

## A SIMPLE METHOD OF PREPROSTHETIC MOLAR UPRIGHTING WITH OPENCOIL SPRING

Mrinalini Mishra<sup>1\*</sup>, Rakesh Thukral<sup>2</sup>, Amit Bhardwaj<sup>3</sup>, Rajeev Srivastava<sup>4</sup> and Vandana Jangid<sup>5</sup>

<sup>1,2,3</sup>Department of Orthodontics & Dentofacial Orthopedics, Modern Dental College & Research Centre Indore, India

<sup>4,5</sup>Department of Prosthodontics, Crown and Bridge & Implantology, Modern Dental College & Research Centre Indore, India

### ARTICLE INFO

#### Article History:

Received 12<sup>th</sup> March, 2018

Received in revised form 10<sup>th</sup>

April, 2018

Accepted 7<sup>th</sup> May, 2018

Published online 28<sup>th</sup> June, 2018

#### Key words:

Sectional mechanics, molar uprighting, interdisciplinary orthodontics

### ABSTRACT

All teeth are essential, yet in function and influence, some are of greater importance than others, the most important of all being the molars, especially the first permanent molar which according to Edward Hartley Angle is the key to occlusion. Loss of a first permanent molar will make the second and third molars to incline and rotate, canine and premolars to move distally into the molar space, and the opposing first molar to extrude. The over-all objective in uprighting the molar is to optimally position it providing space to restore the lost tooth. Thereby preventing the teeth against inflammatory periodontal diseases and occlusal traumatism, which together determine optimal periodontal environment of the molars and improve masticatory efficiency of the patient.

A sound knowledge of biomechanics is necessary in order to optimize the clinical outcome of uprighting mechanics. When uprighting mechanics is used it is absolutely necessary to consider the extrusive nature of the force system. The uprighting mechanics presented here is very simple and biomechanically efficient to be used in daily practice.

Copyright © 2018 Mrinalini Mishra et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### INTRODUCTION

All teeth are essential, yet in function and influence, some are of greater importance than others, the most important of all being the molars, especially the first permanent molar which according to Edward Hartley Angle is the key to occlusion.<sup>1</sup>

Molars occupy functionally and anatomically a key position in the oral cavity. Functionally they aid in chewing and grinding of food, and anatomically as they are located in the posterior region of the dental arches, responsible for maintaining the vertical dimension of the face.<sup>2</sup> Permanent first molars are the first permanent teeth to erupt into the oral cavity. They have been quoted as the most caries-prone tooth in the permanent dentition leading to their early loss, probably as a result of their early exposure to the oral environment.<sup>3</sup> Loss of a first permanent molar should be immediately addressed by prosthetic replacement or orthodontic space closure as it may lead to functional and anatomical disturbances.

The sequelae of events include second and third molars will incline and rotate, canine and premolars will move distally into the molar space, and the opposing first molar will extrude. In addition, the patient may develop an infrabony defect at the mesial aspect of the second molar root and a reduction of the interradicular space between the second and third molars. Another aspect of loss of permanent teeth is that the masticatory efficiency of the patient is compromised.

Correction of these problems is a biggest challenge to the orthodontist.<sup>4</sup>

Numerous approaches have been proposed for uprighting mesially tipped mandibular second molars after loss of the adjacent first molars. Most of these have had problems with molar extrusion and movement of the anchorage unit, making it necessary to apply inter arch stabilization to minimize side effects.

This article describes how lower left second molar can easily be up righted with open coil spring without extrusive effect on the 2<sup>nd</sup> molar.

#### Case

A 50-year-old female patient was referred by a Prosthodontist for uprighting of a mesially tipped lower left second molar. Second molar was tipped mesially because of missing adjacent first molar. Patient's prime concern was reduced chewing efficiency. So she denied full mouth orthodontic treatment. As per her needs we decided to treat her chief complaint area by sectional mechanics.

Patient was treated by using the preadjusted edgewise appliance with MBT prescription. The lower arch only on left side was bonded with the canine to second premolar and second molar was banded. Once aligning and leveling was accomplished we placed open coil spring from mesial to

\*Corresponding author: Mrinalini Mishra

Department of Orthodontics & Dentofacial Orthopedics, Modern Dental College & Research Centre Indore, India

second molar to distal of second premolar. An open coil spring placed on 0.18 stainless steel wire to distalize and upright second molar.

