

Case Report

Feeding Plate: A Boon to Cleft Palate Patients: A Case Report

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Abstract: Cleft palate is most common congenital anomalies of craniofacial region. New born with cleft palate have a distorted maxillary arch at birth. Depending upon the type of cleft, infants suffer from a variety of problems, many of which are related to feeding difficulties. Feeding problems frequently associated with cleft palate neonates which make it difficult for the infant to maintain adequate nutrition. Many methods have been devised to overcome this problem, including the use of special bottles, nipples, and initial obturator therapy. This clinical report describes fabrication of feeding plate for neonate born with cleft lip and palate. Feeding plate is a prosthetic aid that is designed to seal the cleft and restore the separation between oral and nasal cavities.

Keywords: feeding plate, cleft lip and palate

INTRODUCTION

Cleft lip and palate is the most common of the craniofacial congenital anomalies that have an incidence of 0.28 to 3.74 per 1000 live birth globally [1]. Cleft lip and/or cleft palate are structural abnormalities that occur in the embryonal period of life between the 4th and 10th weeks [2]. Any interruption in this tightly controlled processing chain can result in a facial cleft, among which orofacial clefts and cleft lip and palate are most frequent. The lip and primary palate have distinct developmental origins from the secondary palate. Cleft lip defects are usually considered a single entity, and an accompanying cleft palate represents a more severe form. These clefts can range from a slight notch in the lip, to complete separation, and can involve the different regions of the orofacial complex, either independently or in combination [3].

The aetiology of cleft is still unknown, but both genetic and environmental factors may be responsible for many congenital malformations that can result from the developmental process failing to reach some developmental end point or threshold [4]. Cleft lip with cleft palate occurs twice as often as cleft lip alone. The cause of the familial aggregation of the disease may be genetic, environmental, or both. Poor nutrition, tobacco smoke, alcohol, viral infection, and medicinal drugs are among the most important aetiological factors and environmental risk factors are also to be equally

important. Interactions between maternal and foetal genes are significant in the aetiology of the disease.

Cleft palate also affects several systems and functions that include facial growth, dentition, speech, hearing and genetic aspects because of the complex mode of inheritance. Child born with cleft have many problems that need to be solved for successful rehabilitation by a multidisciplinary team approach [5]. Management of the patient with a cleft begins with immediate attention to the need of the newborn. Feeding problems are often associated with cleft anomalies, which make it difficult for the infant to maintain adequate nutrition. These problems include insufficient suction to pull milk from the nipple, excessive air intake during feeding, choking, nasal discharge, and excessive time required to take nourishment.

The feeding plate obturates the cleft and restores the separation between oral and nasal cavities. It creates a rigid platform towards which the baby can press the nipple and extract the milk [6]. According to GPT, feeding prosthesis is an ancillary prosthesis constructed for newborns with cleft palates to permit normal sucking and feeding [7]. It facilitates feeding, reduces nasal regurgitation, reduces the incidence of choking and shortens the length of time required for feeding. The obturator also prevents the tongue from entering the defect and interfering with the spontaneous growth

of palatal shelves towards the midline. It also helps to position the tongue in correct position to perform its functional role in the development of jaws, and contributes to speech development.

The obturator reduces the passage of food into the nasopharynx thus reducing the incidence of otitis media and nasopharyngeal infections [8]. Feeding plate restores the basic functions of mastication, deglutition and speech production until the cleft lip and/or palate can be surgically corrected. The procedure for fabrication of feeding obturator is described in this article.

CASE REPORT

An eleven day old female infant with her mother was reported to Department of Prosthodontics, Narayana Dental College, Nellore. Her mother complains of baby's inability in feeding milk and nasal discharge during feeding milk. The infant's medical history was taken from her parents, who reported no similar congenital or genetic anomaly in the family. On examination, it was found that child was born with unilateral cleft palate on left side [Fig-1].



Fig-1: Pre Operative View

After a detailed examination of the infant, fabrication of a feeding plate was decided on to reduce feeding problem. The parents approved this proposed treatment plan and informed consent was taken. Preliminary impression of the palate was made with a low fusing impression compound (green stick) [Fig-2].



