

Review Article

Breastfeeding in children with cleft lip and palate and its effect on surgical outcomes

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ABSTRACT

Breastfeeding is a fundamental aspect of infant nutrition and development. However, children born with cleft lip and palate face unique challenges in breastfeeding due to structural anomalies in their facial and oral regions. This study explores the intricate landscape of CLP, covering its epidemiology, complex etiology involving genetic and environmental factors, and the specific challenges breastfeeding children with CLP and their mothers encounter. This review emphasizes the critical role of surgical interventions in CLP management, discussing the timing, techniques, and outcomes of these procedures. While surgical repair of CLP can enhance breastfeeding outcomes, it may also introduce temporary complications, including feeding difficulties, pain, and discomfort. Addressing these challenges requires a multidisciplinary approach involving healthcare professionals, specialized feeding equipment, emotional support, and targeted interventions. Moreover, the emotional well-being of mothers of infants with CLP is highlighted as an essential component of breastfeeding success. Maternal stress and emotional distress can hinder breastfeeding, emphasizing the importance of emotional support and counseling services. Successful breastfeeding in children with CLP is achievable with the right strategies and support systems, like comprehensive care, which acknowledges the complexity of CLP and emphasizes the need for a collaborative healthcare approach to ensure that children with CLP receive optimal nutrition and care during their critical early developmental stages.

Keywords: Breastfeeding, Cleft lip and palate, Challenges, Multidisciplinary care, Surgical outcomes, Infant nutrition

INTRODUCTION

Breastfeeding, recognized as the gold standard of infant nutrition, holds paramount importance in early childhood development. However, breastfeeding in children with

cleft lip and palate (CLP) is fraught with challenges and barriers that affect both the infant and the mother. CLPs are congenital craniofacial clefts characterized by the incomplete fusion of the lip and/or palate structures during fetal development. These anomalies manifest as gaps or

fissures in the upper lip, the roof of the mouth (palate), or both, and their severity can vary.¹

CLP is one of the most common congenital craniofacial defects, and it presents with varying degrees of complexity and impact on affected individuals. Classification of CLP is crucial for both clinical assessment and research purposes. Several classification systems are employed, primarily based on the location and extent of the cleft.² These classifications include unilateral and bilateral cleft lip, complete and incomplete cleft lip, as well as various forms of cleft palate, such as soft palate cleft, hard palate cleft, complete cleft palate, and submucous cleft palate. The incidence and prevalence of CLP vary among populations and regions. On average, CLP affects approximately 1 in every 1,000 live births.³ However, these rates can significantly differ among ethnicities and geographical areas. A more detailed understanding of the epidemiology of CLP is essential to grasp the extent of its impact on different communities.

The etiology of CLP is complex and involves genetic, environmental, and developmental factors.⁴ While the precise cause remains unclear, several factors contribute to its development. Genetic predisposition is evident through familial clustering, and numerous genes have been associated with cleft formation.⁵ Environmental factors, including maternal smoking, alcohol consumption, and exposure to teratogens during pregnancy, also increase the risk.⁶ Additionally, disruptions in the intricate processes of embryonic facial structure fusion play a pivotal role in CLP's development. The pathophysiology of CLP is a multifaceted interplay of genetic, molecular, and mechanical factors.⁷ Aberrations in cell migration, proliferation, and tissue fusion processes result in the characteristic orofacial clefts. The failure of facial prominences, such as the frontonasal, maxillary, and mandibular processes, to fuse appropriately contributes to the various presentations of CLP.

Breastfeeding children with CLP present several challenges. Incomplete lip closure, impaired palate function, slow weight gain, maternal stress, and reduced breastfeeding duration are among the prominent issues.⁸ Addressing these challenges requires a multidisciplinary approach involving healthcare professionals, specialized feeding equipment, emotional support, and targeted interventions to ensure that infants with CLP receive the best possible nutrition and care during their crucial early developmental stages.

METHODS

This study is based on a comprehensive literature search conducted on September 28, 2023, in the Medline and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the

previously listed papers as a starting point. We looked for valuable information in papers that discussed breastfeeding in children with cleft lip and palate and its effect on surgical outcomes. There were no restrictions on date, language, participant age, or type of publication.

