



Case Report

A novel technique to preserve Molar anchorage following Distalization using mini implants

Basil Sunny^{1,*}, PK Thriпти Raj², B Goutham³, Sunil Muddaiah⁴, Sanju Somaiah⁴, Balakrishna Shetty⁴

¹Alumni, Department of Orthodontics, Coorg Institute of Dental Sciences, Virajpet

²Alumni, Coorg Institute of Dental Sciences, Virajpet

³Professor and Head, Department of Orthodontics, Coorg Institute of Dental Sciences, Virajpet

⁴Professor, Coorg Institute of Dental Sciences, Virajpet

ARTICLE INFO

Article history:

Received 27.11.2020

Accepted 15.01.2021

Published 25.02.2021

* Corresponding author.

Basil Sunny

basilsunny05@gmail.com

[https://doi.org/](https://doi.org/10.38138/JMDR/v6i2.8)

10.38138/JMDR/v6i2.8

ABSTRACT

Molar distalization is an effective treatment modality in orthodontic treatment. However, preserving molar anchorage after distalization is a difficult task faced by the orthodontist since long. Through this article we will be presenting an innovative technique to hold the distalized position of molars using mini implants. This simple but effective method has proved to be useful to hold the distalized position of molars.

Keywords: Distalization; mini implants

1 INTRODUCTION

Since current trend in orthodontics has shifted towards non-extraction therapy, molar distalization mechanics have become increasingly popular. Conventional distalization techniques includes pendulum appliance, frog appliance, Niti coil spring etc.

Traditionally orthodontists rely on Nance palatal arch and TPA for holding the distalized position of molars. ⁽¹⁾ But the problem with these appliances are that:

1. They are bulkier thereby reducing patient compliance
2. High relapse tendency
3. Clinically fabrication and insertion is cumbersome.

In this article we present an innovative mini implant supported molar distalization/ maintenance appliance that requires no dental support or acrylic palatal button, thereby eliminating the undesirable side effects on anterior teeth.

Armamentarium

- AJ wilcock or TMA
- NiTi Open coil spring
- Mini Implant

Procedure

Following molar distalization to the desired position a mini implant is inserted mesial to the distalized molar. Mesiobuccal root of maxillary first molar has an anatomic contour which curves distally starting from the middle third enabling more distal positioning of mini implant thus favoring distal movement of premolars. ⁽²⁾ A 's' shaped wire component is fabricated using a stiff wire 0.7mm AJ wilcock is used (either AJ wilcock or TMA can be used). NiTi open coil spring is inserted in to the wire component. One end of the wire component is inserted into the accessory slot of molar tube while the other end is inserted to the mini implant.

Case 1

A 13-year-old boy reported to the department of orthodontics with a chief complaint of protruding and

irregularly placed upper front teeth. Based on clinical and cephalometric evaluation the case was diagnosed as a skeletal class II with retrognathic mandible, with angles class II malocclusion. Because of insufficient overjet for direct mandibular advancement, it was decided to extract lower first premolars, retract the lower anteriors and then advance the mandible using fixed functional appliance (AdvanSync2). Since the upper proclination was minimal, non-extraction line of treatment was considered in the upper arch.

First second molars were distalized using open coil springs (Figure 1), distalized positions were maintained using the appliance (Figure 2). Later first molars and premolars were moved to the distalized space of second molars, which were maintained by consolidating them to the stabilized second molar. (Figure 3)



Fig. 1: Open coil spring to distalize 27, to gain space to align 23



Fig. 2: Distalized molar stabilized using the implant supported appliance



Fig. 3: First molar distalized, second molar still stable in its position



Fig. 4: Enough space gained for aligning the Canines, Distalized segments still in position

Case 2

A 19 year old male patient reported to our department of orthodontics with a chief complaint of irregularly placed upper and lower front teeth.

On clinical and cephalometric evaluation, the case was diagnosed as skeletal class I with horizontal growth pattern with angles class II malocclusion with crowded upper and lower anteriors. (Figure 5)

As the proclination was minimal it was decided to treat the case with distalization of both upper molars. We used a modified pendulum appliance for distalization and used this innovative technique to maintain molars in distalized position till crowding gets relieved by utilizing the distalized space.

Double M Pendulum appliance was given for 4 months until a class I molar relation was achieved (Figure 6). Then this appliance was given to hold the molars in the distalized position. (Figure 7)

Case was bonded and molar tubes were replaced with triple tubes after one month. Treatment is still continuing and the results are stable even after 3 months.



