

Management of clefts in infants – A simplified prosthetic approach

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Abstract

Weight is an important predetermining factor for surgical reconstruction of clefts in infants. These clefts causes' difficulties in swallowing of milk leading to inadequate nutrition resulting in gradual loss of weight gain making surgical corrections difficult. Fabrication of artificial feeding plate prosthesis is the best alternative suggested treatment of choice in such situations. This prosthesis helps in proper devouring of the milk there by regaining required weight for surgical management of clefts. This article describes the simplified prosthetic approach in constructing a properly functioning feeding prosthesis and to reduce the parents' anxiety originating from multiple dental visits.

Keywords: Feeding plate, Obturator, Cleft lip, Cleft palate.

Introduction

Oral reclamation and reformation of the clefts in infants depends on the austerity of the functional and anatomical alterations that causes improper closure of the nasopharynx. Depending on the type and extent of cleft, impairment of hearing, feeding, speech, craniofacial growth and development of occlusion can be clearly noticed in these infants. Due to this, gravity prevents the milk entering through the baby's nose causing difficulty in suckling and lack of suction. Based on the weight and other predisposing factors, surgical corrections of cleft was planned mainly to shift the protruding premaxilla to more distal position which helps in proper sucking. When surgical fitness is impaired or patient is not willing for surgery, non-surgical management of artificial feeding plate prosthesis may be the best alternate solution in providing adequate nutrition there by regaining the weight required.¹⁻⁴ During infancy period this device helps in restoring the gap between the oral and nasal cavities by temporary closure of the defect and makes the baby in proper feeding of the milk. It safeguards the tongue penetrating into the defect there by allowing impulsive growth of palatal shelves. It helps in the reduction of incidence of otitis media, pharyngeal infections, undesirable nasal air emission or compromised articulation.⁵

The following case report describes the simplified prosthetic approach in fabrication of feeding plate in infants with clefts.

Case Report

A mother of 15 days old male infant, with irrelevant medical & family history, reported to department of prosthodontics, Narayana Dental College & hospital, complaining about difficulty in feeding and swallowing the milk. Intraoral examination shows cleft at the junction of hard and soft palate involving the upper lip (Fig. 1). Infant was not able to suck the milk conventionally or with squeezable bottles with the use of clefts, hence there is noticeable gradual loss of weight day by day, there by postponing the surgical correction of the clefts. So in meanwhile to get adequate nutrition and to attain required weight for surgical approach,

a feeding plate was fabricated which provides the baby the required suction for swallowing. Complete procedure of fabricating the feeding plate was discussed with the parents and after taking their approval, prosthesis was decided on.

Procedure

1. Position of the baby is held upright to restrict drowning of impression material into the throat in order to avoid any breathing problems.
2. After proper observation of the cleft, it was filled with a piece of Vaseline gauze to prevent any unnecessary thermal injury. A low fusing green stick compound (DPI. PINNACLE IND) was heated, shaped under flame, softened in warm water, kneaded and with the help of middle finger primary impression of the defect was made.
3. Later the impression was cooled down and escape holes were created with the help of a heated probe.
4. At this stage, the green stick compound impression was used as a customized impression tray and a permanent alginate impression was made (Fig. 2). Beading & boxing of impression was done and a die stone master cast was poured (Fig. 3).
5. The cast reproduces the details of the defect and was analysed for the presence of undercuts (Fig. 3). In case of the presence of any undercuts, blocking out of the undercuts should be done (Fig. 4).
6. Modelling wax was adapted onto the cast in the defect region. Then heat cure clear acrylic prosthesis (DPI-Heat cure: Dental Products of India Ltd, Mumbai, India) was fabricated by conventional method of polymerization.
7. After curing has been completed, the prosthesis was removed from the flask, excess resin was carefully trimmed, finished and polished. (Fig. 5)
8. In the earlier stages, after insertion of the feeding plate, baby resists the plate but later on slowly gets accustomed to it. A silk thread was tied at one end of the prosthesis for easy handling and to prevent any unwanted movement of plate into soft palate. After

proper placement of the feeding plate into the defect, it is held by the guardian correctly in the defect with the help of the thread tied. Feeding is tried and after every feed, the baby's defect region was cleaned with a soft guaze or a cloth. Similarly the prosthesis also should be cleaned.(Fig. 6)

9. This feeding prosthesis allows the baby for proper swallowing of milk and weight of the baby has been gradually increased in the span of a few days.



