

Prosthetic Management of an Infant with Partial Palatal Cleft: A Case Report

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ABSTRACT

Background: One of the most common congenital anomalies that effect new born are the clefts which may involve lip and palate or both, but prevention of this malformation is unlikely at this time. The severity of the malformation dictates the treatment which is unique in that it begins at birth and is usually not completed by the end of patient's second decade. Multidisciplinary management, with interaction among the various specialists of cleft palate team, is essential to achieving optimum results.

Keywords: Obturator, cleft palate, oro-nasal communication.

INTRODUCTION

Every about 1 in 2500 births are effected by cleft palate with or without cleft lip. Isolated cleft palate is more common in females than in males as the palatine processes fuse about 1 week later in females than in males¹. The communication between the oral and nasal cavity that is formed due to cleft doesnot allow the negative pressure to form, which is necessary for suckling. This impairs the patient's ability to suck milk thus making it difficult to thrive. To compensate, the nipple is pressed between the tongue and hard palate to squeeze the milk, but this mechanism is insufficient if cleft is wide and the nipple gets trapped inside the defect². Due to oro-nasal communication nasal regurgitation of food further complicates the feeding process for baby as well as mother. Various factors are responsible for clefts that effect the mother early in first trimester. These include infections, toxicity, poor diet, hormonal imbalances and genetic factors. Early treatment of cleft is mandatory for the proper growth and development of child. Clefts are usually associated with cluster of problems which may

include deficient facial growth, dental problems, velo-pharyngeal incompetence and articulation defects³.

Early prosthodontic management may include the fabrication of a feeding plate to obturate the defect, thus closing the oro-nasal communication. This forms a rigid platform which subsequently helps the child to press nipple and squeeze out the milk. Moreover it doesn't allow the tongue to enter the defects thus allowing the palatine shelves to grow towards midline. Feeding plate obturator helps in proper positioning of tongue, thus helps in speech development. Such prosthesis help in maintaining the basic functions, the time till surgical correction can be made². This case report presents the fabrication of the palatal plate prosthesis obturating the palatal cleft of a 2 month old baby.

CASE REPORT

A two month old female infant reported to the department of prosthodontics, sudha rustagi

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Fig 1: Pre-operative photograph of the patient.



Fig 4: Primary impression



Fig 2: Showing the intraoral defect of the patient



Fig 5: Special tray over primary cast



Fig 3: Procedure for making primary impression



Fig 6: Final impression of palate with defect



Fig 7: Marking the borders of final impression.

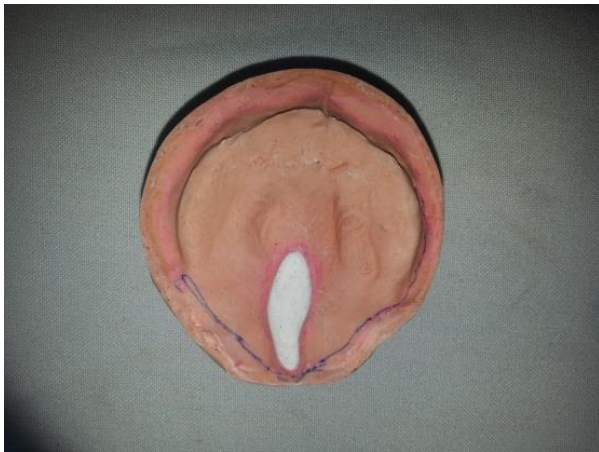


Fig 8: Master cast.



Fig 9: Final prosthesis with dental floss.



Fig 10: Final prosthesis obturating the defect.

college of dental sciences and research, Faridabad, Haryana(fig.1). The parents of the baby presented with a chief complaint of baby's difficulty in sucking milk and nasal regurgitation of milk and frequent drop in weight due to inadequate nutrition. On intraoral examination it was found that the infant was having cleft in palate involving soft palate and some part of hard palate in midline posterior to incisive foramen which falls under group 2 of classification as given by kernahan and stark(1953)(fig.2). There was no history of craniofacial clefts in maternal or the paternal family of the child. There was no history of previous treatment or surgery for the defect. So a palatal plate obturator was planned for the patient.

