

Meeting the Challenge of Feeding a New Born Infant with Cleft Lip and Palate- A Case Report

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Abstract

Cleft-lip-palate could be an anomalousness occurring because of malunion during development which is related to feeding issues within the new born infant. The oronasal communication reduces the creation of a negative pressure, which helps in suckling. Feeding prosthesis is an appliance to beat this challenge, aiding in feeding. Cleft anomalies are related to issues in feeding due to communication established between mouth and nasal cavity that makes it onerous for the baby to take care of adequate nutrition levels. This clinical report describes one visit technique for fabrication of feeding prosthesis for a one month new born infant born with cleft lip and palate, a congenital abnormality, which helps the newborn infant to feed milk avoiding regurgitation. The feeding plate is fabricated using acrylic resin which acts as a temporary prosthesis for feeding the baby till surgical correction is planned. The feeding prosthesis could be a prosthetic aid that helps in obturating the cleft by re-establishing and restoring the separation between the oral and nasal cavities. It helps to form a stiff platform towards which the baby will press the nipple and suck milk. This corrective prosthesis improves feeding by reducing the time needed for feeding that helps in weight gain and conjointly reduces nasal regurgitation. The prosthesis conjointly prevents and protects the tongue from getting into the cleftal defect and intrusive with the spontaneous growth of the palatal shelves towards midline. The prosthesis reduces the flow of food into the nasopharynx, thus decreasing the incidence of Otis media and oro-naso pharyngeal infections.

Keywords: Cleft-Lip; Cleft-palate; Obturator; Prosthesis; Feeding plate; Neonate; Oro-nasal fistula

Introduction

Cleft lip and palate of the mouth is one amongst the foremost common biological process disorder found in humans [1-3] (incidence ranges from one in 800 to 1 in 1200 live births). Cleft palate birth defect, congenital anomaly or congenital defect is a gap within the roof of the mouth caused by failure of the palatal shelves to come back absolutely along from either facet of the mouth and fuse throughout the primary months of development as an embryo [4,5]. The gap within the roof of the mouth permits communication between the nasal passages and therefore the mouth. Surgery is required to shut the roof of the mouth. Congenital abnormality cleft lip will occur alone or in association with cleft palate [4]. This is often caused by some unknown disturbances throughout embryogenesis [2]. Cleft lip and congenital abnormality (CLP) is usually related to feeding difficulties, auditory tube pathology, tympanum effusions, tympanum infections, deafness, speech disorders, dental and dentistry issues [4]. A baby born with cleft lip and cleft in roof of the mouth could be a reason behind plethora of issues to the mother and therefore the entire family [4]. The management involves team work from varied specialties. The role of the pediatric medical practitioner is to provide information and counselling to the mother as well as adequate nutrition for the infant [6]. Lip surgery following presurgical orthopaedics is delayed till optimum jaw alignment is achieved (usually concerning age of 3-6 months with unilateral complete clefts), the aesthetic results of lip surgery is increased as a result of growth has provided tissues that area unit of redoubled size, a lot of vascular and easier to control.

A feeding plate could also be the foremost favourable possibility of babies having feeding issues due to cleft-palate. The feeding plate functions as prosthesis by obturating the communication between the mouth and nasal cavity.

Case Report

A one month old male infant was brought to our clinic by his parents. The baby was referred from a government Hospital. His mother complained that the baby was unable to feed milk, there was nasal discharge throughout feeding milk and he was unable to take oral feed. Feeding was through Ryle's tube since birth. Birth weight of the baby was 2.4 kg. No the other relevant medical record present [4].

No case history of clefting or any other non-inheritable craniofacial defects was noted. This baby was her first child and the pregnancy was uneventful. On intraoral examination, unilateral cleft on the left facet involving the lip, alveolus, hard palate, soft palate, uvula was seen (Figure 1). As there was an exact communication between the oral and nasal cavities, a feeding plate was planned for baby which might act as a barrier and a pseudo roof of the mouth to forestall nasal regurgitation and to help in feeding [4].

Parents were explained concerning the procedure thoroughly before commencement of treatment for which they were convinced as their main concern was the babies feeding [1]. During the impression procedure, the baby is made to cry, in order that it opens the mouth wide [6]. For the impression, the infant was positioned face downward to forestall airway obstruction and aspiration of the impression material and choking [4]. Impression of upper gum pad and cleft area created using medium fusing impression compound with hand adaptation to the roof of the mouth using slight pressure (Figure 2) [7].

The inner surface of the finished impression was verified as correct and adequate [4]. When beading and boxing, an operating model was created with dental stone (Type III gypsum) (Figure 3) [5]. A special tray was fabricated using clear acrylic (Figure 4) and then the final impression was made with putty (Figure 5).



Figure 1: Unilateral cleft on the left facet

The final cast was obtained after trimming on which the feeding plate was fabricated using cold cure acrylic resin by “sprinkle on technique” (Figure 6). Separating medium applied over model to facilitate retrieval of set feeding plate. 21 gauge chrome steel wire inserted within the plate which might facilitate in simple retrieval of the plate from mouth and conjointly to help in stabilization of the plate together with tape (micropore) [4]. After correct finishing and polishing of feeding plate, it absolutely was placed within the mouth to assess its extensions and conjointly to check for instinctive gag reflex (Figure 7). After needed changes, the parents were demonstrated for plate insertion, removal, cleaning. Parents were also instructed about proper positioning of baby and bottle during feeding [4].



