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DENTAL TRAUMATOLOGY

Case Report

Re-eruption of traumatically intruded mature permanent incisor: case report

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Abstract – This case report describes a case of intrusion of the right mature permanent central incisor. After gingivectomy and endodontic treatment with changes of the intracanal dressing (calcium hydroxide paste) every 30 days, spontaneous re-eruption was observed. We conclude that waiting for spontaneous re-eruption associated with gingivectomy and endodontic treatment is an alternative treatment for severe intrusive luxations in mature permanent teeth.

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Key words: traumatism; intrusion; permanent teeth

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Intrusive luxations are relatively uncommon, corresponding to only 3% of all traumatic injuries in permanent teeth (1), and 5–12% of dental luxations (1, 2). Serious damage to the pulp and support structures occurs because of the dislocation of the tooth into the alveolar process. Thus, the repair process after intrusion is complex (3). Pulp necrosis, radicular inflammatory resorption, dento-alveolar ankylosis, loss of marginal bone support, calcification of the pulp tissue, paralysis or disturbance of radicular development and gingival retraction may occur as a consequence of an intrusive luxation (4, 5). The treatment of dental intrusions must try to eliminate or reduce the occurrence of these complications (5).

There is no agreement in the literature for the ideal treatment for permanent intruded teeth after trauma. Depending on the stage of root development, waiting for the spontaneous re-eruption, surgical or orthodontic repositioning are recommended (3, 6–8). Waiting for spontaneous re-eruption is indicated for immature permanent teeth, because of their high potential for eruption and pulp/periodontal repair (3, 5). For mature teeth, it is recommended to reposition the intruded tooth with light orthodontic force, allowing adequate bone remodeling and periodontal fiber re-insertion (5, 9).

This paper describes the treatment of a mature permanent central incisor in which spontaneous re-eruption after severe traumatic intrusion occurred.

Case report

A 10-year-old male patient was seen at the Pediatric Clinic of the University of São Paulo, Brazil, 3 days after traumatism, which led to almost complete intrusion of the right permanent central incisor and crow fracture of the right and the left permanent central incisor (Fig. 1). Clinically, extensive gingival inflammation and purulent exudate drainage was observed at the gingival sulcus of the right permanent central incisor. Radiographs confirmed a mature fully formed root (Fig. 2). Antiseptic procedures with 0.12% chlorhexidine gluconate were carried out, antibiotic therapy was started and maintained for 7 days, and the patient was followed up clinically and radiographically.

After 20 days, radiographic examination showed external inflammatory radicular resorption of both teeth. As access to the root canal of the right permanent central incisor was not possible because of the intrusion, palatal gingivectomy was performed. The root canals of both teeth were instrumented

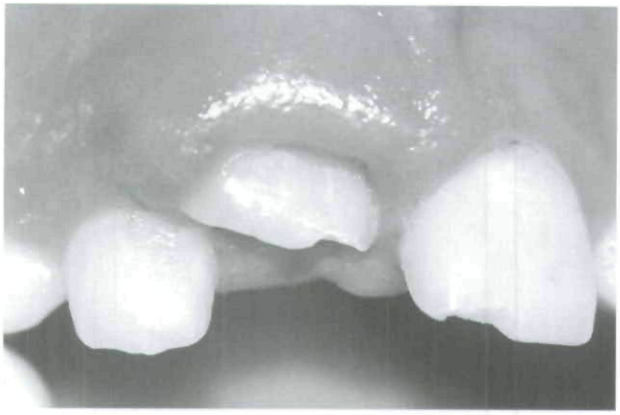

Fig. 1. Clinical appearance 3 days after traumatism, with almost complete intrusion of the right permanent central incisor.

