

CASE REPORT

Uprighting of a Deeply Impacted Mandibular Second Bicuspid During Root Development

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Various methods have been proposed for the extrusion of impacted teeth,¹⁻³ the most common being orthodontic traction after surgical exposure. Few reports, however, have demonstrated treatment of impacted mandibular second bicuspids,^{4,5} especially during root development.⁴ This article presents such a case.

Pretreatment Evaluation

A 12-year-old male presented with an anterior crossbite. Clinical examination showed a mandibular right second deciduous molar present, with adequate arch space for a bicuspid, but a panoramic radiograph showed the crown of the second bicuspid tipped distally or horizontally (Fig. 1).

After nine months of observation, no eruption of the second bicuspid had occurred. A periapical x-ray revealed that there was no room for the root (Fig. 2A).

Orthodontic Treatment

An .018" edgewise appliance with an .016" Elgiloy*

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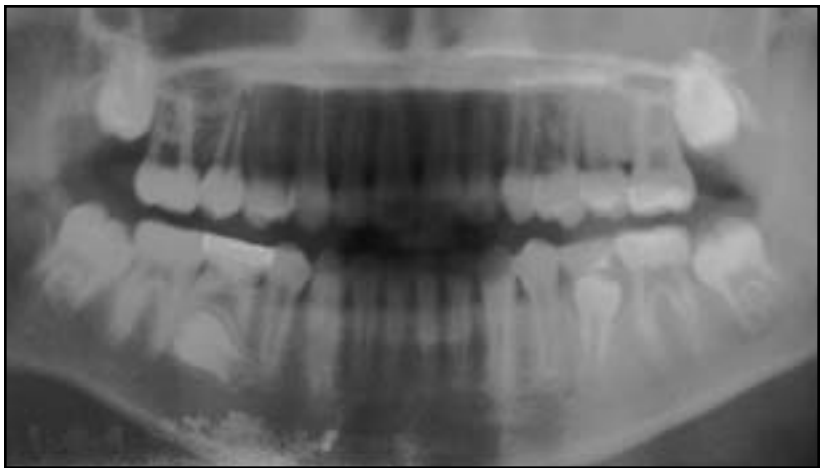


Fig. 1 Initial panoramic radiograph shows horizontal position of mandibular right second bicuspid.

archwire was placed in the mandibular arch. The mandibular second deciduous molar was then extracted, the second bicuspid was surgically exposed, and a button with a twisted ligature

wire was bonded to the exposed surface (Fig. 2B).

Extrusion was begun with light elastics (20g) between the twisted ligature wire and the first bicuspid bracket (Fig. 2C). After



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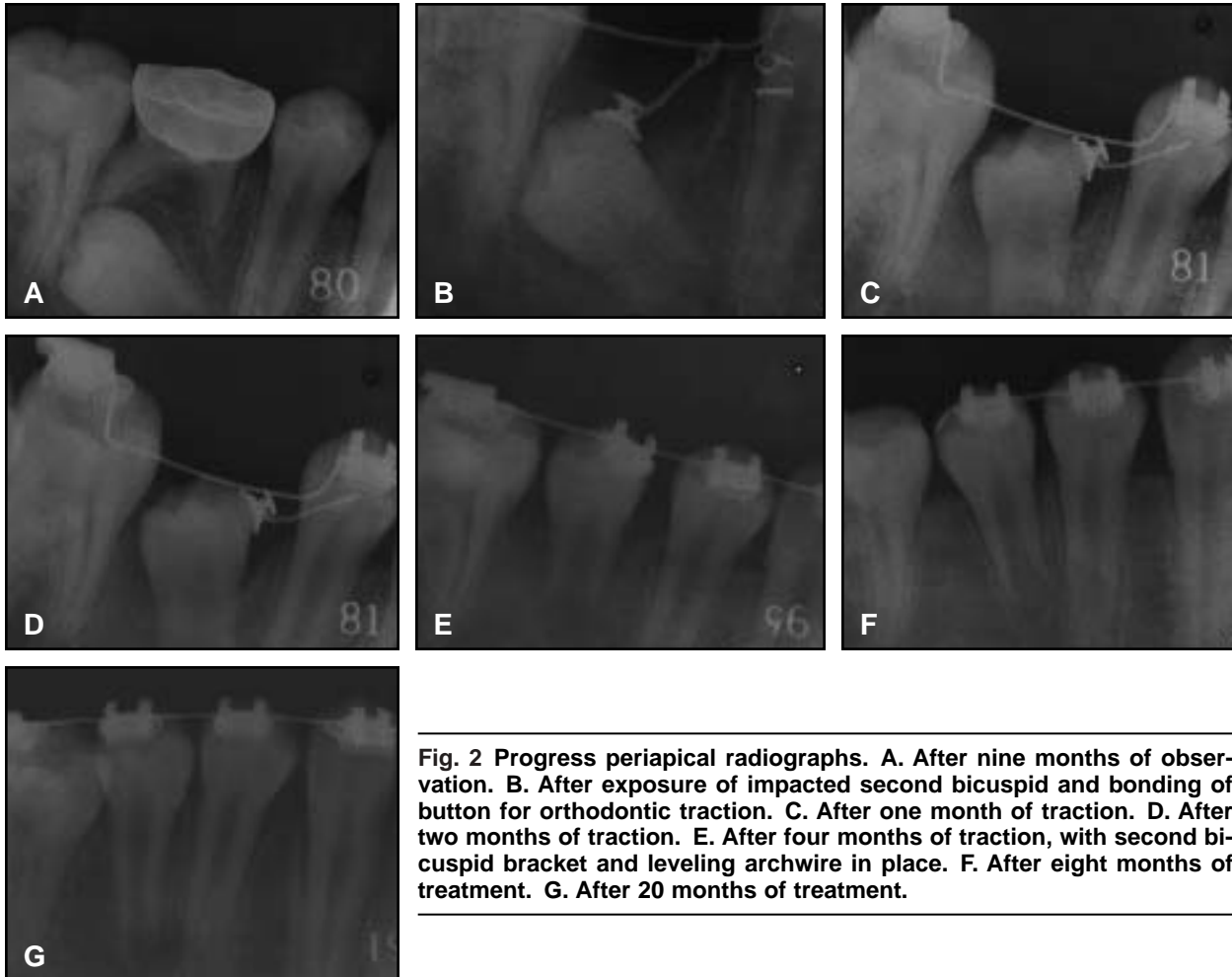


