

RESEARCH ARTICLE

Orthodontic Camouflage of Skeletal Class III Malocclusion With Extraction: A Case Report

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Abstract

Skeletal Class III malocclusion is often referred for orthodontic treatment combined with orthognathic surgery. However, some moderate discrepancies, can to be treated with orthodontic camouflage. To report the case of a 26-year-old woman with skeletal Class III malocclusion with anterior crossbite and a consequent concave facial profile. The patient refused to undergo orthognathic surgery; therefore, orthodontic camouflage treatment with extraction was placed on the mandibular arch. After 25 months of treatment, a Class I molar relationship was achieved, canines replaced congenital missing upper lateral incisors, while anterior crossbite was corrected by retraction of mandibular teeth. The consequent decrease in lower lip fullness and increased exposure of maxillary incisors at smiling resulted in a remarkable improvement of the patient's facial profile and an esthetically pleasing smile, respectively.

Keywords: Skeletal Class Iii Malocclusion, Camouflage, Extraction, Crossbite, Esthetic.

1. Introduction

Skeletal Class III malocclusion is referred to as a heterogeneous clustering of dentofacial anomalies characterized predominantly by forward positioning of the mandible relative to the maxilla either as an isolated trait or as a part of a syndrome¹. The age of the patient, severity of the malocclusion, patient's chief complaint, clinical examinations, and cephalometric analysis will delineate the treatment of choice. For adult patient with skeletal Class III malocclusion, orthodontic camouflage treatment may be an alternative, particularly if discrepancy is slight or moderate. In the present study, we highlight the importance of orthodontic camouflage treatment by reporting the successful case of a 26-year-old woman

with skeletal Class III malocclusion who was treated with this method, choosing it over orthognathic surgery.

2. Case Presentation

2.1 Diagnosis and Etiology

A 26-year-old woman presented for orthodontic treatment with the chief complaint of an unaesthetic smile. The Undesired appearance was caused by lateral incisors missing and decreased visibility of maxillary anterior teeth at smiling. Extraoral examination revealed a concave facial profile. Intraoral examination revealed Angle Class I malocclusion, Class II canine relationship, anterior crossbite, and maxillary lateral incisors missing (Figure 1).

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Figure 1. Undesired appearance caused by lateral incisors missing and decreased visibility of maxillary anterior teeth at smiling. Panoramic radiograph revealed lateral incisors missing (Figure 2).

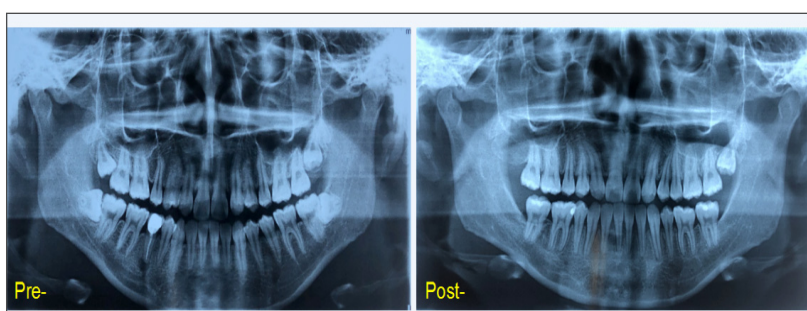


Figure 2. Pre- revealed lateral incisors missing and periapical inflammation. Post- revealed good root parallelism achieved without root resorption.

Cephalometric analysis revealed skeletal Class III incisor proclination, and uprighted mandibular incisors (U1-NA=30.1°, L1-NB=24.4°) (Figure 3).

	Pre-	Post-
SNA	82.8	82.8
SNB	86.5	83.7
ANB	-3.7	-0.9
GoGn-SN	31.5	31.8
U1-NA	30.1	29.5
U1-NA(mm)	6.7	5.9
L1-NB	24.4	20.2
L1-NB(mm)	6.8	4.4
U1-L1	134.1	137.2
Y-Axis	61.3	60.3
IMPA	84.2	80.3
UL-EP	-2.7	-2.6
LL-EP	1.7	0.5
Z-Angle	72.9	73.5

Figure 3. Pre- revealed skeletal Class III malocclusion with maxillary incisor proclination and uprighted mandibular incisors. Post- revealed the modifications obtained with the treatment.

2.2 Treatment

The primary treatment for this patient were: (1) maintain a Class I molar relationship; (2) correct anterior crossbite and achieve adequate overjet and overbite; (3) canines resemble the missing lateral incisors; (4) improve facial esthetics by retracting lower anterior teeth and increasing maxillary incisor exposure at smiling.

2.3 Treatment Alternatives

The first treatment option for this patient was orthognathic surgery, which would certainly improve

facial esthetics and simplify subsequent mechanical orthodontic treatment. However, the patient refused to undergo surgery. The second option was mechanical orthodontic treatment. This would require lower extraction and undesirable effects, such as counterclockwise occlusal plane rotation or greater mandibular incisor inclination. Eventually, camouflage orthodontic treatment with extraction was proposed and the patient agreed to this option.

