

## **New Advancements in Noncompliance Class II correction utilizing Micro-implant Anchorage**

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### **Maxillary Molar Distalization with micro-implants:**

- **Intra-radicular micro-implant supported- Buccal and Palatal**
- **Palatal Micro-implants**
- **Conventional appliances like Distal Jet and Pendulum appliances supported with micro-implants**

### **Limitations with Conventional Molar distalization Appliances:**

- Group distalization is almost impossible
- Undesirable counteraction
  - Anchorage Loss
    - Flare out of incisors
    - Overjet increase
    - Mesial movement of Pre-molars
    - Tipping of molars
  - Mandibular clockwise rotation
- Complicated devices are required
- Poor oral hygiene
- Discomfort for patients
- Need patients cooperation if removable appliances, headgear and or inter-maxillary elastics are combined

## **Implant supported Distalizing appliances:**

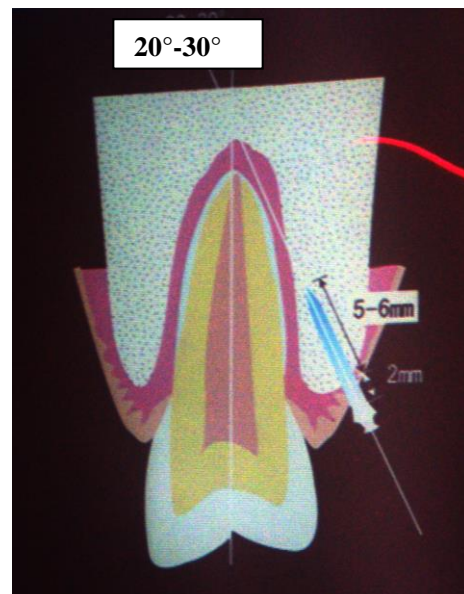
- With Mini-screw fixation there is a way to prevent or eliminate anterior anchorage loss during molar distalization, as it provides absolute anchorage. **The Mini-screw can be placed either buccally or palatally to distalize the first molars.**
- The **Mini-screw in combination with Distal jet appliance** may provide a less invasive alternative to the anchorage loss. In this case the Mini-screw is placed in the Maxillary alveolar process, between the palatal roots of the first and second pre-molar. This mechanical system prevents mesial movement of the anterior teeth during molar distalization.
- Alternatively the Mini-screw can be placed buccally between the second pre-molar and first molar and the distalization is achieved by activation of the **Nitinol springs**, placed on a sectional arch wire between first pre-molar and first molar. The first pre-molars are stabilized indirectly with mini-screw and a palatal arch placed on first pre-molars to prevent anchorage loss.

## **Various molar distalization methods using MIA according to amount of molar movement**

- < 3 mm
  - **Using inter-radicular space**
- > 3 mm
  - **Using Non-alveolar bone area**
    - indirect anchorage
    - combined with pendulum appliance or Distal Jet Appliance
    - combined with inter-maxillary elastics

