Rotation Of Maxillary First Molars With A Modified Oppenheim Headgear

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Several investigators have shown that rotation of permanent maxillary first molars is often observed in malocclusions with a distal molar relationship. Lamons and Holmes[1] even suggest that the maxillary first molars are rotated to a greater or lesser degree in ninety to ninety-five per cent of all Class II, Division 1 malocclusions. However, Friel[2] points out that molar rotations occur more frequently as a result of premature loss of the deciduous second molars than in postnormal malocclusions with distoclusion of the first molars. In many instances it is therefore desirable to correct the rotation of the permanent molars simultaneously with, or instead of, distal movement of these teeth. This objective can be accomplished readily with a specially constructed headgear.

The rotation of permanent first molars owing to premature loss of deciduous molars occurs in a characteristic manner inasmuch as the mesiobuccal cusp moves lingually. The prevalence of rotation is greater in the maxilla than in the mandible and its occurrence has been explained by the fact that the palatal root is resistant to migration because of its size, thus serving as a rotation axis.[3] As a result, a distal molar relationship is suggested from superficial examination, but actually only the buccal cusps are in a postnormal relation. Neutroclusion is readily established after correction of the rotation and, in many instances, distal movement of the maxillary molars is not necessary.

A modified headgear with simple hinge mechanism mesial to the permanent first molar has proven effective for rotating maxillary molars around the palatal root by applying pressure anteroposteriorly on the buccal part of the teeth.

The hinge part of the headgear consists of a tube that can rotate freely on a pivot obtained by bending the ends of the intraoral arch ninety degrees gingivally, immediately mesial to the molar (Fig. 1). To this tube, a short length of archwire is soldered for insertion in the tube on the molar band. The tubes used have the same inside diameter as the arch material (0.051″).

A helical coil made of 0.016″ steel wire with three to five loops and long legs is welded to each part of the arch to keep the rotating tube on the archwire and to facilitate insertion of the archwire into the molar tube.

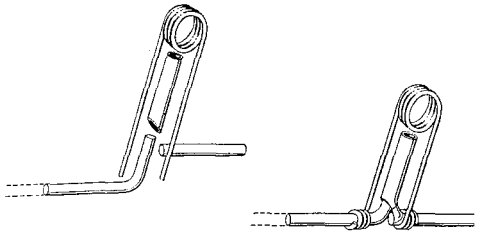

Fig. 1. The construction of the hinge mechanism for rotating maxillary first molars with an Oppenheim headgear (diameter of archwire = 0.050″, diameter of coil spring wire = 0.016″, inner diameter of tube = 0.051″).

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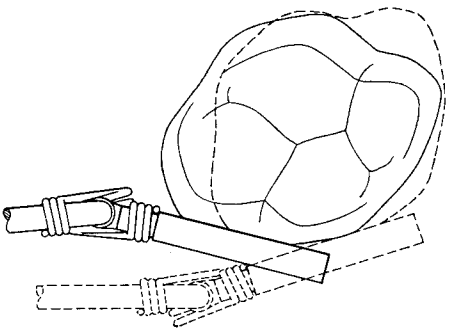

Fig. 2. The functioning of the hinge mechanism when rotating a maxillary first molar. Note that the hinge closely approximates the mesial end of the tube on the molar band.

A slight expansion of the archwire may be necessary in order to move the mesiobuccal cusp buccally instead of moving the distobuccal cusp in a palatal direction (Fig.2). The forces used are the same as those generally applied with Oppenheim headgears. Unilateral application of this hinge mechanism is possible when one molar has to be rotated and the other moved distally at the same time.

As an illustration of the effectiveness of this method the dental casts of a patient at the start of treatment and seven months later, after the correction of the molar rotations, are shown in Figure 3. During the treatment period, neutroclusion of the permanent first molars was obtained as the first objective of therapy.

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Fig. 3. The rotation of maxillary first molars in a 9-year-old boy.

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