2.4 Treatment Progress

A 0.22×0.25 fixed appliance with Damon Q has been bonded to all the erupted teeth on the buccal

surface. The exact sequence of archwire was used for both arches: 0.014 NiTi; 0.016 NiTi; 0.018 NiTi; 0.016×0.022 NiTi. At the 0.016×0.022 NiTi

stage, there was a deepening of the Spee's curve. The bite plate level leveled the deep curve (Figure 4).



Figure 4 . The bite plate level leveled the deep curve.

The 0.017×0.025 NiTi; 0.018×0.025 NiTi; 0.018×0.025 SS were used. By means of this archwire sequence, alignment, leveling and the coordination of the

maxillary and mandibular arch were achieved. At the late stage, the gingival atrophy and root exposure of the lower arch were treated by periodontist (Figure 5).



Figure 5 . The periodontal treatment was used to treat gingival atrophy and root exposure of the lower arch.

After 25 months of orthodontic therapy, the appliance was removed, and removable retainers were applied to the patient upper and lower arch.

2.5 Results

The post-treatment photographs show a substantial improvement in the patient's aesthetics (Figure 6).



Figure 6 . After 25 months of orthodontic therapy, the appliance was removed, and removable retainers were applied to the patient's upper and lower arch.

The post-treatment orthopantomogram displayed good root parallelism achieved without root resorption (Figure 2). The post-treatment cephalometric analysis and the modifications obtained with the treatment (Figure 3). The post-treatment intraoral view shows the achievement of a premolar-canine class I relation with the normalization of overjet and overbite.

Furthermore, this extractive treatment option allowed compensating for the class III skeletal discrepancy improving the dental support of both upper and lower lips. Labial competence was enhanced with a reduction of the lip strain. Looking at the post-treatment lateral cephalogram, the orthodontic camouflage improved the dental relationship with a maintenance of upper

incisor inclination with maintenance of upper incisor inclination with a relevant visualization of lower incisors; the skeletal facial pattern of the patient experienced an apparent improvement.

3. Discussion

Orthodontic diagnosis and treatment planning of class III malocclusion is critical and depends on several factors². The present case reports show a borderline class III patient treated with an orthodontic camouflage achieved by lower premolar extraction. Especially the patient was under the condition of congenital tooth loss.

“Borderline cases” is quite complex, and largely depends on the benefit-to-risk ratio^{3,4}. Mild class III malocclusion with an acceptable facial profile can be managed through camouflage: a compensatory orthodontic treatment that involves displacing teeth relative to their supporting bone to mask for an underlying jaw discrepancy with the ultimate aim of attaining acceptable occlusion, aesthetics, and function. The following must be cautiously considered ahead of treatment selection⁴⁻⁷: (1) the extent of facial impairment and its importance to the patient; (2) the anteroposterior position and inclination of maxillary and mandibular incisors; (3) the degree of protrusion of the mandibular symphysis; and (4) the patient acceptance of the selected option. The most crucial decision between camouflage or surgery should be based on the question of whether the dentofacial esthetic improvement achieved with surgery is worth the increase in the cost of the treatment and the risk it represents for the patient. The risks of surgery may be much more significant than those presented in patients treated with camouflage.

In this research, it can be seen that the ANB angle decreased from -3.7 to -0.9 degrees, and it was possible to reduce teeth inclination 4 degrees. In addition, the rest of skeletal angles did not vary. At the end of the case, the correction of the anterior crossbite was achieved, thanks to the fact that the anterior lateral incisors were missing, and lower premolar extraction and retraction of the lower anterior segment were performed in a good way. The curve of Spee deepened during the distal movement of lower canines, and gingival atrophy was appeared. To solve the problem, positive torque was increased in the lower anterior teeth and the bite plate was assisted in leveling the curve. As the curve was leveled and periodontal treatment was used, gingival atrophy was

improved. There was no more gingival recession till the extracted space closed.

To be able to perform orthodontic treatment to compensate for slight discrepancies in the jaws, a correct diagnosis must be made and an adequate treatment plan must be developed for the patient⁸, which will yield excellent results for the patient. It was proposed that orthodontic treatment be used, accompanied by oral rehabilitation, improve the patient's occlusion. The orthodontist must control and perform correctly the mechanics of the treatment since in the cases by means of camouflage can be more complicated without having the necessary knowledge, causing a prejudice to the patient.

Therefore, orthodontic excellence should constantly be reviewed according to the initial clinical conditions, the needs and possibilities of the patients, and the clinician's skills, aiming at tailor-made orthodontic excellence.

4. Conclusion

Some moderate discrepancies in Skeletal Class III malocclusion can be treated with orthodontic camouflage without orthognathic surgery.

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