

Two - Phase Class II Division II Malocclusion treatment with the Carriere Motion Appliance

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INTRODUCTION

Treatment of Class II Division II malocclusion can be a challenging undertaking for an orthodontist. It is one of the most difficult malocclusions to treat, since it is generally part of a situation with skeletal compromise, deep bite and framed in patients with straight profiles; therefore, the option of non-extractions as a choice of treatment plan is desirable.

The facial growth pattern and in particular the mandibular growth pattern can greatly influence the outcome of treatment and the long-term stability [1].

Different forms of treatment have been discussed, among which are the decision between extracting premolars and the option of not extracting them, depending on the particularities of each patient.

There are also different opinions regarding the time to start treatment and vary between starting in the active stage of growth and facial development, or waiting to complete it.

The decision to use functional appliances in the first phase of treatment is also another option that can be considered to address these cases, to later complete in a second phase with fixed appliances

This article deals with the description of the treatment of a severe case of Class II Division II of a 12 years of age male, treated non extraction in two phases with the Carriere Motion Appliance * in the first phase of treatment as a tool for establishing a solid Class I platform.

DIAGNOSIS AND TREATMENT PLAN

A 12-year-old male presented with a Class II division 2 malocclusion, with deep bite, severe crowding in the upper arch and moderate in the lower arch with the typical characteristics of this type of malocclusion that include palatal retroinclination of the upper central incisors and labialization of the upper laterals (Figure 1).

Profile evaluation found a straight nasiolabial angle and a moderate retroposition of the lower lip in reference to the upper one (Figure 2).

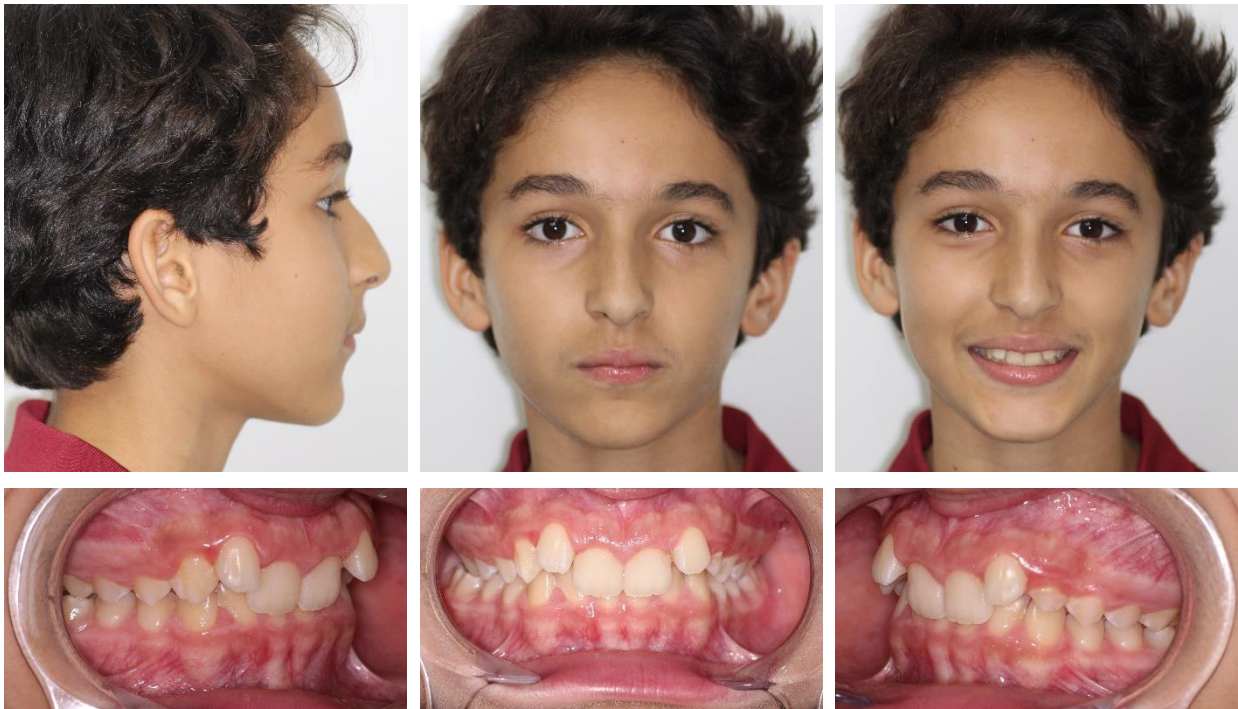


Figure 1



Figure 2

The medical history recorded respiratory difficulties that included mouth breathing, allergies to dust and mites, nocturnal snoring, tiredness during sports activities; therefore, it was decided to include a CBCT of the upper airways as a complementary diagnostic tool.

