

# Feeding Plate Fabrication for a 15 Day Old Neonate using RTV Silicone: A Case Report

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**Abstract :- Clefts of lip/palate are considered to be one among the most commonly occurring inborn deformities involving maxillo-facial region. Cleft lip/ palate can be syndromic or nonsyndromic. Feeding a newborn baby with complete cleft lip/ palate is a problematic pursuit because of the association between the oral cavity and the nasal cavity. An interdisciplinary approach is needed to manage such patients. Dysfunction of auditory tube, infection and effusion of middle ear, deafness, speech disorder, dental and orthodontic problems are usually associated with it. In order to prevent nasal regurgitation and seal the fistula present between oral and nasal cavities, feeding plates are used. Feeding plate is a device that is made to reinstate the communication between oral and nasal cavities temporarily while feeding. The present case represents a -15 days-old neonate with complete bilateral cleft lip and palate (Veau's class IV). Feeding plate in this case was constructed using extraoral silicone (RTV).**

## I. INTRODUCTION

Most common congenital craniofacial anomalies that are seen in a newborn are Cleft lip and palate with an incidence of 0.28 to 3.74 per 1000 live births globally<sup>1</sup>. Cleft palate is formed because of failure of palatal shelves to fuse during the initial months of embryonic development<sup>2</sup>. The challenges and problems of cleft lip and palate patients include physiological activities such as swallowing, speech, etc. Oro-nasal communication decreases negative pressure, necessary for suckling.<sup>3-6</sup> It also causes nasal regurgitation of food, frequent burping, and choking because of excessive air intake. This fatigues both mother and baby significantly due to longer feeding time<sup>7</sup>.

Treatment of cleft lip/palate involves the teamwork of surgeon, prosthodontist, paediatrician, and speech therapist. Lip repair is done at 2 to 6 months age, and palatal repair is done from 1 to 2 years of age. Hindrance to proper development of maxilla can occur if early repair of cleft is initiated<sup>8</sup>. Until surgical correction, adequate nutrition is to be provided to infants for unimpaired growth and development, so that the infant could cope the corrective surgery. Various approaches have been advocated to feed newborns with cleft. Orogastric and nasogastric (ryles tube) tubes can be used but for a limited period of time. Nipples having long neck with enlarged openings designed specially for these patient are helpful, but this option has its own limitations.

As per GPT-9, "Feeding prosthesis is an ancillary prosthesis constructed for newborns with cleft palates to permit normal sucking and feeding". The feeding plates obturate the cleft and hence seal the oronasal

communication. It forms a platform that is rigid enough so that the baby can press nipple toward it and suck the milk.<sup>10</sup> It helps in feeding,<sup>9</sup> prevents nasal regurgitation,<sup>11,12</sup> incidence of choking is minimized, and diminish the time period necessitated for feeding.<sup>10-12</sup> It also prevents the tongue from entering the defect<sup>10-15</sup> thereby by decreasing its interference with the unconstrained growth of palatal shelves to get fused in midline. The basic functions of mastication, deglutition, and speech production are restored until the cleft lip/palate are surgically corrected. The case presented here is a 15 days old neonate with bilateral cleft lip/palate to whom feeding appliance was fabricated using extra oral silicone to facilitate feeding.

## II. CASE REPORT

A 15 days old infant was referred to the Department of Prosthodontics, Government Dental College & Hospital, Srinagar J&K, with the chief complaint of difficulty while feeding. The medical as well as family history of the child not significant. On extraoral examination, there was defect in lips and alveolus. Intraoral examination of the child revealed a cleft involving soft/ hard palate and the alveolar process bilaterally in the premaxillary area (Veau's classification, Class IV) (Fig. 1)

## III. PROCEDURE

A low-fusing impression compound was used for recording primary impression of the maxillary arch (Fig. 2). In order to prevent aspiration the patient was held with his face towards the floor. It was made sure that the infant was crying while recording the impression. This ensured a patent airway throughout the procedure. Custom tray was then fabricated by using autopolymerizing acrylic resin (fig:3) and secondary impression was made with polyvinyl siloxane putty material washed with medium body addition silicone (fig 4). It was ensured that no residual material was left inside the oral cavity. Beading of impression was done in order to obtain fine details. Master stone model was made after pouring the impression with type III dental stone. After blocking the undercuts, feeding plate was fabricated using RTV (room temperature vulcanizing) silicone elastomer (fig 5.). Two 21 gauge stainless steel wires were incorporated in the appliance for holding it in position during feeding (Fig. 6). The free wire ends were embedded in self cure acrylic resin to avoid skin impingement and were tied with elastic strings. Finally, the appliance was placed inside the patient's mouth and was fed using normal nipple bottle (Fig. 7). It was ensured that the wire components do not interfere in lip movement while feeding.

