)
- **Secondary alveolar bone grafting (ABG)** for patients with orofacial clefts is usually carried out between dental ages of 9 and 11 years in Ontario

SECONDARY ALVEOLAR BONE GRAFTING

- Thames Valley Children's Centre discontinued the use of Gingivoperioplasty (GPP) in 2003. Published research of Powers and Matic showed that outcome measures were not satisfactory with GPP in the TVVC patient cohort studied.
- TVCC patients started to receive Oslo protocol for ABG management of maxillary alveolar defects in 2004.
- Orthodontic preparation for ABG at dental age of approximately 9-11 years, before the eruption of the maxillary canine (Bergland 1986). Ideally when the canine root is $\frac{1}{4}$ to $\frac{1}{2}$ formed.

Note: an exception to this is if the alveolar defect is mesial lateral incisor tooth present. In this case, earlier ABG may be considered.

- Successful outcome based on:
 - Experience
 - Standardization of procedure
 - Good oral hygiene – chlorhexidine used on site 1 week prior
 - Cancellous bone
- Schedule for ortho treatment:
 - Age 3-6 – annual monitoring of occlusal development
 - Age 5 – orthodontic records
 - Age 6-9 – orthodontic correction in prep for ABG:
 - Incisor irregularity
 - Incisor rotation
 - Segment repositioning Quad Helix for crossbite
- Optimal timing for ABG – dental age 9-11
 - Dental age is most pertinent in selecting timing for bone graft.
 - Important to look at dental age as opposed to chronological age.

Impact of Cleft Lip and Palate Treatment on Patient Behaviour and Oral Health

Where does the family practice team fit in?

DR. OLAF PLOTZKE

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President of Canadian Society for Disability and Oral Health

INTRODUCTION

- What are the aetiological factors of cleft lip and palate?
- What are the stresses on the family?
- What has the patient and their family been through?
- What impact has this experience had on both the patient and their family as it relates to being a patient in a family practice?
- What impact will it have on the role the dental team plays in the patient's ongoing care?

WHAT THE CLEFT PATIENT MAY HAVE GONE THROUGH BEFORE ARRIVING AT THE DENTAL OFFICE

- Multiple assessments from the time of birth (and likely even pre-natal).
- Feeding issues
- Pre-surgical orthopaedics and subsequent lip and/or palate surgery at a very early age
- ENT issues including multiple BMTs due to chronic ear infections
- Phase One orthodontics followed by secondary bone grafting
- Phase Two orthodontics followed by major restorative treatment
- Speech issues and therapy
- Further lip and nose surgeries
- Sociological and psychological impact on both patient and family (parents and siblings)
- Financial issues, costs, loss of income, travel and cost of getting to treatment providers
- Accessing and dealing with resource agencies and personnel
- Establishing priorities with respect to treatment and family dynamics
- If patient is an immigrant from a third world country – what if any treatment have they received before coming to Canada/North America?

CONSIDERATIONS FOR THE FAMILY PRACTICE TEAM WHEN TREATING PATIENTS WITH CLEFT

- What is the dental team's comfort zone?
- Can it offer a dental home?
- Can the team leader be the quarterback for the patient's immediate and long-term comprehensive care?
- Can the patient cope with the dental environment?
- Always remember that the oral health of the patient is paramount.

GATHERING DIAGNOSTIC INFORMATION

- Patients may be orally defensive or have current oral environments that do not make taking radiographs easy
- Be patient
- Be kind
- Be empathetic
- Consider panoramic film, 3D cone beam prn, or take photos

OBSERVATIONS TO EXPECT DURING FIRST EXAM

- Orally defensive behaviour
- Children with syndromes
- Challenging oral environments
- Pre-teens who do not have much concern for oral health
- Adults who have been through treatment have no interest in going any further

EXTRAORAL FINDINGS

Short Upper Lip

- Cleft lip surgery can cause scarring within an already short lip
- Relative shortening due to protruding premaxilla
- Dry gingiva can lead to gingivitis and compromise future surgical outcomes
- Exposed teeth are more susceptible to caries
- Impact of excessive mouth breathing and potential sequelae if nasal breathing is obstructed due to cleft issues

