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Case Report

Successful Management of Cyanosis Due to Tongue Fall Back of 17 Days Newborn with Cleft Palate: A Case Report

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Abstract

Background: *Cleft Lip and Palate (CLP) are one of the most frequently occurring craniofacial congenital anomalies. Itimpairs an individual's aesthetics, speech, hearing, and psychological and social life. Respiratory difficulty and feeding problems are the primary concern of cleft palate newborns.*

Case Presentation: *A 17-day-old newborn presented to the Neonatal Intensive Care Unit on 10 January 2023 with difficulty in respiration and causes nasal regurgitation. Then the patient was referred to dental OPD to place a palatal device/obturator. The case presented here discusses the management of breathing problems to halt cyanosis in a neonate with a cleft palate.*

Conclusion: *Another immediate problem for a newborn with a cleft lip/palate is difficulty in feeding. After adjusting an obturator to the patient's mouth, she recovered from cyanosis. Currently, she is pretty comfortable in respiration as well as feeding.*

Key words: Cleft palate; Cyanosis; Obturator.

INTRODUCTION

The most common congenital anomalies of the orofacial area are cleft lip and palate.[1] In embryology, the primary palate is derived from the intermaxillary segment, and the fusion of palatine shelves or processes forms the secondary palate.Primary and secondary palate later develop the hard palate. Cleft palate occurs due to failure of fusion between palatine shelves. Cleft Lip with/without Cleft Palate (CL/P) and isolated cleft palate are the two main categories for cleft lip and palate instances, respectively (CP). Depending on specific anomalies, these are further divided into syndromic and non-syndromic (nsCLP) clefts. Approximately 50% of CP patients and 70% of CL/P patients have a non-syndromic condition. African populations had an incidence of nsCL/P of 0.3 per 1000 births, European populations of 0.7–1.3 per 1000 births, Asian populations showed 1.4–2.1 per 1000 births, and Americans had 3.6 per 1000 births.[2] Boys are commonly affected with complete cleft lip with the palate, whether unilateral or bilateral. On the other hand,In girls, cleft palates have been observed. Family history of clefts, advanced maternal age, pregestational hypertension, gestational seizures, folic acid deficiencies, maternal smoking, alcohol consumption, drug use and chemical exposure are significant risk factors.[3] It may be associated with congenital heart defects, skeletal anomalies, ocular lesions and mental retardation.[4] Feeding difficulties and nasal regurgitation are the two main issues that newborns with cleft palate. A feeding appliance, also known as an obturator, is a device used to close clefts and reestablish the separation between the nasal and oral chamber for the prevention of nasal regurgitation and to allow a healthy and sufficient diet. The case presented here aims to fabricate an obturatorto restore the functional movement of the tongue, halt the tongue fall back and also facilitate feeding ofa 17-days neonate with a cleft of posterior hard palate.

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CASE PRESENTATION

A 17-day-female neonate with cleft palate was referred by NICU on 10 January 2023 to OPD Dental Department at Chattagram Maa-O-Shishu Hospital, with the chief complaint of respiratory difficulty due to tongue fall back. Therefore, patient got repeatedly cyanosis. On extraoral examination, there was no defect in lips. Intraoral examination of the child revealed a cleft involving the soft and posterior part of hard palate (Figure 1). Examination revealed that the patient had no other associated anomaly. There was no history of maternal illness, smoking, drug (Other than the iron and folic acid tablets) or alcohol intake during pregnancy. The patient was being fed with nasogastric intubation. Parents were instructed not to feed the neonate for at least 2 hours before the procedure to avoid regurgitation and aspiration. First, the parents' counseling was done to reduce their emotions and anxiety. The whole instrument was set up while taking primary impression.

Image 1 Intraoral view of neonatal cleft palate

Image 2 Tray with necessary instrument

A low-fusing,non-elastic impression compound was used for the impression of the maxillary arch. At first, the impression compound was soaked in warm water. After softening the impression compound, check the temperature, which must be adaptable to the oral cavity temperature. Index and middle finger were used to carry the material and checked the vestibular depth and details. The baby started suckling during the period of taking impression. It was removed from the mouth with minimum distortion. The impression was poured with the dental stone. The cast was inspected for undercuts and blocked with wax (Figure 3). Flasking, dewaxing, packaging, and curing were done conventionally. The prosthesis was examined after retrieval to check for consistent thickness, sharp edges, spicules, and nodules, it was then adjusted as needed. After polishing and finishing, the prosthesis underwent intraoral inspection. With the use of revealing, the obturator's intaglio surface was assessed intraorally and given to the patient.

