

# Molar Rotation and Beyond

MAURICE C. CORBETT, DDS

**S**tudies have shown that 90-95% of all Angle Class II malocclusions have mesial rotations of the upper first permanent molars.<sup>1-6</sup> Correcting these rotations can result in space gains of 1-2mm per side (Fig. 1).

The Nitanium Molar Rotator2\* (Fig. 2) was developed to correct molar rotations while providing anchorage control and stabilization, torque control, expansion or contraction, molar distalization, and vertical control. The shape memory of the nickel titanium transpalatal wire is a result of thermal activation. Below the transition temperature of 94°F, the metal is flexible enough for activation. After insertion, as the patient's mouth warms the wire, it tends to return to its original shape. The light, continuous force exerted by the wire greatly improves patient comfort.

## Molar Rotation

An apparent Class II malocclusion often

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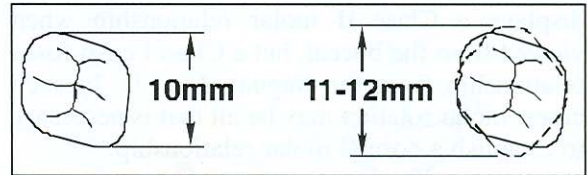


Fig. 1 Space occupied by mesially rotated first molar (right) compared to normal molar.

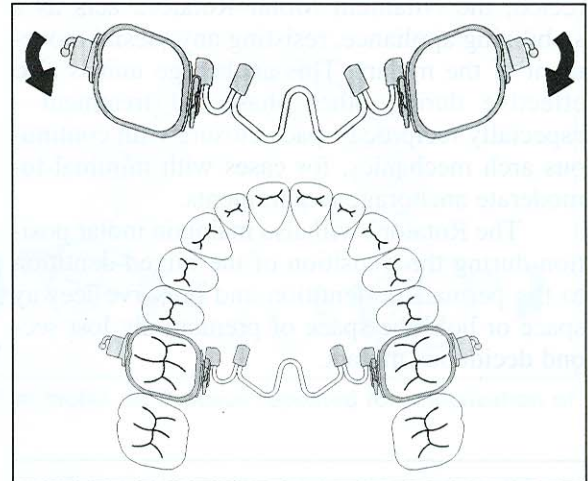


Fig. 2 Nitanium Molar Rotator2.

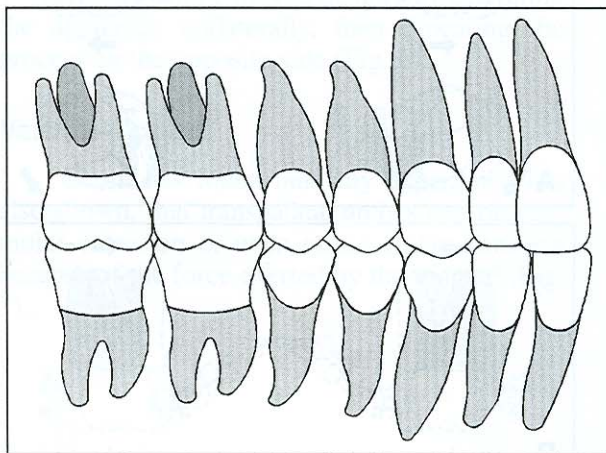


Fig. 3 Case with apparent Class II molar relationship when viewed from buccal, but Class I cusp-fossa relationship from lingual.

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Dr. Corbett is in the private practice of orthodontics at 1 E. Carmel Valley Road, Carmel Valley, CA 93924.

displays a Class II molar relationship when viewed from the buccal, but a Class I cusp-fossa relationship from the lingual (Fig. 3). In such cases, molar rotation may be all that is necessary to establish a normal molar relationship.<sup>4,7-9</sup>

### Anchorage Control and Stabilization

Once any molar rotations have been corrected, the Nitanium Molar Rotator2 acts as a stabilizing appliance, resisting any mesial movement of the molars. This anchorage unit is also effective during other phases of treatment—especially reciprocal space closure with continuous arch mechanics, for cases with minimal-to-moderate anchorage requirements.

