



Case Report

A feeding appliance for a newborn with Veau Type III cleft lip and palate: A case report

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ABSTRACT

Congenital cleft lip and palate is the most commonly found craniofacial defect. The most common problem in an infant with cleft lip and palate is the difficulty in feeding due to communication between oral and nasal cavity. Difficulty in feeding leads to inadequate nutrition and affects the health of the infant. Feeding problems should be assessed and intervened as early as possible, as they are important aspect of the multidisciplinary team approach in the management of cleft lip and palate. Feeding obturator restores this gap and assists in feeding as well as helps in reduction of airway problems, regurgitations, and frequent infections. This clinical report describes a technique of fabrication of a feeding appliance in a 4 hours old neonate with veau type III cleft lip and palate.

Keywords: Cleft lip; cleft palate; obturator; feeding appliance; feeding obturator; Veau Type III cleft lip and palate

1 INTRODUCTION

Cleft lip and palate is one of the most common craniofacial anomalies in humans, with an incidence of 0.28-3.74 per 1,000 live births.^(1,2) When a child is born with a cleft, maintenance of adequate nutrition, which is necessary for growth, development, and the infant's preparation for surgery, is a priority.⁽³⁾ Cleft lip and palate may be syndromic or nonsyndromic in origin. Syndromic type is associated with other craniofacial malformations like Down's syndrome, Treacher Collins syndrome, Pierre Robin syndrome and Waardenburg's syndrome. Isolated or nonsyndromic type cleft is multifactorial and heterogeneous in origin, and its origin is attributed to the genetic or environmental factors.⁽⁴⁾

Feeding in an infant with cleft lip and palate infant is a major challenge due to an abnormal oronasal communication in these patients. These infants have difficulty in making a seal around the nipple of the mother or the bottle. In addition, these infants have an excessive air intake, nasal regurgitation, and choking.⁽⁵⁻⁷⁾ Although the definitive treatment for these problems is the surgical correction of the defect but the timing of appropriate surgery

is 12-18 months. Till that time, a feeding obturator is indicated to maintain the oral function of the infant.⁽⁸⁻¹¹⁾

A feeding appliance is a favorable option in such cases as it obturates the cleft area and creates a stable platform toward which the baby can press the nipple and extract milk.⁽¹²⁾

In the present case report, a feeding obturator was given to a newborn male with cleft lip and palate.

Case Report

A four hour old neonate was referred from the Department of Pediatrics, Srinivas Hospital, Demotand, Hazaribag to the Department of Pediatric and Preventive Dentistry, Hazaribag with a chief complaint of mother for not able to feed the child due to a hole in the mouth. Medical history of the child and parents was non-contributory. Pregnancy and delivery were uneventful with no relevant maternal history.

On examination child was found to be moderately built with birth weight of 2.8 kg having unilateral cleft lip and palate on left side (Veau's Type III) with no other facial malformations (Figure 1).



Fig. 1: Unilateral cleft lip and palate



Fig. 2: Custom made tray

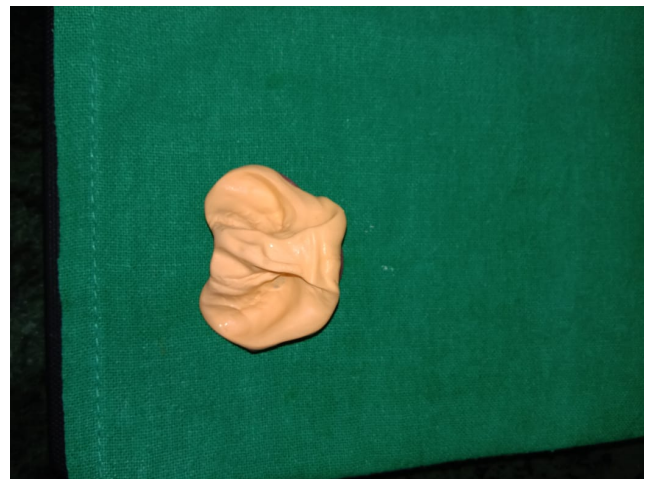


Fig. 3: Addition silicone impression

As immediate concern at that time was feeding and nutrition of the infant, decision to fabricate a feeding appliance was made. Parents were explained about the procedure and written signed informed consent was taken from them.

Customized perforated acrylic tray of adequate size that covers the entire palate along with the cleft was fabricated (Figure 2). Impression was made using additional Polyvinyl Siloxane putty material (President putty super soft, Coltene whaledent, Switzerland) (Figure 3). Child was held in prone position to prevent aspiration of the impression material. A finger motion was used to clear the unset material posterior to the tray. The child kept crying during impression making procedure. This ensured patient airway continuously throughout the procedure.

