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IT IS POSSIBLE TO PROTRUDE THE MAXILLA USING ORTHODONTIC MINI-IMPLANTS IN ASSOCIATION WITH INTERMAXILLARY ELASTICS

The gold standard for the treatment of Class III malocclusion due to maxillary deficiency is the use of rapid maxillary expansion, followed by mandibular protraction with facemask. However, the unfavorable aesthetics of facemasks make it difficult for most patients to adhere to this treatment. With the advent of skeletal anchorage, several possibilities have arisen for using this method to support Class III-oriented intermaxillary elastics in the presence of Class III malocclusion due to maxillary deficiency. However, the procedure for installation of miniplates is invasive, causing many patients to decline this treatment. Given these difficulties, the following question arises: would it be possible to use conventional orthodontic mini-implants instead of miniplates? In order to clinically evaluate this possibility, Brazilian researchers recently published the results of their study in an important orthodontic journal. For this, a prospective nonrandomized clinical study¹ was conducted on 24 patients aged 7 to 12 years. The control group involved rapid maxillary expansion, followed by use of a facemask for maxillary protraction. In the experimental group, mini-implants were inserted in

the posterior maxillary region and between mandibular canines and incisors, and intermaxillary elastic was then applied (Fig 1). The results of this study revealed improvements in the participants' facial profiles and occlusions, with maxillary advancement occurring in both groups. The authors concluded that conventional orthodontic mini-implants, used in association with intermaxillary elastics, may be a valid treatment option for Class III patients with maxillary retrusion. The authors also pointed out that most mini-implants remained stable during treatment, and that the mini-implant protocol reduced the undesirable effects of the conventional technique and resulted in a shorter treatment time.

LOWER FIXED RETENTION BONDED TO ALL TEETH PROVIDES GREATER STABILITY

Maintenance of the results obtained when an orthodontic treatment is completed is everyone's wish. However, it is not uncommon to occur relapse following the cessation of orthodontic treatment. Maintaining long-term results is no easy task, requiring the use of well-designed and -installed retention devices. A number of fixed retention devices have been described in the literature for maintaining lower arch stability, these basically being those bonded to all the teeth or bonded

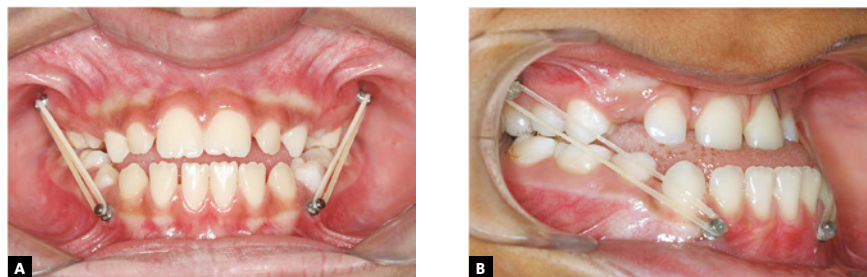


Figure 1 - Intraoral photographs of a patient using mini-implants associated to Class III elastics: A) frontal and B) lateral. Source: Souza et al.¹, 2019.

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to the canines only. The question is: which one is the most effective? Searching for an answer to this recurring clinical uncertainty, Brazilian researchers undertook a systematic literature review² to evaluate the stability offered by these two different types of inferior retention: bonded to all the teeth, and bonded only on the lower canines. To achieve this, electronic databases were consulted (PubMed, Scopus, Web of Science, Cochrane Library, Lilacs, OpenGrey, ClinicalTrials and Google Scholar). The authors found two studies that reported better stability of retention bonded to six teeth, with a further three showing no difference between the two retention types. Thus, the authors concluded that better stability is achieved with fixed lower retention bonded to all anterior teeth. However, the authors drew attention to the need for studies with greater methodological rigor in order to reach a more reliable conclusion.

FUNCTIONAL APPLIANCES PROMOTE SKELETAL AND FUNCTIONAL CHANGES IN TMJ

We know that extraoral traction devices produce the best results, and consider these to be the gold standard in the treatment of Class II malocclusions. The aesthetic appeal of functional appliances has made them popular, and the devices of choice for patients being treated for such malocclusions. However, despite this popularity, there are still questions about the real mechanism of action and stimulation of bone growth. Recently, a sys-

tematic review³ was published by a team of Swiss authors that aimed to evaluate the effects of such devices on the temporomandibular joint. Randomized and prospective nonrandomized clinical trials, from nine databases, were analyzed. The authors concluded that evidence from controlled human clinical studies indicated that treatment with functional appliances is associated with positional and skeletal changes of the temporomandibular joint, when compared to a control group.