The CBCT results confirmed the existence of structural pathologies of the airways such as hypertrophied turbinates, enlarged tonsils; as well as an MCA (minimum constriction area) of 61.8 mm precisely around the section of the airway related to the posterior border of the mandible (Figure 3).

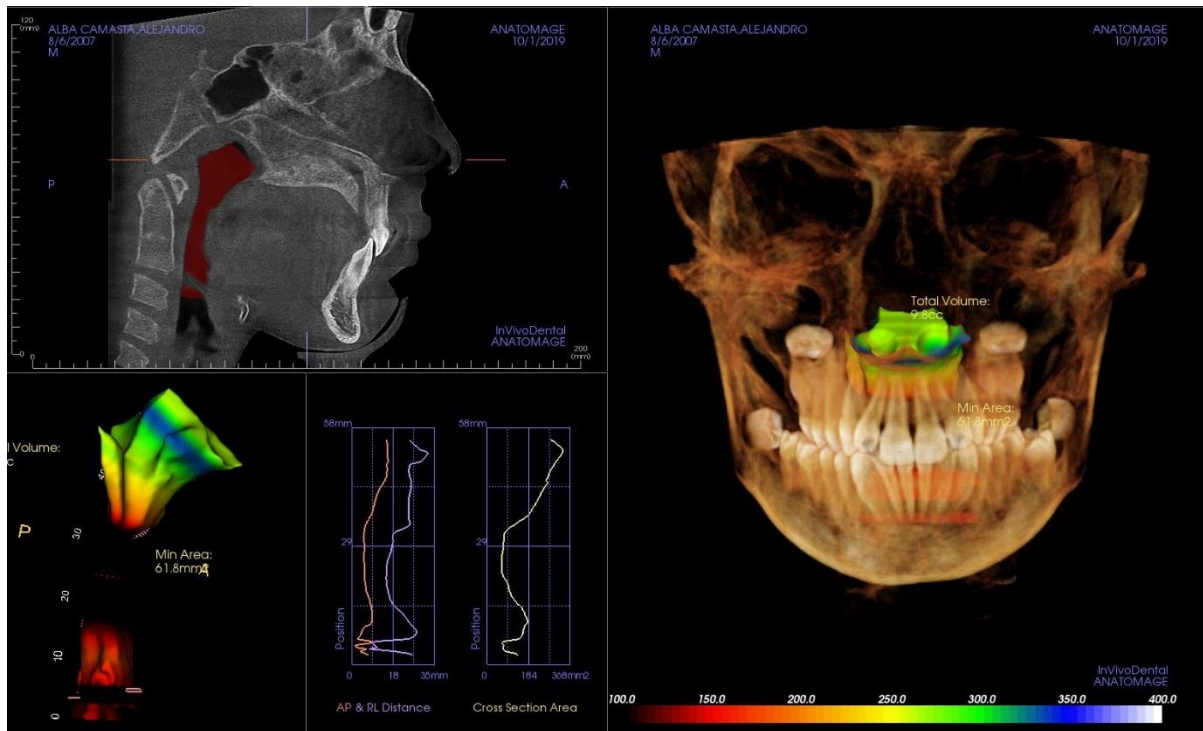


Figure 3

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The cephalometric analysis indicated that the Class II malocclusion was related to a postural retrognathic skeletal relationship of the mandible (Figure 4).

