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### ABSTRACT

The cleft lip and/or palate is one of the common birth defect. The cleft patient faces various problems ranging from socio-emotional to anatomic, esthetic to physiologic malfunctioning. The very first problem the neonatal cleft patient faces is the problem of feeding. As the cleft patient present a multiplicity of problem, the management of such problems requires multidisciplinary approach by team at various stages of his/her age, which include dental specialties (oral surgeon, pedodontist, prosthodontist, orthodontist), medical specialists (plastic surgery, psychiatry) and allied health faculties (speech therapy, nursing, audiology). The prosthodontist can do much for such patient to solve the feeding problem by preparing the feeding plate prosthesis. This article describe various problems of the cleft patient, role of the prosthodontist, preparation of feeding plate prosthesis and important facts to keep in mind while preparing the feeding plate prosthesis.

**Keywords:** cleft lip, cleft palate, feeding plate prosthesis

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### INTRODUCTION:

Cleft lip and/or palate is one of the common congenital defect. It is an abnormal separation of lip and/or palate region that happens because the tissue of the palate or lip does not form correctly in fetal development<sup>1</sup>. The incidence of cleft lip and palate is 1:800 live births so in India, out of 25 million live births, about 30000 children are born with cleft lip and/or palate per year. This article describes, the various problems of children with cleft lip and/or palate and role of the prosthodontist in early stages of life of the cleft patient. It also describe simple steps for preparing the feeding plate prosthesis and important facts to keep in mind while preparing the same.

#### **Etiology and classification of cleft lip and palate:**

Most common etiological factor is genetic<sup>1,2</sup>. Detrimental forces can interfere with cell formation, replication or migration and produce craniofacial malformation including cleft lip and palate<sup>1</sup>. Drugs and other environmental factors disturb metabolic rate and cellular activity and may alter normal development.

The type of the cleft can range from a simple incomplete cleft of soft palate, which is not clinically obvious and may be undiagnosed in the early days, to a bilateral complete cleft involving the soft and hard palate, the alveolus and lip. Some symbolic methods have been used, of which the striped Y of Kernahan is perhaps the most common example.

#### **Problems of cleft lip and palate patients:**

##### **a) Social and emotional problems:**

Parents are often very shocked when they know their child has a facial disfigurement. Our society reacts negatively to such disfigurement and many patients experience problems with teasing at school.

##### **b) Diet and nutritional problems:**

The most immediate problem caused by the cleft lip and/or palate is likely to be difficulty with feeding mainly because of the nasal regurgitation. The baby cannot suck during feeding, as he/she cannot able to create adequate negative intraoral pressure. The intraoral negative pressure, coupled with the rhythmic jaw and tongue movement is necessary to

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suck and to hold the nipple in place. In cleft patient, lip seal is very poor because of lack of stabilizing effect of lip on the nipple. Without the lip seal, the baby finds it harder to keep the nipple in correct position<sup>3</sup>. This is not just relevant to those babies with complete cleft, even those with smallest cleft can have severe difficulties with feeding<sup>4</sup>. Babies who find it difficult to feed may fail to gain weight and result in growth retardation<sup>4,5</sup>. Less body weight and retardation of growth is one of the major factor that prevent the surgical closure of cleft of such patient at appropriate age<sup>6,7</sup>.

