



Management of Dental Intrusion and Lateral Luxation: Case Report with 10 Years Follow-up

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ARTICLE INFO

Article Type: Case Report

Received: 06 Sep 2018

Revised: 10 Nov 2018

Accepted: 26 Nov 2018

Doi: 10.22037/iej.v14i1.22623

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ABSTRACT

This case report documents the clinical approach adopted for two maxillary incisors with intrusion and lateral luxation trauma. The proposed procedures involved reposition of both teeth, one of them with surgical extrusion and endodontic procedure for both, with 10 years of follow-up.

Keywords: Intrusion; Lateral Luxation; Multiple Trauma

Introduction

Epidemiologic studies indicate a high prevalence of traumatic dental injury (TDI) throughout the world. It shows that one fourth of all school children and almost one third of adults have suffered a permanent dentition trauma [1, 2]. The permanent incisors are the most traumatized teeth at home accidents or during sports practice [3]. Consequently, TDI has a strong negative effect on the social, emotional and functional aspects in adolescent life [4].

Intrusion is the most severe TDI and it occurs in 0.5% to 1.9% of all cases. It has the worst prognosis due to great injury of the periodontal ligament and pulp fibers [5]. Other type of TDI is the lateral luxation with damages on one of the root surfaces with similar consequences to intrusion [6].

When TDI takes place, the treatment has to be applied as soon as possible, preferably at the first hour, to reduce and prevent posterior complications related to the injuries [7]. The immediate treatment of teeth with complete root and intrusion and/or lateral luxation is repositioning and splint. After 2

weeks, the endodontic treatment is performed to prevent progressive inflammatory resorption [8]. This is the reason why a restrict control of the treatment is important for tooth retention [9].

The aim of this article is to introduce the report of a patient who suffered from both intrusion and lateral luxation and the outcome of a 10-year follow-up.

Case Report

A 10-year old patient was referred to the Endodontic Department in September of 2008, after 48 h post home accident. It had resulted in the intrusion of the upper right central incisor and lateral luxation of the upper right lateral incisor.

Patient's mother, who is a dentist, at the moment of injury, repositioned the upper right lateral incisor. At the first appointment, the x-ray analyses was done, showing complete root formation of both teeth, displacement of the incisal line of the upper right central incisor 4 mm above the incisal line and no alveolar fracture was noticed (Figure 1).



Figure 1. Periapical x-ray. Intrusion of tooth#11 and lateral luxation of tooth#12

The upper right central incisor was repositioned to its original position through surgical extrusion and flexibly splinted. Antibiotic was prescribed (Amoxicilin 500 mg pill every 8 h during 7 days).

Seven days after the immediate treatment, the root canals of both teeth were accessed, modeled and an intracanal dressing of calcium hydroxide (Calen, SS White, Rio de Janeiro, RJ, Brazil) was applied. After 30 days, the flexible splint was removed (Figure 2).

Preservation

In December of 2008, both teeth were endodontically treated and restored, using Tagger Hybrid Technique with AH-Plus (Dentsply, Petrópolis, RJ, Brazil) and a restoration of glass ionomer (GC Gold Label Glass Ionomer 2 LC, Tokyo, TK, Japan) was applied in the coronal access (Figure 3). During the first two years, the clinical and radiographical controls were made every six months and annually after that. No signs or symptoms of failure were observed.

In March 2018, no clinical symptoms of failure were observed, but in radiography some radiolucency was observed in the periapical region of both teeth. A cone-beam computed tomography (CBCT) (SCANORA[®]3D-, Soredex, Finland) was done, observing radiolucency on the medium and apical thirds of the palatal walls of both roots. These images suggest substitutive resorption.

Discussion

Three factors affect prognosis of intruded teeth, according to Andreasen *et al.* [5]: stage of root development, age of the patient and degree of intrusion. The teeth with TDI had complete root formation, the patient age was 10 and the degree of intrusion of the upper right central incisor was over 3, 0 mm.