The impression was poured with a Type III dental stone (BN stone, West Bengal, India). The cast was inspected for any significant undercut in the cleft area, which, if present were blocked with wax (Figure 4). Feeding appliance was made using self cure acrylic resin. The appliance was trimmed, borders were rounded and polished. An 18 inch floss was then attached to the feeding appliance/obturator to provide a safety mechanism in case of gagging or accidental swallowing (Figure 5). The appliance was positioned in child's mouth and fit of the appliance was checked (Figure 6).



Fig. 4: Cast with blocked undercuts

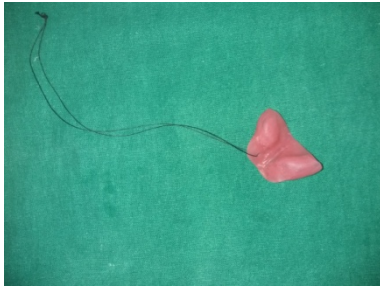


Fig. 5: Feeding appliance /Obturator



Fig. 6: Obturator in place

Suckling response was observed by placing a finger in the child's mouth. The child was able to suck and create a negative pressure on to the fingers. Thereafter child was fed warm water with spoon. It was seen that the mother was able to feed the child with feeding obturator appliance. Thereafter, mother was asked to breast feed the child. The child was able to breastfeed comfortably with the appliance in place. Parents were instructed about the placement, removal and cleaning of the appliance. The appliance was advised to be used only during feeding and should be kept in the water when not in use. The infant was kept on regular

follow up to access the success of feeding appliance.

2 DISCUSSION

Cleft lip and palate is one of the most common congenital anomalies. Treatment of this deformity presents a serious problem for health delivery systems all over the world. Suckling efficiency is one of the most common difficulties related to feeding in children with cleft lip and palate.⁽¹³⁾ Cleft lip is an opening in the upper lip between the mouth and nose. It can be partial (ranging from slight notch in the lip), or complete (extending up to the nose). Cleft palate is characterized by the presence of abnormal oronasal communication. It can range from just an opening at the back of the soft palate to nearly complete separation of the hard and the soft palate. Cleft can be unilateral or bilateral, can occur in isolation or in combination, and can also involve other regions of orofacial complex. Among all the cleft patients, combined cleft lip and palate are the most common presentations (50%), followed by isolated cleft palate (30%), and then the isolated cleft lip (20%). Among unilateral clefts, clefts of left side are more common (70% of cases).

Cleft lip and combined cleft lip and palate are twice as common in males, whereas isolated cleft palate is twice more common in females.⁽²⁾ In the present case report, a male baby presented with unilateral left sided cleft lip and palate.

Cleft lip and palate is not merely a surgical problem. Its management involves multidisciplinary approach starting from obturator placement, surgical repair of the defect, orthodontic treatment to speech therapy. Surgical repair of the cleft lip and palate may completely close the lip defect and oronasal communication and is associated with better feeding, adequate velopharyngeal competence, and good speech and hearing development.⁽²⁾

Most parents are traumatized when a child is born with an orofacial cleft as there is an increased financial, social, and personal impact prior to primary treatment completion. The problems in coping are more in families with children having cleft lip and palate when compared to families with isolated cleft palate.⁽¹²⁾

Various feeding methods have been used in the past to resolve feeding difficulties. Feeding appliance is a favorable feeding option in an infant with cleft lip and palate, as it creates a separation between oral and nasal cavities and provides a rigid surface to oppose the breast or nipple during suckling.⁽¹³⁾

Adequate nutrition is the main priority in patients with cleft lip and palate, and technique should be found so that feeding is as close to normal breastfeeding as possible.⁽¹⁴⁾

Neonatal feeding appliance is traditionally fabricated of acrylic resin that serves the following purposes: Creates a rigid and stable platform for feeding, reduces nasal regurgitation, reduces the time required for feeding and increases the amount of feed intake per feed, helps position

the tongue away from the cleft area to allow spontaneous growth of palatal shelves and reduces parents' frustration as a result of feeding problems.⁽¹²⁾

A variety of impression materials such as alginate, low fusing compound, polysulfide impression material may be used to make a definitive impression. In the present case, a putty-type polyvinyl siloxane was used to make the impression because its high viscosity reduces the danger of aspiration or swallowing. Moreover, the relatively good detail duplication is satisfactory for the purpose of fabricating a palatal prosthesis.⁽¹⁾

3 CONCLUSION

Ample nutrition is of great significance for proper growth and development of a child. Improper and inadequate nutrition hampers normal growth and development of a newborn and it also creates anxiety and apprehension in parents. Even though feeding appliance is not the definitive management but it assist in effective feeding and supports adequate nutrition, weight gain and reduces naso pharyngeal and middle ear infection until surgical corrections are carried out.

