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Premaxillary Setback in Severely Protruded Bilateral Cleft Lip and Palate: A Case Report

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Abstract

Cleft lip and/or palate constitute a large fraction of all human birth defects and has a reported incidence of 3.7 per 1000 live births respectively. Embryologically the formation of tooth germs and occurrence of cleft and/or palate defects have a close relationship both in terms of timing and anatomical position of odontogenic epithelium over premaxillary and mandibular process. In some bilateral cleft lip/palate patients the premaxilla is severely protruded and twisted; cleft becomes very wide and unmanageable. In such a situation, osteotomy of the premaxilla to set it back between lateral segments is useful. Many auxillary devices have been used for the fixation of the osteotomized premaxilla such as occlusal splints and direct interdental wiring between the premaxillary central incisors and the teeth adjacent to the alveolar cleft margins, Cementing a bite splint, arch bar and orthodontic brackets can also be used for this purpose. Many clinicians have confronted inadequate posteriorly positioned premaxilla, as it is not stable and has noticeable movements. Tipping of the premaxillary segment is the other problem. As described by Carlini et al, the miniplate has been applied for fixation of osteotomized premaxilla to the lateral segments.

Keywords

Cleft Lip and Palate; Premaxilla; Osteotomy

Introduction

The bilateral cleft of lip, alveolus and palate is generally considered as the most severe congenital deformity of the upper jaw and the central part of the face. Its surgical correction is difficult and the results achieved are often not satisfying in regard to aesthetic and function [1]. An important aspect of the BCLP patient is that the alveolar clefts cause the premaxilla to be mobile from birth and only apically fixed to the vomer bone. The premaxilla is often protruding due to the lack of sphincter function of the orbicularis oris muscle. This causes extreme abnormalities in the position of the premaxilla; sometimes, the whole segment is rotated and functional and cosmetic disorders result [2]. Many studies have been conducted to evaluate the efficacy of alveolar bone reconstruction for alveolar cleft patients performed with the traditional iliac graft or alternative/supplementary bone grafting materials [3]. This case report describes a patient with bilateral cleft palate which is reconstructed using iliac bone graft and retained using 2mm miniplate [4] hole with gap bilaterally.

Case Report

A 19 years old female patient with the history of repaired cleft lip twice at the age of 6 months and 1 years of age respectively. The patient now is more concerned of her aesthetic because of her fowardly placed central incisors for which she reported to our department. On extra oral examination the middle and lower 1/3rd of the face showed bilateral asymmetry with Broad nasal bridge and the dorsum, Depressed or ill-defined nasal tip projection, Deviated tip of the nose towards the left side and Flaring of the ala of the nose [5-8]. The lower 1/3rd of the face shows massive scar over the philtrum due to previous surgical approach with loss of cupid bow on upper lip, Incompetent lips (short upper lip), forwardly placed maxillary incisors (incisor show), mismatched White roll, Ille defined philtrum with absence of philtrum ridges (Figure 1). Intraoral examination showed high arch palate, collapsed maxillary ridges and protruded premaxillary segment with overlapped maxillary central incisors (Figure 2). The maxillary occlusal radiograph confirmed bilateral cleft palate with the stalk like attachment of the premaxilla with the vomer bone (Figure 3).

Treatment Progress

The treatment plan was surgical setback of premaxillary segment followed by

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Figure 1: Extraoral profile view

