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A Simple Technique for Fabrication of a Feeding Plate for an Infant with Cleft Palate Retained With Elastic Strings

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Introduction to Case Report

A 2 month old female infant with a history of cleft palate was referred to the Department of Prosthodontics. The infant's parents complained of difficulty in feeding resulting in significant weight loss of the infant (5.4 lb). Family history was non-contributory and mother's pregnancy was uneventful. On intra oral examination, the patient was diagnosed with a cleft palate involving complete soft and hard palate (Veau Classification II) (Figure 1). No previous attempt was made to manage the defect.

It was decided to fabricate a feeding plate to obturate the defect and restore the function and anatomy of the palate. Parents were explained the treatment plan for fabrication of feeding plate and consent was obtained.

Steps for fabrication of feeding plate

1) The infant was held upright in mother's lap with her head facing towards the floor. Polyvinyl siloxane putty impression material (Take 1 Advanced, Kerr, UK) was used for making the impression. The material was adapted on the index finger and a gauze was wrapped around it to prevent its aspiration. The loaded finger was placed intraorally and the patient was encouraged to suck on the finger. This ensured a functional impression of the palate extending to the mucobuccal folds. (Figure 2)

2) The impression was poured in Type IV dental stone (Kalrock, Kalabhai, India) and a cast was obtained (Figure 3). The cast was inspected and undercuts were blocked.

3) Separating medium was applied on the cast and an acrylic plate was fabricated with clear auto polymerising acrylic resin (DPI RR cold cure, DPI, India). While still in dough stage, two loops of orthodontic wires were embedded into the acrylic plate at either ends.

4) The plate was finished and polished and tried intraorally following which minor adjustments were made. (Figure 4,5)

5) Two elastic strings were tied on the loops to maintain its position intraorally and also to prevent swallowing. (Figure 6)

6) The mother could feed the child immediately after insertion without nasal regurgitation (Figure 7). Infant's mother was instructed about the method of usage, function, cleaning and maintenance of feeding plate.

Discussion

Cleft lip and palate is a congenital malformation affecting the middle third of the face with an incidence ranging from 1:500 to 1:2500 live births [1]. A cleft palate may involve the soft palate only, or it may extend forward through the hard palate [2].

Various factors like smoking, alcohol consumption, folic acid deficiency and use of steroids and anticonvulsants increase the risk of developing cleft lip and palate. It is also associated with syndromes like Apert syndrome, Treacher Collins syndrome, Pierre Robin syndrome and Crouzon syndrome [3].

In infants with cleft palate, feeding process is complicated due to the difficulty in suckling, nasal regurgitation of food and excessive air intake. This happens because of the lack of negative pressure created due to the defect in the oro nasal communication.

Early treatment in cleft palate patients is mandatory to prevent difficulties in feeding, speech disorders, recurrent ear infections and dental & orthodontic problems. Due to inefficient oral feeding, growth and development of the infant is also hampered [4].

Hence, until the defect is surgically managed, a feeding plate can be used as it effectively separates the oral cavity from the nasal cavity. This notion of early treatment of cleft palate patients by presurgical oral prosthesis was introduced by McNeil [5].

A feeding plate serves the following functions:

- Creates a rigid platform which enables the infant to press the nipple and extract milk
- Reduces nasal regurgitation
- Decreases the time required for feeding
- Helps position the tongue away from the cleft area in the correct position to allow spontaneous growth of palatal shelves towards each other [6].

For fabrication of feeding plate, the first and the most crucial step is the impression procedure. While making the impression, infant was held in upright position with its head towards the floor. This, in addition to using vinyl polysiloxane putty impression material with gauze wrapped around, minimized chances of posterior displacement of the impression material [7]. The infant was encouraged to perform functional movements during the impression procedure which helped mould the impression material record accurate anatomic details.

The obturator was fabricated with autopolymerizing acrylic resin as it had to be delivered to the patient on the same day. Once fabricated, a string of floss was tied to the anterior end of the obturator and tried in the patients mouth as suggested in literature. This is usually done as a safety mechanism in case of gagging or accidental swallowing. However, it was noted that the plate was being pushed out by the infants tongue movement. It was then decided to use elastic threads secured to two wire loops on either end of the obturator. This successfully prevented the dislodgement of the plate as well as served the purpose of easy removal and insertion. The feeding plate was then delivered without any delay, on the same day and parents were educated regarding the oral hygiene of prosthesis and the oral cavity.

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