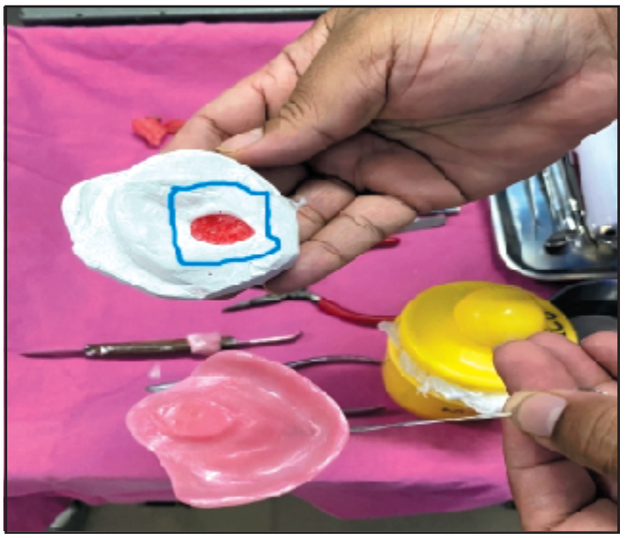

Image 3 Palatal defect filled with wax

Image 4 Cast model with obturator

The oral cavity and prosthetic dental hygiene were discussed with the parents. The baby was completely awake when the imprint was taken. All the impression procedures were taken in the Neonatal Intensive Care Unit (NICU) with a pediatrician to avoid complications and handle airway emergencies. High-volume suction was also kept stand by all the times in case regurgitation of the stomach contents happens, or impression material falls back into the airway during the procedure. Instruction was given to the parents about the insertion and removal of the prosthetic device, which was specially made for the baby. The baby was able to feed through a bottle before starting breastfeeding (Figure 5). After two days of insertion patient was discharged from NICU and kept under follow-up. After 7 days patient visited to dental OPD for follow-up (Figure 6).

Image 5 Bottle feeding with Obturator

Image 6 Seven (7) days after follow -up

DISCUSSION

CLP is a common congenital deformity that affects aesthetics,speech, and hearing.[5] Most frequently, respiratory insufficiency is caused by glossoptosis linked to airway impairment. These individuals frequently require various medical services, such as eating difficulties, speech impairments, persistent ear infections, dental issues and orthodontic issues. Thus primary care is crucial.[6] According to various research, infants with cleft lip and palate have delayed expressive language, which is demonstrated by a limited sound inventory in early infancy and a slower acquisition of sounds and words.[7] To offer complete treatment for the patients with cleft lip and/or palate, a multidisciplinary team is required. According to the American Cleft Palate, the team should include experts in anesthesiology, audiology, genetics, neurosurgery, nursing, ophthalmology, oral and maxillofacial surgery, orthodontics, otolaryngology, pediatrics, pediatric dentistry, physical anthropology, plastic surgery, prosthodontics, psychiatry, psychology, social work, and speech and language disorders.[8] It is typical to schedule cleft palate surgery between 9 and 18 months. Feeding the newborn is difficult for the mother until the cleft palate is surgically closed. Cleft lip surgery or chieoloplastyis done first and the "rules of ten" followed during cleft palate surgery. The feeding obturator briefly closes the opening between the nasal and oral cavities, allowing the baby to exert enough pressure to aid with milk sucking. According to Jones et al., the palatal obturator prevents the tongue from sticking into the cleft, enabling regular milk sucking.[9] There are various impression materials: elastomeric (Polysulphide, silicone, polyether, vinyl polysilicon) and non-elastomeric (Impression plaster, compound, waxes, zinc-oxide eugenol).[4] Here we take impression compound with great care because it can causes burn as well as releases volatile substances, which creates health hazard. For maxillofacial prostheses, various biomaterials are available, including acrylic resins, silicones, visible light-cured acrylic, acrylic polymer etc. Acrylic resin was chosen because it is readily accessible, has acceptable strength, and can be manufactured with a small margin of error.[10] Using a palatal obturator may aid CLP patients with their speech and language development and their breathing improved to prevent cyanosis. The feeding plate's main benefit is improving the young child's feeding and respiration difficulties. This case was successfully rehabilitated by placing an obturator, a prosthetic device. The primary disadvantage of these feeding plates is the ongoing need for their obturator to accommodate development and maintain proper mouth hygiene.[10,11]