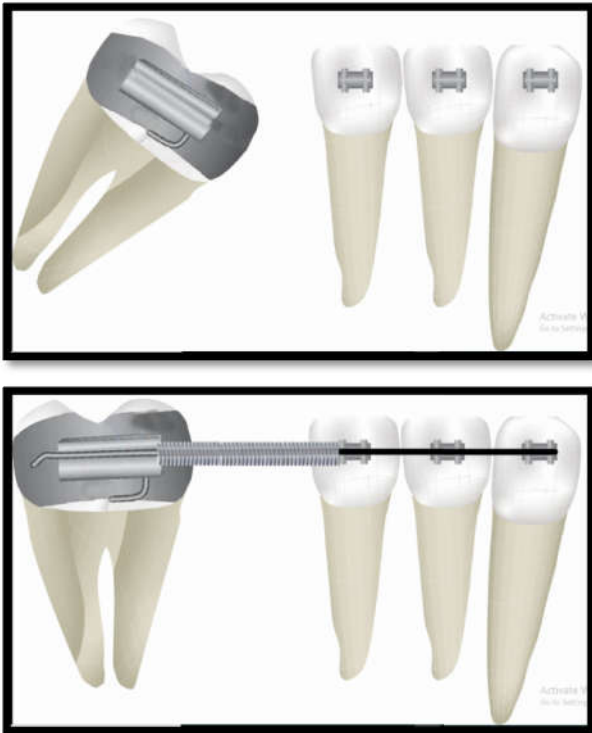


Fig 1 Diagram demonstrating activation of the opencoil spring to obtain uprighting by distal movement of the crown and mesial movement



Fig 2 Canine to second premolar bonded and molar being banded

After two months of midtreatment (fig 3 A) and after three months post treatment (fig 3 B) the molar was uprighted. Orthodontic treatment was completed in five months with retention. An implant was placed after two months of retention.



Fig 3 (A) Mid treatment



Fig 3 (B) Post treatment



Fig 4 Pre and post model comparison with Vernier caliper

## DISCUSSION

Orthodontist's have given convincing evidence of the value of correctly occluded molars by the efforts they have put into making corrections in this area. There has been considerable variation in the length of time required to move these teeth. As clinicians we are inclined to evaluate the merits of each method of applying force to make corrections in the molar area.<sup>5,6</sup> Uprighting of tipped molars can benefit patients functionally, periodontally and prosthodontically.<sup>7,8</sup> The specific benefits to be gained depend on the directions in which the molar moves, both in the vertical and mesiodistal planes of space. Molar uprighting mechanics is not a separate treatment entity; it is an adjunctive appliance design. This mechanics can be used in conjunction with any fixed appliances and is simple to use.<sup>9</sup>

Park and colleagues<sup>10</sup> describes molars uprighted with Micro-Implant Anchorage. Ruellas and colleagues<sup>11</sup> describe a method for molar uprighting with the use of a spring supported on miniscrews.

There are various mechanics to upright impacted teeth of which the above presented are some of the most simple. Case demonstrates innovative but simple mechanics which can be practically used to upright mesially tipped teeth with limited chair side time.

## CONCLUSION

The use of an open coil spring is a simple and effective method for molar uprighting. Orthodontists can be of considerable assistance in periodontal and prosthodontic rehabilitation treatment. Molar uprighting is one such challenging conducive orthodontic procedure that requires proper clinical and biomechanical evaluation and a good appliance selection for successful treatment results.

It's important, particularly after a discussion of orthodontic appliance selection, to reaffirm the biologic nature of molar uprighting. Treatment varies greatly from case to case therefore Individual cases must be considered on an individual basis.

The uprighting mechanics presented are very simple and biomechanically efficient to be used in our daily practice. No matter what our patients present to us with, we as "Orthodontist's" should give them a gift of functionally stable occlusion along with a pleasing face!!!!

## References

1. G Risse: The Angulation of Upper Permanent First Molars, the Key to Functional Occlusion. *ArtikelFach J* 2005; 1: 1-9.
2. A Majourau and L Norton: Uprighting Impacted Second Molars with Segmental Springs. *Am J Orthod* 1995; 107: 235-238.
3. D Gill, R lee and CJ Tredwin: Treatment Planning for the Loss of Permanent First Molar Dent Update 2001; 28: 304-308.
4. E Capelluto and I Lauweryns: A Simple Technique for Molar Uprighting. *J ClinOrthod* 1997; 31(2): 119-125.
5. B Melsen, G Fiorelli and ABergamini: Uprighting of Lower Molars *J ClinOrthod* 1996; 30: 640-645.
6. H J Buchner: Correction of Impacted Mandibular Second Molar. *Angle Orthod* 1973; 43(1): 30-33
7. G Ferrazzini: Uprighting Of A Deeply Impacted Mandibular Second Molar *Am J Orthod* 1989; 96: 168-71.
8. WL Mihram and NC Murphy: The Orthodontist's Role in 21st Century Periodon-tic-Prosthodontic Therapy. *SeminOrthod* 2008; 14: 272-289.
9. W Shellhart and L Oesterle: Uprighting Molars without Extrusion. *JADA* 1999; 130: 381-85.
10. H S Park, H M Kyung, J H Sung: A Simple Method of Molar Uprighting with Micro-Implant Anchorage. *JCO* 2002; XXXVI: 10:592-596.
11. ACO Ruellas, M MPithon, R L Santos: Miniscrew-supported coil spring for molar uprighting: Description. *Dental Press J Orthod.* 2013; 18:1:45-9.

### How to cite this article:

Mrinalini Mishra *et al* (2018) 'A Simple Method Of Preprosthetic Molar Uprighting With Opencoil Spring', *International Journal of Current Medical And Pharmaceutical Research*, 04(6), pp. 3345-3347.

\*\*\*\*\*