

Orthodontic treatment of gummy smile by using mini-implants (Part I): Treatment of vertical growth of upper anterior dentoalveolar complex

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Abstract

Orthodontic mini-implants have revolutionized orthodontic anchorage and biomechanics by making anchorage perfectly stable. In this Part I, 'gummy smile' was defined and classified according to the etiologies. Among them, dentoalveolar type, a good indication of mini-implant treatment, was divided into three categories: (1) Cases with vertical growth of upper anterior dentoalveolar complex (Cases 1, 2, and 3), (2) Cases with protrusion of anterior dentoalveolar complex (Cases 4, and 5), and (3) Cases with protrusion of upper anterior dentoalveolar complex and extrusion of upper posterior teeth (Cases 6, and 7). Three cases with excessive vertical growth of the upper anterior dentoalveolar complex were presented. They were characterized with extruded and retroclined upper incisors, deep overbite, and gummy smile. The aim of this paper is to show that mini-implants are useful in the anterior area to intrude incisors and correct the gummy smile. An upper anterior mini-implant (1.6 x 6.0 mm) and a NiTi closed coil spring were used to intrude and procline the retroclined extruded incisors. Mini-implants can be used successfully as orthodontic anchorage to intrude anterior teeth.

Keywords: Mini-implants. Intrusion. Gummy smile. Segmented arch.

Editor's summary

The use of anchorage devices offers undeniable benefits. No wonder it is so widespread among orthodontists. As well as reducing the reciprocal effects of orthodontic forces, mini-implants have opened new therapeutic avenues, such as the implementation of tooth intrusion movements. Posterior

teeth intrusion may be indicated—primarily for prosthetic purposes—for teeth that have been extruded due to absent antagonists. Posterior region intrusion can still be performed to correct anterior open bite in patients with an essentially vertical facial pattern. Moreover, the intrusion of upper anterior teeth entails a rather precise indication.

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It is recommended for the correction of deep overbite in patients with overexposure of the gingiva in the anterior region only, during smiling, and preferably if associated with retroclined upper incisors.

These morphological nuances are featured in three clinical cases illustrated in this article (Figs 1 and 2) and highlights an important clinical application of mini-implants in orthodontics.



FIGURE 1 - Initial and final frontal view of the face; initial and final frontal view of the occlusion.



FIGURE 2 - Initial and final frontal view of the face; initial and final frontal view of the occlusion.

Questions

1) Are there any limitations on the use of mini-implants for upper anterior teeth intrusion?

The limitations are no different than in any other conventional intrusion technique. For example, patients with periodontal disease, root resorption, narrow interradiacular space, etc. If a mini-implant is inserted into a too narrow space, intrusion will cause implant-root contact, which is bound to result in mini-implant failure. Should a mini-implant be inserted too low in order to expose its head it will cause the space left for spring insertion to become too narrow, thereby compromising the mechanics. Although no research has been hitherto conducted on the stability of anterior teeth intrusion, it appears to be clinically better than posterior teeth extrusion.

2) What motivated you to write this article?

Authors qualify anterior teeth intrusion as simple when mini-implants are used as anchorage. Furthermore, patients are not required to comply, since it does not rely on extraoral headgear or any other type of posterior teeth anchorage such as transpalatal arches. If we can intrude anterior teeth without extruding posterior teeth, orthodontic mechanics is rendered more simple and effective. The purpose of this article is to contribute to the simplification of orthodontic treatment by preventing side effects while offering an alternative approach to gummy smile correction.

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