Fig. 2 Progress periapical radiographs. A. After nine months of observation. B. After exposure of impacted second bicuspid and bonding of button for orthodontic traction. C. After one month of traction. D. After two months of traction. E. After four months of traction, with second bicuspid bracket and leveling archwire in place. F. After eight months of treatment. G. After 20 months of treatment.

two months, the second bicuspid crown appeared between the first bicuspid and first molar (Fig. 2D). Another two months later, the second bicuspid bracket was bonded in the correct position, and leveling was begun with an .014" Elgiloy archwire (Fig. 2E).

After 18 months of active treatment, a Hawley-type retainer was delivered.

Treatment Results

The root of the impacted bicuspid developed normally during 20 months of orthodontic movement (Fig. 2). A panoramic radiograph revealed that the second bicuspid root was straight and as long as that of the first bicuspid, with adequate lamina dura and periodontal spacing (Fig. 3).

Discussion

Although an elastic force of 20g is usually too light to move teeth, a strong orthodontic force is not needed to extrude an impacted tooth. In fact, Lang used only a separating spring to erupt an impacted bicuspid into proper position.⁵

The etiology of impacted teeth has long been related to

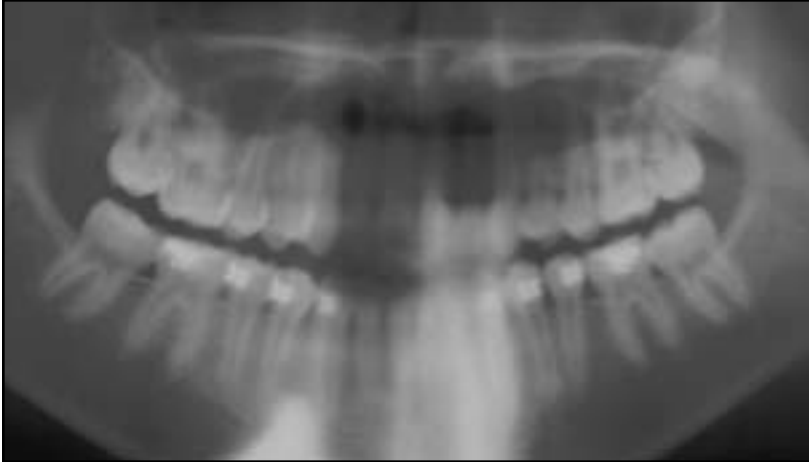


Fig. 3 Panoramic radiograph taken after removal of fixed appliances, showing intact mandibular right second bicuspid root.

arch-length deficiency, but this patient had sufficient space in the mandibular arch. We believe the impaction in this case was caused by rotation of the tooth bud.⁶ The patient's bicuspid root might have been expected to curve in the original direction of the tooth bud, or root development might have stopped after the button was bonded to the crown. Actually, the root turned out to be straight and normal, indicating that orthodontic traction can be successfully initiated during root development.

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