

CASE REPORT

Surgical Intervention to Prevent Exfoliation of Central Incisors from Elastic Wear

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Elastics have long been used for the correction of orthodontic problems such as diastemas,¹⁻⁵ crossbites,¹ and malposed teeth,^{2,3,6} as well as for the intentional non-surgical removal of teeth in cases of hemophilia and other medical conditions.⁷ Unfortunately, numerous cases of iatrogenic periodontal destruction have also been reported in the dental literature since 1870, when McQuillen published his warning against improper use of the India rubber ring.⁸ Whether the extraction is intentional or not, the principle is the same. A constricting elastic band placed around the cervix of the tooth moves toward the apex, where the root is the narrowest, destroying both the periodontal ligament and the alveolar bone and

subsequently causing exfoliation of the tooth.

Such cases usually involve incisors or premolars. Because the divergent roots of molars restrict complete apical migration, no exfoliations have been reported, although gingival inflammation and loss of periodontal attachment and bone can occur.^{9,10} Orthodontic separating rings have also caused periodontal damage when they have slipped subgingivally or have been used incorrectly around the circumference of the tooth.⁷

This report describes the consequences of the improper use of elastics in closing a central maxillary diastema and the approach that was used to save the involved teeth.

Diagnosis

A 12-year-old female came to the office because her parents were dissatisfied with the progress of her orthodontic treatment and deeply concerned about the mobility of the maxillary central incisors. The patient's dental records revealed that the mobility had begun some time after a general dentist had begun orthodontic treatment with an upper removable appliance 15 months earlier. The appliance was activated regularly, resulting in a distinct diastema between the maxillary central incisors. When the parents complained about the diastema, the dentist advised the patient to wear a rubber band around these two teeth and to change the elas-

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tic every day. The parents thought they remembered one day when the old elastic could not be found. Soon after that, the girl complained of acute pain, but the dentist assured the parents that nothing was wrong.

Several months later, when the incisors had developed increasing mobility, the parents visited an orthodontist. This specialist fabricated a removable mandibular appliance with a posterior occlusal bite block, placed a splint on the lingual surfaces of the four maxillary incisors to immobilize the teeth (Fig. 1), and sent the patient to a periodontist, who performed conservative scaling. The situation did not improve, however, and the parents were informed about the anticipated loss of the maxillary central incisors.

Our clinical examination

revealed that the four first premolars had been extracted, and bands had been placed on the maxillary first molars. Draining sinuses with purulent discharge were noted on both sides labial to the maxillary incisors. The maxillary central incisors exhibited Class III mobility and periodontal pockets deeper than 10mm on the distal, palatal, and labial surfaces, with two fistular orifices visible on the attached labial gingiva. Radiographic examination confirmed the extreme proximity of the two apices, but showed no other sites of periodontal destruction (Fig. 2).

Because of the patient's dental history and the isolated severe resorption of alveolar bone, we suspected that an orthodontic elastic was the etiologic factor. Considering the functional and esthetic importance of the



Fig. 1 12-year-old female patient with acrylic splint, reinforced by twisted archwire, on lingual surfaces of maxillary incisors. Note draining sinuses with purulent discharge labial to right and left maxillary incisors.

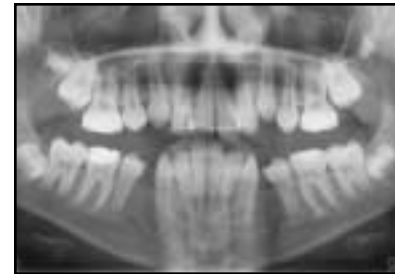


Fig. 2 Radiographic examination showing extreme proximity of maxillary central incisor apices, but no other sites of periodontal destruction.



Fig. 3 Endodontic treatment of maxillary central incisors prior to surgery.

central incisors, the patient's age, and the previous extraction of the first premolars, we decided on surgical exposure of the apices in an attempt to remove the elastic and keep the incisors in the arch as long as possible.

Surgical Treatment

The incisors were endodontically treated before surgery (Fig. 3). Under local anesthesia, a labial mucoperiosteal flap was raised, exposing an elastic around the apices of the incisors (Fig. 4). The elastic was cut with scissors and pulled out. Removal of the granular tissue then revealed a second elastic, closer to the apices, which was removed similarly. The soft tissues were then repositioned and sutured.

A few days after surgery, the mobility of the teeth had already lessened, and comprehensive orthodontic treatment was

initiated (Fig. 5). Healing of the alveolar bone is being monitored with regular radiographic examinations.