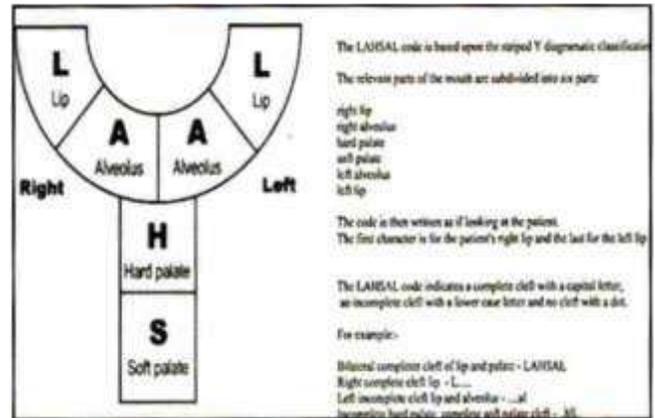
**c) Dental, ENT and Speech problems:**

- 1) There is high incidence of congenitally absent teeth, especially primary or permanent lateral incisors adjacent to alveolar cleft. There is also increased incidence of congenitally missing premolars.
- 2) There is significant increase in frequency of supernumerary teeth.
- 3) Enamel hypoplasia, microdontia, macrodontia, fused teeth are also common.
- 4) Patient with bilateral cleft lip and palate, the premaxilla is often protuberant and mobile. Malalignment of teeth is also very common<sup>8</sup>.
- 5) Hearing may be affected because the muscles of the palate affects ear, making the child more likely to develop glue ear.
- 6) Cleft palate can cause problems with speech. Most children go on to speak normally after the palate is repaired, although some may develop problems such as nasal speech.

**Prosthodontic care of neonatal cleft patient:**

The very first problem the cleft patient faces is the feeding problem. The prosthodontist can solve this

problem by preparing the feeding plate prosthesis<sup>9</sup>.



**Case report:**

A neonate patient of 10 days referred by pediatrician to the department of prosthetics, Ahmedabad dental college and hospital, Ahmedabad for preparation of feeding plate prosthesis, as she had a problem of nasal regurgitation while breast feeding.



On examination, she had a unilateral cleft lip and palate extending up to soft palate (fig-2). Her mother complaints for difficulty in feeding the child because of nasal regurgitation. She also complaints about breathing problem while feeding due to same. The patient also have low birth weight of about 2.25 kg.



After examination, it was decided to prepare the feeding plate prosthesis. The impression was taken in impression compound (fig-3). Before taking impression, deeper undercuts of cleft was blocked

with wet gauze piece tied in suture thread so as to prevent unnecessary flow of material into cleft. After taking impression, cast was prepared and unnecessary undercuts on the cast was blocked with stone plaster. Wax-up done and 21 gauge orthodontic wire loop extension was incorporated. Feeding plate prosthesis was prepared in heat cure acrylic resin (fig-4). A wire extension helps insertion and removal of prosthesis as well as it helps the mother to hold it in place while feeding. After insertion of prosthesis, the patient was able to take fluid very easily without any nasal regurgitation and breathing problems (fig-5).

### **Discussion:**

1. This prosthesis is a simple feeding plate, it is not a obturator so the prosthesis should not be extended deep into cleft area. Extension of prosthesis into cleft area will prevent easy placement and removal of prosthesis. Extension of prosthesis into cleft may prevents the growth of palatal bone at margins of cleft as child grows. Therefore it is important to block the cleft before taking the impression. Blocking the cleft area also helps for easy removal of impression. However, the impression must record margins of cleft, palatal halves and vestibular area.

2. Impression can be taken either with impression compound or with silicon putty material. It is very difficult to hold the impression in patient's mouth for more than one minute. The impression compound is very convenient in this respect, as it is thermoplastic material that can be removed from mouth with relatively short period of time as compare to silicon putty which requires 2.5 to 3 mins to set. The softened compound should not be too hot to prevent burning of oral mucosa. A small piece of green stick can be added to compound

while softening to increase the plasticity of material.

3. The prosthesis can be prepared either in cold cure or heat cure acrylic resin, but heat cure acrylic resin is the material of choice as it is more strong and it can be highly polished. The wire extension should be at corner of mouth.

4. Mother should be instructed properly as how to hold the prosthesis while feeding the child. As child grows the jaw bones also grows, so it requires to prepare another feeding plate after 5-6 months of age. Parents should be instructed that this is not a permanent treatment of the cleft patient, so surgical closure may require at appropriate age.

### **Conclusion:**

Cleft lip and/or palate is common congenital defect. The cleft patient faces multiple problems ranging from socio-emotional to anatomic, aesthetic to physiologic malfunction. The treatment of cleft patient requires multidisciplinary approach<sup>10</sup> like involvement of oral surgeon, pedodontist, prosthodontist, medical specialities (plastic surgery, psychiatrics) and allied health care (speech therapy, nursing, audiology). However, feeding problem in early stage of life is very important, and the prosthodontist can do much in this stage of life by preparing the feeding plate prosthesis. Solving the feeding problems will affect overall health of the cleft patient which ultimately affect the surgical intervention of cleft patient. This article describe easy steps for preparing the feeding plate prosthesis and also discuss some important facts to keep in mind while preparing the prosthesis.

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