

Transforming the Smiles of Newborns: A Case of Unilateral Cleft Lip and Palate Rehabilitation with Palatal Obturator and Nasal Elevation

Dr. Shruti Jha¹, Dr. Nikhil Srivastava², Dr. Ashima Tyagi³,
Dr. Kanishka Gautam⁴

^{1,2,3,4}Department of Pediatric and Preventive Dentistry, Subharti Dental College and Hospital, Swami Vivekanand Subharti University, Meerut

Corresponding Author: Dr. Kanishka Gautam

DOI: <https://doi.org/10.52403/ijhsr.20240854>

ABSTRACT

In this compelling case report, we present the successful management of a newborn with a unilateral cleft lip and palate utilizing the innovative techniques of a palatal obturator and nasal elevator. Our approach not only addresses the physical challenges posed by this condition but also highlights the transformative impact on the infant's quality of life. This case underscores the potential for comprehensive cleft care to enhance early development, feeding and speech, emphasizing the importance of early intervention in providing a bright and promising future for these young patients.

Keywords: *Cleft lip palate, Feeding Plate, Presurgical Orthopaedics, Nasal Elevator*

INTRODUCTION

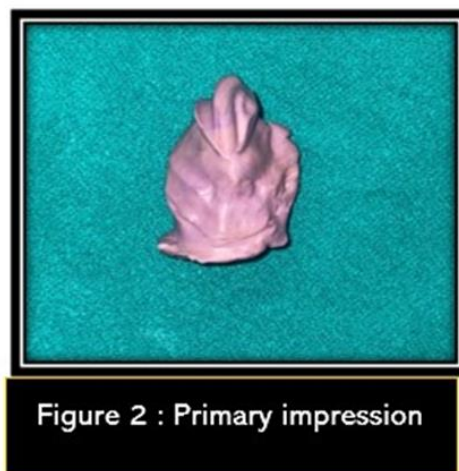
Cleft lip and palate, two seemingly small gaps, yet they can create monumental challenges in the lives of those affected. Cleft lip and palate (CLP) is the most common congenital defect involving the orofacial region.¹ These congenital clefts, which occur during early fetal development, have far-reaching implications that extend well beyond the visible cleft itself. Its presence may be solitary or it may be associated with congenital heart defects, skeletal anomalies, ocular lesions and mental retardation. The problem associated with cleft lip and palate are not merely cosmetic; they ripple through every aspect of life. Children born with these conditions often face difficulties with feeding, speech, and dental development, while enduring potential social and emotional struggles as they grow. The earliest problem faced by

these newborns is feeding difficulty. The oronasal communication leads to nasal regurgitation and difficulty in suckling that complicates the feeding process. The aim of treatment in CLP patients is to restore normal anatomy and function. A feeding obturator is a specialized device plays a pivotal role in addressing the challenges associated with feeding in these young patients.^{2,3} In this case report, we present a comprehensive step by step procedure for fabricating a palatal obturator to rehabilitate the cleft lip and palate patient. The goal is to highlight the critical role these palatal obturators play in enhancing feeding, promoting speech and language development, facilitating presurgical orthopaedics, and effectively preventing a spectrum of associated otorhinolaryngeal problems.

CASE REPORT

A neonate, merely four days old, presented a significant challenge, with a complete unilateral cleft lip and palate on the right side. This case was referred to the department of Pediatric and Preventive Dentistry at Subharti Dental College and Hospital, Meerut, with the chief concern of feeding difficulties. There was no family history suggestive of cleft lip and palate or teratogenic drug intake. Upon examination, a unilateral cleft lip and palate on the right side was evident, and a concomitant depression of the right nasal ala was observed. (figure 1) The patient had no other associated anomaly. Following a detailed discussion with the child's parents, a specialized feeding appliance was strategically planned for the newborn's care.

A preliminary impression was meticulously crafted using elastomeric impression material, all while the infant remained fully awake and comfortably in an upright position. (figure 2) As soon as the material was placed in the oral cavity with index and middle finger the baby started suckling during this period the material was moulded to the palate, taking care that it reaches to the mucobuccal fold areas. The plaster of paris cast was prepared to fabricate a custom impression tray. Using a custom tray, a secondary impression was taken. The impression was poured with the type V dental stone. The final cast was inspected for the undercuts and were blocked. The feeding obturator was then fabricated using clear acrylic resin using sprinkle method. (Figure 3 & 4).

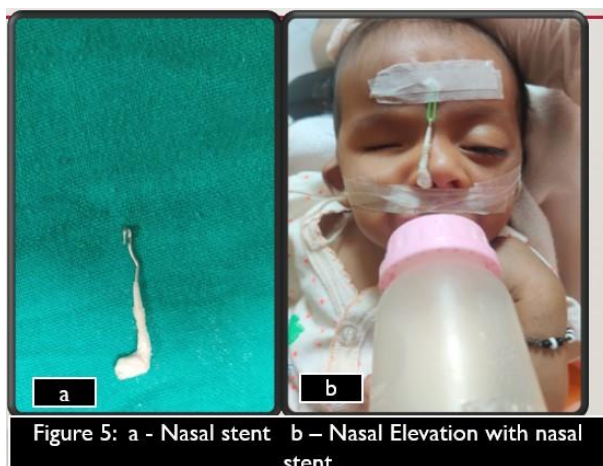


The uniform thickness of the plate was maintained so that tongue space is not jeopardized as it interferes with the airway maintenance. After retrieval the prosthesis was inspected for uniform thickness, sharp edges, spicules and nodules and was modified as per need. After finishing and polishing the prosthesis, it underwent an intraoral check, and the patient's mother was requested to feed the baby. Notably, there was no nasal regurgitation, and the child could comfortably feed using the feeding obturator. Micro-pore tape was used applied to secure the feeding plates.