Fabrication of palatal plate obturator

A stock tray of smallest size was selected and borders were trimmed according to the patient for recording the primary impression(fig.3). Primary impression was made with help of silicone putty impression material (Aquasil,Dentsply). For the impression, the infant was positioned with face downward and head was supported by hands of the mother to forestall airway obstruction and aspiration of the impression material. During the process of impression making the infant is allowed to cry to prevent any choking of impression material by the infant(fig.4).

The impression was beaded and boxed and poured with dental stone (kalstone type III, kalabhai) to obtain primary cast. A special tray with spcer was fabricated over the primary cast using auto polymerising resin(DPI, India)(fig.5). The

special tray was trimmed and adjusted according to the patient and final impression was made using silicone putty impression material (Aquasil, Dentsply) and was refined (fig.6). The border outline of the impression and the defect was marked and impression was poured with dental stone (kalstone type III, kalabhai) to obtain master cast (fig.7 & fig.8)). The wax pattern was adapted on to the defect on master cast for the prosthesis. The wax pattern was flaked, dewaxed and the prosthesis was fabricated using clear heat cure acrylic (DPI, India) for obturating the defect.

The prosthesis was trimmed and polished. Two holes were created in the anterior part of the prosthesis and a 10 inch dental floss was taken and passed through these holes so as to facilitate easy insertion and removal of prosthesis and to act as safety measure to prevent the accidental aspiration of the prosthesis by the infant (fig.9). The trimmed and polished final prosthesis was tried in the infant's mouth and was observed for proper border extensions and obturation of the defect (fig.10). The infant's mother was asked to feed the baby so as to check for any nasal regurgitation of milk and if the infant was able to take the feed properly. Patient was recalled for the follow-up appointments first after 24 hours and weekly. The parents of the patient were happy as the infant was able to take the feed properly and they registered an improvement in overall health and gain in weight of the baby.

DISCUSSION

One of the most common orofacial congenital abnormality effecting the new born are cleft lip and palate. The overall physical and mental growth of the neonate is hampered due to inability to suck milk and inadequate nutrition. Such defects need to be rehabilitated as primary concern for proper growth and development of the neonate. Surgical closure of the defect may resolve the problem but the time of the surgery differs as it may range from as early as 10 to 12 weeks or it may go past 12 months.

The plastic surgeon and prosthodontists have a general opinion that pre-surgical management of the defect should be undertaken as soon as possible after birth⁴. Many authors have suggested various active and passive appliances for

treatment of the defects, but an intraoral palatal plate obturator, has proved beneficial by providing the feeding plate.

Recording the impression is a very challenging task as it poses various problems varying from the size constraints of the oral cavity, anatomical variations and severity of the defect to the highly uncooperative behaviour due to inability of the infant to respond to the commands of the operator³. The material to be used for the impression procedures should exhibit ideal properties. The putty impression material used for making primary and secondary impressions in this case proved to be a good material for the purpose. Due to its high tear resistance it was able to remove the impression without any distortion. It has an added advantage over the impression compound that, silicone impression material is not thermally controlled so no risk of burning the soft and delicate oral tissues of the infant and can be easily removed from the undercut areas. It has another advantage of possibility of making multiple casts from the same impression².

The palatal plate obturator prosthesis has many advantages as it helps in proper positioning of tongue and development of speech, prevents nasal regurgitation of food and helps in proper feeding by the infant which improves the overall nutrition and health of the infant, it conjointly prevents the passage of food in the body cavity thus reducing the risk of any associated infections².

It is important that a regular follow up of the patient is done to check for any damage of the delicate oral mucosa of the infant by the obturator. It is generally advised to change the obturator every 3 months to accommodate the growth of large craniofacial sutures. Also a check-up should be done at every 3-4 weeks to check for the borders of the prosthesis to accommodate growing arches⁶.

CONCLUSION

Congenital defects such as clefts involving lip and palate or both hamper the physical and mental growth of the new born. They pose a lot of problems for the infant as well as parents. Early rehabilitation of the defects becomes inevitable

unless the defects can be surgically closed. Palatal obturator is one such prosthesis which act as a temporary roof for the palate thus obturating the defect and help in nursing and development of the infant both physically and mentally.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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