

# Uprighting Second Molars with Micro-Implant Anchorage

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**W**hen there is an arch-length discrepancy in the posterior segments, the lower second molars tend to erupt lingually, producing a posterior crossbite.<sup>1-7</sup>

Criss-cross elastics can be used to simultaneously upright a lingually tipped lower second molar and a buccally tipped upper second molar,

but they generate lingual and extrusive forces on the upper molar and buccal and extrusive forces on the lower molar (Fig. 1). This system can create occlusal trauma not only during mandibular advancement, but also after treatment, requiring selective grinding of the occlusal surfaces.

In contrast, micro-implants placed in the

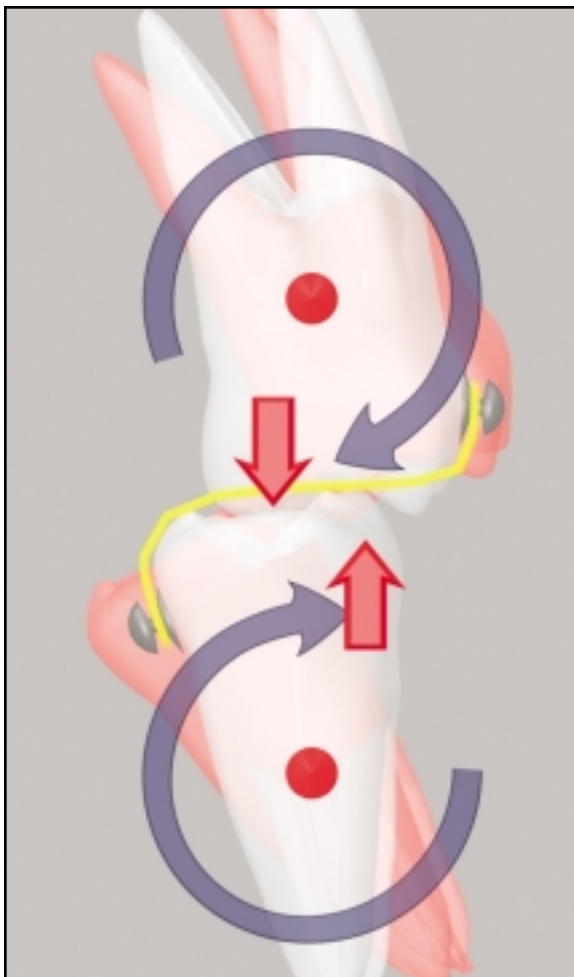


Fig. 1 Force system of molar uprighting with criss-cross elastic.

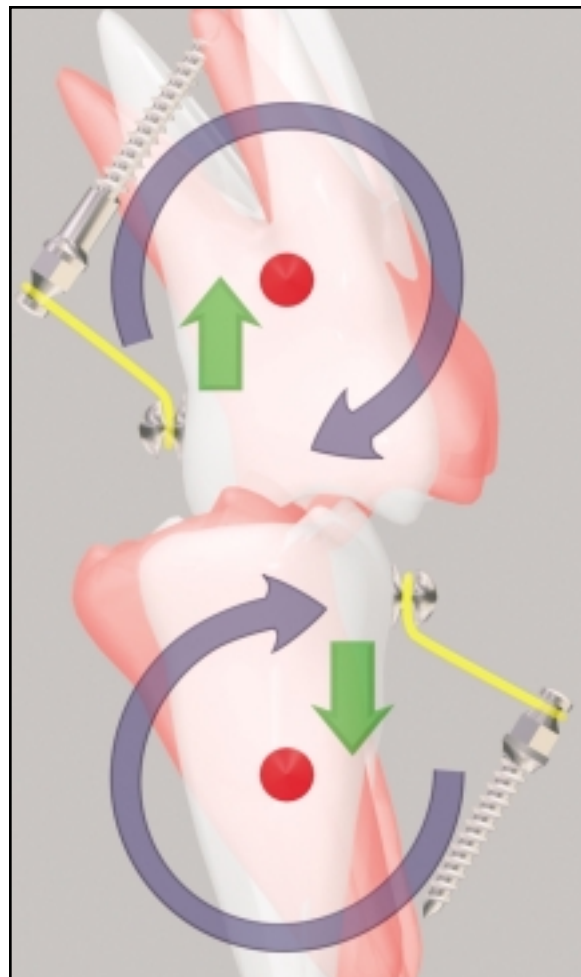


Fig. 2 Force system of molar uprighting with micro-implants.



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alveolar bone palatal to the upper second molar and buccal to the lower second molar generate palatal and intrusive forces on the upper molar and buccal and intrusive forces on the lower molar (Fig. 2).

### Micro-Implant Anchorage Procedure

A 1.2mm × 10mm micro-implant (Absoanchor Part No. AX12-110\*) is placed in the maxillary alveolar bone, and a 1.2mm × 6mm micro-implant (Absoanchor Part No. AN12-204\*) in the mandibular alveolar bone<sup>8-15</sup> (Fig.

3). To avoid contact with the roots, the micro-implants should be positioned at an angle of 30-40° to the long axes of the teeth.<sup>10,12</sup> Because the palatal root of the upper second molar is a little distal to the center of the crown, the implant should be placed in the distal half of the interdental space between the roots of the first and second molars.

The mandibular micro-implant can be inserted into the bone immediately buccal to the second molar crown.<sup>13,16</sup> Although 4mm of the 6mm length of the implant is embedded in the bone, the depth of penetration at a 30° angle is only 2mm. With an average thickness of cortical bone in the mandibular molar area of 3.1-3.2mm,<sup>17</sup> the micro-implant cannot penetrate into

\*Dentos, Inc., 258 BunJi, Dong-In Dong, Jung-Gu, Taegu, Korea; www.dentos.co.kr.



**Fig. 3** A. 32-year-old male patient referred by prosthodontist with left upper and lower second molars in crossbite. B. Micro-implants placed in alveolar bone palatally between upper first and second molars and buccal to lower second molar.

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the bone marrow and therefore can be placed without damaging the roots.

After a two-week healing period, elastomeric thread is attached from the micro-implants to bonded buttons on the upper and lower second molars (Fig. 4). The implants provide stable and strong anchorage throughout treatment.

### Conclusion

A micro-implant placed in the alveolar bone buccal to the mandibular second molar can

provide both a buccally directed force and an intrusive force without any orthodontic appliances on the anchorage unit. Other than the bonded buttons, only a temporary biteplane may be needed to avoid occlusal contact during mandibular advancement. The clinician should be careful not to rotate the teeth during correction, however, because this force system controls only the mode and direction of tooth movement.

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Fig. 4 A. Elastomeric thread attached from micro-implants to buttons bonded to occlusal surfaces of left upper and lower second molars. B. Second molars uprighted sufficiently in seven months for subsequent prosthetic treatment.

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