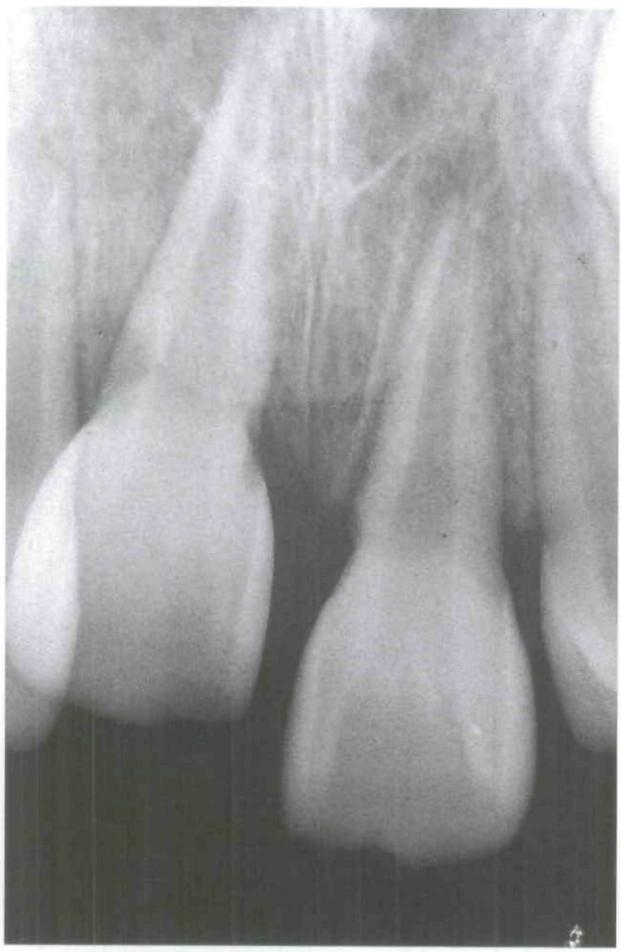

Fig. 2. Radiograph of the right permanent central incisor, with completely closed apices.

and filled with a calcium hydroxide paste (Calen, S.S. White Artigos Dentários Ltda, Rio de Janeiro, RJ, Brazil). The intracanal dressing was changed every 30 days for 4 months until control of resorption was confirmed radiographically. Fifteen days after biomechanical preparation and the placement of calcium hydroxide, the beginning of spontaneous re-eruption was observed (Fig. 3). After 6 months, the tooth returned spontaneously to its normal position. Both teeth were then filled with gutta-percha and a calcium hydroxide-based sealer (Sealapex, Sybron/Kerr, Indústria e Comércio Ltda, Guarulhos, SP, Brazil), restored with Z-100 composite resin(3M do Brazil Ltda, Sumaré, SP, Brazil) (Fig. 4), and followed up for 3 years (Fig. 5).

Fig. 3. Spontaneous re-eruption of the right permanent central incisor 15 days after endodontic treatment of the root canals was initiated with calcium hydroxide paste.

Discussion

The main concern in the treatment of dental luxation must be the periodontal repair (10). Thus, these intruded teeth should be let to re-erupt spontaneously rather than re-positioning them surgically or orthodontically (11). This process occurs between 2 and 4 months (5), and endodontic treatment of these teeth must be performed before this period to prevent external radicular inflammatory resorption (3), because pulp necrosis occurs in almost 100% of mature teeth (4).

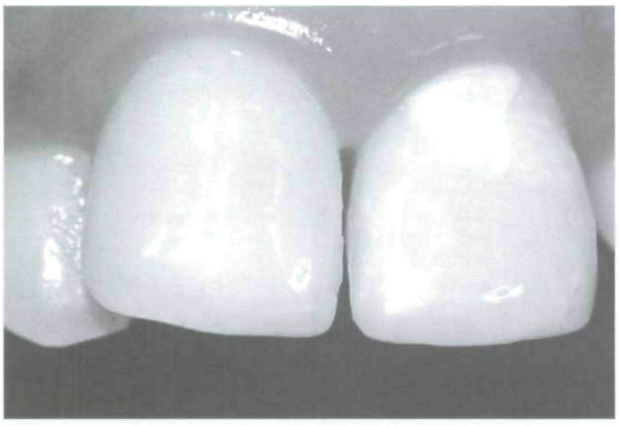

Fig. 4. Final restoration with composite resin.