Discussion

Once an elastic slips into the gingival sulcus, it cannot be

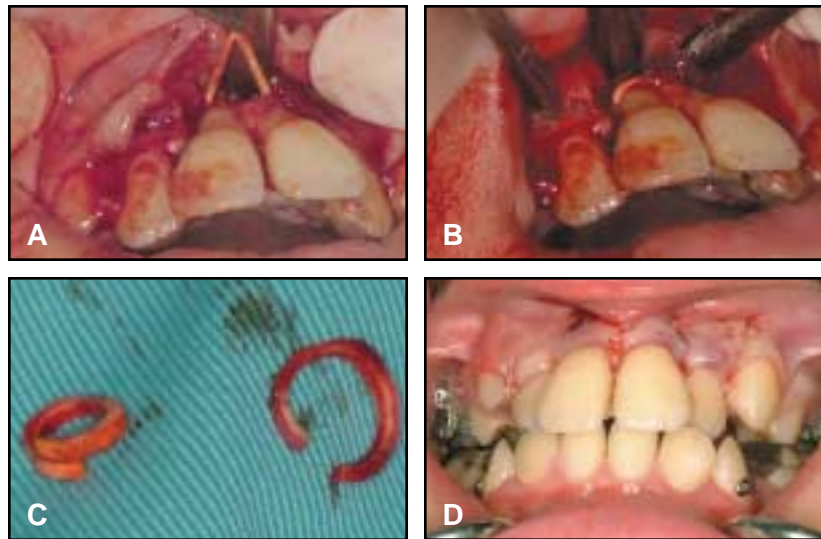


Fig. 4 A. Labial mucoperiosteal flap exposing elastic around apices of central incisors. B. Removal of granular tissue revealing second elastic closer to apices. C. Elastics after removal. D. Repositioned and sutured soft tissues.

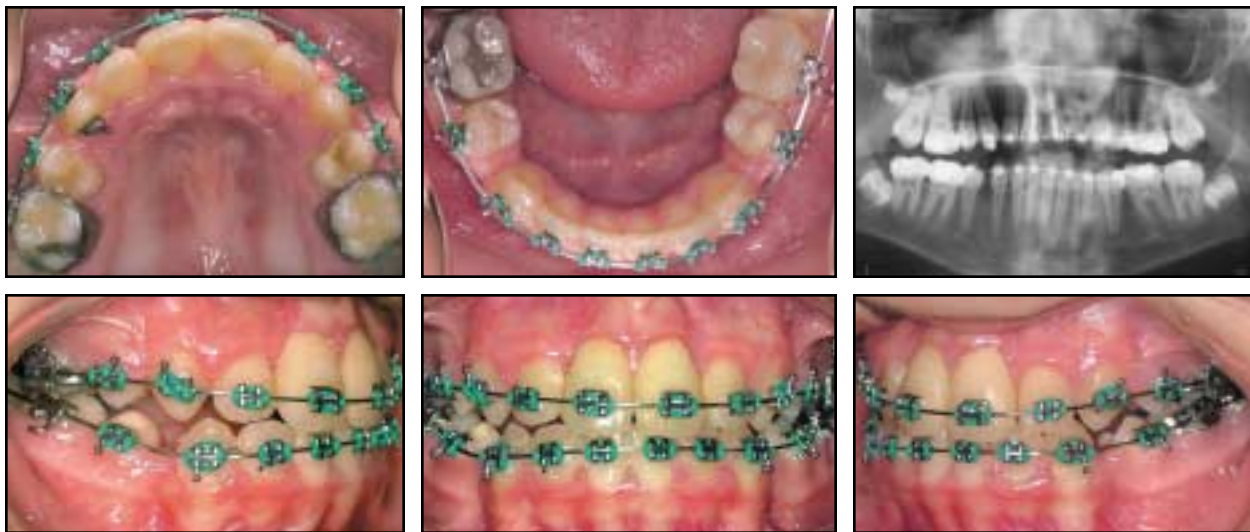


Fig. 5 Patient seven months after surgery. Note complete healing of fistular orifices.

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detected radiographically or distinguished from normal tissue with probing. Nevertheless, signs of localized periodontal inflammation such as redness, edema, tooth mobility, and tenderness to percussion, in conjunction with a careful assessment of the patient's dental history, can lead to an early diagnosis and removal of the elastic before osseous damage occurs.

To prevent these complications in patients treated with elastics, Zilberman and colleagues recommended the following precautions³:

1. Elastics should not be used around the crowns of teeth without being stabilized by some kind of attachment or bracket, either directly bonded to the teeth or welded to orthodontic bands.
2. The patient and parents should immediately report any lost elastics. If the patient complains of pain or if gingival inflammation appears, the dentist should suspect a subgingival movement of the elastic.

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