A SIMPLE, EFFICIENT AND EFFECTIVE METHOD OF MOLAR DISTALIZATION USING SUPERELASTIC NITI WIRE – A CASE REPORT

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ABSTRACT: Distalization is one of the proven methods of gaining space and for correction of intermaxillary malocclusions. There are different ways and means by which distalization can be achieved. Here with a class II case is presented where distalization is achieved with superelastic NiTi wires.

KEYWORDS: Distalization, NiTi wires, Malocclusion, Class II.

INTRODUCTION

Non extraction treatment of Class II malocclusion requires maxillary molar distalization by means of intra-oral or extra-oral forces. Headgears have proved their efficiency in maxillary molar distalization with movement in all planes of space. However, the dependence on patient cooperation is heavy. With recent trend more towards non extraction, several intraoral devices have been advocated to distalize upper molars such as the K-loop (V.Karla), NiTi coil springs (Gianelly), superelastic NiTi wires (Locatelli), repelling magnets (Gianelly), Fixed piston appliance (Greenfield), Pendulum appliance (Hilgers), Lokar Distalizer (Scott), Distal Jet (Carano) as well as combination of extraoral and intraoral forces (Cetlin and Tenhove). The focus is on the simplicity and efficiency of such distalization devices which improves the continuity and constancy of forces. Oral hygiene should be easily maintained and the need for patient compliance has to be eliminated.

Indication of Distalization

- An end-on or full Angle’s Class II molar relationship due to maxillary protrusion, impacted, unerupted and ectopic eruption of cuspids
- Situation requiring distal movement of molars
- Patient showing straight, pleasant profile
- Mild to moderate arch discrepancy
- Class II molar relationship relatively associated with normal mandible.

A favorable time to move molars distally appears to be in the mixed dentition before the eruption of the second molars.

This article illustrates the use of a superelastic nickel titanium wire with shape memory1 (Neo Sentalloy) to move maxillary molars distally. The procedure2 is as follows:

1. Place a 200g Neo Sentalloy wire with regular arch form over the maxillary arch. Mark the wire in three places on each side - at the distal wing of the first premolar bracket, 5-7mm distal to the anterior opening of the molar tube, and between the lateral incisors and canines.

2. Crimp a stop to the archwire at each of the posterior marks, and add hooks for intermaxillary elastics between the lateral incisors and canines. (Fig 1a)

Fig.1. Neo Sentalloy 100g archwire. A. Stops crimped immediately distal to second premolar bracket and 5-7mm distal to anterior opening of molar tube. Hook added between lateral incisor and canine. B. Wire inserted into molar tube and first premolar bracket, with excess deflected gingivally into buccal fold. Distal molar movement as wire returns to original shape.
Fig 2: Extraoral Photographs A. Frontal view, B. Right lateral view, C. Left lateral view

Fig 3: Pretreatment intra oral photographs showing molar and canine relationship on: A. Right side, B. Left side C. and D. showing upper and lower arches
Fig 4: Crimpable hooks placed. Superelastic NiTi wire was inserted to move the molar distally.

Fig 5: Anchorage using Class II elastics.

Fig 6: Post treatment intraoral photographs.

Fig 7: Post treatment extraoral photographs.
3. Insert the wire into the molar tube until the posterior stop abuts the tube (Fig. 1b). To place the wire through the first premolar bracket, grasp the anterior stop and gently force the wire distally so the stop abuts the distal wing of the first premolar bracket when ligated. Since the wire is 5-7mm longer than the available space, the excess will be deflected gingivally into the buccal fold.

As the wire returns to its original shape (Fig. 1c), it exerts a 200g distal force against the molars and a mesial reaction force on the first premolars, canines, and incisors. Anchorage can be controlled by placing 100-150g Class II elastics against the first premolars or placing the hooks between the lateral incisors and canines. An alternative that does not require patient cooperation is a Nance appliance cemented to the first premolars. If the appliance and the incisor segment cannot contain the reaction force and 1mm of anchorage is lost, we immediately switch to Class II elastics.

Discussion

The Neo Sentalloy wire is easy to insert even after all teeth have been bracketed or banded. Since the wire curves into the buccal fold, it passes above the second premolar brackets. If the second molars are unerupted, the first molars can be distalized 1-2mm per month with little loss of anchorage. Once the second molars have erupted, distal movement of the first molars usually takes more time, and anchorage loss is more common. If the first molars do not move at least 1mm per month, a 200g .018” x .025” Neo Sentalloy wire can be placed. With the increase in force, the potential for anchorage loss also increases.

CONCLUSION

So we recommend distalization with Neo Sentalloy wire which is easy to use, economical and effective for achieving the main objective of correction of molar relation from class II to Class I.

References


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