

Orthodontic treatment of an asymmetric case with Class III malocclusion, crowding, and an impacted canine

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Abstract

Introduction: Class III malocclusions are considered one of the most difficult problems to treat. For us, the complexity of these cases is the esthetics of the face and smile because the treatment of these malocclusions without surgery produces a more retrusive face. **Diagnosis and Etiology:** We present a case of an adult male patient with skeletal Class III malocclusion with several crowding and impacted canines, who was treated with extractions of the upper canines and lower premolars. **Conclusions:** The result is acceptable in terms of occlusion function, esthetic of the smile, and facial esthetics.

Key words: Canine extractions, case report, Class III malocclusion, extractions, orthodontics, orthodontic compensation

INTRODUCTION

Etiologically, Class III malocclusions are multifactorial with genetic and environmental factors. However, the genetic factors are the most important in these types of malocclusions. Usually, these skeletal malocclusions also have dental problems such as crowding, impacted canines, or biprotrusion. These problems add difficulties to the case.

Class III malocclusions are considered one of the most difficult problems to treat orthodontically. This is because it is not easy to improve the occlusion and to not retract the facial profile with lower extractions.

The only possibility in cases with biprotrusion is extractions in only the lower arch or maybe in the upper and lower

arch and treat them with only orthodontics or a combined treatment of orthodontic and orthognathic surgery.

The case presented is Class III malocclusions in an adult patient with severe crowding, long face, impacted canine, and bad periodontal status.^[1]

DIAGNOSIS AND ETIOLOGY

The patient is a 19-year-old adult presented with Class III malocclusions, long face, crowding, asymmetric face, an impacted canine, and bad periodontal status.

Clinical frontal examination revealed an asymmetrical face. The profile assessment revealed a straight profile with anterior facial divergence, flat cheekbone contour, and poor esthetics of the smile in the frontal and lateral views. When we analyzed the smile in detail, we observed

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Access this article online	
Quick Response Code:	Website: www.apospublications.com
	DOI: 10.4103/2321-1407.194789

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How to cite this article: Carlos Pérez Varela J, Sánchez BI. Orthodontic treatment of an asymmetric case with Class III malocclusion, crowding, and an impacted canine. APOS Trends Orthod 2016;6:306-11.

crowding, poor coordination of the dental midlines, and the upper teeth are worn [Figures 1 and 2].^[2-4]

Intraoral examination revealed bad periodontal health without coordination of the midlines, Class III molar and canine relation on both sides. The mandibular midline was deviated to the left 2 mm and the upper was deviated 1 mm to the right. The patient had crowding (more in the upper arch) and upper right impacted canine [Figure 3].

Temporomandibular joint (TMJ) examination revealed a little discrepancy between centric relation and centric occlusion, and the patient did not complain of pain or clicking in the joint.

Cephalometric examination revealed retrognathic maxilla, prognathic mandible, with vertical growth pattern, and proclined maxillary incisors and mandibular incisors [Table 1 and Figures 4, 5].

Treatment progress

When we have a case with crowding, it is possible to do extractions to compensate the discrepancy between the maxilla and mandible. However, it is not the only factor as it is necessary to analyze the profile to treat the case with orthodontic and orthognathic surgery.^[5-8]

This case not only needs extractions but also needs an orthognathic surgery for the long face and straight profile. We explained all the options to the patient, but he refused the orthognathic surgery.

Table 1: Initial cephalometric values

	Normal	Initial
SNA	82°±2	80°
SNB	80°±2	80°
ANB	2°±1	0°
Inc. upper incisor	110°±6	119°
Inc. lower incisor	90°	96°
Wits	2 mm	-5 mm
Go-Gn/S-N	33°±2,5	43°
A. interincisor	131°±6	115°



Figure 1: Extraoral photos



Figure 2: Extraoral photos



Figure 3: Intraoral photos

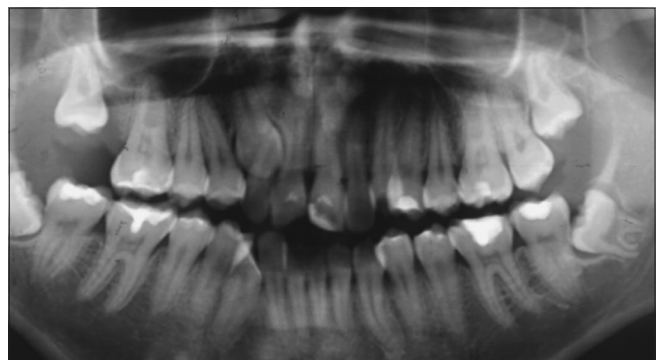


Figure 4: Orthopantomography

We decided to treat the patient with upper and lower extractions, but we used a progeny appliance to obtain centric relation before deciding which teeth to extract for the case.

After, the patient used the appliance for 4 months, and we decided to extract the first lower premolars to align the lower teeth, retract the lower incisors, and coordinate the midlines. In the upper arch, due to the

bad periodontal status of the upper left canine and the impaction of the right one, we decided to extract both of them and finish with the premolars in place of the canines [Figures 6-10].

