



Case Report

Non-Surgical Treatments of Skeletal class III Malocclusion with Sever Anterior Cross Bite: A Case Report

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Abstract

Improvement in facial aesthetics is the primary reason of patients approaching for orthodontic treatment. Skeletal class III is one of the types of skeletal dysplasia which is often associated with excessive mandibular growth, maxillary deficiency in sagittal plane and vertical plane. Severe skeletal discrepancy often needs assistance of surgical orthodontics in non-growing patients. However, orthodontic camouflage is one of the options for the treatment of such cases. This case report presents a 22 year non growing male with severe skeletal class III associated with maxillary anterior cross-bite, with unpleasant smile and excessive protracted mandible. Treatment involved use of camouflage fixed orthodontic treatment along with posterior bite plan for retraction of anterior mandibular dentoalvolar segment.

Keywords: Orthodontics camouflage, Skeletal Class III, Anterior cross bite.

Introduction

Facial aesthetic is often compromised due to maxillary and mandibular dysplasia, which leads the patient to functional and psychological impediments¹. Skeletal class III is the one of the most prevalent skeletal malocclusion. The retrognathic maxilla along with prognathic mandible or the transformation of both may be the accompanying factor of orthodontic Skeletal class III malocclusion^{2,3}. For the management of these complicated cases need careful consideration with multidisciplinary approaches along with the patient collaboration⁴. Usually the adult skeletal class III discrepancies need surgery, which may be carried out either in single jaw (maxillary protraction or mandibular setback), or both in combination⁵.

Class III malocclusion is a subject of attention and apprehension to the orthodontist in both research and clinical practice. The appearance of a protruding mandible with reverse overlap of the anterior teeth is easy to identify⁶.

Subsequent case is a severe skeletal class III malocclusion with severe under-bite, which was treated with orthodontic camouflage treatment rather than orthognathic surgery.

Case Report

A 22 years old chines male patient reported with the complaint of protrusion of mandible along with severe anterior cross bite and unpleasant smile. He had protruded mandible and retruded maxilla which resulted in severe discrepancy between maxillary and mandibular dentition. Lips were competent, with dish shaped appearance of the face (Figure-1).

Lateral cephalometric analysis showed a skeletal class III relationship with severe maxillary deficiency. Upper incisors were retroclined and reverse over jet beyond the normative mean were sight saw (Figure-2).

Ideal treatment plan offered to the patient was the as the protraction of maxilla and set-back of the mandible through orthognathic surgery. However, patient rejected the surgical plan therefore alternate treatment plan was followed. Substitute treatment plan objective was the extraction of maxillary lateral incisors, extraction of lower first premolars, with correction of cross bite in the anterior segment.

Treatment Progress

Extractions of upper lateral incisor and lower first premolar were carried out bilaterally. Fixed orthodontics bonding were achieved with the preadjusted edgewise MBT prescription brackets (Ortho Organizers, Carlsbad, Calif) of 0.022-in slot were bonded with light cure bonding kit (Trans bond XT, 3M Unitek, Monrovia, Calif) and curing were done with a light-emitting diode (Dentsply International, York, Pa)⁶. Maxillary and mandibular arch teeth alignment and leveling initiated with 0.014-in heat-activated nickel-titanium (NiTi) wire, and later sequences of wires were 0.016-in NiTi, 0.017 x 0.025-in NiTi/stainless steel (SS), until 19 x 25-in NiTi. The stabilization were done with 0.019 x 0.025 SS.

For the correction of anterior cross bite, a removable posterior bite plan were fabricated and inserted in the patient mouth. With the help of fixed functional appliance, correction of sever anterior cross bite with pleasant profile and aesthetic smile were achieved.



Figure-1
Pretreatment photographs



Lateral cephalography
Skeletal
SNA = 80.5°
SNB = 87.5°
ANB = -7°
ALFH = 53.7%
MMPA = 16.5°
Dental
UIA = 112°
LIA = 83°
ULA = 149°
Soft tissue
UL-E = 4mm
LL-E = 1mm

Figure-2
Lateral cephalometric analysis



Figure-3
Posttreatment photographs after anterior cross bite correction

Results and Discussion

Figure-3 shows the ideal patient smile, correction of severe anterior cross-bite. The ideal over jet and overbite with class I incisors were achieved via dento-alveolar compensation.

Discussion: Skeletal class III malocclusion may be accompanied by either maxillary growth deficiency and mandibular over growth or the combination of both^{2,3}. For the management of adult skeletal class III discrepancies need surgery, which may be carried out either in single jaw (maxillary protraction or mandibular setback), or both in combination⁵. The surgical orthodontics is one of the options for the management of severe skeletal incompatibility, and is ideal treatment for adult patient. However, patient refused the surgical option.

Our case report was with skeletal severity level of ANB = -7° . Knowledge of craniofacial features of Class III malocclusion is important for treatment plane and predication of treatment outcome usually investigated via orthodontic cephalometric measurements⁷. For the adult skeletal Class III malocclusion

treatment options may be growth modification, orthodontic camouflage, or surgical intervention⁸. The current patient was treated through the orthodontic camouflage. The dento-alveolar compensation were done for the correction of severe under bite with the extraction of few teeth. In this case skeletal Class III malocclusion was treated. The special consideration was given to the soft tissue profile and smile arc of the patient for the achievement of pleasant smile.

Conclusion

Surgical orthodontics is not a very common and acceptable procedure. However, camouflage treatment in moderate to severe skeletal dysplasia can be applied for the correction of severe reverse over jet along with under bite in adult skeletal Class III malocclusion.

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