

Case Report

LE FORT I OSTEOTOMY FOR TREATMENT OF MAXILLARY DEFICIENCY CAUSED BY ANODONTIA OF PERMANENT DENTITION- A CASE REPORT

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ABSTRACT

Anodontia of permanent dentition of maxilla results into a deficiency of facial growth. Facial appearance and mastication are two major concerns. This case report describes the treatment of a patient with underdeveloped maxilla giving a sunken appearance. The treatment includes Le-fort I osteotomy followed by full mouth rehabilitation to establish an acceptable esthetics and masticatory function.

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INTRODUCTION

Anodontia of permanent dentition can result in underdevelopment of maxilla. The presence of teeth is necessary for the development of maxilla and alveolar bone whereas the absence of teeth does not affect the growth of mandible¹. The subsequent growth of mandible can result into class III malocclusion. Le fort I osteotomy is one of the treatment options which can be performed for the advancement of the maxilla to improve the facial profile followed by full mouth rehabilitation on deciduous dentition to improve the mastication.

Case Report

A 22 years old male patient reported to the department with a chief complaint of the short face and difficulty in mastication of food. Intraoral examination (Fig. 1 a) of the patient revealed absence of permanent dentition and retained deciduous teeth. Oral hygiene was good and teeth were periodontally healthy. Teeth present were

55 54 53 52 51 61 62 63 64 65
85 84 83 82 81 71 72 73 74 75

Extraoral examination showed concave facial profile (Fig. 1 b & c) with subsequent growth of mandible giving rise to class III appearance.



Fig. 1 a) Pre-operative Intraoral View, b) Pre-operative Frontal and c) Profile view

The patient was having a short upper lip with sunken appearance. Nasolabial angle was acute. Diagnostic records were taken in the form of extraoral and intraoral photographs, study models and Lateral cephalogram and OPG radiographs (Fig. 2 a & b).

Cephalometric tracing was done and Burstone analysis showed a maxillary deficiency. Facebow transfer was made followed by Maxillary and mandibular impressions to make study models and perform mock surgery to prepare surgical splint.

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James V Marko has stated that model surgery is an integral part of orthodontic surgery planning which can be done on simple hinge articulator or semi-adjustable articulator in the present case we use semi-adjustable articulator to perform model surgery².

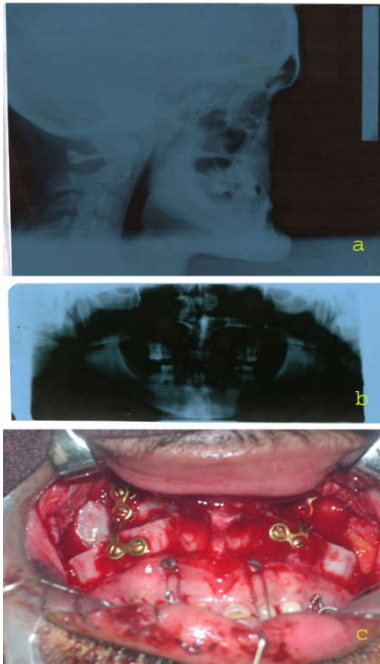


Fig. 2: a) Preoperative Cephalogram b) OPG Radiograph and c) Stabilization of advanced maxilla using plates

Le Fort I advancement osteotomy was performed using surgical splint made during mock surgery. The maxilla was placed forward and stabilized using 2 small titanium plates with 8 screws in piriform rim bilaterally followed by intermaxillary fixation with the help of four intermaxillary fixing screws for 4 weeks (Fig. 2 c). Full mouth rehabilitation was done on deciduous dentition following the protocol, after 4 months of surgery. Post-treatment follow-up was made after 6 months (Fig. 3 a, b & c).

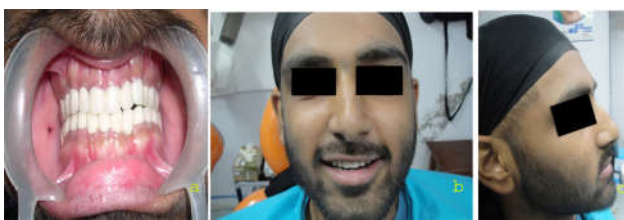


Fig. 3: a) Post-operative intra-oral view after full mouth rehabilitation b) Post-operative Frontal and Profile views (Follow up)

DISCUSSION

Underdeveloped maxilla can lead to the sunken appearance of the upper lip which can lead to unpleasing look. Milder or developing cases may be treated by less invasive techniques. In the present case, severe maxillary deficiency was diagnosed. Etiology of maxillary deficiency was total anodontia of the permanent dentition. The presence of teeth is necessary for the growth of maxilla and alveolar bone¹. Anodontia of permanent dentition is a rare condition in which complete permanent teeth are missing. Graber in reviewing congenital absence of teeth reported that anodontia is actually the result of one or more point mutations in a closely linked polygenic system often

transmitted in an autosomal dominant pattern with incomplete penetrance and variable expressivity³.

Various surgical treatment modalities can be opted to treat such cases. In this case, two approaches could be followed, one the conventional approach with Le Fort I Osteotomy and the other with Distraction Osteogenesis. The preference was given to the conventional approach as with conventional Le Fort I osteotomy immediate movement of the maxilla can be made into the desired position and miniplate fixation is done in a single operation. Stabilization of bony segments with rigid titanium plates results into the lesser chances of relapse of treatment. This forward repositioning of maxilla stabilized with rigid titanium plates improves the facial aesthetic of the patient.

Complications often occur while performing such surgeries, as in Le Fort I osteotomy the posterior maxillary area is most difficult to approach because of maneuver must be performed blindly and the area has a high tendency of bleeding⁴. This may cause avascular necrosis. Less than 1% avascular necrosis result of lack of blood supply has been reported by various studies^{5,6}. Modification of pulp canal of teeth after osteotomy has been investigated but there is no major problem associated with Le Fort I osteotomy after 30 years of study⁷ carried by Panula *et al* in 2001.

To improve the masticatory function of the patient-prosthesis was given on the deciduous dentition after a period of 4 months. The prognosis of the treatment was explained to the patient. After that implant placement should be the treatment for the patient for mastication.

CONCLUSION

Pleasing looks can improve the confidence of a person. In patients with retained deciduous dentition and maxillary deficiency can give a moon face appearance to a patient. The treatment of this facial defect can be done using conventional Le-Fort I advancement osteotomy stabilized with rigid titanium plates. Occlusion of the patient can also be improved by prosthodontic rehabilitation.

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