Figure 2: Intraoral view

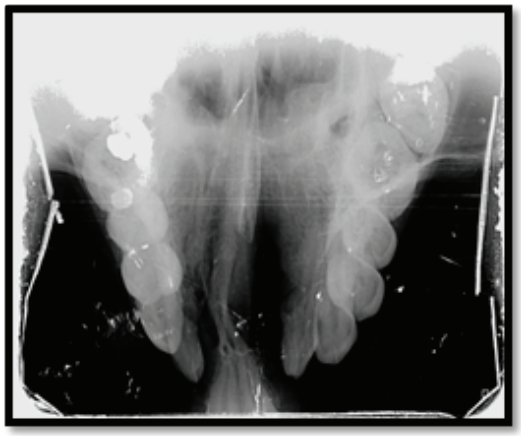

Figure 3: Occlusal radiograph

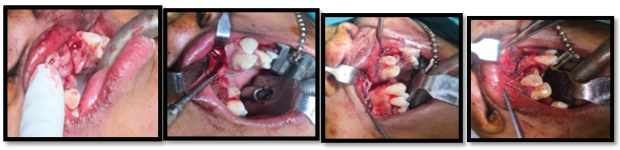

Figure 4: Intra-Operative procedure of premaxillary setback and miniplate fixation

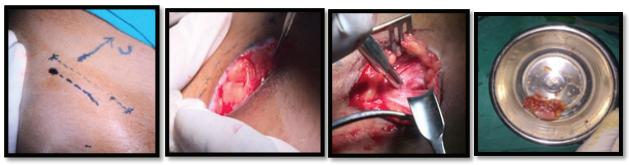

Figure 5: Intraoperative iliac bone harvesting procedure

secondary alveolar bone grafting with cortico cancellous particulate iliac bone graft under general anesthesia. The patient was painted and draped under aseptic condition. A vestibular incision was given in the upper labial vestibule to expose the premaxillary segment (Figure 4). The osteotomy and setback of premaxillary segment was performed and miniplates were placed to secure the mobile premaxillary segment with the lateral maxillary segments bilaterally. Simultaneous exposure of right iliac bone was done to harvest the

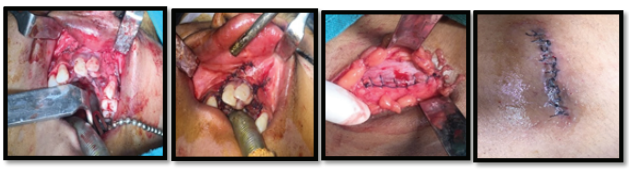

Figure 6: Intraoperative pictures showing particulate bone graft condensed at the cleft site and closure of the operative site

Figure 7: Picture showing placement of k-wire for the alignment of teeth

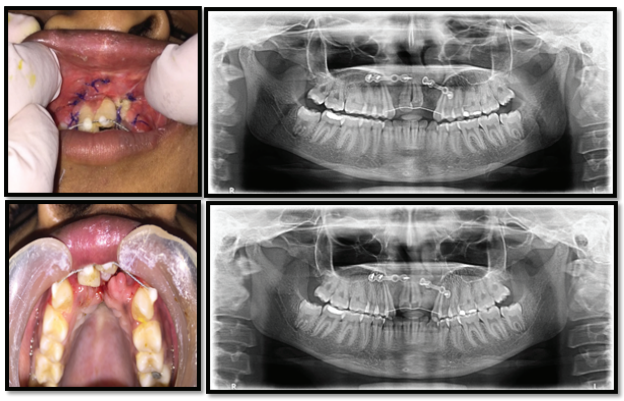

Figure 8: 1 Week and 1 month follow up respectively

Figure 9: preoperative and postoperative profile view

corticocancellous bone with the help of trephine (Figure 5). The particulate bone was condensed and packed at the alveolar cleft defect and the labial vestibule was sutured around the alveolar cleft with 5-0 vicryl sutures and layer by layer closure was performed at the donour site with 2-0 vicryl (Ethicon) (Figure 6). Intraoperatively the K-wire was splinted on anterior teeth to give additional support and alignment to the anterior teeth (Figure 7). Up to 2 months of follow up and sequential radiographs patient showed good amount of bone at the cleft site with improved facial profile with no associated complications (Figure 8).