The Rotator2 will also maintain molar position during the transition of the mixed dentition to the permanent dentition and preserve leeway space or hold the space of prematurely lost second deciduous molars.

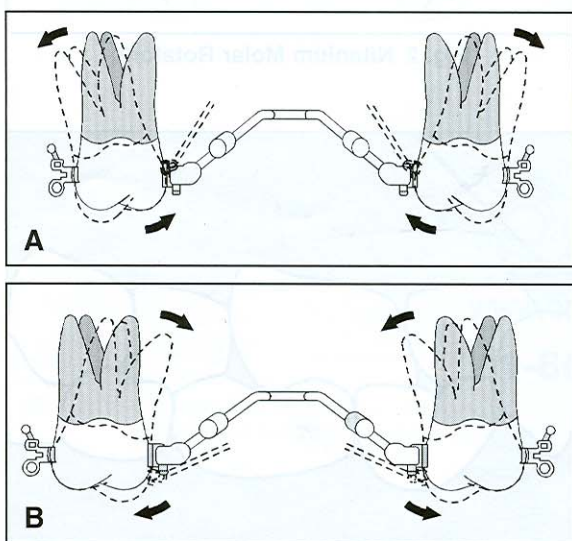


Fig. 4 A. Buccal root torque and lingual crown torque. B. Lingual root torque and buccal crown torque.

### Torque Control

The terminal end of the Rotator2, when engaged in the lingual molar sheath, acts as a rectangular wire and is capable of producing buccal or lingual root and/or crown torque (Fig. 4).

### Expansion and Contraction

If a rotator is selected that is the same width as the intermolar width at the site of the lingual sheath, the band width and the dimensions of the sheath will automatically provide 1.5-2mm of expansion per side. Therefore, the Rotator2 can produce expansion or contraction, depending on the size chosen (Fig. 5). If more than 2-3mm of expansion is needed, expansion appliances such as the Nitanium Palatal Expander2 will be more efficient.

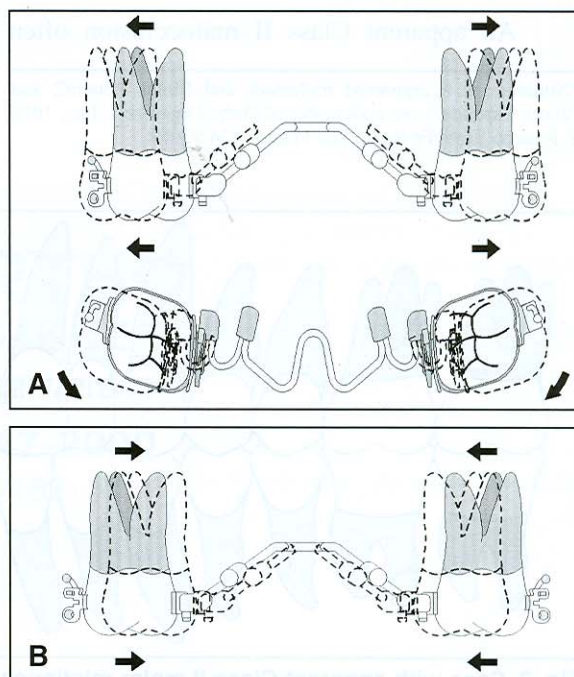


Fig. 5 A. Expansion and rotation. B. Contraction.

