

Feeding Appliance and Obturator for a Fifteen Days Old Neonate with Unilateral Cleft Lip and Palate

Rahul Vishnoi^{1*}, Subhash Sonkesriya¹, Divya Khanna² and Deshraj Jain¹

¹Department of Prosthodontics, Government Dental College, Indore, India

²Department of Periodontology, Krishnadevaraya College of Dental Sciences & Hospital, Bengaluru, India

***Corresponding Author:** Dr. Rahul Vishnoi, Department of Prosthodontics, Government Dental College, Room no. 7, 1st floor, Sardar Patel Marg, Indore-452001, Madhya Pradesh, 562157, India.

Received: September 30, 2015; **Published:** October 07, 2015

Abstract

Cleft lip and palate is the most prevalent congenital anomaly of the oro-facial region. A multidisciplinary approach is crucial and essential for its management. Amidst the multiple challenges faced related to infections, the most critical issue for infants born with cleft lip and palate is the difficulty in suckling leading to the inability to feed normally, which also poses problems in the development of bond between mother and the child. A feeding obturator appliance helps the child in comfortable feeding and hence helps to gain an optimum body weight required for the impending surgical intervention. This article explores various choices available to aid in the feeding of children born with cleft lip and palate; and discusses in detail the benefits and fabrication of a feeding appliance and obturator for a fifteen days old neonate born with such defect.

Keywords: Cleft lip; Cleft palate; Feeding appliance; Obturator

Abbreviations: UCLP: Unilateral cleft lip and palate; CLP: Cleft lip and palate

Introduction

Cleft lip and palate [CLP] is one of the most common congenital maxillofacial anomalies in humans. It's reported to have a very high incidence rate of 0.28-3.74 per 1,000 live births [1]. A combination of CLP is more predominant in the male child [2].

Neonates born with CLP have difficulty in suckling milk, which causes failure to thrive [3]. In cases of partial cleft or a bifid uvula, feeding is not so problematic. However, when a more definite oro-nasal communication is present, the negative pressure necessary for suckling, is not developed properly hence, leading to the inability to feed normally [4]. During feeding, infant compresses the nipple between the tongue and the palate to squeeze out the milk. Sometimes this method does not work in those cases where the cleft is wide, as the nipple gets trapped inside the defect [5]. Moreover, nasal regurgitation of ingested milk further complicates the feeding process. The other associated challenges are excessive air intake that requires frequent burping and choking on the mother's milk. Also, the feeding time is increased which tires both, the baby and the parent [6].

To overcome these multiple problems, many methods have been devised to enable an infant with CLP to feed normally as far as possible. The prominent ones are mentioned here

Haberman feeder: Mandy Haberman introduced and registered an innovatively designed bottle and a nipple with one way valve to aid in normal feeding. The design simulates breast feeding till an extent.

Orogastric and nasogastric tubes: These have been suggested in literature but a major disadvantage of these tubes is that they can be used only for a limited length of time and frequent infections are common [7].

Citation: Rahul Vishnoi., *et al.* "Feeding Appliance and Obturator for a Fifteen Days Old Neonate with Unilateral Cleft Lip and Palate". *EC Dental Science* 2.5 (2015): 377-382.

Surgical intervention: Surgery completely closes the oro-nasal communication. However, there are different schools of thoughts regarding the timing of surgery which can be as diverse as 12 weeks or 12 months. Also, in some cases, orthopaedic appliances have to be used prior to the surgery. In wide defects, cheiloplasty is difficult due to the increased distance for which the tissue must be mobilized to close the defect. This causes wound dehiscence due to the tension on the surgical site. Pre-surgical maxillary orthopaedics facilitates better lip closure with less tissue tension because the soft tissues can be made to overlie a more normal bony anatomy [7,8].

Prosthetic aide: The feeding appliance and obturator mimics the normal contours of the palate which forms the roof of the oral cavity and the floor of nasal cavity. It obturates the cleft and restores the separation between the oral and nasal cavities.