CONCLUSION

The case study demonstrates the fabrication of obturator for the repositioning of tongue, therefore patient relieved from breathing difficulty. Feeding difficulties also can be a significant complication for infants born with large clefts. Obturators have been shown to be valuable and practical nursing aids for cleft infants until corrective surgery can be accomplished. In the present case, the Obturator adapts easily to the contours of the infant's mouth and the appliance is stable and well-retained despite the forces placed on it during feeding.

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DISCLOSURE

All the authors declared no competing interest.

REFERENCES

1. Hiremath VS, Lingegowda AB, Rayannavar S, Kumari N. A innovative technique - Modified feeding bottle for a cleft palate infant. J Clin Diagnostic Res. 2016;10(4):ZM01-ZM02. doi:10.7860/JCDR/2016/15840.7526.
2. A Oner D, Tastan H. Cleft lip and palate: Epidemiology and etiology. Otorhinolaryngol Neck Surg. 2020;5(4):1-5. doi:10.15761/ohns.1000246.
3. Rathee M. Single visit feeding appliance for 1-day-old neonate with cleft palate using safe dental putty-gauze hybrid impression technique for maxillary impression. J Surg Tech Case Rep. 2015;7(1):7-11. doi:10.4103/2006-8808.184938.
4. Gupta S, Bansal R, Kumar Pathak A, Bhatia B, Kumar Gautam K. Rehabilitation of a One-day-Old Neonate with Cleft Lip and Palate using Palatal Obturator: A Case Report. Int J Clin Pediatr Dent. 2012;5(2):145-147. doi:10.5005/jp-journals-10005-1154.
5. Kalaskar R, Bhaje P, Sharma P, Balasubramanian S, Ninawe N, Ijalkar R. Comparative evaluation of nasal and alveolar changes in complete unilateral cleft lip and palate patients using intraoral and extraoral nasoalveolar molding techniques: Randomized controlled trial. J Korean Assoc Oral Maxillofac Surg. 2021;47(4):257-268. doi:10.5125/jkaoms.2021.47.4.257.
6. Breugem C, Paes E, Kon M, van der Molen ABM. Bioresorbable distraction device for the treatment of airway problems for infants with Robin sequence. Clin Oral Investig. 2012;16(4):1325-1331. doi:10.1007/s00784-011-0624-x.
7. Nagarajan R, Savitha VH, Subramaniyan B. Communication disorders in individuals with cleft lip and palate: An overview. Indian J Plast Surg. 2009;42(SUPPL. 1). doi:10.4103/0970-0358.57199.
8. Kumar A, Shah S, Khadka S, Birajee G, Shah L. Bilateral Cleft Lip and Unilateral Cleft Palate with Unilateral Renal Agenesis : A Case Report. Published online. 2022;1-11.
9. Tirupathi SP, Ragulakollu R, Reddy V. Single-visit feeding obturator fabrication in infants with cleft lip and palate: A case series and narrative review of literature. Int J Clin Pediatr Dent. 2020;13(2):186-191. doi:10.5005/jp-journals-10005-1723.
10. Jangra B. Management of feeding Problem in a Patient with Cleft Lip/Palate. Int J Clin Pediatr Dent. 2016;9(2):143-145. doi:10.5005/jp-journals-10005-1351.
11. Grayson BH, Maull D. Nasoalveolar molding for infants born with clefts of the lip, alveolus and palate. Cleft Lip Palate. Published online 2006:451-458. doi:10.1007/3-540-30020-1_27.