



Camouflage Treatment of Skeletal Class III Malocclusion Along With Peg Shaped Maxillary Lateral Incisors with Conventional Orthodontic Therapy

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Abstract

Non-extraction camouflage treatment was used to treat a 15-year-old boy with a skeletal Class III pattern along with anterior spacing, peg shaped maxillary lateral incisors, a low mandibular plane angle and short lower anterior facial height. The total active treatment time was 20 months. His occlusion, smile esthetics, and soft tissue profile were significantly improved after treatment.

Keywords: Camouflage, Class III Malocclusion, Peg Lateral, Orthodontic Therapy, Crossbite

Introduction

Skeletal Class III malocclusions are some of the most complicated cases to treat.¹ Orthodontic camouflage can be used to treat milder cases of Class III skeletal malocclusion.² This case report presents the use of camouflage treatment to correct a skeletal Class III

malocclusion with anterior crossbite, anterior spacing and peg shaped laterals. With the camouflage treatment, acceptable and esthetically pleasing treatment results were achieved.

Diagnosis and Etiology

A 15-year-old Indian boy reported to Department of Orthodontics with chief complaint of underbite and spacing. He had a mesofacial, symmetrical face and a concave profile (Fig 1A,1B). Intraorally, he had anterior crossbite, peg shaped and rotated 12 and 22 (Fig 1). He had a – 2 mm overjet and a 2.5 mm overbite. He had Class III molar relationships on both sides. The maxillary and the mandibular arch showed mild spacing with a flat curve of Spee. His maxillary and mandibular dental midlines were coincident with his facial midline. A panoramic radiograph showed unerupted third molars (Fig 2A, 2B). The lateral cephalometric analysis indicated a skeletal Class III pattern (ANB- 2° ; Wits appraisal-4mm) with a hypo divergent growth pattern (SN-GoGn- 16°) (Fig 2). The maxillary incisors were Proclined (U1-SN 124°), and the mandibular incisors were proclined (IMPA- 100°) (Fig 3; Table: 1). His mother also had a skeletal Class III pattern, so the etiology of his Class III malocclusion appeared to be a combination of heredity and environmental factors.

Treatment Objectives

The following treatment objectives were established:

(1) to reduce facial concavity, (2) to correct anterior crossbite, (3) to establish Class I molar relationships,(4) obtain normal overjet and overbite, (5) correct anterior spacing (6) obtain a stable occlusal relationship, and (7) improve facial and dental esthetics.

Treatment Alternatives

Orthognathic surgery to set back the mandible with the possibility of maxillary advancement, combined with fixed orthodontic treatment once the growth is completed was discussed with the patient. Orthodontics alone could help camouflage some skeletal and dental aspects of the malocclusion, improving esthetics and function. The patient declined orthognathic surgery therefore; we decided to treat him with traditional orthodontic therapy.

Treatment Progress

Pre adjusted appliance, MBT with 0.022 x 0.028-in slots was bonded on both arches for levelling and alignment. In the maxillary arch the lateral incisors were derotated. Both the maxillary and mandibular arches were levelled with continuous arch wires, starting with 0.014-in nickel titanium, and working up to 0.019 x 0.025-in stainless steel to control the torque. Posterior bite-blocks were placed on the maxillary first molars and upper and lower arch spaces were closed along with this Class III elastics were engaged. During the finishing stage, final detailing of the occlusion was accomplished with .014 in SS arch-wires in conjunction with posterior vertical elastics with Class III vectors. Maxillary and mandibular fixed retainers were bonded. Total treatment time was 20 months. After his orthodontic treatment, he was referred to his general dentist to restore his peg shaped maxillary lateral incisors (Fig 3).

