

Chairside Technique for the Eruption of Ectopic Maxillary Molars

MICHAEL P. NEDLEY, DDS
J. BRADLEY KRUSKY, DMD

The incidence of ectopic maxillary molar eruption has been reported to be about 2-6% of the general population.¹⁻²² Siblings of children with ectopic eruption have an increased risk,¹² as do children with cleft palates, perhaps because of the many surgeries involved.²³

Pulver proposed that the etiology of ectopic eruption depends on a combination of factors¹⁴:

- Larger-than-normal primary and permanent teeth
- Small maxilla
- Posterior position of the maxilla in relation to the cranial base
- Abnormal angle of eruption of the maxillary first permanent molar

Clinical signs include abnormal inclination of the maxillary second primary molar and delayed or asymmetrical eruption.^{21, 24-26} The obvious complication of ectopic eruption is the premature loss of the maxillary second primary molar, resulting in significant loss of space and possible impaction of the maxillary second primary molar.^{1,2,4,5,19,27}

Treatment timing is critical in cases of

ectopically erupting maxillary first permanent molars. In Young's study of more than 1,600 cases, she concluded that nearly two-thirds of ectopic eruptions resolved without treatment; these were identified as the "jump" group, while the remaining third that required treatment were identified as the "hold" group.¹⁰ Bjerklin and Kurol found that the vast majority of the "jump" cases self-corrected by age 7.²⁸ Another factor to consider is the patient's dental age. If the contralateral and opposing permanent molars and the mandibular incisors have not erupted and the patient appears to have a delayed eruption pattern, a period of observation is reasonable until the child reaches the appropriate dental age.

The goals of ectopic eruption treatment are to allow the maxillary first permanent molar to assume its correct position in the arch (distal to the second primary molar) and to keep the primary molar in place until its normal exfoliation.⁷ Even with extensive root resorption, the second primary molar can continue to be an excellent space maintainer, exerting a favorable influence on occlusal development.^{6,7,12,17}

Treatment of Ectopic Molars

The majority of methods devised to correct ectopic eruption have utilized either interproximal wedges or appliances for distal tipping. Simple interproximal wedges include brass separating wires, band separators, helical springs, and de-impacting springs.^{11,12,26,29-34}

Humphrey placed a band on the maxillary second primary molar and used a wire extending distally to engage a preparation in the central pit of the ectopic first permanent molar.³⁵ Others have proposed various loops, with acid etching to prevent loss of tooth structure on the permanent molar.^{19,27}

One drawback of appliances that engage the occlusal surface of the ectopic molar is the



Dr. Nedley



Dr. Krusky

Dr. Nedley is in the private practice of orthodontics at 39400 Garfield Road #200, Clinton Township, MI 48038, and is a former Staff Dentist at Mott Children's Health Center, Flint, MI, and an Adjunct Lecturer, University of Michigan Department of Orthodontics and Pediatric Dentistry, Ann Arbor. Dr. Krusky is a resident in pediatric dentistry, University of Michigan.

inhibition of vertical eruption.¹⁸ As a result, other devices have been designed with wires extending to the mesial surface of the permanent molar.² Halterman used a wire from the buccal of the second primary molar to the distal pit of the ectopic molar, activating the appliance with a tight elastic chain to a bonded button on the occlusal surface of the permanent molar.³⁶ Rust and Carr proposed an open-coil spring from a bracket on the first permanent molar to one on the second primary molar.²⁵

For cases of bilateral ectopic eruption, Weinberger utilized a modified Halterman appliance, anchored to the first primary molars and connected contralaterally by a Nance holding arch.³⁷ Yuen and colleagues advocated the use of bilateral appliances, even in cases of unilateral ectopic eruption, to provide more anchorage and stability for weakened first or second primary molars.¹⁶

The interproximal wedging techniques are obviously the simplest, but are not always appropriate or feasible. With the exceptions of Rust and Carr's open-coil spring²⁵ and Kennedy's bonded wire,³⁸ the other treatment modalities require impressions and appliance-delivery appointments. The following case illustrates a simple technique for correction of ectopic molars that eliminates the need for any laboratory work.

Case Report

An 8-year-old female presented with mild-to-moderate discomfort in the maxillary right molar region. A diagnosis of ectopic eruption of the maxillary right first permanent molar was made, based on the signs of localized delayed eruption, visual evidence of impaction, and radiographic confirmation of the impaction and premature root resorption of the maxillary right second primary molar (Fig. 1). Because of the patient's symptoms and dental age, it was recommended that treatment be initiated as soon as possible.

A bicuspid band with a facial edgewise attachment was placed on the maxillary right first primary molar. A button was bonded to the



Fig. 1 8-year-old female with ectopically erupting maxillary right first permanent molar, combined with impaction and premature root resorption of maxillary right second primary molar.

occlusal surface of the ectopic molar, as close to the second primary molar as possible. An .018" × .025" archwire was bent with a three-prong plier to allow activation with an elastic chain (Fig. 2).

One week later, some correction had occurred, as confirmed by the position of the bonded button relative to the distal surface of the second primary molar. After an attempt to place a separator was unsuccessful, a longer rectangular wire was bent, placed, and activated.