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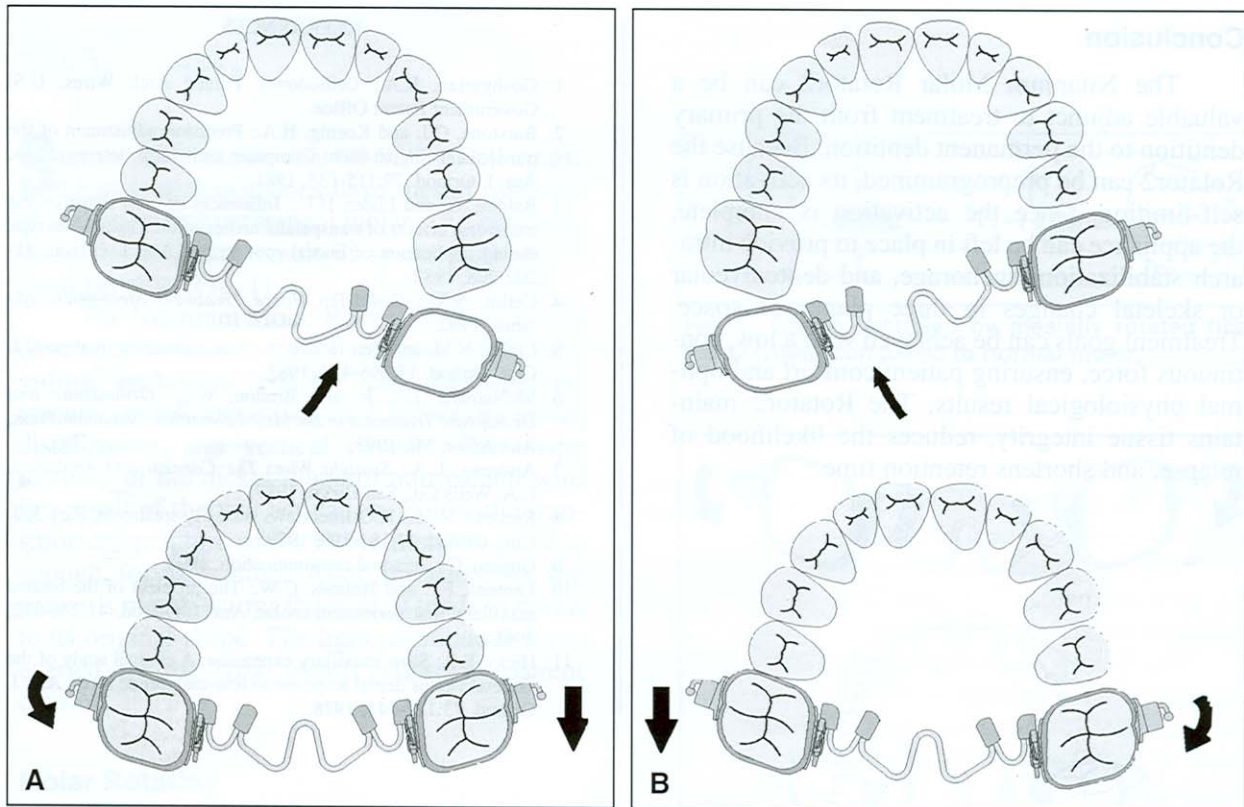


Fig. 6 A. Molar Rotator2 activated for distalization of left first molar. B. Process repeated for distalization of right first molar.

### Molar Distalization

Molars can be moved distally by activating the appliance unilaterally, then repeating the process on the opposite side (Fig. 6).

### Vertical Control

Cetlin has found, and my experience has also shown, that transpalatal arches can prevent molar extrusion or even cause molar intrusion because of the force exerted by the tongue<sup>4</sup> (Fig. 7).

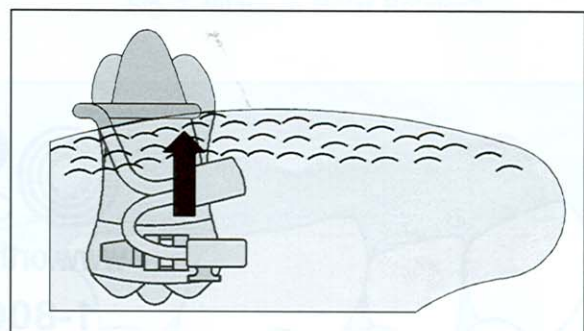


Fig. 7 Intrusive force exerted against molar by pressure of tongue on transpalatal wire.

## Conclusion

The Nitanium Molar Rotator2 can be a valuable adjunct to treatment from the primary dentition to the permanent dentition. Because the Rotator2 can be preprogrammed, its activation is self-limiting. Once the activation is complete, the appliance can be left in place to provide intra-arch stabilization, anchorage, and dentoalveolar or skeletal changes in three planes of space. Treatment goals can be achieved with a low, continuous force, ensuring patient comfort and optimal physiological results. The Rotator2 maintains tissue integrity, reduces the likelihood of relapse, and shortens retention time.

## REFERENCES

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