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CASE REPORT Management of an Unerupted Canine Associated with a Central Giant Cell Granuloma

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This case report describes the successful management of a central giant cell granuloma (CGCG) and an associated displacement of a maxillary canine.

Surgical Treatment

A 12-year-old female initially presented with a CGCG associated with an unerupted maxillary left permanent canine. The CGCG had caused a large, firm expansion in the maxillary left anterior region and a visible facial asymmetry. The roots of the maxillary left lateral incisor and first premolar were also displaced, but the roots of all the displaced teeth were intact (Fig. 1).

The CGCG was surgically removed by curettage under general anesthetic, and histopathology confirmed the initial diagnosis of the lesion. The patient was followed up clinically and radiologically at regular intervals, and the bony defect was almost completely resolved within about 13 months of the surgery (Fig. 2).

Orthodontic Treatment

Upon examination for orthodontic treatment, two years post-operatively, significant improvement in the position of the unerupted canine had occurred (Fig. 3). There was no evidence of any recurrence of the CGCG. The patient had a Class II, division 1 malocclusion on a mild skeletal Class II dental base. The overjet was 8mm, and the overbite was incomplete. The upper labial segment was proclined and spaced, but the lower arch was well aligned. Molar relationships were Class I on both sides. The maxillary left deciduous canine was still in place, but with little or no residual root.

The orthodontic treatment plan was to align the unerupted permanent canine using a nonextraction approach. The canine was surgically exposed, and the retained deciduous canine was extracted. An eyelet with goldchain attachment was bonded to the canine for orthodontic traction (Fig. 4).

Once the canine was brought into the arch, the eyelet was replaced by a bracket, which was incorporated in the maxillary archwire (Fig. 5). Successful alignment was completed using conventional straightwire mechanics, with cervical headgear to correct the overjet.

Discussion

Jaffe identified the giant cell granuloma in 1953, differentiating this jaw lesion from histologically similar giant cell tumors of long bones.1 Jaffe regarded the lesion not as a true neoplasm, but rather a local reparative reaction of bone, possibly secondary to intramedullary hemorrhage, trauma, or infection. The term "reparative" has been dropped, and the lesion is now called a central giant cell granuloma.

CGCGs generally occur in the first three decades of life. Found primarily in females, they account for less than 7% of all benign lesions of the calvarium and mandible.

The clinical behavior of CGCGs varies considerably.2 The majority of giant cell lesions of the jaws are slow-growing, circumscribed processes that usually respond well to simple curettage, as in this patient. A considerable number of lesions, however, are more aggressive.

In this case, the unerupted maxillary permanent canine was significantly displaced, but without affecting the integrity of its root or the roots of adjacent teeth. A more aggressive CGCG may cause resorption of adjacent roots, pain, or perforation of the overlying bone, and tends to recur after curettage.2 Reported recurrence rates range from 10% to 69%.4,5 In view of this risk, orthodontic treatment should be delayed until ossification of the wound site is complete.

If multiple CGCGs are present, extensive surgical resection may be necessary. Considerable bleeding may occur due to the vascularity of the lesions, rendering removal more difficult. This may explain the wide range of recurrence rates recorded. Conventional therapy involving surgical resection of large CGCGs will result in serious mutilation of the jaws, with possible loss of teeth and tooth germs. In these cases, a more conservative, nonsurgical approach is recommended.

Alternative treatments include local injection of calcitonin5 or corticosteroids.6 If dental roots are affected or enveloped by the lesion, endodontic treatment may be indicated; Eisenbud and colleagues reported 37 cases of CGCG, of which 12 had endodontic therapy prior to surgery.7

In our patient, endodontic therapy was not indicated because the root of the unerupted canine was intact. The tooth also responded well to orthodontic forces. Residual alveolar support after orthodontic alignment was another factor, but good bone development occurred, with a proper gingival attachment height.