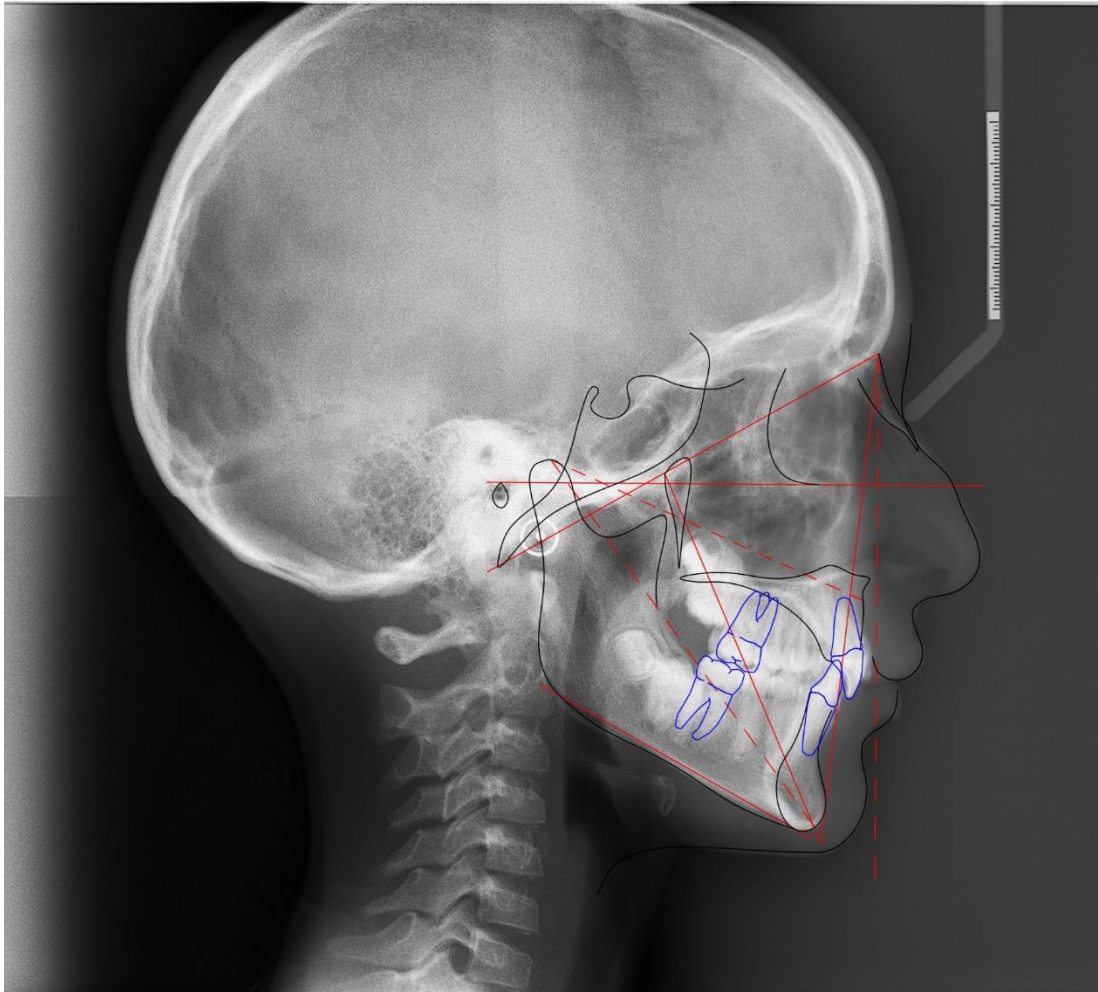


Figure 4

The panoramic radiograph showed all permanent teeth formed and erupted with exception of the second molars. A two phase treatment plan was designed involving bilateral Carriere Motion Appliances in Phase I and upper and lower fixed appliances in Phase II.

TREATMENT PROGRESS

Bilateral 27mm Carriere Class II Motion Appliances were bonded from upper first molars to upper permanent canines, an Essix ** plastic retainer was delivered as lower anchorage and six ounces Class II elastics were prescribed to be worn full time for the first six weeks of treatment (Figure 5).

After the second visit six weeks from baseline, 8-ounce elastics were used for five months.

After six months of Motion Appliance treatment, a bilateral Class I occlusion was achieved.

The bite suffered a change in the vertical dimension and also in the sagittal direction, showing a Class I occlusion relationship and the upper central incisors were in anterior crossbite due to the palatal retroclination typical of Class II Div 2 malocclusion (Figure 6)

After the results of the first phase with the Motion Appliance and taking into account the sagittal change obtained, we proceeded to assess with complete records including a second CBCT to compare the situation of the upper airways after that phase.

The Motion Appliances were removed and the second phase of treatment began with upper and lower fixed appliances to correct the dental discrepancies (Figure 7).

We place upper and lower fixed appliances Aria MBT .022***

The archwire sequence started with a .014 'nickel titanium wires to level and correct the anterior crossbite, then a sequence of .014X.025 NITI, .016 X. 022 stainless steel and finished with .018X.025 stainless steel.