During the treatment, we used these arches:

- Alignment: 0.014 NiTi and 0.016 NiTi

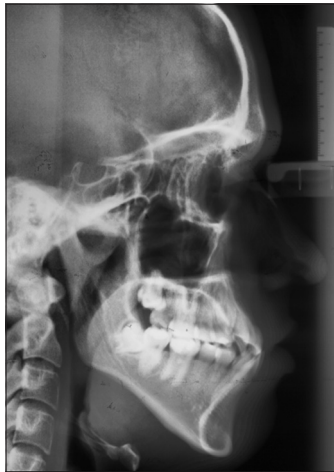


Figure 5: Teleradiography

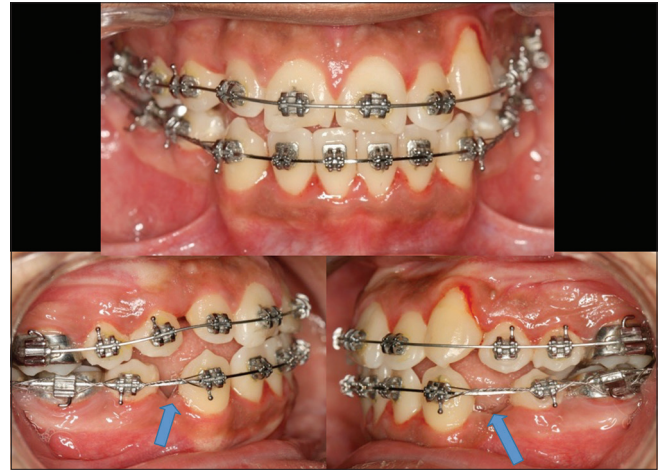


Figure 6: Intraoral photos with lower extractions

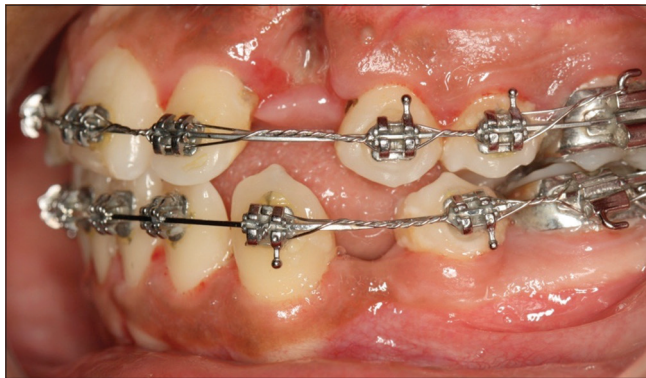


Figure 7: Intraoral photos with upper and lower extractions

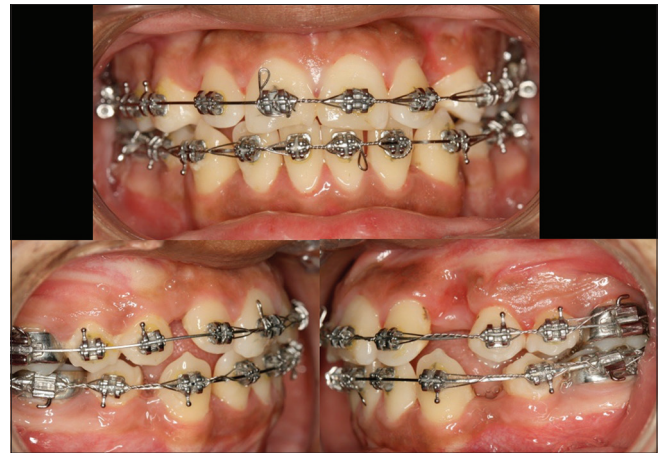


Figure 8: Intraoral photos



Figure 9: Intraoral photos

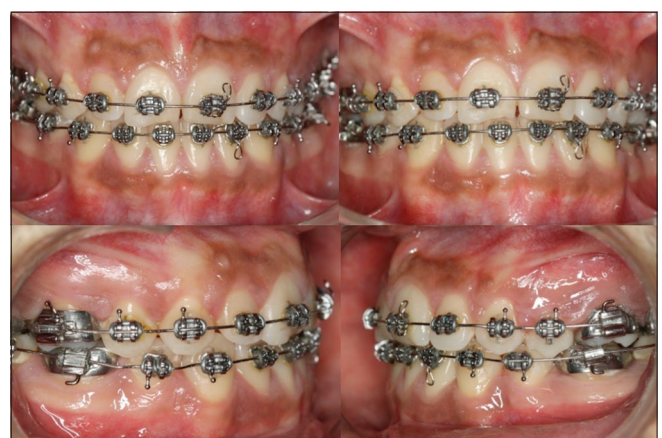


Figure 10: Intraoral photos

- Leveling: 0.017 × 0.025 NiTi
- Space closure: 0.019 × 0.025 steel wire
- Finishing: 0.018 steel wire with bindings.

Treatment results

We obtained a significant improvement in alignment, occlusion function, and esthetics of the smile in frontal and lateral views, and we noted a retrusion of the lower lip [Figures 11-14].



