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Research

Orthodontic treatment of Class III malocclusion with lower extraction and anchorage with mini implants: Case report

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ABSTRACT

This article reports the case of an adult patient with Class III malocclusion with mandibular deviation to right side and right anterior and posterior crossbite treated by retraction of the lower teeth with the aid of mini implants in the retromolar region on both sides. The patient opted to not perform surgery for correction of facial asymmetry, thus the treatment consisted of asymmetric extraction (34 and 38) and placement of absolute anchorage devices distal to the lower second molars in the retromolar area, which assisted in the distal movement of the lower molars and retraction of the lower anterior teeth through springs and elastic. At the end of treatment, the patient has achieved Class I, except only the right side, which achieved molar ratio Class II. After a follow-up period of 2 years, the results remain stable. In this case in a patient with moderate facial asymmetry, it was possible to restore the smile esthetics only with tooth movement through the use of absolute anchorage of mini implants for distalization of molars and anterior teeth.

1. Introduction

In adult patients, the treatment options for Class III malocclusion depend on the skeletal discrepancy, facial profile, and patient's chief complaint. Cases with slight discrepancies may be treated through orthodontic camouflage, whereas severe cases require treatment in combination with orthognathic surgery [1–3].

In borderline cases, in which the facial profile is esthetically acceptable, good results may be obtained with orthodontic camouflage [1–4]. The commonly used biomechanics strategies for Class III camouflage are the use of facemask therapy for mesial movement of the upper teeth and Class III elastics, often associated with lip bumpers, sliding jigs, and multiloop archwires [5–9]. However, all of these mechanics rely on patient cooperation or have potential side effects [10,11]. In this context, skeletal anchorage through mini implants or mini plates increases the foreseeability of the results of the orthodontic treatment. The insertion of mini implants is a less invasive procedure and it is well accepted by patients, representing a good option for mild discrepancies. On the other hand, the insertion of mini plates is more invasive, but is required in cases of moderate discrepancies [4,9,12].

In this article, we report a case of a 36-year-old woman with a Class III malocclusion associated with an anterior and unilateral posterior crossbite and deviation of the mandible and lower midline to the right side. The orthodontic treatment was based on the distal movement of the lower dentition and was achieved with skeletal anchorage provided by mini implants inserted into the retromolar area on both sides of the mandible. The final and 2-year follow-up records showed an attractive smile and normal, functional occlusion.

2. Diagnosis and etiology

A 36-year-old woman sought orthodontic treatment at the Department of Orthodontics of the Pontifical Catholic University of Rio Grande do Sul, Brazil, with the chief complaint of "wrong bite." The frontal facial analysis revealed a mandibular deviation to the right side and an increased lower third of the face. In the smile analysis, there was a greater display of the lower incisors instead of the upper incisors. A lower midline deviation to the right side

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Fig. 1. Pretreatment facial photographs.

(4 mm), associated with an anterior crossbite, worsened the unesthetic condition of the smile (Fig. 1). In the intraoral photographs and dental casts, we observed that second premolars and the left first premolar were absent in the upper arch, whereas in the lower arch, the right second and third molars were absent. In occlusion, the first molars showed a Class I relationship, but canines showed a Class III relationship. A posterior crossbite in the right side extended to the anterior region, including the central incisors. The lower arch had a negative discrepancy of 3 mm (Figs. 2 and 3). In the panoramic radiograph, the tooth absences were confirmed and all of the present roots were found to be in good condition. A lateral cephalogram and cephalometric measurements showed a skeletal Class I pattern with proclined upper and lower incisors (Fig. 4).

2.1. Treatment objectives

The main treatment objectives were as follows:

Eliminate the anterior and posterior crossbite.
Obtain a Class I canine relationship on both sides.
Obtain a molar Class I relationship on the left side and Class II on the right side.
Correct the lower midline.
Eliminate the crowding on the lower arch.
Improve the esthetics of the smile.

2.2. Treatment alternatives

Two alternatives were suggested for this patient. The first option was orthodontic decompensation followed by orthognathic surgery, with mandibular setback and correction of the deviation. This treatment plan would fulfill all the necessities of the case; however, facial esthetics was not the main complaint of the patient and the mandibular deviation was considered acceptable to her. Furthermore, we believed that the dental asymmetry caused by the skeletal deviation could be corrected through orthodontic movement without orthognathic surgery. Based on that, the orthognathic surgery was discarded. The second option was orthodontic camouflage, with extraction of the lower left first premolar with skeletal anchorage. Mini plates were first considered because the total time of treatment could be reduced, moving all teeth at once;

Fig. 2. Pretreatment intraoral photographs.