

Refined Surgical Approaches for Midline Cleft Lip: A Rare Case Report

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Abstract: Failure of fusion of medial nasal prominences results in a rare anomaly known as midline cleft lip, which is one of the least common types of cleft lip. This article provides a comprehensive review of the surgical management of midline cleft lip, focusing on a unique case treated in Sudan with the modified V-incision surgical technique. This study explores embryological foundations, classification systems, and various surgical approaches, highlighting challenges and advancements. This case presentation illustrates the successful application of inverted V incision modification in a 5-year-old patient with an incomplete midline cleft lip.

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I. Introduction:

Cleft lip, a rare congenital deformity affecting the primary palate (1), has an incidence rate of approximately 1 in every 600–800 live births (2). Midline cleft lip, the rarest among cleft lip anomalies, has an incidence ranging from 0.43 to 0.73% (3,4). The precise etiology remains unknown, but environmental and nutritional factors such as alcohol and drug consumption have been implicated (5).

The development of midline clefts involves intricate processes during the 4th week of intrauterine life, during which neural crest cells migrate to form facial structures (6). Paul Tessier's classification system categorizes midline clefting, offering insights into the severity of the deformity (7). Embryologically, theories such as lack of fusion and mesodermal migration attempt to explain the development of facial clefts (8).

Treatment of midline cleft lip involves addressing nasal deformities and abnormal nasolabial anatomy, necessitating identification and classification. The surgical procedure includes removing extra skin and repairing the muscle, depending on the type and severity of the facial cleft (9,10).

Case Presentation: A 5-year-old male with incomplete midline cleft lip underwent surgical excision with a modified V-inverted incision. The surgeon aimed to preserve the small columella and to reposition the orbicularis oris muscle. The procedure involves excising redundant skin and soft tissue, approximating cartilaginous elements, and repairing the orbicularis oris muscle. The recovery was successful and yielded a pleasant aesthetic and functional result.

Surgical Approaches: Surgical repair of midline cleft lip aims to address both aesthetic and functional concerns. Aesthetic considerations involve narrowing of the widened philtral column, lengthening of the columella, and restoration of the normal contour of the tubercle. The functional aspect includes improving the orbicularis oris muscle function and addressing the abnormal labial frenum. Nasal deformities associated with midline clefts have also been addressed during surgical repair.

The lack of a precise classification for midline facial clefts is due to a wide spectrum of variations. Treatment options vary, including techniques like the Francesconi triangular flap, Pinto and Goleria's modified Z-plasty, and inverted 'V' excision. The choice of surgical technique depends on the presentation of the midline cleft and associated deformities.

II. Discussion:

Although rare, midline cleft lip presents unique challenges in surgical management. The embryological basis, theories explaining cleft development, and lack of a specific classification add complexity to the treatment approach. Surgical strategies must consider both aesthetic and functional aspects, and the choice of technique depends on the individual presentation of the midline cleft.

III. Conclusion:

Successful treatment of midline cleft lip requires a comprehensive understanding of the anomalies present. Surgical interventions should address both aesthetic and functional concerns, considering the unique challenges posed by midline clefts. The case presented here demonstrates the successful application of inverted V-incision modification to achieve favorable outcomes.

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Ethical Approval: As Ethical approval was exempted from this case report. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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Appendix



Figure 1 Picture of classic midline cleft lip appearance



Figure 2: Preoperative picture of the classic midline cleft lip appearance.



Figure 3: Postoperative image of the appearance of a operated midline cleft lip.



Figure 4: Image of the appearance of the healed midline cleft lip.