

PREVENTION OF NASAL REGURGITATION WITH OBTURATOR IN A NEONATE WITH CLEFT LIP AND PALATE: A CASE REPORT

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Abstract

Food issues, nasal regurgitation, dysfunction of eustachian tube, infections of middle ear, loss of hearing, disorders of speech, orthodontic and other dental conditions are linked to the cleft palate. Obturator is a prosthetic aid that helps provide proper nutrition to feed such infants. It is intended to secure the gap and re-establish the separation of oral and nasal cavity. This article provides a case study on the bilateral cleft lip and palate of a twenty-two-day-old neonate. The obturator was fabricated using acrylic resin for feeding the baby. This feeding prosthesis also obturated the cleft in the palate maintaining the space between the cavities of oral and nasal, which prevented the nasal regurgitation.

Keywords: Cleft lip and palate, feeding appliance, feeding difficulties

INTRODUCTION

The most common congenital defect involving the orofacial region is cleft lip and palate (CLP). The incidence of CLP varies from 0.28–0.374 per thousand live births.¹ Cleft palate defect is defined as “a gap within the roof of the mouth caused by failure of the palatal shelves to come back absolutely along from either facet of the mouth and fuse throughout the primary months of development as an embryo”.²

Neonates with a cleft palate face difficulties in feeding, which may contribute to problem in their survival. The oro-nasal contact fails to form negative suckling pressure.³ The baby depresses the nipple between the tongue and the hard palate to accommodate the pressure which forces the liquids and milk out, but if the cleft is large and the nipple is stuck within the defect, this mechanism is insufficient.⁴ Nasal regurgitation of food and excessive absorption of air leads to constant burping and coughing during the feeding process.³

The management of CLP involves a number of specialists in a team to work. The pediatric dental consultant does the counseling of the mother and provide information to maintain adequate nutrition for the infant. The management of cleft lip and/or palate is required at early stage. The obturator is given as early as possible to the new born. It covers the gap in relation to the cavities of oral and nasal and thus helping the infant in feeding and preventing the nasal regurgitation. A case study of a twenty-two-days-old

neonate having cleft of lip and palate bilaterally facing feeding problems and nasal regurgitation is discussed in this paper. The feeding plate was made that also obturated the cleft in the palate to restore the distinction between the oral and nasal cavities to avoid nasal regurgitation.

CASE REPORT

A 22-days-old male neonate visited to the Department of Pedodontics and Preventive dentistry, TMDCRC, Moradabad, with a chief complaint of difficulty in feeding and nasal regurgitation of fluids since birth. The patient was having difficulty in feeding and nasal regurgitation of milk since birth for which he had Ryle's tube by the pediatrician, who also evaluated cleft in the palate and lip and referred the patient in our hospital for the feeding plate. The mother's pregnancy was normal, and this baby was her first issue. Nothing relevant found in the medical history.

Intraoral examination showed a cleft in the hard and soft palate bilaterally. Cleft was found on both sides of the premaxilla through the alveolus, parting the alveolus free as shown in Fig 1.

According to Veau classification of Palatal cleft the diagnosis was made as Class IV. Now the fabrication of obturator was initiated.

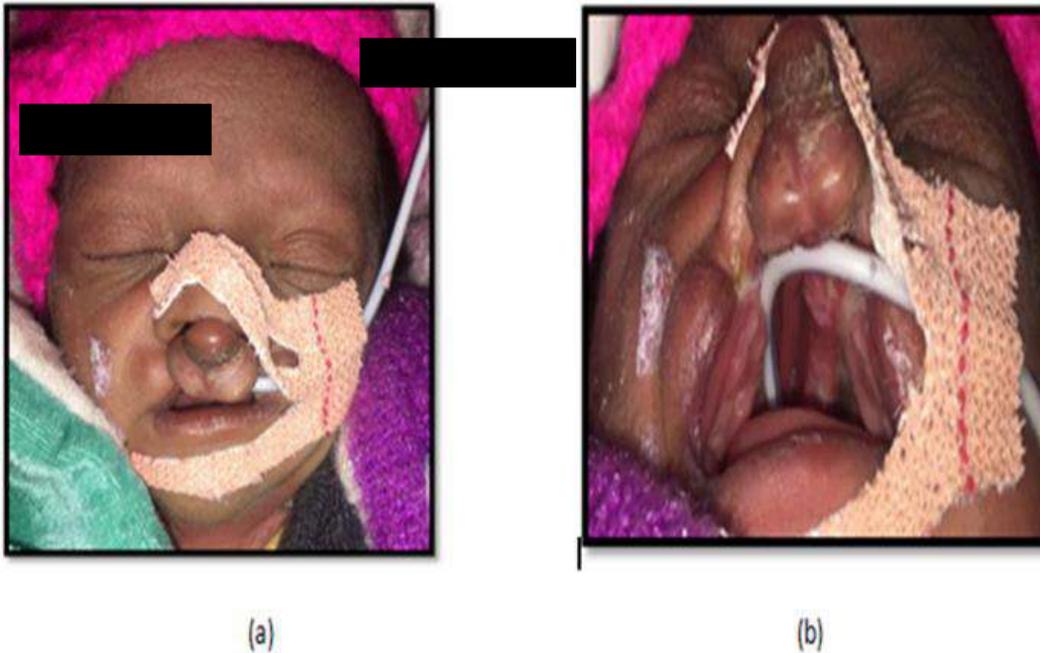


Figure 1: Preoperative (a) extraoral
(b) Intraoral photograph

Procedure for fabrication of obturator:

Primary impression was made using modelling wax by molding with hand and it was adapted to the palate of the patient. Then the cast was poured with dental stone (type III gypsum). After that special tray was made with autopolymerizing acrylic resin. Secondary impression was then obtained with putty impression material. It was taken care for prevention of aspiration of any excess material. Master cast was poured and block out of excessive undercut was done with modeling wax as shown in fig 2. The obturator was then made using a sprinkle-on technique with cold-cure acrylic. Two eyelets were made using bur to tie dental floss on both sides of the obturator to allow

proper wearing of the prosthesis, and it also allowed safety to avoid swallowing of appliance.