Feeding appliance provides a rigid platform on which the infant can press the nipple and suckle milk conveniently [4,9]. It helps not only in feeding, but lessens the nasal regurgitation as well [3,4,10]. It is also known to reduce the chance of choking and even cut shorts the feeding time [4]. The feeding appliance also prevents the tongue from entering the defect as it interferes with the normal growth of the palatal shelves [10]. It aides to place the tongue in the correct position to perform its functional role in the development of the jaws [10], and even contributes to proper speech development [4]. The obturator further prevents the entry of food into the nasopharynx, thereby greatly reducing the incidence of otitis media and nasopharyngeal infections [4,10]. The feeding obturator has also proven effective in reducing parents frustration regarding feeding difficulties and in relieving the anxiety associated with the birth of a child with deformity [3].

The presented article describes a simple technique for the fabrication of a feeding obturator, along with its numerous advantages and other methods which aid in feeding of children with unilateral cleft lip and palate (UCLP).

Case Report

The patient presented in this case report, is a 15 days old male child, weighing 2.232 Kg. The attending physician of the Paediatric department in M.Y Hospital, Indore, referred the patient at the age of fifteen days to the Department of Prosthodontics in Government Dental College, Indore, India because of poor swallowing ability and need for prosthetic consultation. A temporary nasogastric tube had been inserted for feeding purpose. After a detailed extra-oral and intra-oral examination, the child was diagnosed with UCLP [Veau Classification, Class III] (Figure 1). After explaining the treatment plan to the parents and taking their written signed consent, a feeding appliance was chosen as the most suitable feeding-aide for the new born.



Figure1: The patient with unilateral cleft lip and palate.

After selection of the stock tray (Figure 2), preliminary impression was made with a thick mix of alginate*. On parents' insistence, nasogastric tube was not removed. During the impression procedure, the mother was made to sit on the dental chair and the child was placed in her lap in prone position. This position displaces the tongue downward and forward, promoting a patent airway; it also avoids aspiration if vomiting or gastric reflux occurs. Also, the baby's head was stabilized during the impression making and his breathing was continuously monitored.



Figure 2: The stock tray selected for the preliminary impression.

The impression thus obtained was boxed and poured in type IV dental plaster i.e., high strength die stone[†] (Figure 3). A secondary impression was not required because all the tissue details required to make the prosthesis was recorded in a single impression. Also, a child need not be subjected to the agonizing experience of making impression twice as the appliance will have to be repeated again approximately after two months, owing to the continuous growth of the oro-facial region.



Figure 3: The cast poured in high strength die stone.

The cast was inspected for deep undercuts in the cleft area and were blocked with wax. Two wire tags made up of braided ligature wires were attached to the cast with wax. These would help in easy placement and removal of the prosthesis by the parents as per the need. Separating medium was painted over the surface of the cast and auto-polymerizing acrylic resin[‡] was adapted using the dough technique.

After the polymerization was complete, prosthesis was retrieved from the cast. It was inspected for uniform thickness and the sharp edges were smoothed out. Prosthesis was finished and polished.

*Neocolloid, Zhermack, Italy

[†]Kalrock, Kalabhai, India

[‡]DPI RR-Cold Cure, Dental Products of India Ltd, India

While the prosthesis was placed intra-orally (Figure 4), the parents were made to watch the whole procedure so that they can repeat it at home when feeding the child. The wire tags were affixed to the clothing of the baby with micro-pore surgical tape[§] (Figure 5) and feeding with a milk-bottle was started.



Figure 4: Insertion of the feeding appliance.



Figure 5: Feeding appliance secured with micro-pore surgical tape.

The baby now suckles with excellent ease and comfort (Figure 6). Parents note that the time spent in feeding with the feeding appliance was almost half of the time required without the appliance.



Figure 6: Feeding appliance facilitates effortless feeding.

Parents were instructed regarding the insertion and removal of prosthesis; the cleaning of the prosthesis; and the follow-up appointments.

[§]3M, India

Follow-up appointments were required because the growing child will not be able to wear the same prosthesis as the oro-facial dimensions will soon change and a new one will have to be fabricated until the surgery is scheduled.

Case-Discussion

Babies born with CLP encounter a variety of problems that must be solved for complete rehabilitation. Clefts of the palate, alveolus and lip can either be syndromic or non-syndromic. The syndromic clefts are related to other malformations such as Pierre Robin sequence, Treacher Collins Malformation, trisomies 13 and 18, Apert syndrome, Stickler syndrome, Waardenburg syndrome etc. Non syndromic clefts are of polygenic/multi factorial inheritance. CLP requires a multidisciplinary team that comprises of a paediatric dentist, orthodontist, oral surgeon, prosthodontist, plastic surgeon, paediatrician, otolaryngologist, psychologist, and a speech therapist [11].