DISCUSSION

Breastfeeding, a cornerstone of infant nutrition and development, presents distinct challenges when CLP is present in newborns.⁸ These challenges stem from the structural anomalies of the cleft itself, affecting both the infant's ability to latch onto the breast and the mother's ability to breastfeed effectively.⁹ Children with cleft lips often face difficulties with incomplete lip closure, which is necessary for a proper latch during breastfeeding. The absence of a sealed environment around the breast compromises suction, leading to inefficient milk transfer and increased air intake during feeds. These issues not only frustrate the infant but also reduce breastfeeding duration and effectiveness. Adding to the complexities, infants with a cleft palate experience impaired palate function, a critical component for creating the intraoral pressure required for milk extraction.¹⁰ In children with CLP, milk may escape into the nasal cavity through the cleft, raising the risk of aspiration and respiratory problems. This compromised palate function can hinder the establishment of a coordinated sucking and swallowing pattern.⁸

The challenges posed by CLP often result in slow weight gain and nutritional concerns. Inadequate milk intake can lead to undernourishment, growth delays, and heightened susceptibility to infections.¹¹ Consequently, ensuring proper nutrition becomes a paramount concern, necessitating alternative feeding methods or supplementary feeding to meet the child's nutritional needs. The emotional impact on mothers of infants with CLP should not be underestimated. Mothers frequently experience elevated stress and emotional distress related to breastfeeding.⁸ The difficulties they face in achieving successful breastfeeding can lead to feelings of inadequacy, guilt, and frustration. This maternal stress can, in turn, hinder breastfeeding success and the establishment of the vital mother-infant bond.

The combined effects of these challenges often result in reduced breastfeeding duration. Mothers may prematurely opt for alternative feeding methods, such as bottles and formula, due to perceived breastfeeding difficulties.¹² This early cessation of breastfeeding can have long-term implications for both the child's health and the mother's emotional well-being. Furthermore, access to specialized support services, such as lactation consultants and feeding therapists with expertise in CLP, may be limited in some regions. Mothers in areas with restricted access to these services may face additional barriers to addressing breastfeeding challenges effectively. Children with CLP need special strategies to overcome the unique challenges they face. Supporting breastfeeding in this population involves a multifaceted approach that addresses the

structural and functional anomalies associated with CLP while prioritizing the well-being of both the infant and the mother.¹³ One key strategy is the utilization of specialized feeding equipment, such as cleft palate bottles and nipples (Figure 1).¹⁴ These devices are designed to accommodate the cleft and allow for better control of milk flow. By using cleft palate bottles, mothers can maintain a safe and efficient feeding environment, reducing the risk of aspiration and ensuring that infants receive the nutrition they need. Lactation consultants and healthcare professionals play an indispensable role in supporting breastfeeding for children with CLP. These experts provide guidance and training to mothers on proper breastfeeding techniques and positioning, which are crucial for optimizing latch and milk transfer. Lactation consultants also offer emotional support, helping mothers navigate the unique challenges they may encounter during their breastfeeding journey.

Paced bottle feeding is another effective strategy that mimics breastfeeding and can be employed to enhance the infant's sucking reflex and promote oral muscle development.¹⁵ This technique ensures that infants receive milk at a pace that is comfortable for them, reducing the likelihood of overfeeding or milk aspiration. Speech therapists are valuable members of the support team, contributing to the long-term management of CLP infants.¹⁶ They can assist in addressing speech and language development concerns that may arise as the child grows. Early intervention and speech therapy can help mitigate potential speech difficulties associated with CLP.



Figure 1: Different types of feeders or nipples are available for cleft lip and palate infants.¹⁷

It is essential to acknowledge the emotional aspects of breastfeeding for mothers of CLP infants. Providing emotional support and counseling services is integral to promoting breastfeeding success. Mothers may experience heightened stress and anxiety due to the challenges associated with breastfeeding their infants.⁸ Addressing their emotional needs can contribute significantly to the overall well-being of both the mother and the infant. Moreover, support groups and peer counseling networks can be invaluable resources for mothers of CLP infants. Connecting with other mothers who have faced similar

challenges can offer a sense of community and reassurance. Sharing experiences and coping strategies can empower mothers to persevere in their breastfeeding efforts.

The surgical management of children born with CLP is a multifaceted process involving a series of surgical procedures designed to correct anatomical defects, restore normal function, and enhance aesthetic outcomes.¹⁸ Timing is a critical consideration in these surgeries. Typically, cleft lip repair occurs within the first few months of life, typically around 2 to 3 months of age, allowing for early intervention that improves breastfeeding and speech development. In contrast, cleft palate repair is generally performed later, usually between 9 and 18 months of age, once the child's palate has sufficiently developed for surgery.¹⁹ The surgical technique for cleft lip repair aims to address both functional and aesthetic concerns.¹⁸ The procedure involves precisely aligning and suturing the divided lip tissues. Modern techniques focus on minimizing scarring while achieving a natural appearance and functional improvement. This approach enhances the child's ability to breastfeed and speak effectively as they grow.

Cleft palate repair, on the other hand, is a more intricate procedure due to the involvement of both hard and soft palatal tissues.¹⁹ The specific surgical techniques employed may vary based on the characteristics of the cleft. The primary goals include achieving adequate velopharyngeal closure, which is crucial for speech development, as well as facilitating efficient feeding and breastfeeding. Techniques encompass a range of approaches, from using local tissues like palatal flaps to more extensive procedures such as the Furlow double-opposing Z-plasty (Figure 2), which elongates the palate and enhances closure. In some instances, children with CLP may require orthognathic surgery during adolescence, particularly if severe jaw misalignment or malocclusion exists.²⁰ Orthognathic surgery aims to correct skeletal discrepancies, and improve facial aesthetics, occlusion, and overall function. Proper jaw alignment can contribute significantly to oral function, including chewing and speech.