Post insertion instructions were given to the parents about using and cleaning the plate. It was made sure to make

parents understand that, it may take longer to feed the child with the plate, and even it is uncomfortable for the child, gradually, it will get adjusted.

**IV. DISCUSSION**

Nutritional requirement of cleft lip/palate patients is similar to that of normal patients ,if not more unless other systemic issues are involved.<sup>16-18</sup> Adequate nutrition is the first priority during first few months of life.<sup>19</sup> Feeding problems are often experienced by infants such patients that include lack of suction, nasal regurgitation, excess air gulping hence frequent burping and hence prolonged feeding time.<sup>18</sup> Various feeding methods have been proposed to overcome feeding problems, and some have advocated specially designed feeding bottles for use in such conditions.<sup>21</sup> The feeding plate forms an arbitrary palatal vault thereby facilitating the infant’s ability to create adequate negative pressure that helps in sucking, hence decreasing the fluid flow through the nasal cavity as well.<sup>20</sup> Many studies have reported enhanced feeding with plate in shorter feeding time. It enhances the child’s ability to obtain nourishment during early stage. The main disadvantage of these appliances is that it needs repeated

fabrication of new ones because of growth and maintenance of good oral hygiene.<sup>21</sup> Comprehensive management of children born with cleft lip/palate is best accomplished by the interdisciplinary team approach, which not only benefits the patient, but also provides a significant avenue for the understanding of diagnosis and management considerations. Addition poly silicone is the material of choice for making a cleft impression as it is elastic with high tear strength, reproduces surface details more precisely and has long-term dimensional stability which allows multiple pours<sup>22</sup>. Use of silicone (RTV- room temperature vulcanizing) for making feeding plate in this report was done to increase the patient’s acceptance which was advocated by nonacceptance of acrylic plate fabricated before the present one.

**V. CONCLUSION**

The feeding plate acts as an important aid for feeding. It helps in maxillofacial development by making sure incessant development of palatal shelves, prevents distortion of tongue, nasal reflux and nasal septum irritation. It also prevents auricular infections. Diversification of anterior maxilla is prevented thereby, helping surgeons to provide proper reconstructive treatment.



Figure 1: Veau’s class IV cleft lip/palate



Figure 2: preliminary impression

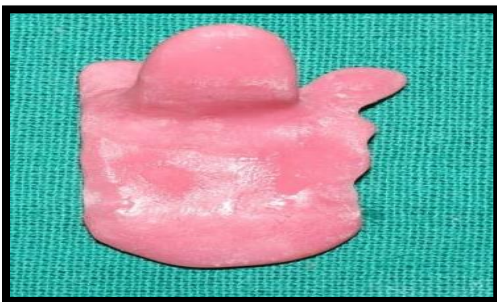


Figure 3: custom tray



Figure 4: secondary impression



Figure 5: RTV adaptation on the cast

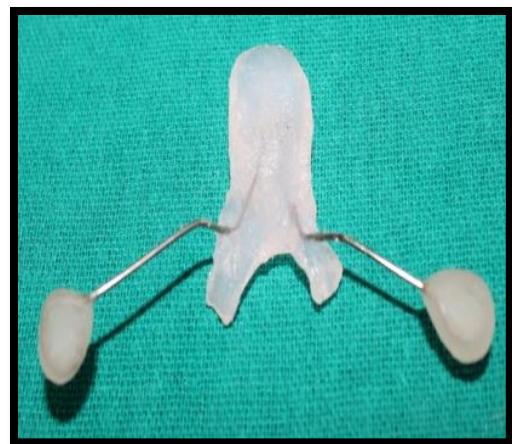


Figure 6: Final prosthesis



Figure 7: Feeding plate after insertion

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