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Figure 5



Figure 6



Figure 7

TREATMENT RESULTS

After 25 months of treatment in both phases including the disruption of the COVID 19 pandemic, the patient exhibits a solid Class I occlusion with excellent interdigitation, a centered midline, and a well-proportioned facial appearance with a pleasant smile (Figure 8).

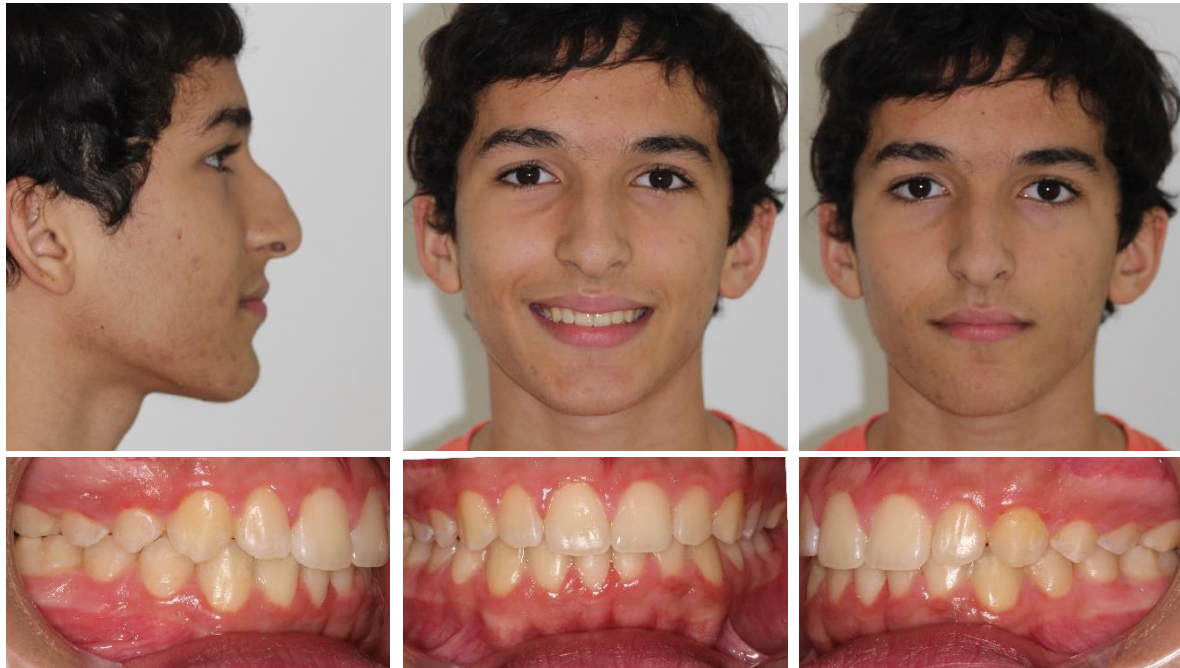


Figure 8

DISCUSSION

The decision to treat Class II division 2 with or without extractions of upper 1st premolars is one of the dilemmas faced by orthodontists due to the possible facial changes that said compensation implies [2].

The Carrière Motion Appliance (CMA) is a simple and efficient device, whose use has been widely developed over the last decade. It was introduced by Luis Carrière in 2004 as a Class II intermaxillary correction device. The clinical principles of the CMA are based on achieving Class I at the beginning of the treatment when the patient's cooperation is the most important, with dental alignment and intercuspidation continuing at a later stage, both in the fixed appliances and aligner techniques. In addition to its efficiency, the possibility of remote follow-up in times of pandemic makes it an undeniable tool of choice in our orthodontic arsenal [3].

The option of using the Motion Appliance as a Class II correction tool in the first phase was key in the correction of the sagittal discrepancy, enabled the option of non-extractions, but even more important promoted an important change in the vertical dimension as has been demonstrated in several studies [4].

The diagnosis in orthodontics has been incorporating the assessment of the airways as an important element within it [5].

In this treated case, the evaluation of the airways showed that the minimum constriction area (MCA) at the beginning of treatment with the Motion Appliance was 61.8mm and after the first phase there was an increase in the MCA up to 181.9mm; which indicates that in six months of treatment the structures of the upper airways tripled in size (Figure 9).