Fig. 5: Pretreatment photographs



Fig. 6: After distalization



Fig. 7: Maintenance of distalization using implant supported appliance

2 DISCUSSION

95% of Class II cases can be improved by molar rotation, distalization, and expansion.⁽¹⁾ Therefore, Class II treatment usually involves distal movement of the upper molars to achieve Class I molar and canine relationships. Distalization of molars is an effective treatment modality in orthodontic treatment, both in non-extraction treatment of class II malocclusions as well as re-treatment cases. However the challenge is to hold the distalized molars in position. Unlike conventional methods, this innovative approach holds the distalized molars in position without any dental support or acrylic palatal button, thereby eliminating the undesirable side effects on anterior teeth.⁽³⁾ Distalized molars possess

zero anchorage value, hence a retraction of the anterior after distalization is a big challenge in conventional methods. The innovative method discussed here enables to use the same implants for retraction of anterior teeth hence serving dual-purpose. However, precautions to be taken includes proper evaluation of implant placement site, avoiding roots and careful selection of implant dimensions.⁽⁴⁾ Ideal cases for the method includes class II malocclusions with proclined upper anteriors and increased overjet.

3 CONCLUSION

Since the conventional molar distalization maintenance techniques used are bulkier, show high relapse tendency & are cumbersome to fabricate, this simple hygienic appliance can be considered promising as a means of holding distalized molars in position. Other advantage with this technique is that the same implant can be used to retract the anteriors as distalized molars possess no anchorage value.

REFERENCES

- 1) Hilgers J. The pendulum appliance for Class II noncompliance therapy. *J Clin Orthod.* 1992;26:706–714.
- 2) Wheeler's Dental Anatomy, Physiology, and Occlusion. 1993;p. 248.
- 3) Kinzinger GS, Wehrbein H, Diedrich PR. Molar distalization with a modified Pendulum appliance: In vitro analysis of the force systems and in vivo study in children and adolescents. *Angle Orthod.* 2005;75:558–567.
- 4) Sj, Tseng IY, Lee JJ, Kok SH. A prospective study of the risk factors associated with failure of mini-implants used for orthodontic anchorage. *Int J Oral Maxillofac Implants.* 2004;19:100–106.
- 5) Jones RD, White JM. Rapid class II molar correction with an open coil jig. *J Clin Orthod.* 1992;26:661–664.
- 6) Keles A. Maxillary unilateral molar distalization with sliding mechanics: a preliminary investigation. *The European Journal of Orthodontics.* 2001;23(5):507–515. Available from: <https://dx.doi.org/10.1093/ejo/23.5.507>.
- 7) Angeliere E, de Almeida RR, Janson G, Henriques JFC, Pinzan A. Comparison of the effects produced by headgear and pendulum appliances followed by fixed orthodontic treatment. *The European Journal of Orthodontics.* 2008;30(6):572–579. Available from: <https://dx.doi.org/10.1093/ejo/cjn060>.
- 8) Kinzinger GSM, Fritz UB, Sander FG, Diedrich PR. Efficiency of a pendulum appliance for molar distalization related to second and third molar eruption stage. *American Journal of Orthodontics and Dentofacial Orthopedics.* 2004;125(1):8–23. Available from: <https://dx.doi.org/10.1016/j.ajodo.2003.02.002>.
- 9) Jeckel N, Rakosi T. Molar distalization by intra-oral force application. *The European Journal of Orthodontics.* 1991;13(1):43–46. Available from: <https://dx.doi.org/10.1093/ejo/13.1.43>.
- 10) Antonarakis GS, Kiliaridis S. Maxillary Molar Distalization with Noncompliance Intramaxillary Appliances in Class II Malocclusion. *The Angle Orthodontist.* 2008;78(6):1133–1140. Available from: <https://dx.doi.org/10.2319/101507-406.1>.
- 11) Chiu PP, McNamara JA, Franchi L. A comparison of two intraoral molar distalization appliances: Distal jet versus pendulum. *American Journal of Orthodontics and Dentofacial Orthopedics.* 2005;128(3):353–365. Available from: <https://dx.doi.org/10.1016/j.ajodo.2004.04.031>.
- 12) Caprioglio A, Fontana M, Longoni E, Cozzani M. Long-term evaluation of the molar movements following Pendulum and fixed appliances. *The Angle Orthodontist.* 2013;83(3):447–454. Available from: <https://dx.doi.org/10.2319/050812-378.1>.