After appropriate cutting, finishing and polishing, the obturator was examined in the oral cavity of the patient, and slight changes were made and the obturator was finally polished. Then it was stabilized by extraoral taping using micropore tape as shown in figure 3. Instructions were given regarding the use and storage of appliance. In the clinics, the appliance was tried in the patients' mouth and the mother of the patient was asked to feed the baby and no nasal regurgitation of milk was noticed. The mother of the infant was told about the method of usage, function, cleaning and maintenance of feeding plate. After 24 hours, follow up of the patient was done and further follow ups were scheduled for new appliance fabrication every 15 days to accommodate normal growth of maxilla.

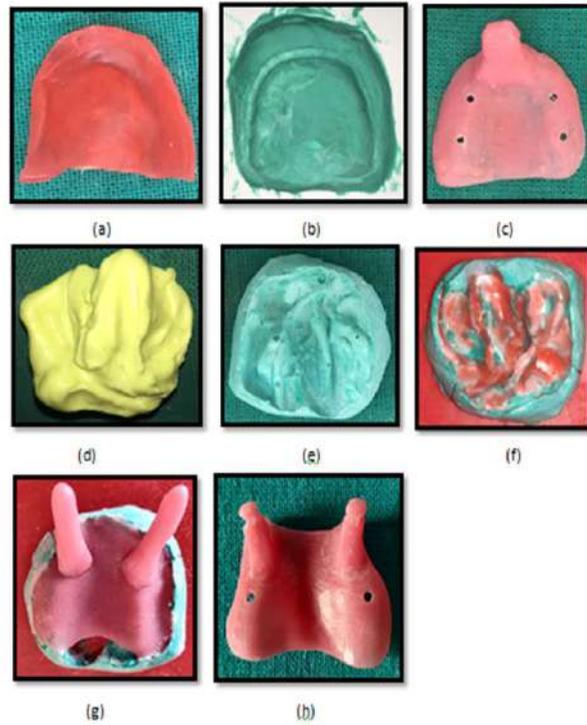


Figure 2: a) Primary impression b) Primary Cast c) Special tray with perforation d) Secondary impression e) Secondary cast f) Blockedout undercuts g) Obturator (h) Obturator after finishing and polishing.



Figure3: Insertion and stabilization of Obturator

DISCUSSION

Multidisciplinarians such as dental specialties (orthodontics, oral surgery, pediatric dentistry, and prosthodontics), medical specialties (genetics, otolaryngology, pediatrics, plastic surgery, from birth throughout puberty, are required for the management of patients with cleft lip and cleft palate. Pediatric dental professionals are responsible for the presurgical and postsurgical treatment phases of maxillary orthopedics. For the proper alignment of the gap, both active and passive appliances are used.

In a survey Young et al. found that 95% of parents had feeding difficulty with cleft lip and palate infant deemed "critical."⁵ Pandya and Boorman and Wilcox et al. showed in their studies the association of feeding difficulties in infants with cleft palate with failure to thrive and death in developing countries.^{6,7} Failure to general a negative intraoral pressure and form a lip seal around the nipple due to the oronasal communication and lip defect results in unsuccessful breastfeeding in infants with cleft lip and palate leading to nasal regurgitation.

McNeil first gave the idea of early management of cleft palate patients by presurgical oral prosthesis.⁸ Mellor & Volp made a valuable contribution to the cleft palate prosthesis technique for babies.⁹ Different approaches have been used earlier to resolve the feeding difficulties in cleft lip and palate infants that include, feeding tubes (orogastric and nasogastric), specially designed feeding equipments (compressible bottles and nipples), and the feeding appliance/palatal obturator.

Feeding appliance serves all the purposes. It is a passive prosthesis system designed to give the cleft alveolus and hard palate a natural contour. Fabrication of this appliance in a newborn has challenges like constraints of size of the oral cavity, variation in size, location, and severity of the cleft, infant's inability to cooperate and follow commands. Selection of accurate impression tray size and the position to be adopted for impression making also is a critical step. A number of positions have been adopted to prevent the accidental aspiration of the impression material including prone, face down, upright, and even upside down.

Jones et al. compared the feeding difficulties before and after the use of obturator in cleft lip and palate infants.¹⁰ Decreased choking, nasal discharge, and bottle feed length and improved parental confidence were recorded after 8 months of wearing the obturator. Goldberg et al. illustrated increase in weight with the

use of the feeding obturator with the baby having cleft of the hard and soft palate.¹¹

CONCLUSION

The feeding obturator is useful in regular growth of maxilla and it must be inserted at earliest. It helps in nursing, prevents nasal regurgitation, stimulates oral and facial growth, helps to improve the palatal shelves, prevents tongue distortion and irritation of the nasal septum, reduces ear infections, expands the collapsed maxillary section, constricts the enlarged anterior part of the maxilla, which helps health care practitioners' cleft palate team and psychological assistance to parents. A pediatric dentist is extremely important in such cases. They play a dual role in enhancing both the personal effect and the surgical result.

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