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Case Report

Modified feeding plate for a one-month-old infant with Pierre Robin sequence: A case report

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ABSTRACT

Pierre robin sequence is characterized by the triad of mandibular micrognathia, 'U' shaped cleft palate, and glossoptosis. Infants with this condition usually present with airway obstruction and feeding difficulties. This in turn leads to low weight and nutritional deficiencies which might delay the surgical intervention for the same. This case report describes a one-month-old infant with Pierre Robin sequence presenting with feeding difficulty and nasal regurgitation due to a 'U' shaped cleft palate. Elastomeric impression followed by fabrication of feeding plate with auto-polymerizing resin was done. Additional 'S-shaped' retentive arms were provided from the intra-oral to extra-oral side wire to provide additional retention and to prevent injury to both the child and parent while feeding. Early insertion of a feeding plate helps to prevent nasal regurgitation, to gain weight, and to guide the growth of the mandible in a child with Pierre Robin Sequence.

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1. Introduction

India remains one of the most populous areas of the world with an estimated 24.5 million births per year, where the birth prevalence of clefts is arbitrarily between 27,000 and 33,000 clefts per year.¹ Cleft palate may or may not be associated with various syndromes such as Pierre-Robin sequence, Treacher Collins malformation, Apert's syndrome, etc.² Pierre Robin sequence (PRS) is a triad of micrognathia, cleft palate and glossoptosis. The term 'sequence' signifies that one condition leads to another. In PRS, abnormal development of mandible during 7th – 11th week post-conception maintains higher tongue position which rests against the basicranium and thus it does not descend. This prevents the fusion of the palatal shelves. Thus, a characteristic 'U' shaped cleft is seen which reflects

presence of tongue during prenatal development of palate.³

An infant's ability to suck is related to two factors: the ability of the lips to form a lip seal and perform the necessary sucking movements and the ability of the palate to allow the necessary build-up of pressure inside the mouth to propel milk into the mouth. Hence, one of the major problems with an isolated cleft palate patient is difficulty in sucking through a regular nipple due to the breach in the roof of the mouth and nasal regurgitation.⁴

This case report demonstrates the fabrication of modified feeding plate with retentive arms for cleft palate in PRS in one-month-old infant presenting with feeding difficulties.

2. Case Report

One month old infant reported to the department of Pedodontics and Preventive Dentistry, with the chief complaint of difficulty in feeding.

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Patient reported with the medical history of patent ductus arteriosus but was currently not under medication. On extra-oral examination, mandible was retrognathic with a severely retruded chin.[Figure 1] On intra-oral examination, a wide ‘U’ shaped cleft was present posterior to the incisive foramen extending till the soft palate (Veau’s classification: type II) [Figure 2] and glossoptosis. On the basis of medical history, extra-oral and intra-oral examination, a classical triad of mandibular micrognathia, cleft palate and glossoptosis was present and hence a diagnosis of Pierre Robin sequence was made.



Fig. 1: Extra-oral photograph depicting features of Pierre Robin sequence.



Fig. 2: Intra-oral photograph with Veau's Type II classification of cleft palate.

To overcome this obstacle of inability to propel the milk, nasal regurgitation and low birth weight (2.3 kg), a feeding plate was designed with the retentive arms.



Fig. 3: Elastomeric impression.



Fig. 4: Modified feeding plate with retentive arms.



Fig. 5: Intra-oral photograph with modified feeding plate.

2.1. Fabrication of feeding plate

2.1.1. Preliminary impression

Preliminary impression was made with polyvinyl siloxane rubber-based putty material (3M ESPE). The patient was advised to be NPO (nil per oral) for 3 hours prior to the procedure. During the procedure, the patient was held with her face toward the floor (facedown position) to avoid aspiration of the impression material by the infant and prevent the tongue from falling back, thereby allowing fluids to drain out of the oral cavity. The tray was placed in the infant's oral cavity until the impression material was set. As soon as the impression material was set, it was removed and the oral cavity was examined for any residual impression material. [Figure 3]

2.1.2. Cast preparation

Beading and boxing of the impression was carried out. The impression was then poured with dental stone. Then, the final cast was obtained, and all the undercuts were blocked using modelling wax.

2.1.3. Acrylization of feeding plate

Clear auto polymerizing resin material was used to fabricate the feeding plate using a salt and pepper technique.

2.1.4. Modified feeding plate with retentive arms

A 20G stainless steel orthodontic wire was used to fabricate the retentive arms for the plate. The wire was extended from the feeding plate extra-orally up till two cm lateral to the ala of the nose on both sides. S shape bend was given to the wire from the intra-oral to the extra-oral side to prevent the wire impingement onto the lip. Auto polymerizing acrylic resin was added on the extra-oral side of the wire to prevent injury to both the child and parent. [Figure 4]

2.1.5. Delivery of feeding plate and instructions

Feeding plate was inserted and retained with the help of retentive arms and horizontal skin barrier tapes (3M Transpore) [Figure 5] followed by careful observation during feeding. Parents were given instructions regarding feeding, which included the position of the baby and the mother during and after the feed and to maintain good oral hygiene. Demonstration on how to place the feeding plate was carried out and parents were asked to emulate the same. Importance of cleanliness of the feeding plate was reinforced.

3. Discussion

Feeding difficulty in cleft palate patient is majorly due to inefficiency to create adequate negative intraoral pressure (suction) during feeding and is further complicated by the nasal regurgitation, excessive air intake, burping, coughing, and choking. This leads to prolonged feeding which causes

fatigue.⁵

Reconstructive surgery is performed in the first few months of life for cleft lip and before 18 months for cleft palate.² Hence, fabrication of feeding plate becomes necessary considering the health of the infant and nutritional deficiencies.⁶ Feeding plate acts as a rigid platform against which infant can press the nipple and it also prevents lodgement of tongue in the defect. It helps in gaining weight which in turn is essential for surgical procedure.²

The feeding plate was constructed using autopolymerizing acrylic resin as it possesses various advantages of being rigid than the other materials, ease of fabrication, and appliance delivery in a single visit.⁷ Modification of adding the retentive arms was to avoid accidental ingestion or aspiration of the plate and for ease of adjustment and comfort while feeding.

Since there was glossoptosis, it was difficult for the infant to adjust to the appliance, hence initially mother was advised to feed the baby with the spoon followed by specialized bottle.

4. Conclusion

In this case of Pierre Robin Sequence, early insertion of feeding plate was beneficial to gain weight and to guide the tongue into correct position which is essential for the growth of mandible.

5. Clinical Significance

1. Feeding plate helps to enhance the nutritional value of an infant and thereby allows for normal growth and development of child.
2. In syndromic patients with cleft palate, the naso-oral communication usually leads to complications like pneumonia. Thus, feeding palate allows an infant to be systemically healthy.

6. Source of Funding

None.

7. Conflict of Interest

None.


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