

## CASE REPORT

# Orthognathic Surgery: A Boon to Beautify the Face

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## ABSTRACT

This case report describes a patient who presented with a severe class II skeletal discrepancy together with a class I malocclusion and a large amount of deep bite associated with vertical maxillary excess showing upper incisors full crown exposure at rest. The malocclusion and skeletal discrepancy were managed with a combination of orthodontic and orthognathic treatment. The orthognathic surgery was undertaken following orthodontic phase of leveling and alignment to allow Lefort I osteotomy and genioplasty to be performed. Although the discrepancy was severe using this combination of treatment, a successful outcome, both facially and occlusally, was achieved.

**Keywords:** Esthetics, Orthosurgical procedures, Patient psychology, Vertical maxillary excess.

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## INTRODUCTION

Facial appearance is an important factor in determining social relationships and their peers often perceive significant dentofacial deformities as being less attractive.<sup>1</sup> The term handicapping malocclusion was used to describe what is now called as dentofacial deformity in the year 1975 by National Research Council.<sup>2</sup> Dentofacial deformity cases almost always have severe malocclusion, but the malocclusion is not the defining feature of the condition. Orthodontic treatment, even if successful in bringing the teeth into proper relationships, may not correct the underlying skeletal problems well enough to overcome psychological handicaps. For this reason, surgery to reposition the jaws often is required for successful treatment, and soft tissue surgical procedures also may

be needed. Vertical maxillary excess (VME) is a condition where the maxilla over grows in vertical plane, as a result the gingival exposure of the patient increases resulting in what is called as 'gummy smile.' These patients usually show class II jaw relationship, because the mandible growth is restricted in sagittal plane as the maxilla keeps on growing vertically downwards as a result the patient shows long face with recessive chin appearance. These patients are usually considered as hyperdivergent growth pattern cases showing clockwise rotation of mandible, facial profile is usually convex with posterior divergence. Intraorally, the molar relation could vary from class I to II, based upon the amount of natural dental compensation taken place, presurgical decompensation can be performed and the cases can be treated through surgery to achieve the normal skeletal and dental relationships.

## CASE REPORT

A 21 years old female (Figs 1A to C) reported complaining about her unesthetic appearance of face and excess exposure of upper front teeth. The diagnosis established was angles class I malocclusion with vertical maxillary excess on skeletal class II jaw bases (Figs 2A to C).

### Medical and Dental History: No Significant Medical or Dental History was Recorded

*Extraoral examination:* The extraoral clinical findings are summarized as:

- Vertical growing face
- Potential lip incompetency
- Full crown exposure of the upper anterior teeth at rest
- Backwardly growing face with severe convex facial profile along with chin deficiency
- Obtuse nasolabial angle
- Protruding lower lip
- Hyperactive mentalis activity
- Chin deficiency.

### Intraoral Examination: On Intraoral Examination following Features were Observed

- Angles class I molar relation was seen bilaterally
- Anterior deep overbite (6 mm)
- The overjet was 5 mm
- Mild retroclination of upper anterior teeth
- The amount of upper incisor show at rest in the pre-treatment phase was 7 mm and during smile it was

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**Figs 1A to C:** (A) Pretreatment extraoral frontal view at rest, (B) pretreatment extraoral frontal view at smile and (C) pretreatment extraoral profile view



**Figs 2A to C:** (A) Pretreatment intraoral frontal view, (B) pretreatment intraoral right lateral view and (C) pretreatment intraoral left lateral view

full incisor crown along with 6 mm of the gingival exposure seen

- Rotated upper central incisors
- Mild crowding in the lower anterior segments
- Generalised fluorosis
- Both upper and lower arches were found to be ovoid in shape in the pretreatment phase.

*Radiographic examination:* The radiographic analysis (Fig. 3) confirmed the clinical findings.

### Problems List

- Skeletal class II jaw relation
- Vertical maxillary excess
- Gummy smile
- Lip incompetence
- Excess upper incisor show
- Recessive chin
- The severe facial convexity.

### Treatment Objectives

The treatment objectives were to achieve:

- Reduction of the vertical maxillary excess
- Reducing the excess incisal show at rest

- Reducing the severe facial convexity
- Achieving the proper lip seal
- Maintaining the Angles class I molar and canine relationship and achieving the normal overjet and overbite.

### Treatment Planning

The treatment plan was to treat the case under both orthodontics and orthognathic surgery, involving three stages of treatment, i.e. presurgical orthodontics phase, surgical phase, followed by post-surgical orthodontic phase. Presurgical orthodontic phase was started to level and align the arches and stabilizing with 0.021 × 0.025" stainless steel wires in 0.022" Roth preadjusted edgewise appliance. Immediate presurgical phase involved taking the face bow records to perform the mock surgery using three point semi-adjustable Hanau articulator and intermaxillary surgical splint was prepared (Fig. 4). The surgical phase involved Lefort I osteotomy, impacting the maxilla superiorly by about 5 mm, stabilizing the surgical splint using intermaxillary fixation (Figs 5A and B), along with augmentation genioplasty to improve the esthetics to considerable extent (Fig. 6). The post-surgical phase was started after 6 weeks of surgery to achieve