A feeding appliance given to the infant with cleft lip and palate effectively separates the oral cavity from the nasal cavity and is of great help in feeding and also it ensures normal, physical mental and physiological wellbeing of a child and parents.

REFERENCES

- 1) Chandna P, Adlakha VK, Singh N. Feeding obturator appliance for an infant with cleft lip and palate. *Journal of Indian Society of Pedodontics and Preventive Dentistry*. 2011;29(1). Available from: <https://dx.doi.org/10.4103/0970-4388.79950>.
- 2) Sharma A, Dogra S, Sharma N. Early prosthetic rehabilitation in newborns with orofacial cleft using a feeding appliance: A case report and review of literature. *Journal of Indian Academy of Dental Specialist Researchers*. 2017;4(1). Available from: https://dx.doi.org/10.4103/jiadsr.jiadsr_16_16.
- 3) Singh A, Kar R, Mishra N, Singh S. A novel feeding appliance made up of soft silicone-based denture liner for cleft palate patient. *International Journal of Oral Health Sciences*. 2015;5(1). Available from: <https://dx.doi.org/10.4103/2231-6027.171156>.
- 4) Cohen MM. Perspective on craniofacial anomalies, syndromes and other disorders. In: Lin KY, Ogle RC, Jane JA, editors. *Craniofacial surgery: Science and Surgical Technique*. 2002;p. 448–453.
- 5) Masarei AG, Sell D, Habel A, Mars M, Sommerlad BC, Wade A. The Nature of Feeding in Infants with Unrepaired Cleft Lip and/or Palate Compared with Healthy Noncleft Infants. *The Cleft Palate-Craniofacial Journal*. 2007;44(3):321–328. Available from: <https://dx.doi.org/10.1597/05-185>.
- 6) Clarren SK, Anderson B, Wolf LS. Feeding infants with cleft lip, cleft palate, or cleft lip and palate. *Cleft Palate J*. 1987;24:244–253.
- 7) Choi BH, Kleinheinz J, Joos U, Komposch G. Sucking efficiency of early orthopaedic plate and teats in infants with cleft lip and palate. *International Journal of Oral and Maxillofacial Surgery*. 1991;20(3):167–169. Available from: [https://dx.doi.org/10.1016/s0901-5027\(05\)80009-8](https://dx.doi.org/10.1016/s0901-5027(05)80009-8).
- 8) Goldberg WB, Ferguson FS, Miles RJ. Successful use of a feeding obturator for an infant with a cleft palate. *Special Care in Dentistry*. 1988;8(2):86–89. Available from: <https://dx.doi.org/10.1111/j.1754-4505.1988.tb00699.x>.
- 9) da Silva Freitas R, Lopes-Grego AB, Dietrich HLD, de Moraes Cerchiari NR, Nakakogue T, Tonocchi R, et al. Weight Gain in Children with Cleft Lip and Palate without Use of Palatal Plates. *Plastic Surgery International*. 2012;2012:1–4. Available from: <https://dx.doi.org/10.1155/2012/973240>.
- 10) Jones JE, Henderson L, Avery DR. Use of a feeding obturator for infants with severe cleft lip and palate. *Special Care in Dentistry*. 1982;2(3):116–120. Available from: <https://dx.doi.org/10.1111/j.1754-4505.1982.tb01297.x>.
- 11) Saunders ID, Geary L, Fleming P, Gregg TA. A simplified feeding appliance for the infant with a cleft lip and palate. *Quintessence Int*. 1989;20:907–917.
- 12) Lodaya R, Dave A, Kunte S, Shah R. A Feeding appliance for a 2 day old neonate with cleft lip and palate: A case report. *Int J Oral Health Med Res*. 2017;3(6):86–89.
- 13) Rana V, Shafi S, Agarwal A. A feeding appliance for a newborn baby with cleft lip and palate. *National Journal of Maxillofacial Surgery*. 2010;1(1). Available from: <https://dx.doi.org/10.4103/0975-5950.69149>.
- 14) Naveen BH, Prasad RS, Kashinath KR, Kumar S, Kalavathi SD, Laishram N. An innovative modified feeding appliance for an infant with cleft lip and cleft palate: A case report. *Journal of Family Medicine and Primary Care*. 2019;8(6). Available from: https://dx.doi.org/10.4103/jfmpc.jfmpc_327_19.