Fig. 1: Defect of the baby



Fig. 2: Impression of the defect



Fig. 3: Master cast



Fig. 4: Blocking out of the undercuts



Fig. 5: Final prosthesis



Fig. 6: Insertion of feeding obturator

Discussion

The most common congenital birth defects seen in the infants were both cleft lip & cleft palate. These babies suffer with inadequate nutrition and as a result there will be always gradual loss of weight. Surgical approach of these clefts cannot be done until the baby requires adequate weight as per age. In such pathetic situation, one should look at the non surgical prosthetic approach of fabrication of an artificial feeding prosthesis. The main objective of all prosthodontic care is to construct a comfortable, functioning, cosmetically acceptable prosthesis that restores the impaired physiological activities.

Non surgical prosthetic care for clefts in infancy period includes either fabrication of feeding obturator, premaxilla positioning appliances, palatal lift prosthesis or speech aid prosthesis. Among these, feeding plate prosthesis is a prosthetic device which reconstructs the gap between the oral and nasal cavities. As a result, it helps in the elimination of hyper nasality, aids in speech therapy for correction of compromised articulations, reduces incidence of otitis media & other pharyngeal infections. This temporary closure of the cleft by feeding prosthesis makes the baby to swallow the milk aiding to acquire adequate nutrition and proper weight gain, thereby making surgically fit for the permanent closure of clefts.⁶⁻⁷

Prosthetic therapy in infants is always a challenging task as it requires management of many multifactorial situations such as reluctance of infant to the impression procedures, aspiration problems, swallowing of impression materials, selection of impression trays for too small sized oral cavities, locking of impression material in the undercuts of the defect etc.⁸⁻⁹ Therefore, it is important to take care of each and every step starting from the position of the baby during impression procedures till the insertion of feeding plate.

In this technique, during impression procedures, baby is kept in a prone position on mothers slap so that tongue will be at forward position thereby eliminating the posterior regurgitation of the impression material. The defect was recorded by green stick compound primarily and is used as a custom tray for making the alginate impression to avoid multiple impressions. Master cast was then poured with a die stone, undercuts were detected, blocking was done, modelling wax was adapted and finally processing of clear heat cure acrylic resin feeding plate prosthesis was completed. The finished prosthesis was placed in the baby's mouth, checked for proper seating of the feeding plate in the defect and then feeding was tried. During feeding in order to avoid unnecessary swallowing of the plate by the infant, a silk or an orthodontic wire was tied as a safety measure to the obturator extra orally and insisted the mother to hold it until feeding is completed. At the time of delivery of the feeding plate, post insertion instructions were given and the usage of the prosthesis was clearly explained to the mother. During the successive follow up of the baby, weight gain of the baby was checked indicating the proper function of the feeding plate. Feeding plate is a temporary treatment option until the baby attains the required weight for surgery. It should be re-fabricated according to the baby's skeletal changes as the age progresses.

Prevention

The incidence of cleft lip and cleft palate is the most common scenario seen in consensual marriages and in poor socio economic status group. Educating the people in avoiding these marriages is one way to prevent these occurrences of clefts.¹⁰⁻¹¹

Conclusion

Treatment of congenital defects of the mid facial region still remains a tricky task to accomplish but not impossible even though it requires the team work of a large number of specialists. Improper feeding results in loss of weight of infant gradually leading to delay in future surgical correction. Feeding prosthesis in such patients makes the infant proper swallowing of the milk and helps in not only reconstructing their physical appearance alone but giving him a new life totally.¹²⁻¹³ The Prosthodontist plays his role to restore function, esthetics, feeding & phonation and makes the infant surgically fit for future procedures in treating the clefts.

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