Fig. 3: Pretreatment cephalogram

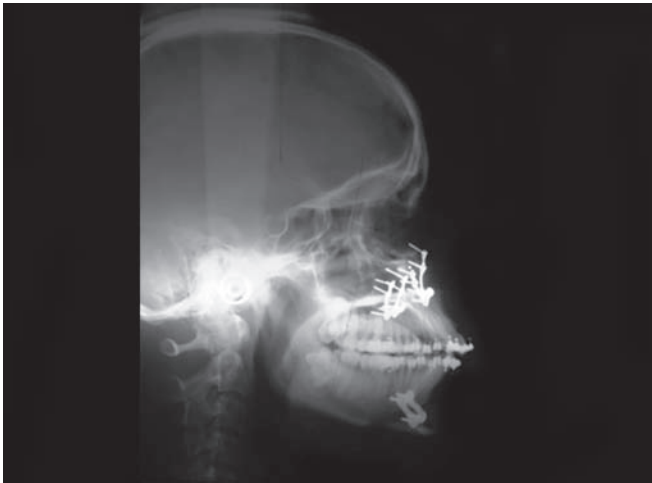


Fig. 4: Hanau articulator for making intermaxillary splint



Figs 5A and B: (A) Lefort I osteotomy for surgical impaction and (B) stabilization using intermaxillary fixation splint





**Fig. 6:** Augmentation genioplasty seen on the postoperative cephalogram

the final leveling of the arches and settle the occlusion, which lasted for 4 months. The pre-debonding radiographs were taken to assess the final root positioning. The post-treatment extraoral (Figs 7A to C) and intraoral results (Figs 8A to C) showed excellent stable occlusion and esthetics achieved in this case (Table 1).

**SUMMARY OF THE TREATMENT PROCEDURE**

Since the patient was diagnosed as having Angle’s class I malocclusion along with vertical maxillary excess,

**Table 1:** Pre, post-surgical and post-retention cephalometric values

Cephalometric readings	Pre	Post	1 years in retention
SNA	85°	83°	83°
SNB	78°	81°	81°
ANB	7°	2°	2°
WITS	5 mm	5.0 mm	1 mm
N-A-Pog	-10°	-2°	-2°
SN GO GN	38°	33°	33°
FMA	35°	31°	31°
Y-axis	74°	71°	71°
N-UI	94 mm	90 mm	90 mm
ANS-Gn	84 mm	78 mm	78 mm

showing gummy smile, having deep bite and convex facial profile, the treatment plan was to do Lefort I osteotomy and impact the maxilla superiorly by 5 mm, thereby addressing her gummy smile and vertical maxillary excess. As a result of superior impaction of maxilla, there was an expected forward placement of the maxilla in the sagittal plane and also autorotation of her lower jaw. However, to improve the facial convexity much better the augmentation genioplasty by about 6 mm was attempted. These two procedures, i.e. maxillary superior impaction and augmentation genioplasty were the basic surgical procedures which improved the facial appearance of the patient to a great level by



**Figs 7A to C:** Post-treatment extraoral frontal view at smile, (B) post-treatment extraoral profile view and (C) post-treatment extraoral three quarter view



**Figs 8A to C:** (A) Post-treatment intraoral frontal view, (B) post-treatment intraoral right lateral view and (C) post-treatment extraoral left lateral view

reducing the convexity of her face and maintaining class I molar relationship intraorally. Both the arches assumed U-shape in the post-treatment phase. The output response of the patient and her parents toward treatment was positive and supportive. The patient herself expressed her great satisfaction in the final treatment results achieved.

## DISCUSSION

Vertical maxillary excess in the patient with a class I occlusion with variable degrees of severity. Since the occlusion is class I to begin with, if it is to remain class I after the maxilla is repositioned superiorly, there must be some anterior movement of the maxilla as a result of the upwards and forward mandibular autorotation. The more the superior repositioning, the more the maxilla will move forward.<sup>3</sup>

Superior repositioning of the maxilla has been considered as the most successful method of treating the patients with vertical maxillary excess. This surgery is primarily indicated in patients with potential lip incompetence, long lower face, excess upper incisor exposure, microgenia on class I or class II malocclusion. As this surgical procedure results in overall improvement in the facial appearance and the stability of the results has made it most versatile and effective procedure. In the hierarchy of the stability of surgical results, maxillary impaction is given the most superior position of all orthognathic surgical procedures.<sup>4</sup>

‘Everything has beauty, but not everyone sees it!’

— Confucius

## CONCLUSION

Combined orthodontic surgical treatment can now be carried out successfully for patients with dentofacial problems of any type. Orthognathic surgery does not rate high on discomfort or morbidity scales. Often psychological evaluation of the patient before the surgery is mandatory and carefully preparing the patient for their surgical experience would benefit the patient to adapt to the significant facial changes.<sup>5</sup>

‘Art washes away from the soul the dust of everyday life’

— Pablo Picasso

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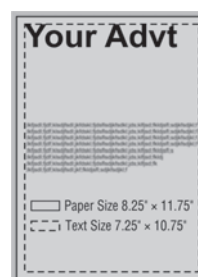
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