

A Triangular Cut for Premaxillary Setback on Severe Crooked Protusio Maxilla Congenital with Cleft Lip Bilateral : A Case Report

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Abstrak

Latar Belakang: Celah bibir dan langit bilateral seringkali disertai komplikasi berupa protrusi rahang atas bawaan yang signifikan, yang disebabkan oleh perkembangan yang tidak terkendali pada sutura vomeromaksilaris dan septum hidung anterior. Deformitas kerangka yang berat ini menjadi tantangan rekonstruksi yang cukup besar dalam membangun kontinuitas otot, mencapai fusi bibir yang stabil, dan mengoptimalkan estetika nasolabial. Meskipun intervensi ortopedi praoperasi seperti pembentukan nasoalveolar sering digunakan, teknik bedah seperti osteotomi premaksilaris atau *setback* primer tetap menjadi alternatif klinis yang penting. Namun, waktu yang optimal untuk intervensi ini dan efek jangka panjangnya terhadap pertumbuhan maksilofasial masih menjadi topik perdebatan yang berkelanjutan. **Kasus:** Bayi perempuan berusia 9 bulan datang dengan deformitas nasolabial kompleks, protrusi premaksila yang persisten, dan bibir sumbing bilateral. Pasien memiliki riwayat bedah labiaplasti bilateral sebelumnya. Karena inkompetensi bibir yang berat dan premaksila yang menonjol, intervensi bedah lanjutan diindikasikan. Di bawah anestesi umum, pasien berhasil menjalani prosedur *setback* premaksila satu tahap dengan design segitiga untuk menyesuaikan kondisi bengkok, yang dikombinasikan dengan prosedur flap lanjutan untuk mengembalikan segmen yang menonjol ke posisi semula. **Diskusi:** Pendekatan bedah ini sejalan dengan paradigma bedah kontemporer yang mengintegrasikan *setback* premaksila dan osteotomi vomer posterior ke dalam satu prosedur tahap tunggal. Mempertahankan suplai vaskular selama mobilisasi segmen sangat penting untuk memastikan keamanan dan keefektifan teknik ini. Keputusan untuk melakukan intervensi bedah dini memerlukan keseimbangan klinis yang cermat, dengan mempertimbangkan manfaat estetika dan fungsional jangka pendek terhadap potensi implikasi skeletal jangka panjang. Oleh karena itu, pengelolaan multidisiplin yang komprehensif, dengan penekanan pada pemantauan sefalometri longitudinal dan perawatan ortodontik dini, sangatlah penting untuk hasil optimal bagi pasien. **Kesimpulan:** *Setback* premaksila dengan design segitiga merupakan modalitas bedah yang terbukti aman dan sangat efektif untuk mengoreksi protrusi maksila kongenital berat pada kelainan bibir sumbing bilateral, terutama ketika terapi ortopedi pra-bedah tidak dapat dilakukan secara klinis.

Kata kunci : *Setback* premaksila, protrusi maksila kongenital, celah bibir langit bilateral.

Abstract

Introduction: Bilateral cleft lip and palate is frequently complicated by significant congenital maxillary protrusion, which arises from the unregulated development of the vomeromaxillary suture and anterior nasal septum. This severe skeletal deformity presents considerable reconstructive challenges for establishing continuous musculature, achieving stable lip fusion, and optimizing nasolabial aesthetics. While preoperative orthopedic interventions like nasoalveolar molding are frequently utilized, surgical techniques such as

