

# CASE REPORT

## Impacted Incisors with Dilacerated Roots

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**A**n 18-year-old patient presented with two impacted upper central incisors, both with dilacerated roots.

The intraoral examination showed a Class I molar and canine relationship on the right side and a Class II molar and canine relationship on the left, with a bilateral posterior crossbite. The lower right lateral incisor was lingually displaced and had a lingual recession (Fig. 1).

The impacted upper central incisors were observed on the panoramic radiograph, both with roots dilacerated toward the distal. The distal curvature of the incisors was so severe that it was impossible to correct in the usual manner without contacting the

roots of the lateral incisors.

### Treatment Planning

Treatment objectives were:

- Maxillary dentition—resolve the transverse problems and molar rotations and create space for the impacted incisors.
- Mandibular dentition—correct the osseous-dental discrepancy and attempt to incorporate the right lateral incisor in the arch despite its lingual recession.
- Occlusion—establish bilateral Class I molar and canine relationships and achieve a mutually protected, canine-guidance occlusion.

Alternative solutions were proposed to the patient to correct the maxillary transverse and sagittal problems by orthognathic surgery or by palatal expansion, both of which were reject-

ed. A Quad Helix\* was therefore chosen to resolve the transverse problem while allowing derotation of both molars.

Surgical exposure and extrusion of the dilacerated central incisors was planned after explaining to the patient that it was impossible to position these teeth correctly without their roots coming into contact with those of the upper lateral incisors, with the consequent resorption of all four roots.

To resolve this problem, after mounting the case on a SAM 2 articulator\*\* in centric relation, we concluded that the solution would be to apply less torque to the upper central incisors and more torque to the upper lateral incisors.

In the mandibular arch, relief of crowding was planned without extractions, by moving

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\*\*Great Lakes Orthodontics, Ltd., 199 Fire Tower Drive, Tonawanda, NY 14150.

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the palatal lateral incisor into the arch during leveling and alignment. As for the lingual recession of the lateral incisor, the periodontist advised finishing orthodontic treatment before reassessing the periodontal condition.

### Active Treatment

The first part of the treatment was designed to correct the

molar rotations and transverse problems, while aligning the upper and lower arches by means of Hilgers brackets with .014" nickel titanium archwires, overlaid with .016" × .016" Elgiloy utility arches. Nine months later, the posterior crossbite and molar rotations had been resolved, and the correct torque had been achieved. The maxillary archwire was changed to .016" × .016" stainless steel.

Space was created in the mandibular arch by protracting the four incisors. The right lateral incisor was brought into the arch with an .014" nickel titanium overlay left outside the bracket slots (Fig. 2).

The patient was then referred to the surgeon for exposure of the maxillary central incisors by a fenestration with excisional gingivectomy. Five days later, brackets were bonded to



Fig. 1 18-year-old female patient with impacted maxillary incisors before treatment.

both incisors, and traction was begun on an elastic chain with a force ranging from 40-60g on each tooth.

After six months of traction, both central incisors reached the line of occlusion. The overbite was left at 1mm to avoid the appearance of having more torque in the lateral incisors than in the central incisors.

The upper incisor torque

was controlled by custom bends in the archwires, finishing with .016" × .022" stainless steel. Class I molar and canine relationships were achieved on the left side by using Class II intermaxillary elastics.

### Treatment Results

Post-treatment records showed an overall esthetic improvement (Fig. 3). Both central

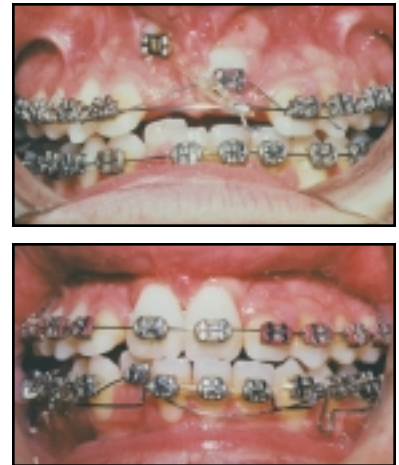


Fig. 2 Movement of impacted incisors into dental arch.

