

CASE REPORT

Orthodontic Management of an Impacted Maxillary Canine with an Abnormal Premolar Root

T.G. McNAMARA, BDS, DOrth, FDS, FFD

C.M. McNAMARA, BDS, DOrth, FDS

This report presents a method of treatment of a palatally impacted permanent maxillary canine in association with an adjacent abnormal premolar root form that avoids the need for extraction or surgical modification of the premolar root.

Diagnosis and Treatment Planning

A female patient age 14 years, 7 months, presented for treatment of an impacted maxillary permanent canine. She was a transfer patient with a mandibular fixed appliance already in

place (Fig. 1). The patient and her parents had been advised of the difficulty of orthodontic management of the unerupted canine.

The molar relationship was a half-unit Class II on the right and Class I on the left. A cross-bite existed in the left second premolar region, where the maxillary left deciduous canine was retained.

Radiographic examination confirmed the presence of all permanent teeth except for the mandibular right third molar. The palatal root of the left first

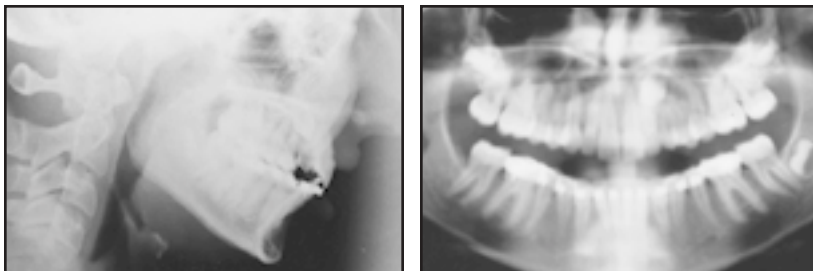


Fig. 1 14-year-old transfer patient with impacted maxillary canine and mandibular fixed appliance in place.



Dr. T.G. McNamara



Dr. C.M. McNamara

Dr. T.G. McNamara is Consultant Orthodontist, Mid-Western Health Board, Ireland. Dr. C.M. McNamara is Consultant Orthodontist, Eastern Health Board, Regional Orthodontic Department, St. James's Hospital, Dublin 8, Ireland.

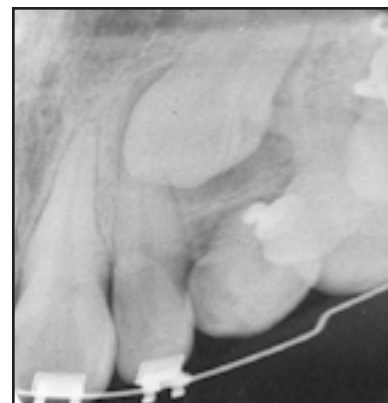


Fig. 2 Dilacerated palatal root of first premolar impeding eruption of adjacent permanent canine.

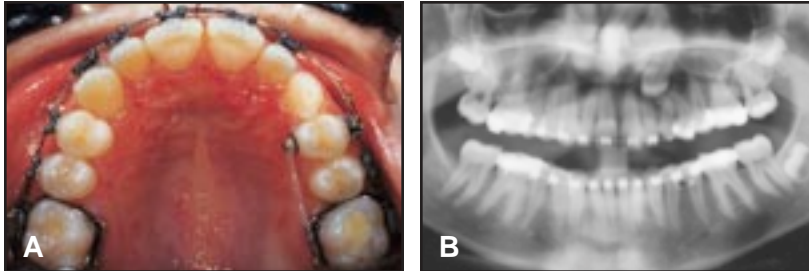


Fig. 3 A. Premolar after distopalatal rotation with spring to buccal Begg bracket and power chain from lingual button to palatal cleat on first permanent molar. B. Rotation of dilacerated premolar root away from unerupted canine; note retained deciduous canine.

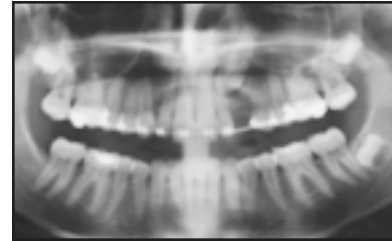


Fig. 4 Space obtained for unerupted canine; permanent canine exposed, and deciduous canine extracted.



Fig. 5 Early stages of canine alignment, with conventional edgewise bracket replacing Begg bracket on first premolar.

premolar had a mesial dilaceration that had impeded the eruption of the adjacent maxillary permanent canine (Fig. 2).

A nonextraction orthodontic solution was proposed. The treatment plan was to move the dilacerated palatal premolar root away from the path of eruption of the impacted canine, surgically expose the canine, and complete the alignment with a conventional maxillary fixed appliance.