Conclusion

Although CGCGs are relatively uncommon, these lesions should be considered by orthodontists as part of a differential diagnosis of patients with grossly displaced teeth. Because of the inherent potential of the displaced teeth to improve their positions after surgery, severely displaced teeth, such as this canine, should, if possible, be retained at surgery. Orthodontic treatment should only be begun after ossification of the wound site is complete. Successful alignment depends on good alveolar bone regeneration and support. •

FIGURES

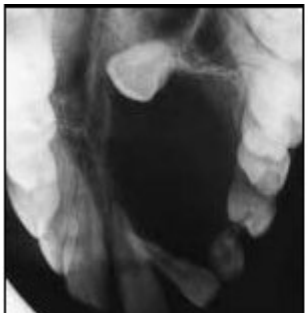

Fig. 1 Displacement of maxillary left canine and roots of erupted left lateral incisor and first premolar by large central giant cell granuloma.

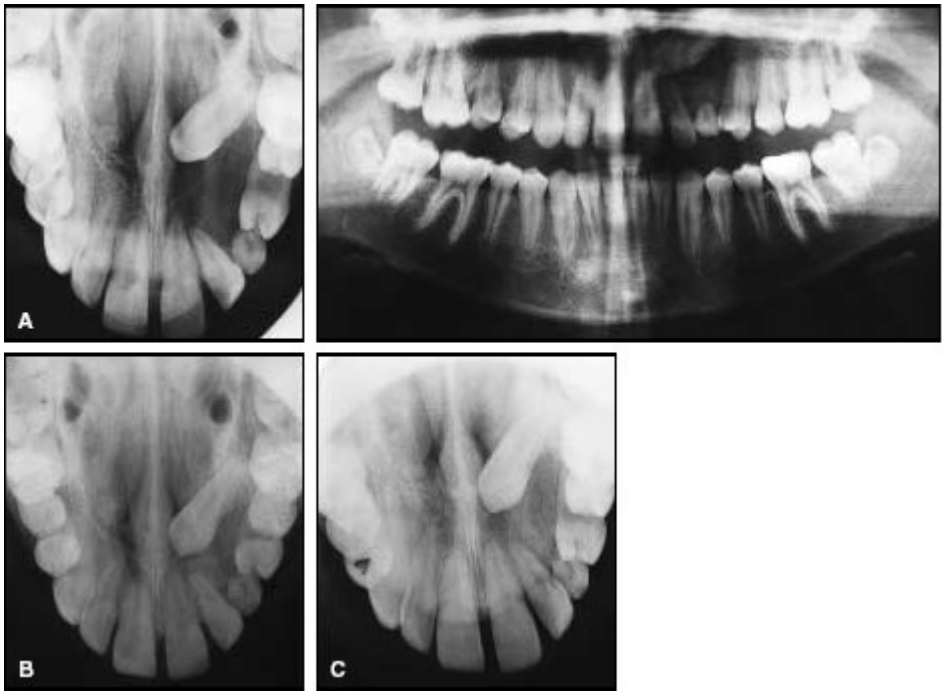

Fig. 2 A. Five months after surgery, bony regeneration is incomplete, but positions of canine and first premolar root have improved. B. Nine months after surgery. C. 13 months after surgery, showing no recurrence of central giant cell granuloma and bone regeneration near completion.

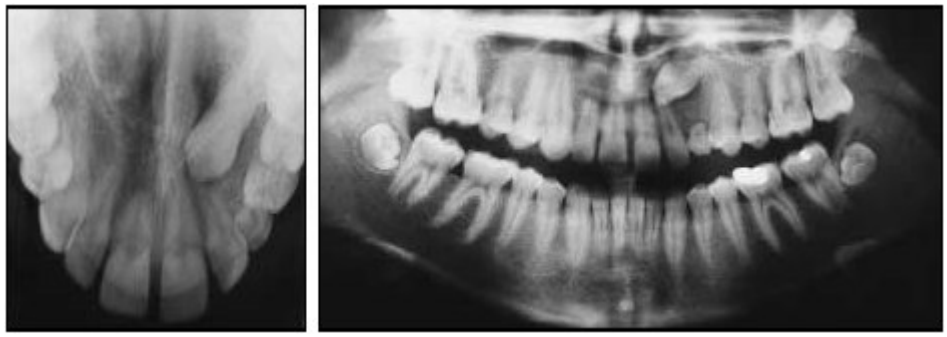

Fig. 3 Two years after surgery, showing complete resolution of large radiolucent bony defect.

Fig. 4 Placement of bonded eyelet and gold chain after surgical exposure.

Fig. 5 Near completion of orthodontic treatment, note good root morphology of canine. Eyelet was replaced by conventional bracket for incorporation of canine in maxillary archwire.

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