Discussion

The presence of bilateral cleft lip and palate often results in protruded premaxillary segment in these patients which increases the risk of trauma and compromises the functions such as speech, mastication, swallowing and also pose psychologic impact on the patients due to altered facial profile [9-11]. An orthodontic intervention at appropriate time helps to expand the posterior maxillary segments which provides sufficient space for the setback of the premaxilla and also sustains the blood supply. Several studies have reported the long term complications in the cleft patients such as impaired midfacial growth, maxillary retrusion, and concave facial profile, class III relationship leading to mandibular prognathism and tipping of the premaxilla [12-14]. This technique used for the setback of the osteotomised premaxilla provides additional three dimensional supports to the mobile segment along with the use of splinting wire that helps to align the anterior teeth. The use of this technique also gives support to the densely packed particulate bone graft and thus eliminates the chance of fistula formation and requirement of second surgical intervention (Figure 9).

Conclusion

In protruding premaxilla, osteotomy and fixation of premaxilla with a miniplate to the bone lateral to the cleft and alveolar bone grafting approach has satisfactory outcomes in patients who require secondary functional palate repair.

References

1. Steinhäuser EW. The modified “Wunderer” osteotomy for stabilization of the cleft-premaxilla--a new operative technique J Craniomaxillofac Surg. 2014 Jul;42(5):372-376.
2. Rahpeyma A, Khajehahmadi S, Ghasemi A. Premaxillary osteotomy fixation in bilateral cleft lip/palate: Introducing a new technique. Asian J Surg. 2016 Apr;39(2):90-95.
3. Wu C, Pan W, Feng C, Su Z, Duan Z, et al. Grafting materials for alveolar cleft reconstruction: a systematic review and best-evidence synthesis. Int J Oral Maxillofac Surg. 2018 Mar;47(3):345-356.
4. Bittermann GK, de Ruiter AP, Janssen NG, Bittermann AJ, van der Molen AM, et al. Management of the premaxilla in the treatment of bilateral cleft of lip and palate: what can the literature tell us? Clin Oral Investig. 2016 Mar;20(2):207-217.
5. Scott JK, Webb RM, Flood TR. Premaxillary osteotomy and guided tissue regeneration in secondary bone grafting in children with bilateral cleft lip and palate. Cleft Palate Craniofac J. 2007 Sep;44(5):469-475.
6. Posnick JC, Tompson B. Modification of the maxillary Le Fort I osteotomy in cleft-orthognathic surgery: the unilateral cleft lip and palate deformity. J Oral Maxillofac Surg. 1992 Jul;50(7):666-675.
7. Barsky A, Kahn S, Simon B. Early and late management of the protruding premaxilla. Plast Reconstr Surg. 1962 Jan;29:58-70.
8. Bell W. Revascularization and bone healing after anterior maxillary osteotomy: a study using adult rhesus monkeys. J Oral Surg. 1969 Apr;27(4):249-255.
9. Flath L, Heiner H. Zur operativen Reduktion der protrudierten Praemaxilla bei doppelseitigen Lippen-Kiefer-Gaumenspalten. Zbl Chir. 1964;89:1604-1608.
10. Padwa BL, Sonis A, Bagheri S, Mulliken JB. Children with repaired bilateral cleft lip/palate: effect of age at premaxillary osteotomy on facial growth. Plast Reconstr Surg. 1999 Oct;104(5):1261-1269.
11. Bartzela T, Katsaros C, Ronning E, Sara R, Gunvor S, et al. A longitudinal threecenter study of craniofacial morphology at 6 and 12 years of age in patients with complete bilateral cleft lip and palate. Clin Oral Investig. 2012 Aug;16(4):1313-1324.
12. Narayanan RK, Hussain SA, Murukesan S, Murthy J. Synchronous palatal closure and premaxillary setback in older children with bilateral complete cleft of lip and palate. Plast Reconstr Surg. 2006 Feb;117(2):527-531.
13. Sindet-Pedersen S, Enemark H. Comparativestudy of secondary and late secondary bone-grafting in patients with residual cleft defects. Short-term evaluation. Int J Oral Surg. 1985 Oct;14(5):389-398.
14. Terbish M, Choi HY, Park YC, Yi CK, Cha JY. Premaxillary Distraction Osteogenesis Using an Intraoral Appliance for Unilateral Cleft Lip and Palate: Case Report. Cleft Palate Craniofac J. 2015 Jul;52(4):e95-e102.