Treatment Progress

The maxillary arch, except for the left first premolar, was bonded with Roth OmniArch*

brackets, and extraoral traction was begun. A Begg bracket** was bonded buccally to the premolar; a button was bonded palatally. Distopalatal rotation of the dilacerated premolar root away from the unerupted canine crown was carried out with a buccal rotating spring and a power chain from the palatal button to the lingual cleat on the maxillary first molar band (Fig. 3).

The deciduous maxillary canine was then extracted, and push-coil mechanics were used to create space for the unerupted permanent canine (Fig. 4).

An eyelet was bonded to the permanent canine after its

surgical exposure. When adequate space was available, elastomeric traction was applied to the exposed canine (Fig. 5). Alignment of the canine was uncomplicated (Fig. 6).

The premolar Begg bracket and the eyelet on the canine were replaced with conventional brackets. Patient compliance was excellent throughout, and treatment was successfully completed in 30 months.

Discussion

The case shown here was similar to the two cases described by Kerrigan and Sandy.¹ In their report, however, one patient needed extractions, and the abnormal premolar was selected; in the second case, the dilacerated root of the premolar was surgically resected after devitalization and endodontic therapy on the premolar.

In the present case, a non-

*Registered trademark of GAC International, Inc., 185 Oval Drive, Central Islip, NY 11722.

**TP Orthodontics, Inc., 100 Center Plaza, LaPorte, IN 46350.

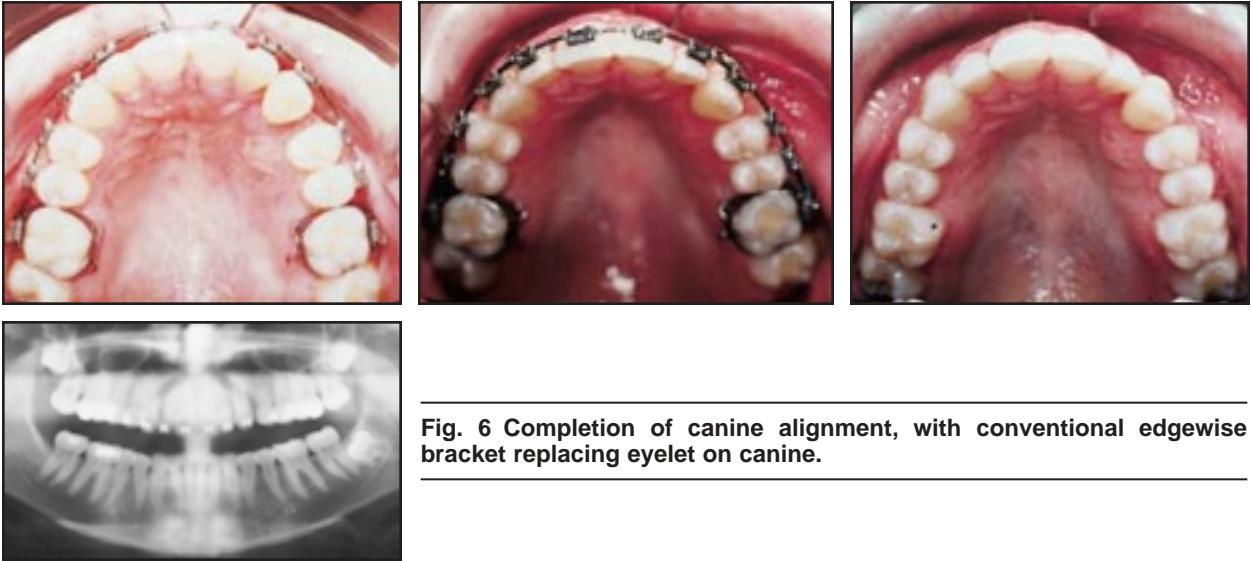


Fig. 6 Completion of canine alignment, with conventional edgewise bracket replacing eyelet on canine.

extraction approach was considered the best treatment option. The objective was to retain the vitality of the premolar and thus avoid long-term problems from surgical root resection. Orthodontic alignment of the canine was not without risks or complications: minor resorption of the dilacerated premolar root occurred after the rotational movement of the premolar (Fig. 7),

and orthodontic treatment time was significantly increased. Except for these two factors, management of the impacted canine was uncomplicated, and an optimal treatment outcome was achieved.

REFERENCES

1. Kerrigan, J. and Sandy, J.R.: Displacement of maxillary canines: A twist in the root, Br. J. Orthod. 22:275-278, 1995.



Fig. 7 Minor root resorption following rotation of premolar root away from crown of unerupted canine.