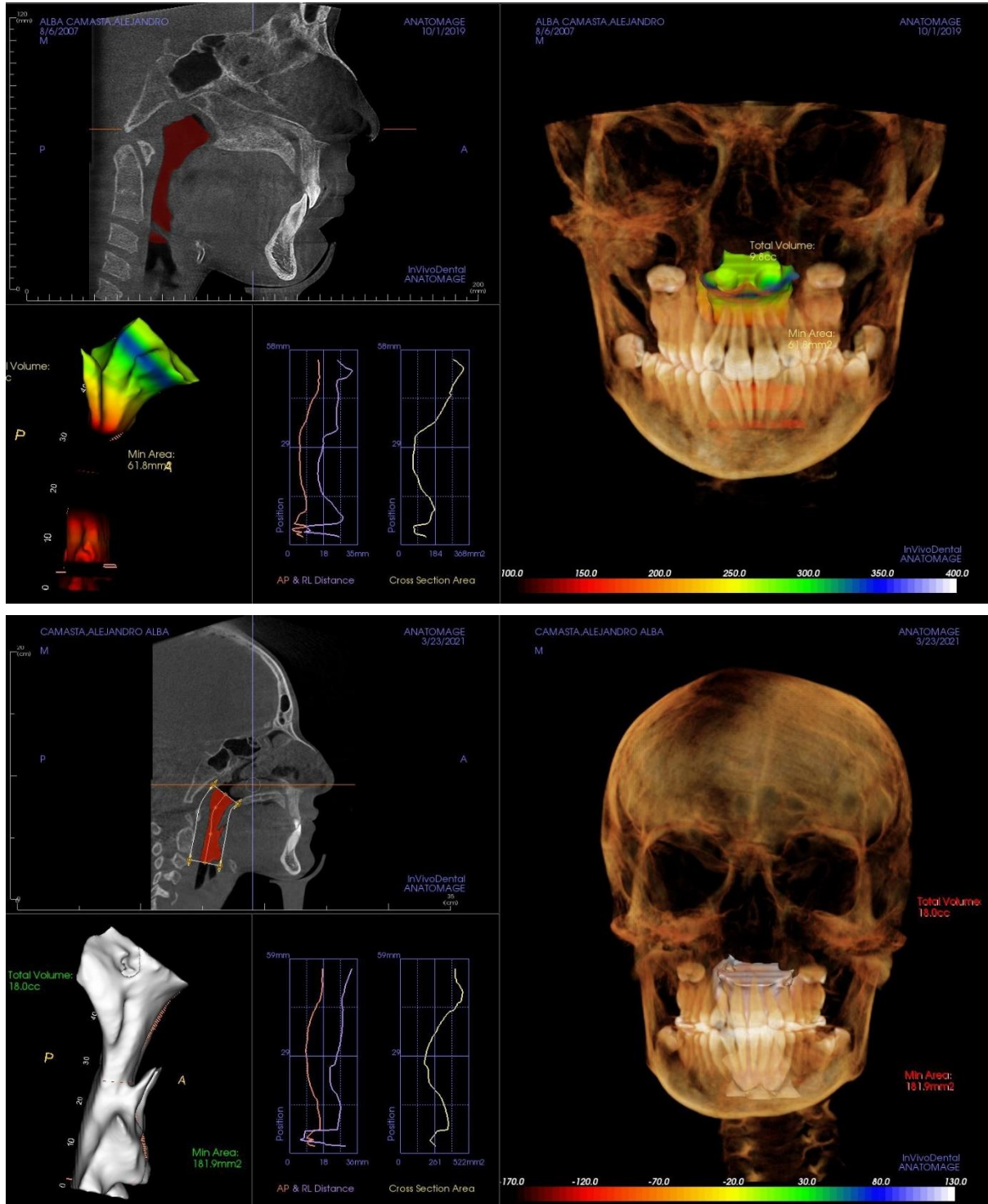


Figure 9

The Motion appliance in combination with the fixed appliances without extractions was an excellent option to treat this Class II division 2 malocclusion.

