

## Case Report

# Ra Molar Intrusion Appliance.

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## ABSTRACT

Rehabilitation of edentulous space with prosthesis is often complicated with overeruption of antagonistic tooth and usually requires pre prosthodontic intervention. Therefore, orthodontic intrusion of the overerupted tooth to facilitate prosthodontic rehabilitation is required. Without orthodontic molar intrusion restoring the posterior occlusion often entails the need for significant reduction of maxillary molar crown height, with the potential need for costly iatrogenic root canal therapy and restoration. Conventional orthodontic techniques do not intrude posterior teeth effectively, and almost all methods result in anterior extrusion rather than posterior intrusion. This case report describes the treatment of a patient with supra-erupted maxillary first molar which was intruded with RA Molar intrusion appliance. The results showed that the biological responses of the teeth and the surrounding bony structures to the intrusion appeared normal and acceptable.

**Key words:** Maxillary intrusion, Molar intrusion appliance, overerupted molars.

## INTRODUCTION

Molar intrusion is one of the most challenging movements in orthodontic mechanics. Loss or absence of mandibular first molar often leads to the overeruption of the opposing maxillary first molar. Extrusion can cause certain problems, such as occlusal interferences and consequent functional problems.<sup>1</sup>

Conventional orthodontic techniques for intrusion require anchorage reinforcement by incorporating multiple teeth, which depend heavily on patient cooperation and usually result in extrusion of other teeth rather than a molar intrusion. However, the task is formidable with routine orthodontic mechanics and control of anchorage is difficult.<sup>2</sup>

The mini-implants / TADS have commonly been used for the maxillary molar intrusion in recent times. Mini-implants provide stable intra-oral anchorage and allow the maxillary molars to be intruded with better efficacy.<sup>3</sup> However, there is a concern regarding the best protocol to perform molar intrusion with maximum efficiency and the ideal number of mini-implants to be used during this mechanics. Although the mini-implants provide an important aid for molar intrusion but since it is an invasive procedure there can be potential risks and complications during its placement, stay and removal. Moreover, use of multiple mini-implants can be expensive for the patients. It limits the uses in patients with increased dental anxiety. Also, it is important to differentiate

the intrusion of the concerned molar from the intrusion/extrusion or any undesirable movement of the adjacent teeth, thus representing a relative intrusion and not the required true intrusion.

We therefore devised a new appliance as a non-invasive and cost effective alternative to the mini-implants for maxillary molar intrusion.

Using this appliance for maxillary molar intrusion may simplify the orthodontic treatment by eliminating the need for any kind of invasive procedure, extraoral or intraoral multi unit anchorage.

## CASE REPORT

A 20-year-old female patient came to our department with the chief complaint of irregularly placed upper front teeth. On clinical and radiographic examination patient had impacted 45, 46, 47 and 48. There was extrusion of 16 due to absence of any antagonistic teeth. (Figure 1) Initially it was planned to use mini-implants buccally and palatally for intrusion of 16 to create sufficient space for uprighting of the lower impacted molars. In the lower right quadrant we planned extraction of impacted 48 and uprighting of 46 and 47 using mini-implant in the ramal area. Also, we planned to use anterior bite plane for the clearance of bite posteriorly for molar uprighting.

Since the patient was apprehensive about the use of multiple implants we constructed an appliance as a substitute to the mini-implants. The appliance was made fixed to eliminate any patient dependence.

## APPLIANCE DESIGN

The appliance included acrylic and wire components.

The acrylic components included anterior bite plane and the posterior teeth of 1<sup>st</sup> quadrant except 1<sup>st</sup> molar keeping it free for intrusive movement.

The wire component started from the 1<sup>st</sup> and 2<sup>nd</sup> molars of the second quadrant to the anterior bite plane and continuing as a buccal and palatal extension to the maxillary 1<sup>st</sup> molar. The buccal and palatal extensions were made at the same place as planned for the mini-implant in diagonal manner. In the 2<sup>nd</sup> quadrant the first and second molars were banded and the wire extension was soldered to it. (Figure 2) The first and second molar of the 2<sup>nd</sup> quadrant were included to reinforce anchorage along with the bite plane and acrylic extension. Elastomeric chain was extended diagonally from the buccal to palatal arm for molar intrusion. (Figure 3) The fabricated RA molar intrusion appliance arch was transferred to the patient mouth and cemented using glass ionomer cement. (Figure 4)

The clinical results showed significant intrusion of around 2 to 3 mm of over a period of two month while maintaining periodontal health, tooth vitality, and root length. (Figure 5)



Figure 1: Pretreatment intraoral photograph with extruded maxillary right 1st molar



Figure 2: Constructed appliance with the wire framework soldered onto the molar bands



Figure 3: Elastomeric chain was extended diagonally from the buccal to palatal arm for molar intrusion.



Figure 4: RA Molar intrusion appliance after cementation on the first and second molars



Figure 5: Post intrusion intraoral photograph with after maxillary right 1st molar



Figure 6: Study model showing significant amount of maxillary right 1st molar intrusion in 2 months

## CONCLUSION

The present article serves as a viable alternative to carryout molar intrusion in such patient where today's modern methods cannot be used, thus emphasizing the role of these appliances in orthodontics. The advantages of this technique include good control over the tooth to be intruded because of simultaneous &

uniform buccal & palatal force application. It is comfortable for the patient and cost effective.

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