

Restorative treatment on permanent teeth with enamel hypoplasia and crown dilaceration caused by trauma to their primary predecessors

Tratamento restaurador em dentes permanentes com hipoplasia do esmalte e dilaceração da coroa causada por trauma nos seus antecessores decíduos

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INTRODUCTION

Orofacial trauma is a serious dental and general health problem that may have medical, esthetic and psychological consequences for children and their parents¹.

Owing to their exposed position in the dental arch, the upper central incisors are the most commonly teeth affected by traumatic injury in primary and permanent dentition. With a statistical gap in incidence, they are followed by traumatic injuries of the upper and lower lateral incisors and upper canines^{2,3}.

Squeals in the permanent dentition after trauma to primary dentition are usually related to intrusive injury^{4,5}. The type and severity of traumatic injuries are related to predisposing factors, such as child's age, proximity of primary teeth and permanent germ, stage of root formation or resorption of primary teeth, permanent teeth root formation, root inclination of primary teeth when trauma occurred, treatment conduct and deciduous tooth repair, among others⁶⁻⁸.

Primary tooth intrusion may result in a

ABSTRACT

This report describes a typical case in which injury to the primary central incisors resulted in morphological changes in the germ of permanent successors. The permanent incisors erupted with enamel hypoplasia/dilaceration, which were treated seven years after the trauma, with a light-cured composite resin restoration. This procedure reestablished the function, the aesthetic appearance and the self-esteem of this patient.

KEYWORDS: Dental enamel hypoplasia; Dental trauma; Deciduous tooth.

RESUMO

Este artigo descreve um típico caso em que a lesão aos incisivos centrais decíduos resultou em mudanças morfológicas no germe dos sucessores permanentes. Os incisivos permanentes erupcionaram com hipoplasia /dilaceração no esmalte, estes foram tratados sete anos após o trauma com restaurações em resina composta fotoativada. Este procedimento restabeleceu a função, a aparência estética e auto-estima do paciente.

PALAVRAS-CHAVE: Hipoplasia do esmalte; Trauma dentário; Dente decíduo.

variety of pathologic alterations to permanent teeth, including hypoplasia, crown dilaceration, root angulation or dilaceration, partial or complete arrest of root formation, sequestration of the permanent tooth germ, and disturbances in eruption. Of these, hypoplasia (including enamel discoloration and/or enamel defects) and crown dilaceration is the most common sequel⁹.

The present study relates a clinical case of an aesthetic treatment in permanent teeth with localized crown malformation, enamel hypoplasia/dilaceration as a result of traumatic injury in the primary central incisors.

CASE REPORT

A 8 year and 6 month old male patient presented to the Ribeirão Preto School of Dentistry complaining about the upper incisors aesthetics, which were altered in shape and color.

Patient's dental history was reported by his father and revealed an intrusive luxation of his primary incisors teeth as a result of a fall at the age of 18 months. The father doesn't know about the importance of

clinical and radiographic monitoring until complete eruption of permanent teeth.

Following clinical examination a diagnosis was made of enamel hypoplasia in both central incisors, presenting yellow-brownish discolorations and crown dilaceration in the incisal third (Figs.1 and 2). Radiographic examination confirmed an immature apex, no root fracture or dilacerations and no periapical pathological condition were observed (Fig. 3).



Figures 1 and 2. Enamel hypoplasia and crown dilaceration in the incisal third. Initial appearance.



Figure 3. Radiographic examination confirmed an immature apex and no root alterations.

The planning treatment was aesthetics restorations with composite resin without wear substrate (Fig.4). After absolute isolation with rubber dam, the teeth were clean and its realized acid etching (37% phosphoric acid) in all affected surface in enamel near of lesion. After washing and removed the water excess it was applied 2 layers of adhesive system (Single bond – 3M ESPE Dental Products, St Paul, MN, USA) and photopolimerized the last layer for 15 seconds. The first layer was employed opaque resin (Opallis Opaque Pearl - FGM Produtos Odontológicos, Joinville, SC, Brazil) (Fig 5). In sequence, a microhybrid composite was inserted in increments in the angles and in the proximal surfaces (Opallis - FGM Produtos Odontológicos, Joinville, SC, Brazil) using two different shades (B1 and B2) (Fig 6) and photopolimerized each layer for 30 seconds. Occlusal and excursive movements were adjustment immediately after restoration using high-speed multiblade drills. After 48 hours, the finishing was made with abrasives disks (Sof-Lex™ Contouring and Polishing Discs – 3M ESPE Dental Products, St Paul, MN, USA) and polished with diamond paste (KG Sorensen, São Paulo, SP, Brazil). (Fig 7 and 8).