Treatment Results

The post-treatment extra oral and intraoral records showed that the treatment objectives were achieved. Facial concavity was improved by the retraction of lower incisors. His anterior crossbite and spacing were corrected. Acceptable overbite and overjet were achieved along with Class I canine and molar relationships. The patient's smile esthetics was significantly improved (Figs 4A, 4B). A post treatment panoramic image showed no signs of significant root or bone resorption (Fig 5). The lateral cephalometric analysis showed skeletal changes with a slight backward movement of the mandible (SNA, 89). The ANB changes may be explained by the downward and backward rotation of the mandible (SN-MP, from 16⁰ to 17⁰) caused by the Class III elastics. Esthetic soft tissue profile changes were demonstrated by the positions of the upper and lower lips to the E-line.



Fig. 1A: Pre-Treatment Extra-Oral Photographs



Fig. 1B: Pre-Treatment Intraoral Photographs



Fig. 2A: Pre-Treatment Radiographs (Lateral Ceph)



Fig. 2B: Pre-Treatment Radiograph (OPG)



Fig. 3: Post Debonding Composite Veneering of 22



Fig. 4A: Post-Treatment Extraoral Photographs



Fig. 4B: Post-Treatment Intraoral Photographs



Fig. 5: Post-Treatment Extraoral and Intraoral Photographs

S. No.	Ceph Values	Pre Treatment Values	Post Treatment Values
1.	SNA	89 ⁰	88.5 ⁰
2.	SNB	91 ⁰	89 ⁰
3.	ANB	-2 ⁰	- 0.5 ⁰
4.	Wits Appraisal	-4 mm	+2.5 mm
5.	Upper Incisor TO SN	125 ⁰	129 ⁰
6.	Lower Incisor To Mand Plane	100 ⁰	98.5 ⁰
7.	SN To Mandibular Plane	16 ⁰	17 ⁰
8.	Upper Lip To E Plane	-6mm	- 4 mm
9.	Lower Lip To E Plane	+ 1.5mm	+ 1 mm

Table 1: Comparison of Pre and Post Treatment Cephalometric Changes

Discussion

Camouflage orthodontic treatment can be considered to correct mild skeletal Class III patients with decent profiles. However when the skeletal Class III discrepancy is beyond the limit of dental compensation orthognathic surgery maybe the only option for creating a stable occlusion. The patient's pre-treatment skeletal discrepancy (ANB,-2⁰; Wits appraisal-4 mm) originated from his hypo-plastic maxilla and prognathic mandible. Pre-treatment records also showed a mid facial deficiency with dental compensation. Stellzig-Eisenhauer et al³ reported that the Wits appraisal is the most discriminative factor in determining whether the developing Class III malocclusion should be treated by camouflage treatment or surgery. The average Wits appraisal value for patients who were successfully treated with camouflage treatment was -4.6 to 1.7 mm. In our case, the Wits measurement was-4 mm, within the limit suggested by Stellzig-Eisenhauer et al for camouflage treatment. Moon et al⁴ concluded that Class III patients with a more hypo-divergent skeletal pattern generally respond better to treatment. Our patient too had a hypo-divergent profile and responded well to Class III elastics. The upper incisor inclination was maintained using labial root torque, so the incisors didn't procline much (U1-SN, from 126⁰ to 129⁰). In a growing patient various techniques are used to correct a skeletal Class III malocclusion. In addition to the facemask and chincup, success has also been reported with miniplates for maxillary protraction.⁵⁻⁷ Nonetheless, for fully grown Class III patients, we are still left with only 2 choices: surgery or camouflage. If patients decline surgery or camouflage treatment with temporary skeletal anchorage devices, we might consider Class III elastics. However, when using long inter-maxillary elastics in Class III patients, their effect on the inter-arch relationship should be carefully monitored during conventional orthodontic treatment.

Conclusions

If a patient with a Class III malocclusion has a low mandibular plane angle and a short lower anterior facial height, Class III elastics can be used to induce downward and backward rotation of the mandible to improve the profile. To prevent flaring of the maxillary incisors while using Class III elastics, the maxillary incisor torque should be controlled properly.

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