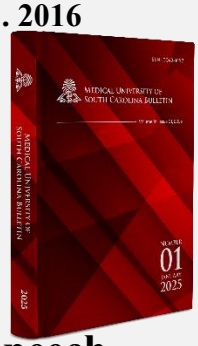
Research Article
E-ISSN: 0099-6157

Volume 07, Issue No. 01. 2016



MEDICAL UNIVERSITY OF SOUTH CAROLINA BULLETIN

The Impact of Cleft Lip and Palate Repair on Early Speech Development in Pediatric Plastic Surgery

[1]Mihatov, [2]Seshadri
[1,2] New York Medical College, United States of America
Corresponding Email : Mihatovdr41341@gmail.com

Article History :
Received date : 2015/10/15
Revised date : 2015/11/24
Accepted date : 2015/12/08
Published date : 2016/01/16

ABSTRACT

Introduction: Cleft lip and palate are among the most common craniofacial birth defects, significantly impacting speech development. Surgical repair is a cornerstone of treatment, aiming to restore normal anatomy and function. This review explores the relationship between the timing and technique of cleft lip and/or palate repair and its influence on early speech development in pediatric patients within the scope of plastic surgery. **Literature Review:** The complex anatomical distortions caused by clefts directly impede normal velopharyngeal function and oral cavity resonance, crucial for clear speech production. Early surgical intervention, particularly for palate repair, has been emphasized to facilitate optimal speech outcomes by providing a functionally intact velopharyngeal mechanism before critical speech sound acquisition periods. Studies have investigated the impact of various surgical techniques on velopharyngeal competence, fistula formation, and maxillary growth, all of which indirectly affect speech. While early closure generally promotes better speech, the precise timing remains a subject of ongoing discussion, balancing the benefits to speech with potential effects on facial growth. **Conclusion:** Surgical repair of cleft lip and palate is pivotal for enabling normal speech development. The timing and meticulous execution of these plastic surgery procedures are

critical determinants of early speech outcomes. Achieving successful anatomical and functional restoration is essential to minimize speech impediments and optimize communicative abilities in children with clefts, underscoring the importance of an integrated, multidisciplinary approach to their care.

Keywords: Cleft Lip, Cleft Palate, Speech Development, Plastic Surgery, Velopharyngeal Function, Pediatric.

Introduction

Cleft lip and palate are among the most prevalent congenital anomalies affecting the craniofacial region, presenting significant challenges that extend beyond aesthetic concerns to critical functional aspects, most notably **speech development**. These birth defects result from incomplete fusion of facial structures during embryonic development, leading to anatomical distortions of the lips, alveolar ridge, hard palate, and soft palate. The integrity of these structures is fundamental for proper articulation, resonance, and the production of intelligible speech.

In the field of **pediatric plastic surgery**, the primary goal of cleft lip and palate repair is not merely cosmetic but, crucially, to restore normal anatomy and function, thereby facilitating optimal feeding, hearing, and, profoundly, the development of clear and effective communication. The timing and specific techniques employed in these surgical interventions are believed to directly influence the subsequent trajectory of a child's speech acquisition. This literature review aims to examine the intricate relationship between the surgical repair of cleft lip and palate and its direct impact on **early speech development**, highlighting key considerations and findings within plastic surgical practice.

Literature Review

The anatomical defects associated with cleft lip and palate directly impede normal **speech development** by compromising the velopharyngeal mechanism, which is essential for separating the oral and nasal cavities during speech. This inadequate closure leads to hypernasality and compensatory articulation patterns. Surgical repair, particularly of the palate,

is therefore a critical intervention aimed at creating a functional velopharyngeal valve and allowing for normal resonance and articulation.

Early studies on cleft palate repair (palatoplasty) consistently highlighted the importance of **timing** in relation to speech outcomes. It was widely accepted that closing the palate before the onset of babbling and the acquisition of early speech sounds was beneficial. Early intervention aimed to provide a structurally and functionally competent palate before children developed ingrained compensatory speech patterns (Bardach et al., 1984). Many surgeons advocated for palate repair between 9 and 18 months of age, theorizing that this window balanced the advantages of early speech development with concerns about maxillary growth disturbance (Choi & Kim, 2008).

