

Treatment of Severe Skeletal Bimaxillary Protrusion Using Mini Implant

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ABSTRACT

In the orthodontic clinic, skeletal and dental bimaxillary protrusion is presented frequently as one of the factors leading patients to seek orthodontic treatment, mainly due to the aesthetic involvement it has. The patient of this article illustrates this situation, being deeply uncomfortable with her aesthetic appearance, due to the excessive upper incisors exposure and problems with lip sealing.

Keywords: Class I malocclusion. Corrective orthodontics. Aesthetics.

INTRODUCTION

A female patient, 18 years and 6 months old, with the chief complaint: "I want to improve my teeth because they are looking in forward direction and i also want to improve my esthetics as well". On examination it was a clear case of bimaxillary skeletal and dental protrusion with more incisor display with good gingival and periodontal health.

DIAGNOSIS

The patient's facial aspect, in frontal view, did not present visible asymmetry, but absence of passive lip sealing. From the lateral view, the patient presented a convex profile, reduced nasolabial angle, lack of lip sealing at rest, and increased lower anterior facial height (Fig 1). The patient presented a Class I molar relationship and 4 mm overjet; slight upper and lower alignment ; moderate Curve of Spee; presence of all teeth without cross bite cross bite. Upper and lower midline coincide upper and lower incisors proper occlusion with more incisor display. (Fig 2). The periapical and panoramic radiographs demonstrated normal root morphology of the upper and lower teeth, In skeletal terms, according to the lateral cephalometric radiograph and respective jaws with prognathic, it was observed that the patient presented unbalanced skeletal bases, characterized by angles increased SNA , SNB and, with a dolichofacial pattern, and presenting protruded upper incisors, and protruded lower incisors with buccal tipping.¹ The functional analysis of mandibular movements revealed normal anterior guides.



Fig 1



Fig 2

TREATMENT PLAN

Due to compromised facial aesthetics and dental and skeletal bimaxillary protrusion, the treatment plan had the following objectives: Maintain canine and molar occlusion; maintain align and level the teeth; reduce overbite and overjet; correction of protrusion on both arches; level the Curve of Spee, close the spaces due to extraction of teeth.

For this purpose, extractions of the first upper and right lower premolars were necessary bilateral, besides the retraction of upper and lower anterior teeth, to reduce bimaxillary protrusion and correct the lower midline. All this was done very carefully, in order to reduce incisor display.

The treatment also aimed at maintain lateral and protrusion guides, and reduction of facial protrusion. The nasolabial angle would be increased, as well as passive lip sealing would be expected and decrease of the lower anterior facial height, in order to reach smile harmony.

TREATMENT PROGRESS

The treatment was performed with the Straight wire technique, using metallic orthodontic brackets in both arches, according to MBT prescription (0.022 x 0.028-in). Levelling and alignment were carried with a sequence of NiTi round arch wires, NiTi rectangular arch wires 0.017 x 0.025-in and stainless steel rectangular arch wires 0.019 x 0.025, using mini implants placed in molar region with retraction and intrusion for retraction of anterior teeth.

Bands were placed on the first molars, as well as on the first, lower molars, with a mini implants mesial to the first upper molars and T loop was placed on lower arch.

The placement of the fixed orthodontic appliance was completed with the direct bonding of brackets on the remaining upper and lower teeth, except on teeth 14, 24, 34 and 44 - which would be extracted, with the objective of eliminating and allow the correction of the dental bimaxillary protrusion, by means of retracting the anterior teeth.^{1,3,4} Alignment and leveling were carried with 0.014, 0.016 and 0.018-in NiTi arch wires; and 0.017 x 0.025-in NiTi rectangular, and stainless steel 0.019 x 0.025-in archwires. Then, the retraction of upper and lower anterior teeth, and the maintenance of the lower midline were performed.

OBTAINED RESULTS

The evaluation of the final records shows that there was reduction for SNA and SNB angles, a slight decrease in the vertical direction. The canine guidance was kept normal, there was overjet reduction, overbite and Curve of Spee correction. Upper and lower anterior retraction was satisfactory.

The lower midline correction and anterior guides were maintained. However, lip sealing was not completely passive, due to the patient's vertical growth pattern. The nasolabial angle was changed, despite the decrease of incisor protrusion, which promoted smile harmony (Figs 3 to 4). The treatment lasted 16 months.



Fig 3



Fig 4

FINAL CONSIDERATIONS

The treatment of dental skeletal bimaxillary protrusion was successful, once the main objectives proposed to the patient were achieved, resulting in good occlusion and pleasant facial esthetics (Fig 3). A good parallelism was obtained between roots, especially for lower molars. The pre-existing spaces before treatment and those caused by the extraction of teeth #14, #24,34 and #44 were properly closed, with upper and lower anterior retraction (Fig 4).

In facial terms, passive lip sealing, initially expected, was not completely obtained, mainly due to increased anterior facial height. Nevertheless, greater smile harmony was obtained, which fully met the patient's expectations, who always collaborated regarding oral hygiene and clinical recommendations.

The patient was pleased with the treatment result, since it improved her facial aesthetics substantially,⁸ with the reduction of dental and skeletal bimaxillary protrusion.² After removing the appliances and placing new retainers, the patient was referred to dental whitening and composite restoration of the incisal borders of the upper anterior teeth. Thus, after the recommended procedures, an even more pleasant smile was obtained, which contributed significantly for the patient's complete satisfaction.⁶

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