The outcomes of these surgical interventions significantly impact the child's ability to breastfeed and achieve optimal feeding and speech development.²¹ Surgical repair of cleft lip typically results in improved breastfeeding outcomes. The procedure aims to achieve proper lip closure, which is essential for a secure latch during breastfeeding.¹⁵ Successful lip repair not only enhances the infant's ability to latch effectively but also contributes to better suction and milk transfer. Mothers often report improved breastfeeding experiences following successful cleft lip repair.

Cleft palate repair is equally vital to optimizing breastfeeding outcomes.²¹ A successful palate repair aims to create an intact palate, facilitating the development of an

effective sucking and swallowing pattern. It prevents the regurgitation of milk into the nasal cavity, reducing the risk of aspiration during feeds.¹⁶ Children with repaired palates often exhibit improved oral function, which positively impacts their ability to breastfeed effectively. As mentioned earlier, the timing of surgical interventions plays a crucial role in breastfeeding outcomes.²³ Early repair of the cleft lip, typically within the first few months of life, allows infants to establish successful breastfeeding patterns early on. Early palate repair, performed around 9 to 18 months of age, ensures that children can transition to more complex feeding mechanisms, such as cup or spoon feeding, and aids in the development of speech.

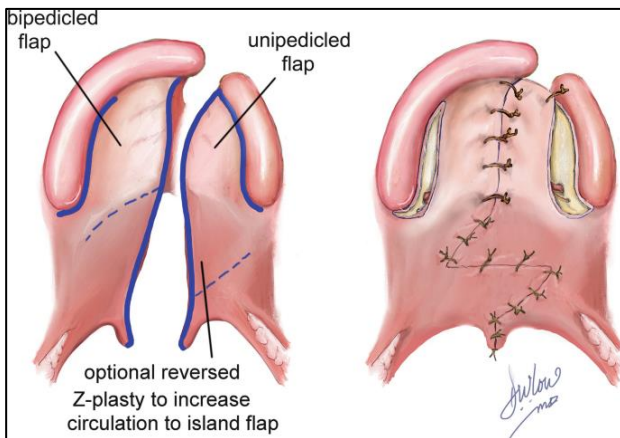


Figure 2: Cleft palate repair through Furrow double-opposing Z-plasty.²²

Surgical repair of CLP is a crucial aspect of comprehensive care, but it can introduce certain complications that may affect breastfeeding children. These complications need careful consideration to optimize outcomes for infants undergoing CLP repair. One of the primary complications observed in breastfeeding children post-CLP repair is feeding difficulties.²⁴ Surgery, while intended to improve oral function, can sometimes lead to temporary disruptions in feeding patterns. Challenges with latching, achieving a proper seal during breastfeeding, and coordinating sucking and swallowing may arise.²⁵ Postoperative pain and discomfort are common concerns following CLP repair, particularly in the days immediately following surgery.²⁶ This discomfort may temporarily affect the infant's willingness to breastfeed, potentially resulting in decreased feeding frequency and duration. Adequate pain management strategies, including pain medication and soothing techniques, are essential to support breastfeeding during this period. Surgical interventions can also alter the sensation in the affected area, affecting the infant's perception of the breast and coordination of tongue and oral muscles during breastfeeding.²⁷ Palatal sensation typically improves over time as the child adapts to the surgical changes. Scarring and adhesions can develop at the surgical site, potentially impacting the mobility of the lip or palate and hindering the child's ability to achieve a proper latch.²⁶ Addressing adhesions may require additional interventions.

Revision surgery may also be necessary for some children as they continue to grow and develop.²⁸ These revisions can address issues such as scar revision, residual deformities, or persistent speech problems, tailoring procedures to the child's specific needs to optimize function and appearance. It is essential to recognize that the surgical management of CLP is just one facet of a comprehensive, multidisciplinary approach. Collaboration among surgeons, speech therapists, orthodontists, and other specialists is paramount. This collaborative effort ensures not only functional improvements but also addresses the psychosocial and holistic needs of the child, promoting their overall well-being.¹⁸ Complications from CLP repair can also have psychosocial implications, affecting both the infant and the parents emotionally. Adequate emotional support, counseling, and resources are crucial to addressing these concerns.

CONCLUSION

In summary, breastfeeding challenges for children with CLP are multifaceted, affecting both infants and mothers. Specialized strategies, including feeding equipment, support from healthcare professionals, and emotional assistance, are essential for successful breastfeeding in this population. Surgical interventions, performed with precise timing, play a pivotal role in improving latch and suction. However, careful management of surgical outcomes is necessary to address potential complications and optimize feeding outcomes in children with CLP.

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