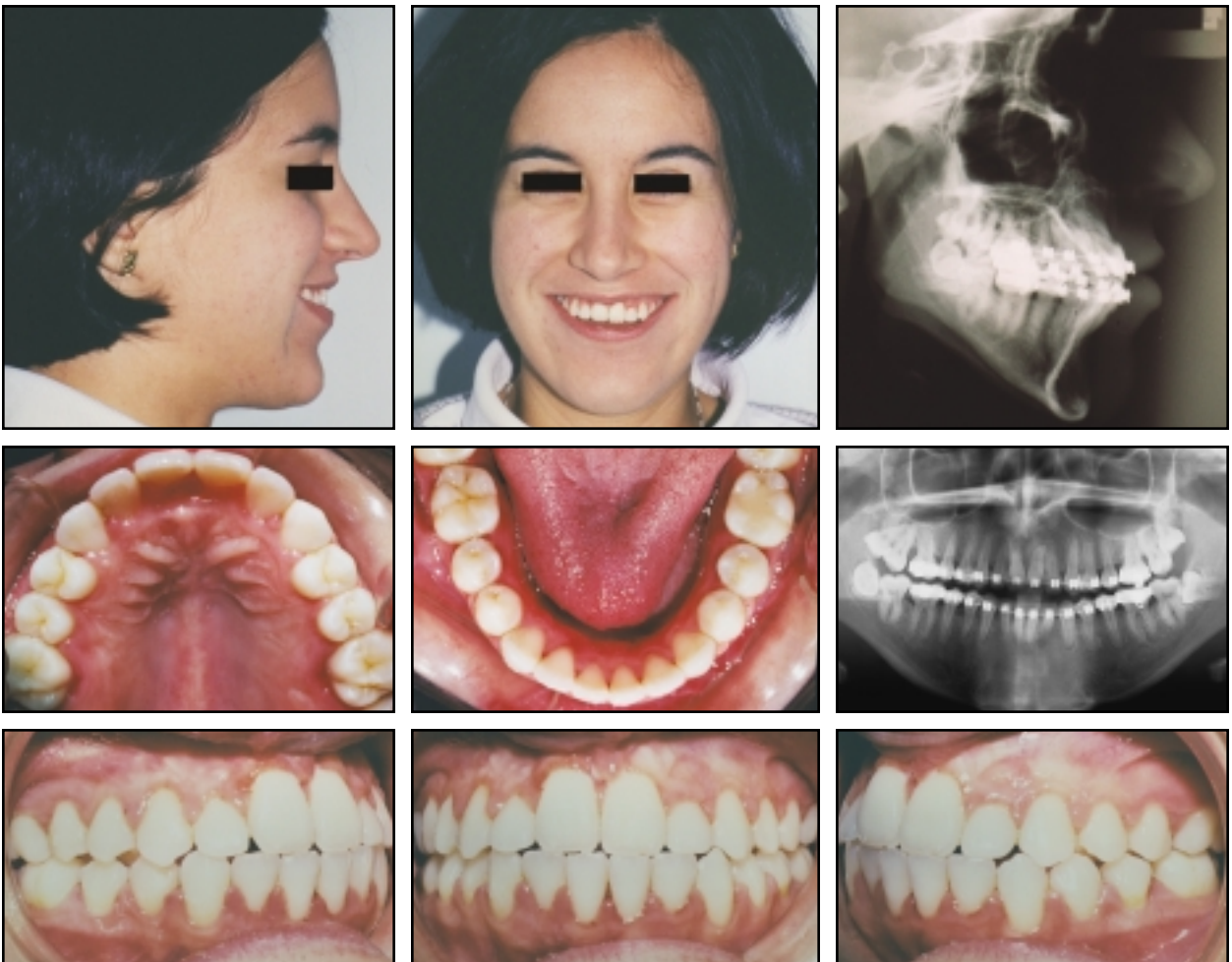


Fig. 3 Patient after treatment.

incisors had been brought into the arch without causing apical loss of gingival insertion or external root resorption.

The mandibular incisor crowding and overbite were corrected. The right lateral incisor was brought into the arch, improving its lingual recession. The molar and canine relationships were Class I on both sides. Final cephalometric analysis in-

dicated that the skeletal parameters were unchanged.

### Retention

The patient wore Hawley retainers for a year, removing them only for eating and oral hygiene. Thereafter, she wore them only at night. After 14 months of retention, the patient was referred for extraction of the four

third molars, due to malpositioning of the lower ones.

Two and a half years after treatment, the esthetic improvements remained (Fig. 4). A small diastema had appeared between the upper right central and lateral incisors, probably as an adaptation to the new functional occlusion, which was evidenced by improved interdigation. The periodontal situation remained