premaxillary osteotomy or primary setback remain critical clinical alternatives. However, the optimal timing for these interventions and their long-term effects on maxillofacial growth remain topics of ongoing controversy. **Case Report:** We present the clinical case of a 9-month-old female infant presenting with a complex nasolabial deformity, persistent premaxillary protrusion and crooked to the left, and bilateral cleft lip. The patient had a surgical history of a previous bilateral labiaplasty. Due to the severe lip incompetence and prominent premaxilla, further surgical intervention was indicated. Under general anesthesia, the patient successfully underwent a single-stage premaxillary setback with triangular cut design combined with an advancement flap procedure for the soft tissue to retroposition the protruding segment and close the defect. **Discussion:** This operative approach aligns with contemporary surgical paradigms that integrate premaxillary setback and posterior triangular vomer osteotomy into a single-stage procedure. Preserving the vascular supply during segment mobilization is paramount to ensuring the safety and efficacy of this technique. The decision to execute early surgical intervention necessitates a careful clinical balance, weighing the immediate aesthetic and functional benefits against potential long-term skeletal implications. Consequently, comprehensive multidisciplinary management, emphasizing longitudinal cephalometric tracking and early orthodontic care, is indispensable for optimal patient outcomes. **Conclusion:** Premaxillary setback with triangular osteotomy and flap advancement for the soft tissue serves as a demonstrably safe and highly effective surgical modality for correcting severe congenital maxillary protrusion in bilateral cleft lip anomalies, particularly when pre-surgical orthopedic therapies are not clinically feasible.

Keywords : Premaxillary setback, congenital maxillary protrusion, bilateral cleft lip.

I. INTRODUCTION

Patients with bilateral cleft lip and palate often have a prominent or rotated premaxilla. This is due to uncontrolled growth of the anterior nasal septum and the vomero-premaxillary suture (VPS), a sign of lateral continuity.¹ Approximately 1% of live births have cleft lip and palate, with prevalence varying by region.²

Bilateral cleft lip causes the premaxillary segment to not experience lateral alveolar restriction due to the presence of bilateral alveolar clefts, so it is only maintained by the septo-premaxillary ligament and the vomero-premaxillary suture that connects to the nasal septum. This results in the premaxillary growth being more advanced anteroposteriorly than the lateral maxillary segment, causing significant protrusion.^{3,4}

Various techniques have been developed, ranging from pre-surgical orthopedics such as nasoalveolar molding and taping to surgical interventions such as premaxillary osteotomy, vomerine ostectomy, and premaxillary set-back. However, there is still debate regarding the indications, timing, and long-term impact.⁵

A long-term retrospective study found that premaxillary setback compared with the non-setback group was not significantly associated with midface hypoplasia.⁶ This case report aims to document the clinical experience of an infant with congenital maxillary protrusion and bilateral cleft lip who underwent premaxillary setback and to review the results and current literature.

II. CASE DESCRIPTION

A 9-month-old female infant was referred to Dr. M. Djamil Padang General Hospital with a history of congenital maxillary protrusion and bilateral cleft lip. The patient had previously undergone bilateral labioplasty but experienced persistent premaxillary

protrusion, which caused difficulty in lip approximation and aesthetic deformity of the nasolabial complex.

On general physical examination, the patient was well-nourished, alert, and had no systemic abnormalities. Extraoral examination across the alveolar ridge line revealed a prominent premaxillary segment extending anteriorly with bilateral cleft lip scars. The upper lip was incompetent, not covering the upper alveoli, and the columella appeared short with mild nasal tip depression. The alae nasi were widened, and the nasal floor was widened, consistent with bilateral cleft lip sequelae. There was no evidence of infection, necrosis, or tissue ischemia at the scar sites.

Intraoral examination revealed bilateral wide alveolar clefts with a prominent and anteriorly projecting premaxillary segment separating the two lateral maxillary segments and crooked to the left. The alveolar ridge was discontinuous, and the mucosa overlying the premaxilla was mobile and thin. The palate showed residual cleft deformity along the alveolar ridge, while the posterior palate was intact from previous repair. Occlusal alignment showed anteriorly displaced premaxillary segments, consistent with congenital maxillary protrusion and bilateral cleft lip deformity (Figure1).

