

Correction of bilateral ectopic eruption of first permanent molars using a fixed appliance

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Introduction

The reported incidence of ectopic eruption ranges from 2 to 4.3% of the population.¹⁻⁴ Treatment modalities have been divided into two categories: interproximal wedging and distal tipping.⁵ Interproximal wedging is indicated when there is minimal impaction of the first permanent molar on the distal aspect of the second primary molar. When the impaction is severe, distal tipping techniques are required.

With the exception of a case presented by Croll,⁶ reports in the literature describe treatment modalities on unilateral ectopic eruption situations. The present report describes the use of a bilateral appliance design for correction of these cases.

Technique

The appliance design has distal extensions on both sides (2-3 mm distal of teeth 3 and 14). Both extensions are fabricated using .036" wire, with small hooks on the distal aspect of the extensions. A transpalatal bar with an acrylic button is incorporated in the appliance for stabilization. The first primary molars are banded using stainless steel crowns with the occlusal portions removed (Fig 1). Buttons are bonded on the disto-occlusal aspect of teeth 3 and 14. Chain elastics are adapted on both buttons and placed over the hooks on the distal aspect of both extensions to provide distal pressure on both permanent molars (Fig 2). The pressure is increased every three weeks by shortening the elastics. The active phase of treatment is less than two months. The appliance and the bonded buttons are left in place for one more month in case of premature loss of the second primary molar and the need for later distalization. Placement of a passive space maintainer may be needed later.

Discussion

Most ectopic eruption correction methods rely on the second primary molar for anchorage purposes. This requires the tooth to have sufficient root structure for the stability of the appliance. Band adaptation on a severely resorbed tooth also can be difficult and may cause pain and infection or hasten resorption and loss. A major difference between this appliance and Croll's appliance⁶ is the use of the first primary molars for anchorage. The Croll technique, although very useful, cannot be used in severe resorption cases. The possibility of further damage and infection to the second pri-

mary molar is always a concern. In most of these cases, good band adaptation is also very difficult and at times impossible. Garcia-Godoy⁷ describes a unilateral appliance using the first primary molar for anchorage, but the appliance is considered an intra-alveolar appliance used after extraction of the second primary molar.⁸ The Halterman appliance⁹ consists of a reverse band and loop incorporating a distal spur. A chain elastic also is placed from the spur to a bonded button on the ectopically erupting permanent molar. Although similar to this technique, this appliance relies on the second primary molar for retention. It is also important to note that it is a unilateral appliance.

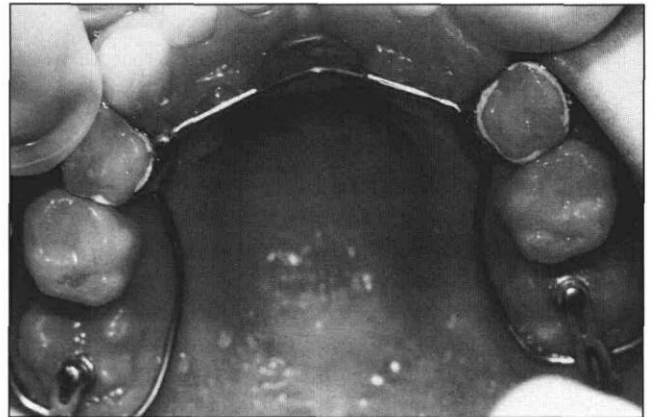


Fig 1. Appliance as it would seat in the mouth.

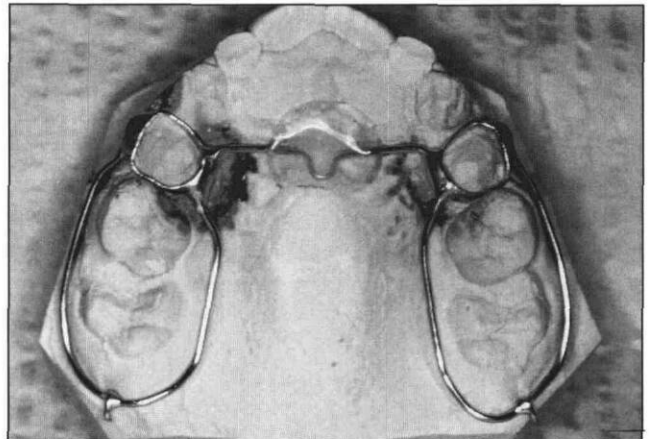


Fig 2. Appliance is cemented and buttons are bonded selectively on teeth 3 and 14. Chain elastics are placed over the hooks and over the buttons.

The bilateral appliance reported here has several advantages: 1) no force is applied to the second primary molar (often severely affected by resorption); 2) when only one molar is erupted sufficiently, treatment can be started unilaterally avoiding a second impression; and 3) only the occlusal surface of the permanent first molar needs to be bonded, as compared with bonded unilateral appliances,⁸ which require several surfaces to be bonded. Accurate wire bending also is required with the use of the fully bonded appliances. Failure of the bonded attachments is also a concern.⁸ When using this bilateral appliance, a buccal spur also can be placed on the wire extensions to facilitate correction of a buccal crossbite in severe cases in which the first permanent molar rotates lingually. Thus, the clinician is not limited to anteroposterior forces.

When using this technique, the appliance should be left in place until the permanent molars achieve full correction. In the event that a second primary molar is lost before correction due to mobility and/or infection, space can be maintained or regained using the same appliance.

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1. O'Meara WF: Ectopic eruption pattern in selected permanent teeth. *J Dent Res* 41:607-16, 1962.
2. Cheyne VD, Wessels KE: Impaction of permanent first molar with resorption and space loss in region of deciduous second molar. *J Am Dent Assoc* 35:774-87, 1947.
3. Bjerklin K, Kurol J: Prevalence of ectopic eruption of the maxillary first permanent molar. *Swed Dent J* 5:29-34, 1981.
4. Kimmel NA, Gellin ME, Bohannon HM, Kaplan AL: Ectopic eruption of maxillary first permanent molars in different areas of the United States. *ASDC J Dent Child* 49:294-99, 1982.
5. Schneider PE, Dummett CO Jr: Treatment of ectopic permanent molar eruption — case report. *Quintessence Int* 16:459-62, 1985.
6. Croll TP: Correction of first permanent molar ectopic eruption. *Quintessence Int* 15:1239-46, 1984.
7. Garcia-Godoy F: Correction of ectopically erupting maxillary permanent first molars. *J Am Dent Assoc* 105:244-46, 1982.
8. Kennedy DB: A bonded appliance to correct ectopically erupting permanent molars. *Pediatr Dent* 7:224-26, 1985.
9. Halterman CW: A simple technique for the treatment of ectopically erupting permanent first molars. *J Am Dent Assoc* 105: 1031-33, 1982.