Various **surgical techniques** for palatoplasty have been developed, each with its own advantages and potential impacts on speech and growth. Techniques like the two-flap palatoplasty (von Langenbeck procedure) and the V-Y pushback palatoplasty (Veau-Wardill-Kilner procedure) aim to achieve complete velopharyngeal closure (Veau, 1931; Wardill, 1937; Kilner, 1937). Studies comparing different methods often focused on outcomes such as rates of velopharyngeal insufficiency (VPI), fistula formation, and subsequent speech characteristics like hypernasality and articulation errors (Wyatt et al., 2004). While no single technique has been definitively proven superior for all speech outcomes across all patients, the goal across all approaches remained the creation of a mobile, tension-free, and anatomically correct soft palate to facilitate normal speech.

The presence of a **palatal fistula** after repair, a common complication, significantly impacts speech by allowing air leakage into the nasal cavity, resulting in persistent hypernasality and nasal emission (Cohen et al., 1991). The meticulousness of surgical closure and management of these fistulas is paramount for achieving optimal speech. Furthermore, while early palate repair generally promotes better speech, there were ongoing discussions regarding its potential impact on **maxillary growth**, sometimes leading to midface hypoplasia. Balancing these two critical outcomes – excellent speech and favorable facial growth – has been a perpetual challenge in pediatric plastic surgery (Lilja et al., 2006).

Ultimately, successful early speech development after cleft repair depends not only on the physical reconstruction but also on a multidisciplinary team approach, including speech therapy, to maximize the functional potential created by the surgery (Dunn et al., 1986). The

plastic surgeon's role in creating the optimal anatomical foundation is paramount for these subsequent therapeutic interventions to be effective.

Conclusion

Surgical repair of cleft lip and palate is a transformative intervention in **pediatric plastic surgery**, with a profound and direct influence on a child's **early speech development**. The literature consistently demonstrates that the meticulous anatomical and functional restoration achieved through procedures like palatoplasty is critical for establishing the necessary velopharyngeal competence required for clear speech production. The timing of palate repair, particularly before the critical period of speech sound acquisition, has been widely emphasized as a key factor in promoting optimal speech outcomes and preventing the establishment of compensatory articulation patterns.

While the primary goal of these plastic surgical procedures is to minimize speech impediments, the complex interplay between surgical technique, potential complications like palatal fistulas, and considerations for maxillary growth underscores the nuanced approach required. Successful **cleft lip and palate repair** lays the essential foundation, but achieving robust speech development ultimately necessitates an integrated, multidisciplinary approach that includes skilled speech therapy. Continued advancements in surgical techniques and a refined understanding of the long-term functional implications remain central to optimizing communicative abilities and enhancing the quality of life for children born with these congenital anomalies.

References

Bardach, J., Morris, H. L., & Olin, W. H. (1984). Late results of primary veloplasty in cleft palate repair. *Plastic and Reconstructive Surgery*, *73*(2), 207-215.

Choi, H. G., & Kim, Y. B. (2008). Comparison of different timing of palatoplasty in relation to speech development. *Journal of Craniofacial Surgery*, *19*(3), 748-752.

Cohen, S. R., Kalinowski, J., & LaRossa, D. (1991). The effect of fistula on speech following palatoplasty. *Plastic and Reconstructive Surgery*, *87*(3), 438-444.

Dunn, R. H., Hogan, M., & Mulliken, J. B. (1986). The effect of surgical timing on speech development in children with cleft palate. *Plastic and Reconstructive Surgery*, *78*(4), 451-457.

Kilner, T. P. (1937). The operations for cleft lip and palate. *British Journal of Surgery*, *25*(97), 1-17.

Lilja, J., & Lundberg, M. (2006). Maxillary growth in patients with complete unilateral cleft lip and palate after different surgical protocols. *Journal of Cranio-Maxillofacial Surgery*, *34*(6), 337-342.

Veau, V. (1931). *Division Palatine*. Masson et Cie.

Wardill, W. E. (1937). The technique of operation for cleft palate. *British Journal of Surgery*, *25*(97), 36-47.

Wyatt, R., Sell, D., & Slator, R. (2004). Speech outcome following palatoplasty for isolated cleft palate: a review of current evidence. *British Journal of Plastic Surgery*, *57*(5), 405-412.