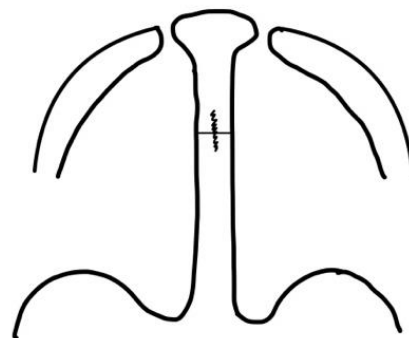


FIGURE 1. VOMERO-PREMAXILLARY SUTURE

A diagnosis of congenital premaxillary protrusion with bilateral cleft lip, post-labioplasty, was made. Surgical correction with a set-back flap and premaxillary

advancement was planned to reposition the premaxilla posteriorly and restore continuity between the lateral maxillary segments (Figure 2).



FIGURE 2. PREOPERATIVE CLINICAL PHOTO OF THE PATIENT

Under general anesthesia, the patient was placed in the supine position. After standard antiseptic preparation and draping, an incision was made along the nasolabial and gingival margins (Figure 3).



FIGURE 3. INTRAOPERATIVE VIEW DURING PREMAXILLARY SETBACK PROCEDURE

An osteotomy was performed at the vomero-premaxillary junction with a triangular resection of the septal bone to allow posterior repositioning of the premaxilla (Figure 4). The segment was carefully mobilized to prevent vascular compromise and repositioned posteriorly to align with the lateral maxillary segment. The advancer flap was elevated to achieve adequate soft tissue coverage, and the gingival mucosa was sutured in layers to achieve a stable closure. Hemostasis was ensured, with a total intraoperative blood loss of approximately 10 cc. The procedure lasted two hours without complications or the need for transfusion.

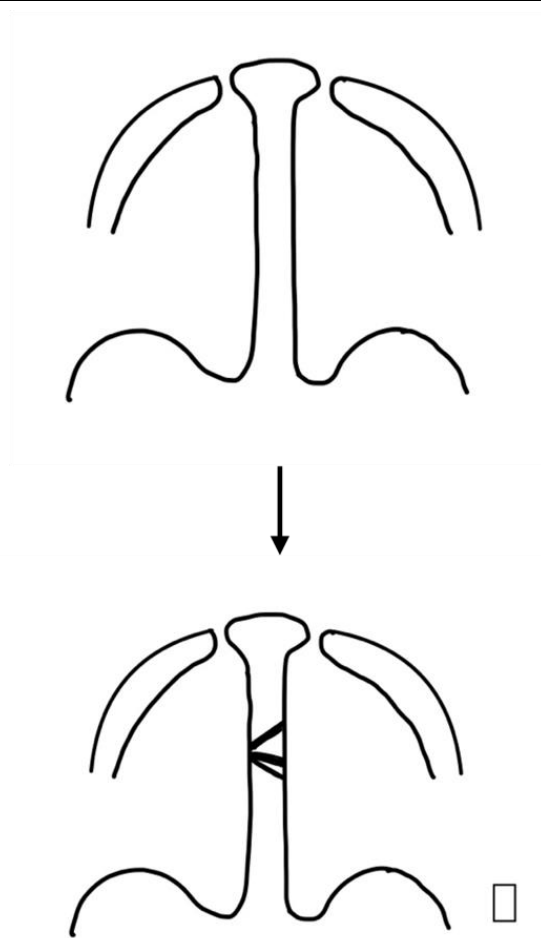


FIGURE 4. ILLUSTRATION OF THE OSTEOTOMY LINES

Postoperatively, the patient recovered uneventfully with stable vital signs. The premaxillary segment maintained good alignment and perfusion, and no evidence of tissue necrosis or wound dehiscence was observed. The reconstructed upper lip achieved improved symmetry and tension-free closure (Figure 5). The postoperative course was stable, and the patient is scheduled for long-term follow-up to evaluate maxillofacial growth and dental development.