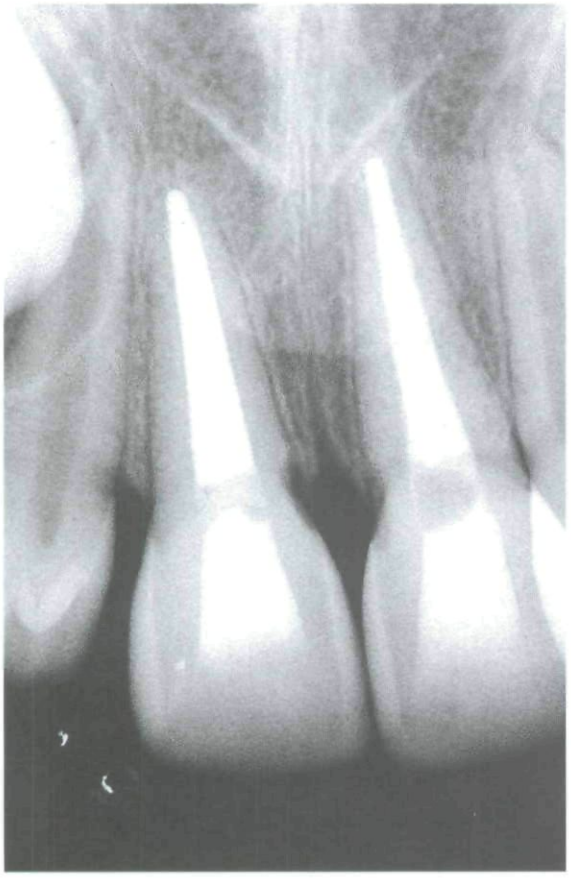

Fig. 5. Three years follow-up. Repair of mineralized tissues appears to have taken place.

The difficulty of root canal access in severely intruded teeth was reported by Shapira et al. (6) and Tronstad et al. (7). These authors recommended gingival surgery to allow access to the root canal, while the tooth is still intruded in the alveolar bond. Then, endodontic treatment can be performed while waiting for spontaneous re-eruption. These authors observed that after gingivectomy, biomechanical preparation, and root canal filling with a calcium hydroxide-based material, the teeth (mature or immature) showed a considerable increase in speed of re-eruption and returned to their normal position in 3–7 months. In the present study, re-eruption started 15 days after the gingivectomy, biomechanical preparation, and calcium hydroxide application. After 4 months, the tooth returned spontaneously to its normal position. A possible explanation for this is that when performing gingivectomy, the gingival tissue that is an obstacle for re-eruption is removed (6).

It is doubtful if endodontic therapy could also be considered a factor for spontaneous re-eruption in traumatically intruded teeth (12). Alves et al. (12) reported a case of an intruded mature permanent central incisor because of trauma and after 6 months found no re-eruption. Gingivectomy was performed, and 3 months later, partial re-eruption occurred. There was no need for endodontic therapy because the tooth responded to the sensitivity tests. Alves et al. (12) compared this case report with those of Shapira et al. (6), in which immature teeth re-erupted completely after gingivectomy and root canal treatment. In the present study, the mature tooth returned to its normal position after these procedures were carried out.

Shapira et al. (6) suggested that in cases in which gingivectomy can be performed to allow access to the pulp chamber, spontaneous re-eruption must be the chosen treatment for intruded permanent central incisors. According to Tronstad et al. (7), surgical exposure of the crown allows access to the root canals and endodontic treatment at any period, reducing the occurrence of complications.

We conclude that waiting for spontaneous re-eruption associated with gingivectomy and endodontic treatment is an alternative treatment for intrusive luxations in mature permanent teeth.

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