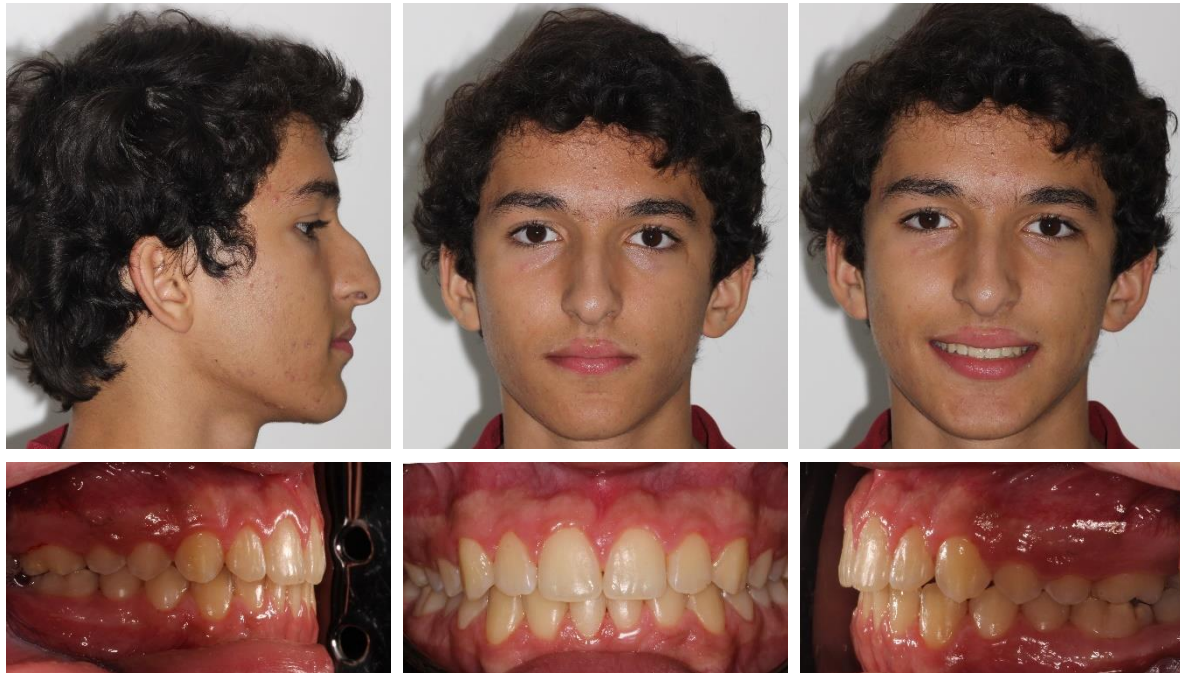


Figure 10

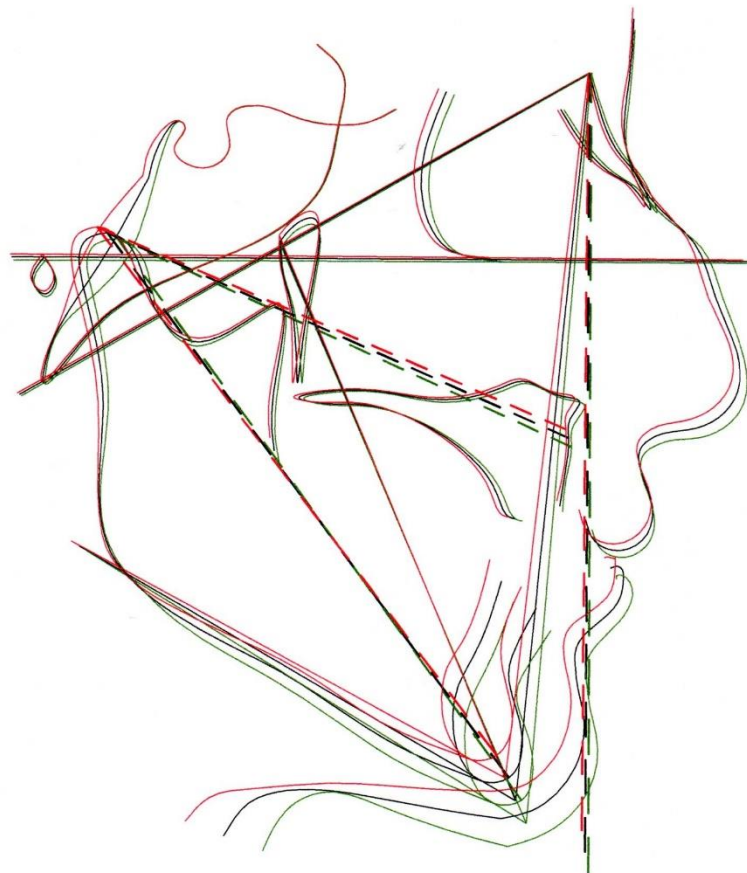


Figure 11

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