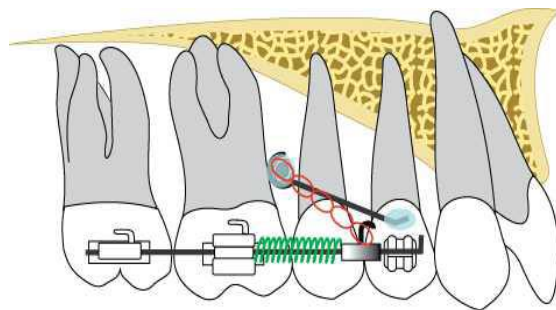
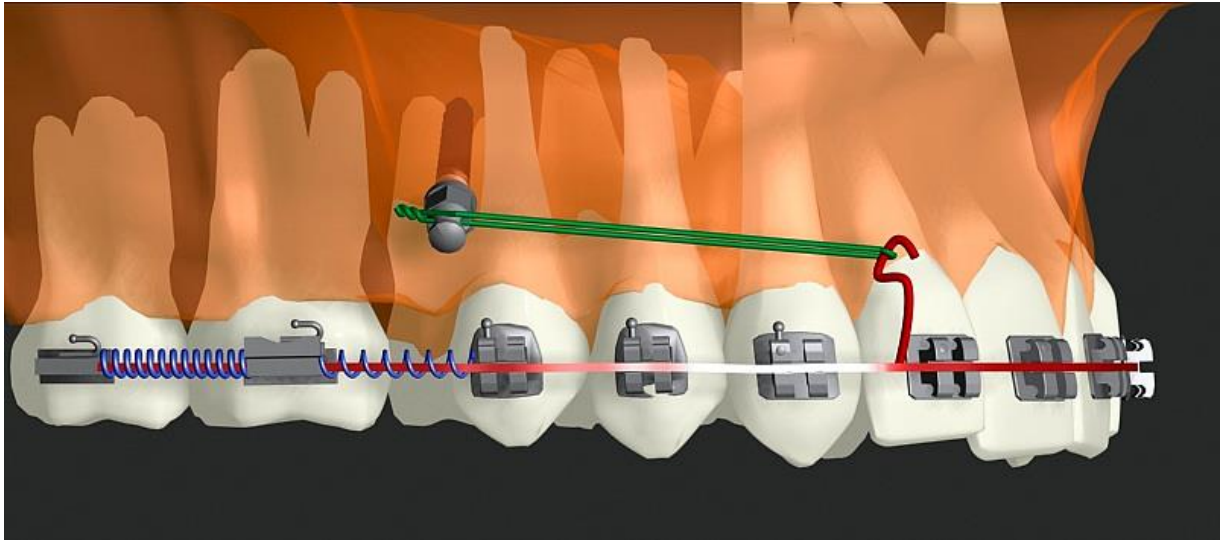
## Guidelines for safe placement with MIA:

- Ideal location to place the micro-implant is between first molar and second pre-molar.
- Use 20% Benzocaine Gel / surface spray-15% Lidocaine- this way the roots will remain sensitive in the event of the root contact.
- Use periodontal probe to mark the area and then use the marking pen to mark the exact spot for the insertion of mini-screw.
- The initial point for mini-implant placement should be near the mucogingival line in the attached gingiva (2-4 mm from the CEJ).
- Place mini-screw at 20°-30° to the long axis of the proximal tooth with a mini-screw 1.3mm in diameter and 6 to 7 mm. in length between second pre-molar and first molar buccaly.
- Self drilling Method with continuous irrigation.
- Use Light continuous forces (Nitinol coil spring 100gms- 250gms.)
- Place micro-implant near occlusal level as possible.
- The direction of force application was backward and upward as parallel to the occlusal plane as possible.
- Orthodontist himself should place the mini-screw.
- Know the limitation of tooth movement on denture



Guidelines for placement of mini-screw

## Molar Distalization with micro-implant Using buccal inter-radicular space



### Recommendations for treatment of Class II malocclusion with Maxillary Molar Distalization

- Recommend to use of inter-radicular mini-screw anchorage if required distalization is less than 3.5 mm, because of minimum invasion and simple mechanics.
- However if required molar movement is more than 3.5mm, it is recommended to use bone anchorage placed out of dentition or choose extraction treatment.

## **Quantitative evaluation of cortical bone thickness with computed tomographic scanning for orthodontic implants**

***Toru Deguchi, Miho Nasu, Kaoru Murakami, Toshinori Yabuuchi, Hiroshi Kamioka, and Teruko Takano-Yamamoto***

*Okayama, Japan (Am J Orthod. Dentofacial Orthop. 2006; 129:721.e7-721.e12)*

- From the cortical bone thickness, the best available location for a mini-screw is mesial or distal to the first molar, and the best angulation is 30° from the long axis of the tooth.
- From findings of the distance from the inter-cortical bone surface to the root surface and the root proximity, the safest length is 6 mm with a diameter of 1.3 mm. In addition, for lingual orthodontics, the recommended location is mesial to the first molar at 30°, and 8 to 10 mm in length.