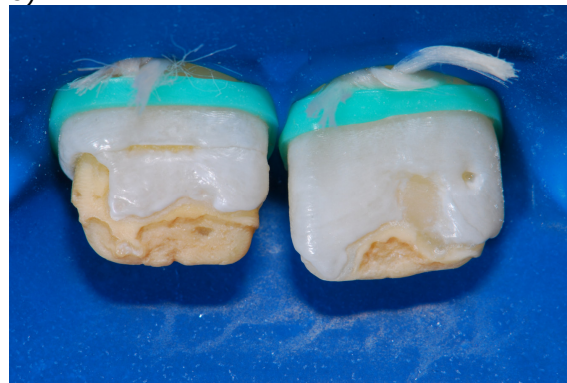


Figure 4. After rubber dam without wear substrate.

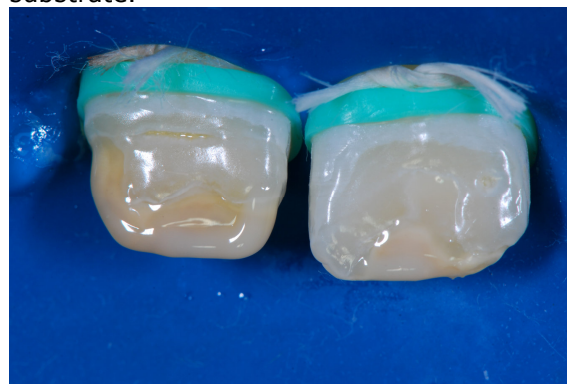


Figure 5. An opaque resin was used to mask color alteration and hypoplasia lesion.



Figure 6. A microhybrid composite was inserted in increments in the angles and in the proximal surfaces to reconstruction of crown dilacerations.



Figures 7 and 8. After Occlusal adjustment, Contouring and Polishing. Final appearance.

DISCUSSION

Squeals for permanent dentition after a trauma to primary dentition are usually related to intrusive injuries^{4,5}. The impact by a force in an axial direction often results in displacement of the tooth within the socket. Intrusive injury to primary dentition often results in anomalous development of the permanent teeth, with a frequency of between 18 and 69%^{4,9}. Many squeal can be found in the coronal region, such as structural alterations associated with enamel hypoplasia, crown dilaceration and white,

yellow/brown discoloration¹⁰, such was observed in the present clinical case.

Developmental disturbances of permanent teeth involving the crown have been reported to occur more frequently than those involving the roots or eruption patterns^{10,11}. This finding may be attributed to the close relationship between the primary tooth root and the permanent tooth crown and the fact that the majority of traumatic injuries occur between ages 1 and 4, during the developmental stage of the permanent crown¹⁰⁻¹². In the present case, shape and color alterations were observed in the crown only and the trauma occurred when the patient was 18 months, in this time the germ of the permanent successor was in the initial stages of odontogenesis. Probably the trauma promoted ameloblasts destruction in the active enamel epithelium⁹ and occurred crown dilacerations and enamel hypoplasia.

Assunção et al.¹³, evaluated the effect of luxation injuries to primary teeth on the successor permanent teeth in children assisted at an emergency center. They examined 623 permanent teeth and observed that hypoplasia was the disturbance most detected through radiographic analysis, with 86% of the cases followed by crown dilacerations with 9% of instances. Only one case of root malformation was observed in 15% of the examined teeth, the root was in early development stages at the time of injury.

Depending on the degree of severity of these anomalies, various protocols of treatment may be practiced, including whitening, microabrasion, aesthetic conservative restorations and prosthetic rehabilitation. In the present case, restoration of the incisal and third middle of central incisors was necessary. An opaque resin was used to mask color alteration and hypoplasia lesion. Composite resin was also used to the reconstruction of crown dilacerations. This treatment was possible due to precise diagnostic process and an effective and efficient treatment which reestablished the function, aesthetic appearance and the self-esteem of patient¹⁴.

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