PRESURGICAL NASOALVEOLAR MOULDING

This involves actively moulding and repositioning the deformed nasal cartilages and alveolar processes, along with lengthening the columella. Two square

adhesive tapes were affixed to the left and right cheeks and then horizontally crossed from the right to the left cheek. The parents were asked to replace the tapes daily. The nasal elevator system (Nasal stent) was crafted by bending a plastic coated paper clip into the desired shape, and its tip was covered with teflon tapes. The device was secured using an orthodontic elastic band and affixed to the frontal area with adhesive tape, gradually applying tension until slight skin blanching occurred.(figure 5 a & b). The parents were instructed on how to use, replace tapes, and the patient was monitored weekly, with adjustments made to the appliance as necessary. During the routine follow-up, improvements were noted in the child's nutritional status, a decrease in cleft width, and enhancements in the vertical level of the nasal alae on the cleft side (figure 6).



DISCUSSION

Newborns with cleft palate face feeding challenges due to oronasal communication, impacting their ability to generate the necessary negative pressure for sucking. Additionally, the feeding process is complicated by nasal regurgitation of food and increased air intake, often resulting in frequent choking episodes.⁴ Surgical closure of the cleft can take place as early as 10-12 weeks up to 12-18months. Until then, it's crucial to ensure the child receives proper feeding to maintain their health and weight.⁵

The use of various feeding devices such as squeezable bottles, soft nipples, specially designed nipples with enlarged openings, and wide base nipples can be highly beneficial in successfully feeding an infant with cleft lip and palate. However, these tools may be less effective for infants with larger clefts. The feeding obturator is a device designed to establish a seal between the oral and nasal cavities, effectively regulating the flow of milk. Its primary functions include facilitating feeding, minimizing nasal regurgitation, and decreasing the duration of feeding session.⁶ Elastomeric impression materials excel in

capturing cleft impressions because of their excellent elastic properties, high tear strength, precise replication of surface details, and prolonged dimensional stability, enabling multiple pours to be made.⁷

In this particular case, a feeding obturator was accompanied by a nasal elevator to shape the deformed nasal cartilage. The initial use of a paperclip lined with plastic as a nasal elevator, coupled with an elastic band fastened to the forehead to align the cleft segments was reported by Monasteries et al. This nasal elevation technique is minimally invasive, lowering the risk of nostril airway obstruction.⁸ Additionally, it offers ease of understanding and management for parents. In our case, the cleft width displayed a reduction, as depicted in the figure 6, and the nasal architecture showed improvement. Throughout the treatment and follow up sessions, no complications were observed. Therefore, the utilization of a palatal obturator in conjunction with a nasal elevator can significantly decrease the cleft width and enhance the nasal architecture.

CONCLUSION

In most cleft palate cases, an appliance is necessary to seal the nasal and oral cavities, enabling negative pressure for infant feeding. The feeding obturator is the preferred device for this purpose, reducing nasal regurgitation and choking. Enhancing the nasal architecture can be achieved by combining a nasal elevator with the feeding obturator, providing added benefits.

Declaration by Authors

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Proffit, WR.; Fields, HW.; Ackermann, JI.; Thomas, PM.; Tulloch, JFC. Contemporary orthodontics. CV Mosby: St Louis; 2000. p. 287-288.
2. Reisberg DJ. Prosthetic habilitation of patients with clefts. Clin Plast Surg 2004 Apr;31(2):353-360.
3. Osuji OO. Preparation of feeding obturators for infants with cleft lip and palate. J Clin Pediatr Dent 1995 Spring;19(3):211- 214.
4. Narendra R, Sashi Purna CR, Reddy SD, Simhachalam Reddy N, Sessa Reddy P, Rajendra Prasad B. Feeding obturator-A presurgical prosthetic aid for infants with cleft lip and palate -clinical report. Ann Essences Dent 2013;5(2):1-5.
5. Duggal A, Arora A, Duggal P, Handa K. Feeding obturator or appliance in a cleft palate patient: A case report. Ind J Compr Dent care 2014;4(1):64-7.
6. Agarwal A, Rana V, Shafi S. A feeding appliance for a newborn baby with cleft lip and palate. National journal of maxillofacial surgery. 2010 Jan;1(1):91.
7. Bansal R, Pathak AK, Bhatia B, Gupta S, Gautam KK. 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):145-7.
8. Heravi F, Ghoochani TZ, Jahanbin A, Askary A. Nasal elevation: A case report of a new approach in orthopedic treatment of infants suffering from cleft lip-palate. Shiraz E-Medical Journal. 2019 Dec 31;20(12).

How to cite this article: Shruti Jha, Nikhil Srivastava, Ashima Tyagi, Kanishka Gautam. Transforming the smiles of newborns: a case of unilateral cleft lip and palate rehabilitation with palatal obturator and nasal elevation. *Int J Health Sci Res.* 2024; 14(8):463-466. DOI: <https://doi.org/10.52403/ijhsr.20240854>
