CASE REPORT

Prosthodontic Management of a 10-day-old Neonate with Cleft Palate Using a Feeding Appliance: A Case Report

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ABSTRACT

Cleft lip and palate have a complex mode of inheritance and affects several systems and their functions such as facial growth, eruption of teeth, feeding of the newborn, speech, and hearing. It can be associated with many syndromes. Fabrication of a feeding appliance helps with the proper nourishment which has a positive impact on the growth and development of the infant. Clinician should have proper knowledge and understanding of the dental materials and specific impression techniques used in the fabrication of feeding plate.

Keywords: Cleft palate, Feeding plate, Neonate.

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INTRODUCTION

Cleft lip and palate are one of the most common congenital deformities of orofacial region and it is associated with high rate of morbidity. Both environmental and genetic factors are responsible for orofacial clefts and it occurs in 1 in 700 live births.¹ Environmental factors such as viral infections, vitamin and mineral deficiencies, radiation exposure, and excessive use of drugs like insulin, certain antibiotics, and steroids particularly affects in the first trimester. Genetically these defects are sex-linked recessive affecting the males.²

It has debilitating effect on feeding, dentition, mastication, facial growth, deglutition, esthetics, breathing, and speech.² Management of cleft palate is a team approach including a number of healthcare personnel involvement like pediatrician, otolaryngologist, orthodontist, prosthodontist, speech therapist, and many others.³ Treatment aims to help patient lead a normal and competent life and it is greatly regulated by the age of the patient. Feeding an infant with cleft lip and palate particularly becomes difficult for the parents. In that case, a feeding appliance obturates the cleft and helps in formation of positive seal which helps in feeding. With the advancing age, treatment is generally a supportive one.

The present case report elaborates the prosthodontic management of cleft palate in 10-day-old healthy neonate with a feeding appliance.

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CASE DESCRIPTION

A healthy 10-day-old male neonate reported to the Department of Prosthodontics with the parents complaining of regurgitation of fluids through nose (Fig. 1A). Mother was unable to bottle- and breastfeed the neonate. On examination, neonate was found

Figs 1A and B: (A) Ex view; (B) Intraoral view showing cleft palate

Figs 2A and B: (A) Index finger coated with putty; (B) Putty impression with safety gauge

Figs 3A to C: (A) Special tray; (B) Impression compound final impression; (C) Working cast

Fig. 4: Feeding plate

to have Veau's 4⁴ isolated cleft palate and nasogastric tube was placed in the left nostril (Fig. 1B). After consulting the parents, it was decided to fabricate a feeding appliance for the patient.

One of the parents was seated in dental chair holding the neonate in his lap facing the head in the forward direction. The elastomeric impression was made using the operator's index finger

as oral cavity was too small for any type of impression trays (Fig. 2A). The patient was made to suckle on the elastomeric material coated finger to record the soft palate defect appropriately (Fig. 2B).

The impression was poured and a special tray was fabricated to make the final impression (Fig. 3A). Special tray was checked in patient's mouth and adjusted accordingly. Final impression was made by manipulating impression compound by making the patient to do the suckling movements to record the edentulous ridges and the palatal defect (Fig. 3B). Final impression was poured after doing appropriate beading and boxing (Fig. 3C). The cast was retrieved and unfavorable undercuts were blocked.

Feeding appliance was fabricated using self-cure acrylic resin and 22 gauge wires were placed to support the appliance extraoral (Fig. 4). Appliance was checked in the neonate's mouth regarding coverage of the defect as well as the extension of the borders. The mother was explained about the method of insertion and feeding technique to be used with the feeding appliance (Fig. 5).

After the delivery of the appliance, mother was successfully able to feed the infant. Postinsertion instructions were given regarding the cleaning and maintenance of the appliance. Mother was advised to hold the patient in upright or semi upright position while feeding. The feeding plate insertion was done on the same appointment. Regular follow-up is required after the appliance insertion as the oral mucosa is very delicate and prone to injuries.

Figs 5A and B: (A) Feeding plate intraoral view; (B) Feeding plate extraoral view

DISCUSSION

The treatment for cleft palate varies according to the presentation and extent of the defect and the age of the patient. The primary objective of treatment of an infant suffering from cleft palate is proper feeding so that it does not hamper proper growth of the child. A feeding appliance is very important for the adequate nourishment of the growing neonate.⁵

Treating a newborn poses many challenges to a clinician. The first and foremost difficulty is recording the defect properly. The oral cavity of a neonate is too small for use of any commercially available trays to make an impression.⁶ Also, there is always a risk of swallowing and aspiration of impression material. Care should be taken while choosing the impression material for its setting time, consistency, and flow rate. Patient's head position is another important factor to be considered while making an impression to maintain the airway patency.⁶

Relieving the unfavorable undercuts of the defect and oral cavity minimizes the impression tear and helps in its easy retrievability. Neonate crying is satisfactory for ensuring airway patency and reduces the risk of impression material aspiration.⁷ Heavy putty-type elastomeric impression material was used to make impression in the current case because of its high viscosity and ability to record the proper details.⁸

The feeding plate was made with self-cure acrylic resin so that the appliance can be delivered on the same day of the appointment. It helps with the feeding of the neonate and reduced the mother's anxiety.^{9,10}

CONCLUSION

Sufficient knowledge of different cleft and growth patterns is important to choose an impression technique and fabrication of appliance. Feeding appliance should be fabricated as soon as possible after birth for the better feeding of the newborn.

It promotes the health of the patient as well as has a positive psychological influence on the parents. Feeding appliance should be changed every 2–3 months to match the growing maxilla, palatine shelves, and soft tissue.

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