

Surgical Management of Severely Proclined Premaxillary Segment in Bilateral Cleft Lip and Palate with Vomerian Osteotomy - A Case Report

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Abstract

Repair of a bilateral cleft lip deformity is challenging yet rewarding. Many surgeons find it hard to achieve results comparable to those of unilateral repairs. Poorly planned surgeries can leave noticeable residual deformities. There is a combination of genetic and environmental factors that may affect development of cleft lip in weeks 4 to 10 of gestation. Bilateral cleft lip and palate is recognized by the presence of a central echodense mass in the region of the upper lip. This mass is known as the premaxillary protrusion and it represents abnormal alveolar and gingival tissue due to uninhibited growth of the premaxilla caused by lack of continuity of the bony, gingival and lip structures. This case report is going to throw light on the unique surgical technique for severely prominent premaxilla in bilateral cleft lip and palate using reductive ostectomy on the vomero-premaxillary suture.

Keywords: Proclined, Premaxillary, Vomerian.

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INTRODUCTION

Prominent premaxilla is a holistic feature of infants with complete bilateral cleft lip. There is an attachment of premaxilla to the vomer and the nasal septum via the septo-premaxillary ligament with practically zero lateral strains. The protruding twisted premaxilla adds the difficulties in surgical management of bilateral complete cleft of lip patients (CBCL). Premaxilla is unrestrained from both sides of the maxillary alveoli and only fixed to nasal septum through septomaxillary ligament. In normal children, the cartilaginous septum slides forward in relation to the premaxillary region to restraint on the premaxilla by the lip and lateral maxillary segments. In bilateral cleft, the premaxilla is carried forward at the same rate as that of the growing septum to which it is firmly held. The premaxilla has only one restraining connection, the vomer. This restraint is realized as a tension between these bones borne by the vomero-premaxillary suture, thus creating the condition for bone formation [1, 2]. There are different appliances which being used as repositioning devices for premaxilla like elastic straps, tapes, Latham appliance and Burston plate after various surgeries of bilateral complete cleft of lip [3-6]. Surgery

like lip adhesion technique also got popularity for repair of CBCL but moulding of premaxilla with this technique was unpredictable. It is advisable to mould premaxilla after muscle repair. Hence this procedure required a second surgery also adds scars to the lip making the next repair more difficult [7].

In the present case vomerine ostectomy technique was performed to suit the local circumstances. With reductive ostectomy on the vomero-premaxillary, we can perform it in one stage surgery. At the same time as premaxillary setback, the blood supply of the premaxilla is impaired, with the risk of premaxillary necrosis. There are few reports of one stage surgery with vomerine ostectomy to repair CBCL with severely protruding premaxilla [8-11].

Case Description

A seven month old child was brought to the department with the chief complaint unesthetic appearance and inability in sucking. Patient was clinically examined and diagnosed with complete bilateral cleft lip and palate with severe pre maxillary protrusion (Fig 1 & 2). Patient had no family history

nor risk factors, nor associated anomalies and syndrome. Patient's pre operative surgical fitness was taken along with radiograph and surgery was planned. Under general anesthesia, supine position and minimal extension of the neck patient was prepared. Labiobuccal mucoperiosteal lateral transposition flaps are raised, to allow full access to the cleft. A substantial cuff of palatal mucosa is left on the palatal aspect of the premaxillary segment to facilitate the closure. The premaxilla maintains its blood supply through the vestibular mucosal pedicle. The premaxilla then is osteotomized, usually via an intraoral approach. The nasal mucosa is dissected carefully away from the premaxilla to enable free movement of the segment.

With careful soft tissue handling, the premaxilla is retracted labially, allowing excellent access to the cleft deformity. The required of bone was removed anterior to the vomero-premaxillary suture (Fig 3 & 4). Additional simultaneous gingivoperiosteoplasty was done, achieving an enough stability of the premaxilla in its new position, to be able to close the alveolar gap bilaterally. The hypertrophic, bony vomerine spur is trimmed close to the premaxilla to facilitate its repositioning (Fig-5). The nasal layers are identified and then are closed using a continuous resorbable suture followed by suturing the orbiculus muscle then using Millard's technique to repair the lip.



Fig-1: A 7 months male with CBCL with protruding premaxilla and palate cleft



Fig-2: Excessive protruded premaxilla



Fig-3: Occlusal intra-oral view, showing vomero-premaxillary suture, nasal septum and the site of the wedge osteotomy



Fig-4: Gap after the withdrawal of the wedge osteotomized vomer



Fig-5: Excised Vomer and nasal septal bone

DISCUSSION

Severe forms of bilateral cleft lip and palate have been a challenging issue for many years [12]. Premaxillary osteotomy has been thought to be contraindicated in growing children. Despite the debate, recent publications have observed that premaxillary osteotomy could be accepted as a feasible alternative for the repair of severe forms of bilateral cleft lip [13-17]. The time of the osteotomy of the premaxillae, which extends from infancy to adolescence, varies. There are some reports proposing that premaxillary osteotomy should be delayed until a late age [8, 17-22]. There are various factors which in conjugation results in CBCL such as Unrestrained anterior nasal septal, vomero-premaxillary suture growth, lack of bony and soft tissue continuity, and disruption of balance between the circumoral musculature and the tongue [21, 22]. There are lists of problems encountered by the child with the protrusive premaxillary like absence of proper anterior occlusion, lateral mobility of the premaxillary segment and labial or palatal oronasal fistulae with consequent problems in speech and oral hygiene. Prominence or vertical overdevelopment of the premaxilla also may result in significant psychological harm during a child's developing age. Hypoplasia of maxilla is kind of inevitable even after late repair of premaxillary repair but what we wanted was good alveolar base for placement of bone grafts and future orthognathic surgery. Since the length of nasal septum and vomero premaxillary suture was humongous it was obligatory to proceed with premaxillary setback with septal dissection. One basic thing which was kept in mind during surgery was maintaining the pedicle for the premaxillary segment to avoid necrosis of the segment. We have dealt with premaxillary osteotomy with primary cheiloplasty at an early age for retraction of premaxillae. There are some reports stating that premaxillary osteotomy should be delayed until a late age. On the other hand, there are other reports of premaxillary osteotomy performed at an early age of less than 2 years [19, 13, 23]. Although both approaches have advantages and disadvantages, using this procedure at an early age could have few advantages over using it at a later age. Primarily, the patients would be better able to fit into society, such as when attending kindergarten and elementary school, as a result of the early improvement of their facial structures. Secondly, improving their facial structures, including their columella and philtrum hollow, would be easier at an early age than at a later age after cheiloplasty. Single-stage primary operation is relatively easier to perform, as there are no scarred tissues. The vomerine osteotomy facilitate subsequent bilateral lip repair and adequate muscular repair, which is vital for labial function. Simultaneous gingivoperiosteoplasty on both sides provides better stability and alignment of the arches in addition to the bilateral closure of the alveolar gap. Using Millard technique achieves an excellent symmetry of the lip, prolabium and Cupid's bow as well as good scars. No complications were documented.

CONCLUSION

Operating complete bilateral cleft lip and palate in infants is highly controversial few surgeons operate at adolescent age whereas some concerns with the better development of language and aesthetics hence treat CBCL at early childhood phase. Particularly this case was highly challenging due to massive protrusion of premaxilla with elongated nasal septum. Orthopaedic modulation was difficult in this case. So we proceeded with premaxillary repositioning with nasal spetal and vomeromaxillary suture osteotomy and finished with a convincing result.

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