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RESEARCH ARTICLE

PROSTHODONTIC APPROACH FOR THE MANAGEMENT OF A NEONATE WITH CLEFT LIP & PALATE USING NATAL FEEDING PLATE: A CASE REPORT

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ABSTRACT

Feeding in an infant with cleft lip and palate 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. Feeding obturator restores this gap and assists in feeding as well as helps in reduction of airway problems, regurgitations and frequent infections.

Key Words:

Cleft lip, Cleft palate, Natal feeding plate, Ethylene vinyl acetate sheet.

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INTRODUCTION

Cleft lip and palate is one of the most common developmental disturbances of the oro facial structure. These are the most common congenital malformations occurring in humans. These are the structural defects of the oro facial complex which may vary from slight notching of the lip or a small cleft of the uvula to complete separation of the lip and absence of portion between the oral and nasal cavities. Cleft lip and palate together accounts for approximately 50% of all the cases followed by isolated cleft palate (33%) and cleft lip alone (21%). The occurrence of unilateral cleft is 9 times more than bilateral cleft and left side of the face is 2 times more affected than right. Males are more affected by cleft lip and palate and isolated cleft palate is more common in females. There has been marked progress in identifying genetic and environmental factors for syndromic clefts of lip and palate (associated with other malformations) more common non syndromic (isolated) form remains poorly characterized. This case report contains the management of a neonate with cleft lip and palate using natal feeding plate fabricated from ethylene vinyl acetate sheet (EVA).

Case Report

- An 8 days old healthy female neonate reported to the Department Of Prosthodontics and Crown and Bridge, Government Dental College & Hospital, Patiala, Punjab with the chief complaint of difficulty in feeding.

- The patient had a patent naso gastric tube for feeding
- Medical history of the mother revealed that she was under treatment for infertility for the past 8 years
- Pregnancy period and delivery were uneventful
- On history taking it was revealed that the child was born with Non- Syndromic Cleft of Lip and Palate
- Intra oral examination revealed that the neonate was suffering from Class III Cleft Lip and Palate (Veau's Classification 1931) (Fig 1a)

Treatment Plan

- Patient's preliminary impression was made using elastomeric impression material (Addition silicone, putty consistency, Coltene) (Fig 1c) with the help of two fingers after packing the defect with a gauze piece
- The neonate was held upright during the impression process to prevent aspiration of the impression material
- The parent was asked to hold the floss which was attached at the end of the gauze piece in order to prevent ingestion (Fig 1 b)
- The patency of the airways while impression making was maintained by depressing the tongue of the neonate gently with a mouth mirror (crying of the infant during impression making is a positive sign indicating patent airways)



Fig- 1 (a,b,c) (a) Intra oral view of the defect (b) Gauze (with floss attached to one end) to pack the defect (c) Primary impression using elastomeric impression material



Fig- 2 (a,b,c) (a) Primary cast (b,c) special tray fabricated using transparent self cure acrylic resin with multiple holes



Fig -3 (a,b) (a) Final impression made using light body impression material (b) Master cast



Fig. 4. a,b,c (a,b) Ethylene vinyl acetate sheet and fabrication of the feeding plate in Biostar machine (c) Natal feeding plate with 3-0 black suture silk attached

- After disinfecting the primary impression , preliminary cast was made using type III gypsum(Kalabhai, India) (Fig 2a)
 - Undercuts were blocked out using type II gypsum
 - A custom tray was then fabricated using transparent self cure acrylic resin (DPI-RR cold cure, India), numerous holes were made in the custom tray Fig 2(b,c)
 - The custom tray was then painted with tray adhesive and a secondary putty wash impression was made Fig 3(a); master cast was made in type III gypsum Fig 3(b)
 - A feeding appliance was then made on the final cast by Pressure Molding Technique in a Biostar machine Fig 4(b) using Ethylene Vinyl Acetate sheet of 1mm thickness Fig 4(a)
 - Excess margins were trimmed off & final finishing was completed using bur
 - Holes were made in the canine region bilaterally with a round bur in the feeding appliance and a 3-0 black suture silk was attached for preventing the swallowing and easy retrieval of the appliance Fig 4(c)
 - Appliance was inserted after finishing, polishing and disinfecting
 - Post insertion instructions were given to the parents
- Post insertion instructions**
- Expressed mother’s milk should be fed to the baby by bottle (bottle with long nipple) rather than spoon
 - Child’s head should be raised 45degrees during feeding

- Burp the baby frequently as the infants with cleft palate tend to swallow a lot of air during eating even in the upright position
- Feeding time should be no more than 30 minutes for 2-3 ounces
- After feeding a wet oral swab should be used to clean mucous membrane and milk from the cleft
- Feeding appliance should be always kept clean after feeding

DISCUSSION

An infant with cleft requires special nursing considerations during feeding. Feeding problems are often associated with cleft anomalies which lead to inadequate nutrition. The problems include, insufficient suction to pull milk from the nipple, excessive air intake during feeding, choking, nasal discharge, excessive time required to take nourishment. A variety of alternatives are available nowadays that can be very useful in feeding an infant with a cleft lip and palate like cleft palate squeeze bottle, crosscut nipple, Pigeon cleft palate nurser, Mead Johnson nurser. Taking this into consideration, a natal feeding plate was fabricated to aid the infant in breast feeding. It helps to compress the nipple easier which produces a contact point and helps the neonate to express milk. In this case report elastomeric impression material was used for making preliminary impression as alginate could flow to the posterior part and choke the oropharynx. Impression compound was not chosen as it could cause burns or discomfort to the neonate. Two fingers were used for impression making as stock tray could not be inserted in the infant's mouth. Ethylene vinyl acetate sheet was chosen for the fabrication of feeding appliance over acrylic due to the following advantages

- Softer than acrylic
- Smooth surface
- Light weight
- Good intra oral fit
- Simple procedure
- Retentive wires not needed

Conclusion

Early non surgical intervention is of prime importance in a cleft lip and palate infant. It not only helps in feeding the infant but also modifies the growth and prevents future complications. Adequate nutrition is very important for proper growth and development of a child. Inadequate nutrition acts as a stumbling block in the milestones of normal development. An obturator bridges the gap between a healthy and a weak cleft lip and palate patient.

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