Figure 2. After splint removal

The treatment plan was selected according to the stage of root development and degree of intrusion. In the lateral luxation and intrusion of permanent teeth with complete root formation, the most common consequences are pulp necrosis, progressive and substitutive inflammatory resorption. It is possible to find loss of alveolar bone, although it was the only consequence not observed in the herein teeth [6, 7].

The International Association of Dental Traumatology (IADT) guidelines of 2007 [10] indicated that teeth with complete formation should be surgically repositioned. A systematic review by Al-Khalifa and Al Azemi [11] pointed that there was not enough evidence to compare the orthodontic and surgical outcomes. Tsilingaridis *et al.* [12] suggested that the immediate surgical extrusion facilitates the endodontic access, lowers the costs and time of treatment, and enhances the patient aesthetics translating into his/her wellness.

In the present case report, after the surgical extrusion, the preventive endodontic treatment using a dressing of calcium hydroxide was performed accordingly to IADT's guidelines of 2007 [10], for prevention of progressive inflammatory resorption [10, 12, 13].

The worst complication expected after TDI is substitutive resorption as there is no treatment for it [12]. These patient's teeth had no clinical and radiographic signs or symptoms at the last control, 10 years later. In the last panoramic image, radiolucency was observed in the periapical area of the upper seen in the two-dimensional image, a CBCT for a complete root evaluation was suggested, where substitutive resorptions in both teeth in the palatal root region was observed. Nevertheless, in this case, the patient didn't suffer the additional burden of upper anterior tooth loss. It would have caused profound trauma to her self-esteem [4].

Other issues, different from the technical aspects, may influence the positive outcome of the case reported herein as pointed out by Roskamp *et al.* [14]. The intrinsic genetic

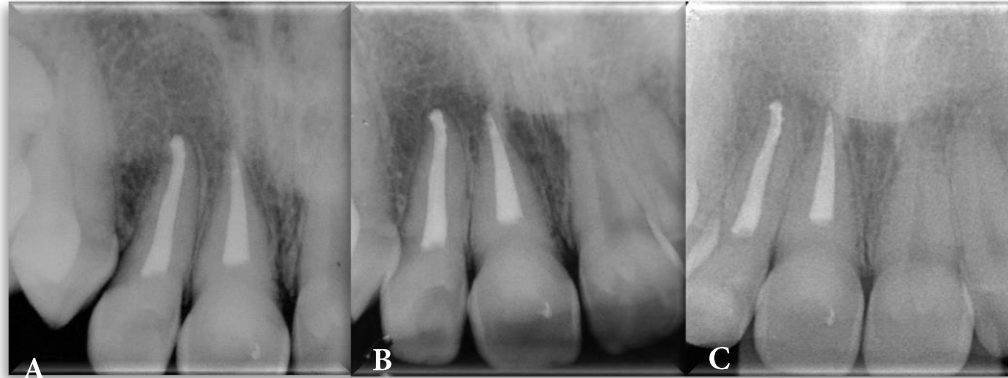


Figure 3. Endodontic fill. A) X-ray at 12/2008; B) Control X-ray at 09/2013; C) Control X-ray at 06/03/2018

individual characteristics may contribute to specific immune-inflammatory responses; this could help in explaining the reasons for such long period of retention of these teeth while others may be lost more rapidly.

Conclusion

Each TDI request an assertive and opportune particular treatment. In this particular case, the surgical extrusion and the preventive endodontic treatment using a dressing of calcium hydroxide resulted in a positive alternative. This reported case could be considered a success because both teeth have been preserved during 10 years without any symptoms, with perfect retention and function. It is important to consider the emotionally critic aspect of life from 10 to 20 years old, period in which the patient went through puberty.

Conflict of Interest: 'None declared'.

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Please cite this paper as: Alencar MN, Lopez ABT, Silva Neto UX, Kowalczyk A, Carneiro E, Westphalen VPD. Management of Dental Intrusion and Lateral Luxation: Case Report with 10 Years Follow-up. *Iran Endod J.* 2019;14(1): 93-5. Doi: 10.22037/iej.v14i1.22623.