FIGURE 5. IMMEDIATE POSTOPERATIVE APPEARANCE AFTER PREMAXILLARY SETBACK AND BILATERAL LIP RECONSTRUCTION

III. DISCUSSION

This case report involves a 9-month-old female infant with severe congenital maxillary protrusion and a history of bilateral cleft lip and prior labioplasty. The characteristic clinical presentation is a prominent and protruding premaxilla far anteriorly, disrupting the continuity of the alveolar arch, causing difficulty in lip closure, and resulting in a prominent nasolabial deformity.⁶

Common indications for premaxillary setback in patients with bilateral cleft lip and palate (BCLP) typically arise when premaxillary protrusion is quite extreme (often greater than 10 mm) or when pre-surgical orthopedics such as nasoalveolar molding (NAM) cannot be performed or fail to correct the premaxillary position. Recent studies have shown that premaxillary setback (PS) remains a valid and safe option for patients who are not suitable for NAM or in situations of severe premaxillary protrusion.⁶

The surgical technique used in this patient, a vomero-premaxillary osteotomy or osteotomies and posterior premaxillary repositioning using a soft tissue advancement flap, is consistent with procedures described in the current literature. Documentation of one-stage methods integrating posterior vomer osteotomy, premaxillary setback, and primary cheiloplasty is increasing. This approach facilitates premaxillary repositioning and nasolabial reconstruction in a single surgical session when performed for appropriate indications, while reducing the risk of vascular complications through careful segment mobilization. Findings from various clinical series demonstrate adequate reconstructive outcomes and a low acute complication rate, provided that vascular principles and osteotomy techniques are correctly applied.⁷

However, a major focus that continues to emerge in the literature is the long-term impact of premaxillary setback on maxillofacial development. Traditional concerns include the risk of midface retrusion or midface hypoplasia during childhood and adolescence, potentially increasing the need for orthognathic surgery later in life. While previous research has revealed changes in the skeletal profile after premaxillary setback, recent data from more comprehensive studies do not consistently show significant differences between groups undergoing PS and those not undergoing PS, provided proper orthodontic control and follow-up monitoring are performed. Therefore, the decision to perform PS must balance the benefits of early correction (improved labial-palatal function, nasolabial esthetics, and ease of lip closure) with the potential for future skeletal intervention. Continuous monitoring through cephalometry and collaboration with the orthodontic team are essential.^{6,8}

Timing of surgery is also a strategic aspect to consider. Various research groups have reported that premaxillary setback can be

performed in infants (usually 3–12 months of age), depending on the clinical conditions and practices of the treatment center, as well as the presence or absence of preoperative efforts. Several series have shown a mean age of approximately 9 months for primary setback in bilateral cleft lip and palate (BCLP), which aligns with the age of FHM patients, allowing for lower tension lip closure and better initial esthetics. However, monitoring tooth growth and occlusal relationships remains a long-term goal that requires orthodontic intervention.^{7,8}

From a functional and aesthetic perspective, numerous reports indicate that premaxillary set-back provides immediate improvements in lip closure, nasolabial symmetry, and orbicularis oris muscle continuity, which in turn benefits the development of feeding function, early articulation, and the family's psychosocial well-being. However, because skeletal changes can occur later in life, families should be counseled about the potential need for additional treatments: orthodontic therapy, alveolar bone grafting (around the age of permanent lateral teeth), and the possibility of orthognathic surgery during adolescence. Long-term studies have revealed that most bilateral cleft lip and palate (BCLP) patients ultimately require orthognathic intervention, so family expectations should be adjusted early.^{6,9}

This report is limited by the lack of long-term follow-up, so the impact of the intervention on the patient's maxillofacial development cannot be evaluated at this time. Furthermore, quantitative data (such as premaxillary repositioning measurements in millimeters, esthetic or functional scores, and cephalometric changes) were not recorded in the initial surgical documentation. Therefore, quantifiable records are needed at follow-up visits for comparison with the available literature.

IV. CONCLUSION

Premaxillary setback is a safe and effective surgical option for treating severe congenital maxillary protrusion in patients with bilateral cleft lip, especially when nasoalveolar molding as pre-surgical orthopedic therapy is not feasible. In this case, premaxillary repositioning successfully restored alveolar arch continuity and nasolabial symmetry without significant complications.

This approach yielded adequate functional and aesthetic benefits in a short period of time, but ongoing monitoring of maxillofacial development and occlusal relationships through multidisciplinary collaboration remains essential.

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