INTRAORAL FINDINGS

- Lips repaired but alveolae left open until time of secondary bone graft
- Ectopic tooth in cleft site may interfere with tongue movement
 - Removal considerations:
 - Location
 - Bone response
 - Local anesthesia considerations
 - Note - always consult with orthodontist before removal of ectopic teeth. Need to come out prior to secondary bone graft
- Palatal fistula – hard palate
 - Can affect air emission through nose creating hypernasality and transmission of fluids from mouth out the nose
 - Solution is Hawley with Adams clasps – prevents fluid, saliva and air escaping into the nasal cavity
- Other issues common in cleft patients:
 - Post-surgical redundant fleshy mucosa
 - Rotated teeth
 - Ectopic retained primary incisor
 - Inflamed gingival papillae
 - Maligned lower incisors
 - Upper permanent cuspid coming through secondary bone graft site
 - Intra-occluded primary upper first molar
 - Posterior open bite
 - Crowded third quadrant
 - Periodontal disease

CONCLUSIONS

- The family practice needs to take the lead in care of cleft patients.
- The oral health “big picture” needs to be addressed.
- It’s not always about checking what to repair, it’s about recognizing and preventing disease.
- Good oral health/hygiene is imperative for an appropriate treatment outcome, especially when it comes to significant treatment such as secondary bone graft.

RESOURCES

- Thames Valley Children's Centre - www.tvcc.on.ca
- American Cleft Palate Association – acpa-cpf.org
- Canadian Society for Disability and Oral Health – csdh.ca
- American Academy of Pediatric Dentistry – aapd.org
- National Institutes of Health – www.nih.gov
- PubMed – pubmed.ncbi.nlm.nih.gov
- Ontario Ministry of Health/Ministry of Long-Term Care – www.health.gov.on.ca/en/public/publications/child/cleft.aspx
- Comprehensive Cleft Care Family Edition: Losee, Kirschner, Smith, Lawrence, Straub – CRC Press, Taylor and Francis Group, 2015. ISBN – 13.978-1-4822-4368-0 (Paperback)

Cleft Lip and Palate Speech Dentistry

ANNE DWORSCHAK-STOKAN

Registered Speech Language Pathologist with the London Cleft Palate Team, VPI Clinic, and Pierre Robin Sequence Team

THE ROLE OF THE CLEFT LIP AND PALATE SPEECH PATHOLOGIST

- Pre-natal Counselling
- Feeding Assessment
- Education – university and community
- Research – cleft and VPI
- Speech assessment of all cleft and craniofacial patients:
 - Auditory – Perceptual evaluation
 - Velopharyngeal function assessment
 - Articulation screening
 - Oral-peripheral evaluation

SPEECH DEVELOPMENT NORMS

- Starts at 6-12 months
- By age 5, a stranger should be able to understand 90% of the child's speech

CLEFT SPEECH

- 20-50% of children with cleft lip or palate can have difficulties with speaking at some point in their care.
- Articulation Disorder – when a child has trouble making specific sounds. This requires an assessment and possible speech therapy
- Resonance Disorder – an unusual amount of nasal sound energy when the child is talking. Can result in:
 - Hypernasality – too much nasal sound energy
 - Hyponasality – too little nasal sound energy
 - Mixed resonance – a bit of both
- Velopharyngeal Dysfunction – inability of the palate to create a barrier between the nasopharynx and oropharynx during certain speech sounds and/or during eating/drinking.

FACTORS THAT CAN AFFECT ARTICULATION/RESONANCE BESIDES THE SOFT PALATE

- Lips and mouth
 - Short lip
- Nose and nasal cavity
 - stenotic nares
 - deviated septum
 - nasal congestion
 - midface retrusion
- Dentition and occlusion
- Hard palate
- Tongue
- Tonsils and adenoids
- Extractions or missing teeth do not usually affect speech
- Crossbites – anterior and lateral crossbites can cause crowding and interfere with tongue tip movement (interdental production of alveolar sounds) or tongue dorsum to palate contact if there is active compensation
- Class III Malocclusion – has most detrimental effect on speech because it can affect ALL anterior speech sounds.
- Dental appliances – can affect airflow and tongue placement but speech therapy is not recommended while dental appliances are in place

- Palatal Fistula – effect on speech and nasal regurgitation depends on location and size.
- Labio-alveolar fistula
 - no effect on speech or resonance
 - Some nasal regurgitation in toddler years
- Hypertrophic Tonsils
 - Can cause an anterior tongue placement resulting in fronting of sibilants and lingual alveolars
 - Can cause hyponasality or cul-de-sac resonance
- Hypertrophic Adenoids
 - Hyponasality if there is airway obstruction
 - Fronting of phonemes due to anterior tongue position to open airway

ASSESSING SPEECH IN THE DENTAL OFFICE – WHAT DO YOU SEE AND HEAR?

- Poor intelligibility of speech
- Not talking after age 2
- Nasal speech
- Cleft palate child who mumbles
- Palate or nasopalveolar fistula
- Large tonsils with muffled speech
- Bifid Uvula; Submucous cleft palate