

Developmental disturbance of permanent teeth following trauma to primary dentition in young athletic children

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Abstract

Orofacial trauma is a serious orodental and general health problem that may have medical, esthetic and psychological consequences for young athletic children and their parents. When the root of the primary tooth is close to the unerupted permanent tooth, primary tooth trauma may result in developmental disturbances in the crown of the unerupted permanent tooth. This study presents a case report in which injury to the primary dentition resulted in morphological changes in the germ of the permanent successor. The permanent incisor erupted with an enamel hypoplasia and was treated with light-cured composite resin restoration. This procedure re-established the function, the esthetic appearance and self-esteem of the patient.

Keywords: Enamel hypoplasia, Dental trauma

Introduction

Orofacial trauma is a serious orodental and general health problem that may have medical, esthetic and psychological consequences for young athletic children and their parents. Sequelae in the permanent dentition after trauma to primary dentition are usually related to intrusive injury; either the coronal or root region or the entire permanent tooth germ may be affected (Autun et al, 2009). An intrusive injury occurs when the impact of an axial force displaces the tooth within the socket. 18% to 69% of intrusive injuries to the primary dentition are caused by the anomalous development of the permanent teeth (Flores, 2002). Such alterations in dental pathology can include white or yellow brown discoloration, or circular enamel hypoplasia; crown dilaceration; root duplication; vestibular or lateral root angulation or dilaceration; partial or complete arrest of root formation; sequestration of the permanent tooth germ; and disturbed eruption. Of these

enamel hypoplasia and dilacerations are the most common sequelae (Andreasen & Andreasen, 1994; Andrade et al, 2007).

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

Case Report

A 12 year old young athletic basketball player reported to the O.P.D Clinics of Dr Harvansh Singh Judge Institute of Dental Sciences, Panjab University Chandigarh with a chief complaint of unesthetic lower anterior teeth which were altered in shape and color. Following clinical examination a diagnosis was made of enamel hypoplasia in lower left central incisor which presented with yellowish brown discoloration and crown dilaceration in the incisal one third (Figure 1). His medical history revealed that at 44 months

of age he had injured his primary mandibular central incisor while playing in the ground.



Figure 1: Intraoral view shows crown malformation and enamel hypoplasia of the permanent mandibular left central incisor

The planning treatment was aesthetic restorations with composite resin. After isolation, the teeth were cleaned and acid etching was done with 37% phosphoric acid on the affected surface of enamel near the lesion. After 20 sec the etchant was washed with water and dried. Then bonding agent was applied with a brush and cured for 10 sec. In sequence composite was applied in increments and each layer was cured for 30 sec. The composite was inserted in increments in the angles and in the proximal surfaces for the reconstruction of the crown dilaceration. The finishing was made with composite polishing burs (Figure 2).



Figure 2: Intraoral view after restoration of the permanent mandibular left central incisor with a light-cured composite resin.

Discussion

Developmental disturbances of the permanent teeth involving crown have been reported to occur more frequently than those involving the roots and eruption patterns. 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 the traumatic injuries occur during 1 and 4 years, during the developmental stage of permanent crown. In the present case, shape and color alterations were observed in the crown only and the trauma occurred when the child was 4 years old, in which the germ of the permanent successor was in the process of odontogenesis. Probably the trauma promoted ameloblasts destruction in the active enamel epithelium and caused crown dilacerations and enamel hypoplasia (Von Arx, 1993). Causes of primary anterior tooth trauma are falls when infants are in the stage of insufficient motor controls, sports and other traffic accidents.

Depending on the degree of severity of these anomalies, various protocols of treatments may be practiced including whitening, microabrasion, aesthetic conservative restorations, and prosthetic rehabilitation.

In the present case, restoration of the incisal and middle one third of central incisor was necessary. The composite restoration was done for reconstruction of crown dilaceration.

Conclusions

The case report here stresses the importance of traumatic injuries to primary dentition because of their effect

on permanent tooth germ. Injured teeth should be followed up periodically for possible periapical infection and pulp necrosis. In addition special care may be necessary in the restoration of the injured teeth because their reaction pattern may be different from those of non traumatised teeth.

References

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