PREDISPOSING FACTORS FOR EXTERNAL APICAL ROOT RESORPTION IDENTIFIED

Despite being a subject that has been exhaustively studied over the years, root resorption still haunts patients and orthodontists worldwide. The possibility of losing teeth through resorption causes a lot of people sleepless nights, including me. Knowing which groups are at risk is essential for preventative measures to be taken, these being either mechanical or patient-oriented. Recently, a group of Brazilian researchers published a study⁴ that aimed to identify the possible risk factors for external apical root resorption in the upper incisors after orthodontic treatment. For this, the root lengths of 2,173 maxillary incisors were measured from the periapical radiographs (Fig 2) of 564 patients who were receiving orthodontic treatment. Statistical tests were applied to these measurements, to determine the association of resorption with several factors. The authors

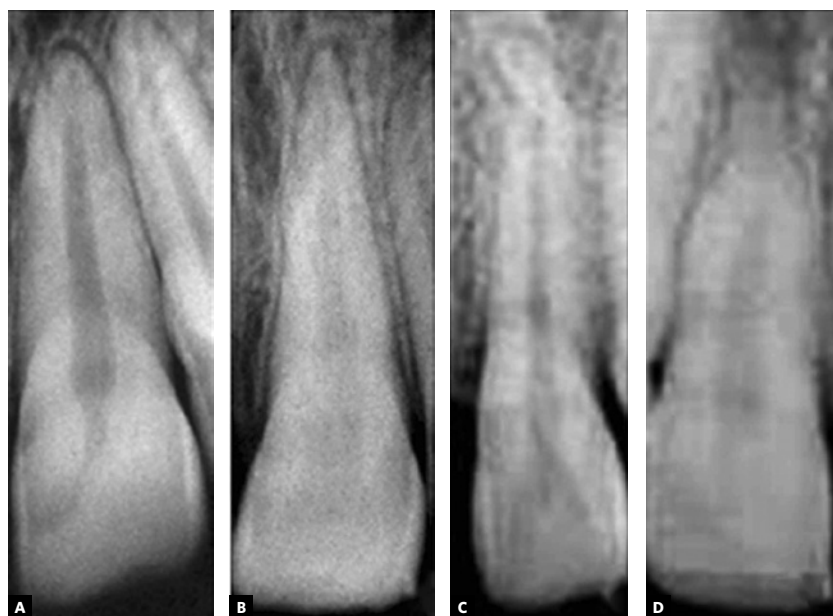


Figure 2 - Initial classification of root shape; A) rhomboid; B) triangular; C) dilacerated; and D) pipette. Source: Fernandes et al.⁴, 2019.

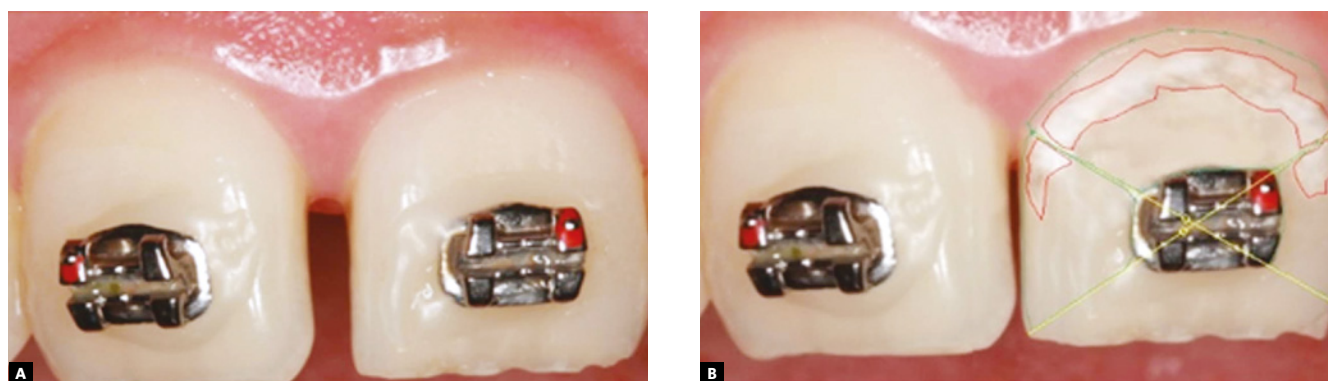


Figure 3 - A) Without white spot, at baseline; B) white spot after 6 months.

concluded that the potential risk factors for external apical root resorption were treatment with maxillary premolar extraction, increased overjet at the beginning of treatment and torn roots.

CO₂ LASER APPLICATION PREVENTS WHITE SPOTS ON ORTHODONTIC PATIENTS' TEETH

One of the most common side effects of fixed orthodontic appliances is white lesions around orthodontic bands and brackets. Fixed devices increase the number of locations available for plaque buildup, and alter the balance between enamel demineralization and remineralization processes. This phenomenon leads to the loss of minerals and the development of white spots. The appearance, or not, of such spots is dependent on the hygiene applied by the patients; in other words, our work is in their hands. The search for a product that can be applied to the tooth for better protection during treatment is ongoing; however, one method for increasing caries resistance is laser irradiation. Using this method, Iranian researchers performed a randomized, controlled clinical trial⁵ that aimed to evaluate the effect of a carbon dioxide (CO₂) laser on the prevention of white spots associated with fixed orthodontic appliances. This study involved the treatment of 554 maxillary anterior teeth of 95 patients aged 12 to 30 years. The samples were randomly divided into two groups: 1) CO₂ laser (n = 278); and 2) control (n = 276). After fixation of the bracket, the teeth of the test group were exposed

to a CO₂ laser (0.4 mw, 10.6 μm, 5 Hz) for 20 s, while the control group received a placebo light. Based on the results obtained, the authors concluded that CO₂ laser irradiation was effective in preventing the incidence of white spots in orthodontic patients (Fig 3).

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