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Feeding Plate Obturator For A Neonate With Cleft Palate: A Case Report

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Abstract:
Orofacial clefting is one of the most common craniofacial defects affecting neonates. It must be addressed immediately as it can lead to a wide array of oral health issues, causing difficulty in speech, facial development, feeding, dental health, and psychological challenges. This clinical report describes a neonate with a cleft palate in whom a feeding plate was delivered using vacuum forming.
Keywords: *Cleft Palate, Infant, Feeding Plate Obturator*

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I. Introduction:

Clefts of the lip and palate (CLP) are the most common congenital deformities involving the orofacial region. It occurs due to incomplete fusion of facial structures during early development.(1, 2, 3, 4) Worldwide incidence of Cleft lip and palate is 1 in 600 and the prevalence is 6.64 per 10,000 whereas the prevalence of Cleft lip with or without Cleft palate is 9.92 per 10,000 and Cleft lip alone is 3.28 per 10,000. In India, the estimated birth rate is found to be 24.5 million births per year, and the prevalence of cleft cases within them is approximately between 27,000 and 33,000 per year. The ratio of CL in males to females is 2:1, whereas Cleft palate without Cleft lip is more common in females. (6, 7, 8, 9)

Immediate problems need to be solved since they can lead to a wide array of oral health issues, causing difficulty in speech, facial development, feeding, dental health, and psychological challenges. The baby requires nutrition from its mother, but due to a compromised lip seal, feeding becomes a mammoth task. The infant can aspirate milk into his/her lungs due to communication between the oral and nasal cavities. Other associated conditions could also cause complications. Hence, as standard feeding cannot nourish the infant, a feeding obturator can effectively address the shortcomings. It is a prosthesis device that effectively seals and restores the separation between oral and nasal cavities- a rigid platform towards which the baby can press the nipple and extract milk via negative pressure.(4) It positions the tongue, reduces nasal regurgitation and feeding time and aids in better speech and aesthetics.(5) This clinical report describes an infant with a cleft palate in which a feeding plate was delivered using a vacuum-forming technique.

II. Case Report:

A 28th-day healthy neonate was reported to the Department of Prosthodontics, Crown and Bridge and Implantology at Rishiraj College of Dental Sciences and Research Centre with a primary complaint of difficulty in sucking milk and nasal regurgitation. There was no family history and clinical examination revealed a defect of the soft palate (Veau classification, Class I) [Figure 1, 2]. It was decided to fabricate a feeding plate obturator to manage the feeding issues. Its benefits were explained to his parents and they approved to proceed with the treatment plan.

III. Steps In The Fabrication Of A Feeding Plate Obturator

Impression-making in cleft lip and palate patients is crucial but challenging due to factors such as the small size of an infant's oral cavity, anatomical differences, and the inability of the patient to follow instructions. In this case, a preliminary impression was taken without the use of premedication or anaesthesia. A putty-type polyvinyl siloxane was chosen for the impression due to its high viscosity, which helps reduce the risk of

aspiration or swallowing. Additionally, its ability to capture fine details is adequate for creating a palatal prosthesis.(10) To prevent aspiration, the infant was positioned with their face downward and the impression was made using the operator's thumb [Figure 3]. It was also observed that the infant was crying during the procedure, which ensured that the airway remained clear throughout.

Beading and boxing were done to ensure the proper borders of the impression [Figure 4, 5]. The impressions were then poured into a Type V dental stone. The cast was carefully examined for any significant undercuts in the cleft area, and if found, these were blocked with wax. The vacuum tray was fabricated in a vacuum former machine (Biostar Vacuum Former) using a sheet of ethylene vinyl acetate material [Figure 5].

This material was used because it is lightweight, easily moldable, a good fit for palate and ridges and decreases the possibility of soft tissue injury because of its soft texture11. The stone cast was placed flat on the vacuum former, and the tray material was allowed to sag by 1/2 to 1 inch. The vacuum motor was operated for 30-60 seconds to ensure proper adaptation of the ethylene vinyl acetate sheet to the cast.

Once the material conformed tightly to the palate and ridges, the tray was trimmed to remove any excess material [Figure 6]. A dental floss was then attached to the feeding obturator as a safety precaution in case of gagging or accidental swallowing. The appliance was placed in the patient's mouth [Figure 8], and the parents were instructed on how to properly insert, remove, and clean the feeding obturator. Afterwards, the mother fed the infant, and it was observed that the child was able to feed successfully with the feeding obturator in place. The patient was recalled after a week for possible adjustments. The parents were also instructed that the feeding appliance needed to be replaced after 2-3 months due to changes in the child's oral anatomy.

IV. Discussion:

Cleft palate throws a huge challenge for the Neonate and the parents due to the difficulty and feeding. The inability to provide nourishment affects the overall health of the baby. A feeding plate obturator is highly beneficial for infant feeding. It provides a firm surface for the baby to press the nipple against, making it easier to extract milk. It also helps reduce nasal regurgitation, and the risk of choking and shortens feeding time. Additionally, the obturator prevents the tongue from entering the cleft and interfering with the natural growth of the palatal shelves towards the midline. By reducing the passage of food into the nasopharynx, it also lowers the risk of otitis media and nasopharyngeal infections. In the end, it promotes neonatal weight gain which is important in preparing the baby for corrective surgery.

V. Conclusion:

This case report highlights that while the feeding plate obturator is not a permanent solution, it provides critical support for both the newborn and the caregiver until corrective surgery can be performed.

Figure 1: Intra Oral Picture

Figure 2: Extra Oral Picture

Figure 3: Impression made using polyvinyl siloxane

Figure 4: Beading

Figure 5: Boxing

Figure 6: Feeding Plate Obturator Fabricated using ethylene vinyl acetate material

Figure 7: Appliance placed in place

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