Fig-2: Primary Impression

First the green stick was softened in warm water and kneaded. With a finger impression material carried into the baby's mouth and pressed the material against the hard palate and into the buccal and labial vestibules, while the baby was held in prone position in the mother's lap, in order to prevent aspiration in the event of vomiting and asphyxiation due to airway obstruction. The impression was inspected thoroughly. As the material hasn't covered the defect completely in the posterior region, the modelling wax was softened and adapted to the impression in that region and the material was molded in patient's mouth. A primary model was prepared by pouring the impression in dental stone [Fig-3].

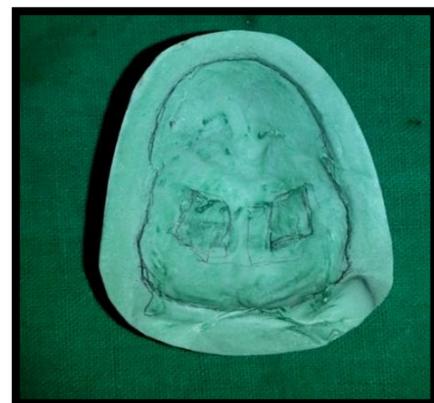


Fig-3: Preliminary Cast

The cleft defect in the primary model was blocked out by modeling wax and a special tray was fabricated using auto polymerizing acrylic resin. Special tray was evaluated intraorally and determined the easiest path of insertion; final impression was made with the special tray using irreversible hydrocolloid impression material [Fig-4]. A master cast was prepared using die stone [Fig-5].



Figure-4: Secondary Impression



Fig-7: Master Cast with Feeding Plate



Fig-5: Master Cast

Double thickness modelling wax was adapted to the master cast [Fig-6].



Fig-6: Wax Adaptation

Then, processing was done by following the protocol of compression moulding technique and conventional heat curing using clear acrylic resin material. After curing the feeding plate was retrieved from the flask and proper finishing & polishing was done [Fig-7].

Floss was attached to the feeding appliance to prevent swallowing and easy retrieval of appliance (Fig-8).



Fig-8: Feeding Plate with Floss

Finally, appliance was placed in child's oral cavity and child was fed (Fig-9).



Fig-9 Post Operative View

Instructions were given to the parents on how to insert, remove and clean the prosthesis. Parents were given instructions regarding how to use the obturator during feeding time, remove it after words, and thoroughly clean the baby's oral cavity and cleft with a soft cloth soaked in warm water. The patient was seen

after 24 hour later for adjustment, and then patient was followed up regularly after 3 month interval.

DISCUSSION

Comprehensive management of children born with cleft lip and palate is best accomplished by the multidisciplinary team approach. Dentist plays an important role in the team which is working closely with medical and allied health specialties. However, prompt intervention by fabrication of feeding plate can eliminate the immediate problems i.e. proper nourishment and prevention of infections for the already debilitated infant.

Feeding plate has become a boon for the infants with cleft lip and palate. This helps to create a rigid platform, towards which the child can press the nipple and feed, reduces nasal regurgitation, reduces the time required for feeding, helps position the tongue away from the cleft area in the correct position to allow spontaneous growth of palatal shelves towards each other, reduces parent's frustration as a result of feeding problems.

The impression procedure carried out here is easy to follow. Proper care should be taken by the operator during the impression procedures as there are chances for swallowing of the impression material. It was also ensured that the infant made sucking motions during impression-making as this helps ensure better moldability. The feeding plate should be thoroughly examined for the blebs or any rough surfaces to prevent discomfort to the baby.

The feeding plate fabricated has the advantages of being light weight, moldability, and good fit to palate and ridges and decreased possibility of soft tissue injury because of its soft texture.

CONCLUSION

This paper reports fabrication of feeding plate for the cleft palate patient. The feeding obturator can aid nursing, stimulate oral-facial development, helps develop the palatal shelves, prevent tongue distortion and nasal septum irritation, decrease the number of ear infections, expand the collapsed maxillary segment, constrict the expanded anterior part of the maxilla which aids the cleft palate team of health care practitioners and psychological help to the parents.. The problems experienced by cleft lip and palate patients were reduced if a team approach was adopted and specialists were careful to apply skill and experience at all stages and keep the patient under regular review.

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