Three weeks after initial placement, enough correction had occurred to allow removal of the connecting wire and placement of a medium (.175") separator (Fig. 3A). The band on the maxillary right first primary molar and the button on the ectopic molar were left in place. Four weeks later, a large (.210") separator was placed.

After 11 weeks of treatment, the ectopic molar had erupted enough to permit removal of the separator (Fig. 3B). The band and button were still left in place in case the permanent molar became reimpacted and further treatment was necessary.

In another four weeks, the marginal ridge of the first permanent molar had erupted beyond the height of contour of the second primary molar. At that time, the occlusal button was removed from the permanent molar to prevent inhibition of vertical eruption. The band was removed and treatment was discontinued two

weeks later (Fig. 4).

A one-year follow-up showed the patient symptom-free and the second primary molar continuing to function well (Fig. 5). Although the primary molar exhibited no mobility throughout

treatment, the root resorption that had occurred earlier will continue to be monitored. The patient's caretaker was instructed to let us know if the patient had any further symptoms or if the primary second molar were lost prematurely.

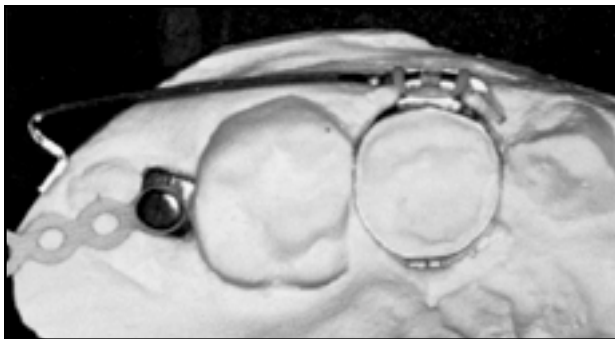


Fig. 2 Orthodontic appliance for eruption of ectopic molar (demonstrated on model).

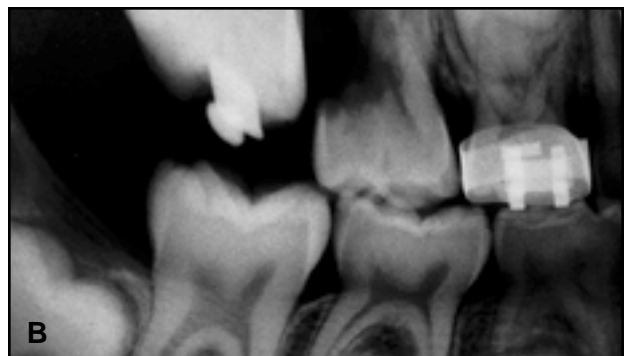


Fig. 3 A. Three weeks after appliance placement. B. 11 weeks after appliance placement.

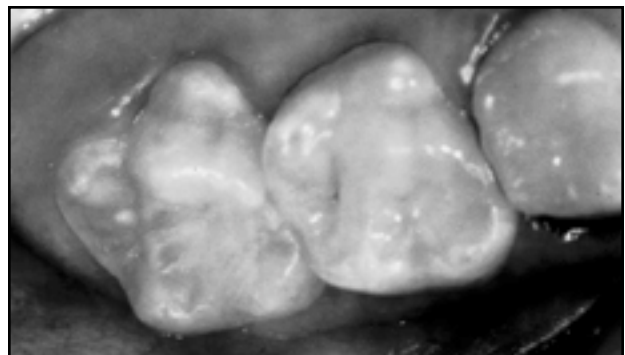


Fig. 4 After 17 weeks of treatment and appliance removal.

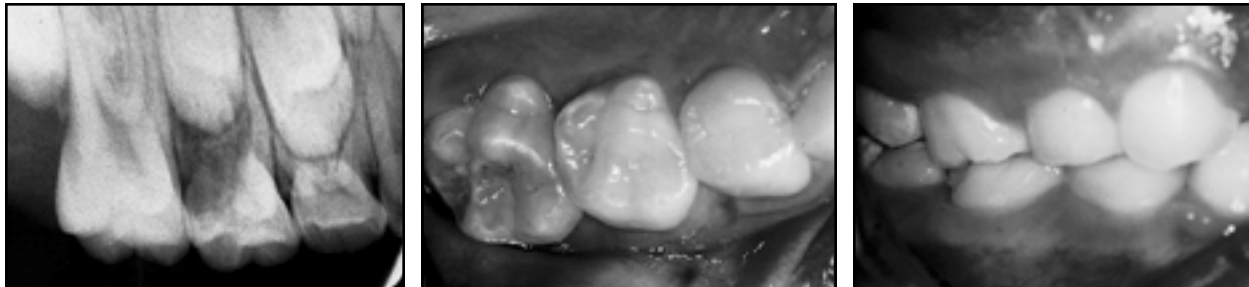


Fig. 5 One year after treatment.

Conclusion

The technique shown here utilizes both types of correction mechanics—interproximal wedging and orthodontic distal tipping. In this case, the tipping took only three weeks, after which the wire was removed to prevent soft-tissue trauma and improve patient comfort.

The benefits of this method are its ease of use, flexibility, and avoidance of any laboratory work. The only prerequisites are a modest armamentarium and the ability to manipulate an orthodontic wire.

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