Figure 2: Impression of upper gum pad and cleft area

The corrective prosthesis was tried within the clinic and the patient's mother was asked to feed the baby. There was no nasal regurgitation noted [4]. The feeding plate was then delivered and the infant and a follow up visit was done 24 hours after delivery and after 1 week. On recall visit the baby was able to take oral feed well and there have been no other complaints of discomfort. The baby's weight on recall visit was found to be 3.0 kgs. And therefore the parents were happy concerning the gain in weight. A new feeding prosthesis ought to be made every three months approximately to accommodate the facial growth of the baby [2].



Figure 3: Operating model of inner surface



Figure 4: Special tray fabrication

Discussion

Patients with cleft lip and cleft of roof of the mouth craniofacial deformities want further care involving multi disciplinarians from birth throughout adolescence. Cleft palate could also be heritable as a chromosome dominant condition with variable penetrance [2]. Family history in a very first degree relative will increase the link by an element of twenty percent. Environmental factors embrace maternal brain disorder like epilepsy, bound medicine like steroids, diazepam, diphenylhydantoin and B deficiency [2]. Cleft lip and palate conjointly

occur as a locality of over one hundred syndromes, as well as congenital defect and Treacher Collin's syndrome [8].

attached to the feeding appliance to prevent swallowing and easy retrieval of appliance.



Figure 5: Final impression made with putty



Figure 7: Feeding plate placed in mouth



Figure 6: Final cast obtained after trimming

The literature reveals the employment of artificial material by Ambroise Pare in 1500s, to close up the palatal defect [8]. Pare used a dry sponge that was hooked up to the side of the disc. Once the sponge becomes wet by the secretion, it expands and holds the prosthesis in situ. In another variation, he used a turnbuckle style of mechanism to carry and hold the corrective prosthesis in situ. Pierre Fuchard (1728), the father of scientific odontology, contributed considerably to maxillofacial prosthetics [8]. He represented 2 types of palatal obturator [8]. One of the kinds has wings within the form of propellers, which might be pleated along together while being inserted and unfolded when insertion with a special key [8]. In the opposite kind, the retentive feature is within the kind of a butterfly wings that area unit created to open by a key when the closed wings are inserted through the palatal perforation [8]. Ethylene vinyl acetate has also been used for fabrication of the feeding appliance. Ethylene vinyl acetate is available in market as bioplast (thickness 1 mm). Floss

Morton used a gold plate to treat palatal defect [8]. Later, in 1875, Claude Martin started employing surgical obturator prosthesis for jaw defects [8]. In 1927, Fry represented importance of impression making before surgery. Use of gutta-percha to hold a skin graft in position for surgical correction of maxillectomy was represented by Steadman in 1927 [2]. Medical aid plays a crucial role in such patients, World Health Organization typically have varied health care wants, as well as difficulties in feeding, speech disorders, ear infections and dental issues. Since definitive surgical procedure wasn't planned a minimum of for 2-3 years, we've got planned an appliance which might facilitate the baby to take care of the traditional suckling mechanism [2]. Feeding appliance becomes a must in cleft lip and (CLP) babies considering the health of the infant . A feeding plate helps in feeding and effectively separating the mouth from the nasal cavity [2]. McNeil eight Mellor & Volp, pioneered the construct of early treatment of congenital abnormality patients by pre-surgical oral corrective and created helpful contribution within the technique of congenital abnormality corrective for infants. This sort of prosthesis reduces regurgitation, incidence of choking, and also shortens the length of your time needed for feeding [1]. The prosthesis conjointly prevents the tongue from getting into the defect and developing the right tongue position with the assistance of a feeding appliance [1]. It helps the tongue within the correct position to perform its practical role in the development of the jaws that conjointly facilitate the speech development [9]. The prosthesis conjointly reduces the passage of food into the bodily cavity reducing the incidence of bodily cavity infection [5].

Surgery could utterly shut the oronasal communication and resolve issues associated with the cleft [5]. However, temporal arrangement of surgery differs considerably between medical centers and will be as early as ten to twelve weeks older or twelve to eighteen months or maybe well past twelve months older [1].

The advantages of construction of palatal prosthesis is incredibly necessary till the surgical correction of the defect is applied as a result of it provides a false roof of the mouth against that kid will suck, reduces the incidence of feeding difficulties in new-borns, helps maintain adequate nutrition, provides jaw cross arch stability and

prevents arch collapse after definitive cheiloplasty (surgical closure of the lip) and conjointly provides jaw medical science moulding of the cleft segments into approximation before primary alveolar cleft bone attachment [1].

Conclusion

Respiration and food intake are the foremost necessary functions for a living being to survive. Non inheritable deformities like cleft lip and palate and other congenital abnormality impair these functions resulting in varied complications. The feeding and respiratory disorders impact not solely on the physical however conjointly psychological well-being of the infant or child [5]. Early intervention develops a positive impact on the infants with clefts [1].

This case report describes a way of how a feeding plate is fictional for a neonate with cleft lip and palate. The feeding plate is an effective appliance in overcoming a number of the feeding issues related to a congenital abnormality defect [1]. Feeding plate prosthesis might also scale back the stress of the baby and parents therefore the baby expertise with the feeding method and promote new born infant weight gain that is vital in making ready the baby for surgery [5]. The feeding plate must be refabricated frequently due to the slow however constant growth of roof of the mouth until the surgery is planned.

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