Figure 11: Extraoral final photos



Figure 12: Extraoral final photos



Figure 13: Extraoral and intraoral final photos



Figure 14: Intraoral final photos

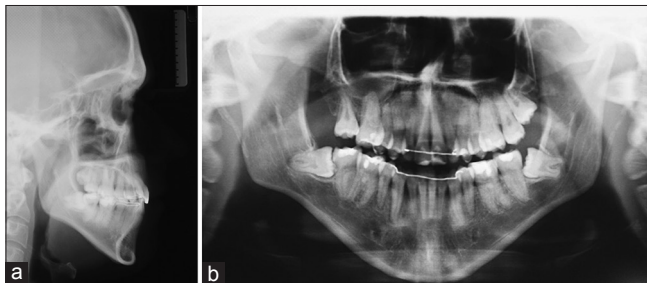


Figure 15: (a) Teleradiography, (b) orthopantomography

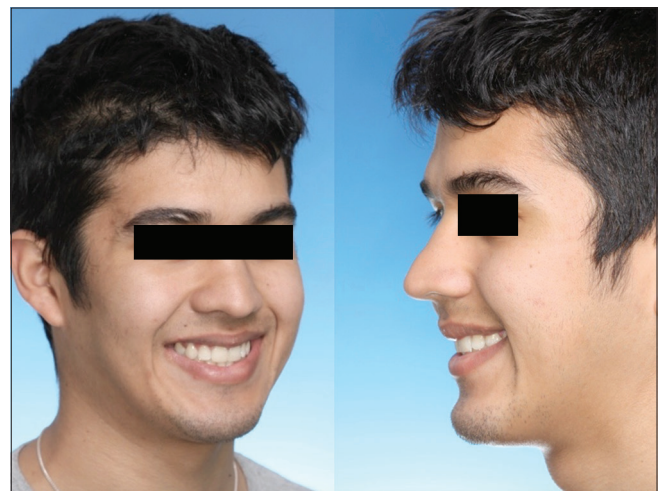


Figure 16: Extraoral retention photos

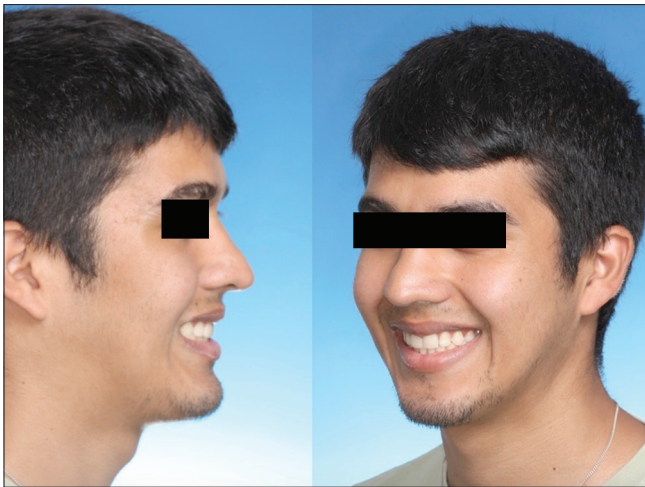


Figure 17: Extraoral retention photos



Figure 18: Extraoral and intraoral retention photos



Figure 19: Intraoral retention photos

computed tomography, we can observe that the roots are in the middle of the alveolar bone, and there is no root resorption [Table 2 and Figure 15a, b].

Two years later, the occlusion function is stable. The esthetic of the smile is acceptable. The patient does not have TMJ problems [Figures 16-20].

CONCLUSION

In cases where there is a severe skeletal discrepancy, it is necessary to perform a combined orthodontic treatment and orthognathic surgery to obtain all goals. However, in some cases, when the patient refuses orthognathic surgery, and if the patient has crowding and biprotrusion, the upper and lower extractions could be an acceptable alternative.^[9-12]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and

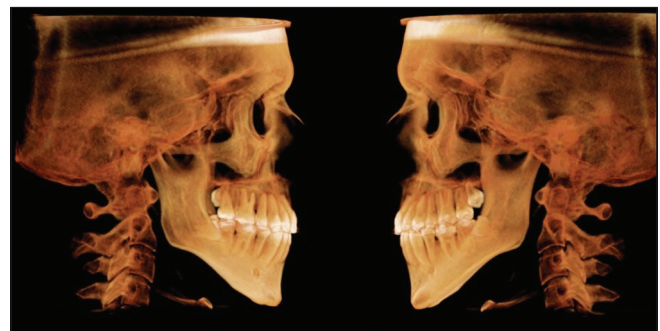


Figure 20: Three-dimensional scan

Table 2: Final cephalometric values

	Normal	Initial	Final
SNA	82°±2	80°	84°
SNB	80°±2	80°	81°
ANB	2°±1	0°	3°
Inc. upper incisor	110°±6	119°	110°
Inc. lower incisor	90°	96°	85°
Wits	2 mm	-5 mm	-2 mm
Go-Gn/S-N	33°±2,5	43°	41°
A. interincisor	131°±6	115°	130°

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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