## **Distal movement of maxillary molars using miniscrew anchorage in buccal inter-radicular region**

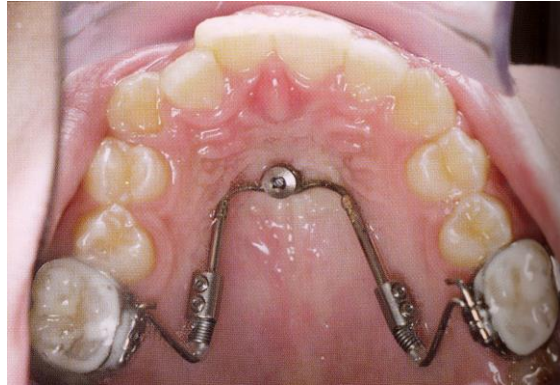
***Kazuyo Yamada; Shingo Kuroda; Toru Deguchi, Teruko Takano-Yamamoto; Takashi Yamshiro*** *Angle Orthod 2009;79;78-84*

- In non-extraction cases, mini-screws inserted into the buccal inter-radicular space between the second pre-molar and the first molar at an oblique angle were useful and more efficient for moving maxillary molar distally than traditional orthodontic methods
- Molar distal movement was achieved without active patient compliance or with no undesirable side effects such as incisor proclination, clockwise mandibular rotation or root resorption.
- Orthodontic treatment with mini-screw anchorage is simpler and more useful than traditional anchorage mechanics for patients with skeletal Class II malocclusion

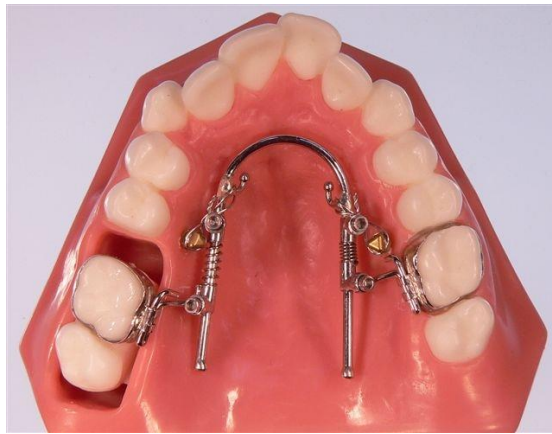




**Mini-screw positioned mesial to the activation lock**



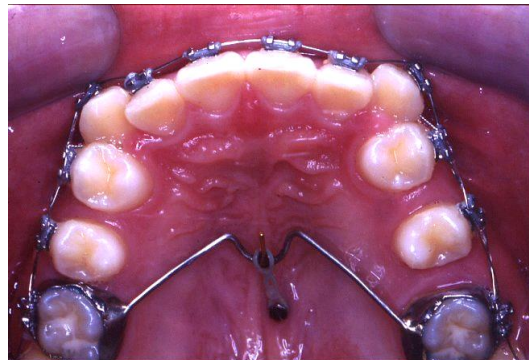
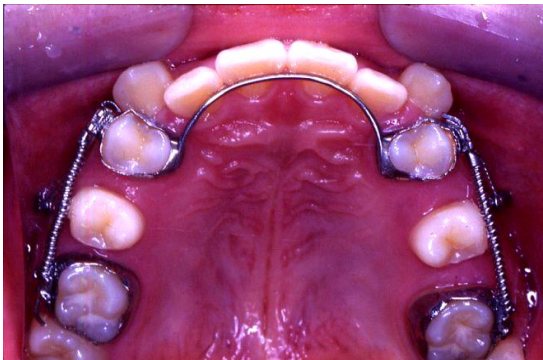
**Mini-screw anchorage system (palatal implant) combined with Distal Jet**



**Bowman's modification-  
TAD assisted Horseshoe Jet Distalizer**



**Mini-screw combined with Nitinol springs placed buccally**



**Implant supported molar distalization**

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