The high rate of morbidity in infants born in Asian subcontinent with CLP makes it one of the most crucial of all congenital defects. Feeding is an immediate concern in babies born with clefts as compared to those without such defect. This is a major challenge for the parents and the child if he/she has to undergo surgery for correction of the cleft. These infants need to maintain an optimum weight for the surgery [12].

Moreover, the children born with CLP not just suffer from physical ailments; CLP also has psychological aspects which prominently affects the parents and eventually the child in his growing years. Mother has to deal with the agony of giving birth to a child inflicted with pathology, marking its presence on the face of the child.

Also, feeding is the most important post-birth experience for both, the child and the mother. It forges a bond between the two which marks the beginning of the mother-child bond. However, in cases of children born with CLP, feeding becomes a tiresome procedure, even a cause of anxiety in mother's mind. Hence, the importance of feeding appliance and obturator lies in the fact that it is simple to make; is not time-consuming; is an economical method as it does not employ any elaborate equipment or expensive material; and its use can be easily taught to the parents.

After insertion of the feeding appliance, the infant should be monitored for probable tissue irritation on every alternate day of the first week. It should be adjusted every two weeks and replaced every two to three months. To avoid interfering with the growth of the maxillary and mandibular arches, the borders of the feeding appliance should be trimmed regularly until the retention becomes insufficient [12].

Summary

This article describes a simple and economical method for the fabrication of a feeding appliance and obturator for a fifteen days old neonate with UCLP. This appliance is effective in overcoming most of the feeding problems associated with CLP. It also helps reduce the anxiety and frustration which both, parents and the child experience during the feeding process. It promotes neonate weight gain, which is essential to prepare the child for corrective surgery of CLP.

Conflict of Interest: Authors declare no conflict of interest.

Bibliography

1. McDonald R., *et al.* "Dentistry for the Child and the Adolescent". 1. 1 (2004).
2. Arvedson J and Brodsky L. "Craniofacial Anomalies: An Interdisciplinary Approach. Feeding with Craniofacial Anomalies". 12 (1992).
3. Goldberg WB., *et al.* "Successful Use of a Feeding Obturator for an Infant with a Cleft Palate". *Special Care in Dentistry* 8.2 (1988): 86-89.
4. Osuji OO. "Preparation of Feeding Obturators for Infants with Cleft Lip and Palate". *Journal of Clinical Pediatric Dentistry* 19.3 (1995): 211-214.

5. Shprintzen RJ. "The Implications of the Diagnosis of Robin Sequence". *The Cleft Palate Craniofacial Journal* 29.3 (1992): 205-209.
6. Savion I and ML Huband. "A Feeding Obturator for a Preterm Baby with Pierre Robin Sequence". *Journal of Prosthetic Dentistry* 93.2 (2005): 197-200.
7. Saunders ID, et al. "A Simplified Feeding Appliance for the Infant with a Cleft Lip and Palate". *Quintessence International* 20.12 (1989): 907-910.
8. Prah-Andersen B. "Dental Treatment of Predental and Infant Patients with Clefts and Craniofacial Anomalies". *The Cleft Palate Craniofacial Journal* 37.6 (2000): 528-532.
9. Kogo, M., et al. "Breast Feeding for Cleft Lip and Palate Patients, Using the Hotz-Type Plate". *The Cleft Palate Craniofacial Journal* 34.4 (1997): 351-353.
10. Oliver HT. "Construction of Orthodontic Appliances for the Treatment of Newborn Infants with Clefts of the Lip and Palate". *American Journal of Orthodontics* 56.5 (1969): 468-473.
11. Chandna P, et al. "Feeding Obturator Appliance for an Infant with Cleft Lip and Palate". *Journal of Indian Society of Pedodontics and Preventive Dentistry* 29.1 (2011): 71-73.
12. Masih, S., et al. "Simplified Feeding Appliance for an Infant with Cleft Palate". *Journal of Indian Society of Pedodontics and Preventive Dentistry* 32.4 (2014): 338-341.

Volume 2 Issue 5 October 2015

© All rights are reserved by Rahul Vishnoi, et al.