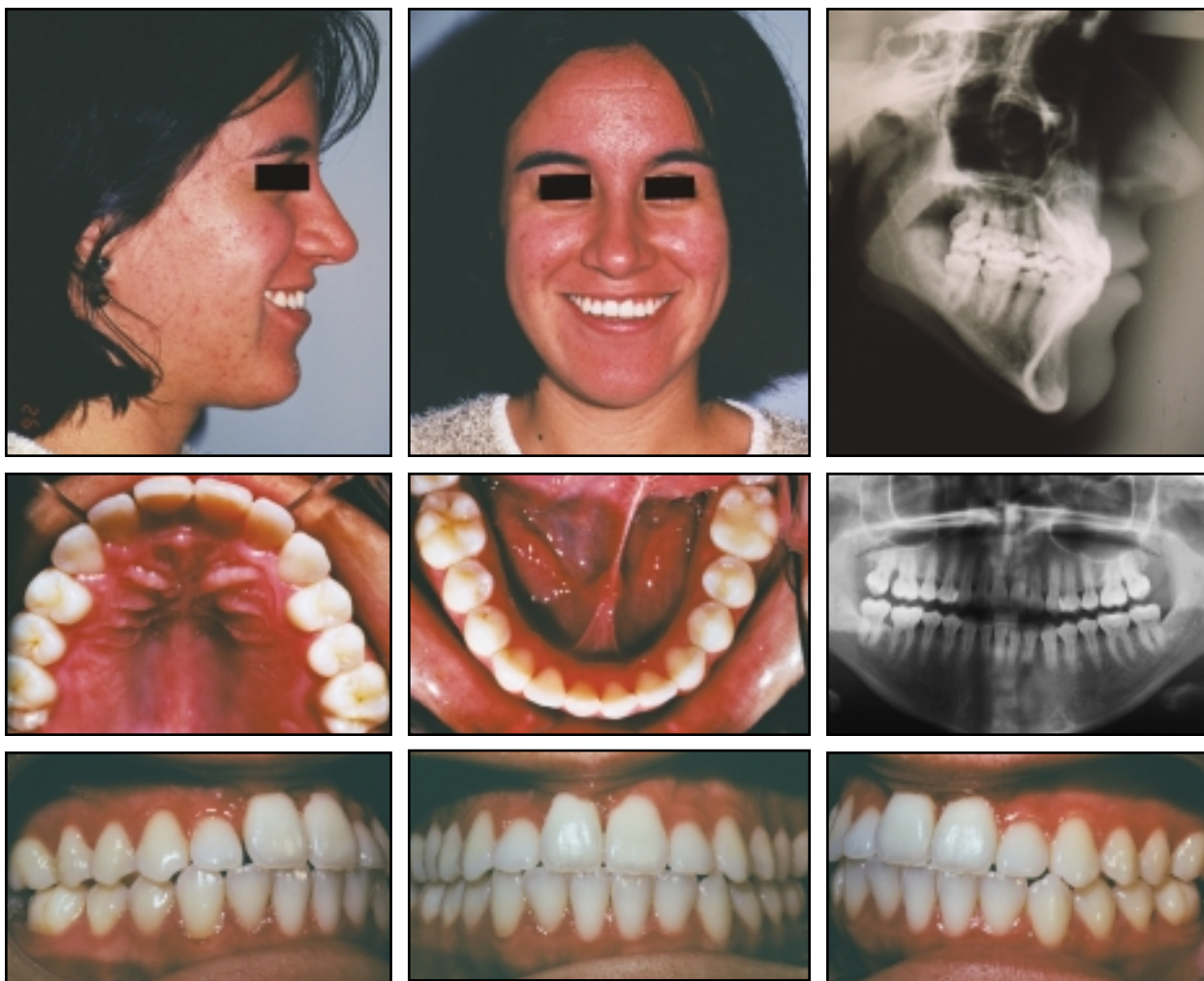


Fig. 4 Patient after 30 months of retention.

stable, as did the mandibular correction and overbite.

Neither of the impacted incisors showed any root resorption. Their periodontal tissues remained in good condition both during and after treatment, and they experienced no apical recession.

### Discussion

The maxillary central incisors are among the teeth most likely to be impacted, along with the third molars and maxillary canines.<sup>1,2</sup> According to Bassigny,<sup>3</sup> eruption defects of the upper central incisors can be due to any of three circumstances<sup>2-8</sup>:

1. Trauma to the predecessor incisor.
2. Presence of a supernumerary tooth or odontoma.
3. Treatment or morbidity of the deciduous incisor.

In cases of trauma, depending on the state of development of the deciduous incisor, the location of the germ relative to the apex, and the severity of the trauma, either a vestibular or palatal displacement without radicular disturbance or an upward and forward displacement with severe radicular deformation will occur. Radicular formation will continue after a trauma, its shape depending on the anatomical surroundings.<sup>3</sup> The root deformation will be more or less ac-

centuated according to the inclination of the crown and the shape of the hard palate.

Some authors believe dilaceration is a result of an early trauma to the deciduous tooth.<sup>2,3,9</sup> Stewart attributes it to ectopic development of the tooth germ.<sup>10</sup> Nadal proposes two possible causes: the presence of mechanical obstacles during the formative and eruptive period of the tooth, or trauma affecting the follicle after coronal formation is completed.<sup>11</sup> Bassigny cites four causes: a complex eruption trajectory, a cortical obstacle, a displacement of the immature tooth after the exodontia of the neighboring tooth, or repositioned included teeth.<sup>3</sup>

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