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Treatment of sequelae in permanent dentition after severe trauma in primary dentition

CASE REPORT

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Abstract – A case with a dilacerated upper right central and hypoplastic upper right lateral incisors covered with gingiva of a 10-year-old female, with a history of trauma at the age of 18 months, is presented. After clinical and radiographical evaluations, esthetic problem was solved with gingivectomy followed by composite restorations of the involved teeth.

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Orofacial traumas cause severe damage to both orodental and general health. In addition to medical and esthetic problems, psychological trauma of children and parents is a vital concern (1, 2).

Developmental disturbances in permanent dentition mostly derive from the intrusive injuries in primary dentition. This could be explained by the close relation of the apex of the primary teeth to their successors. Upper incisors are most frequently subjected to trauma; the highest incidence is observed between the ages of 1–3 years (1, 3, 4).

Trauma to primary dentition may cause delay in eruption, local hypoplasia, malformations and dilacerations in permanent teeth. From a clinical aspect, malformation may vary from local areas of opaque to discoloration with extensive hypoplasia or crown/root dilacerations (5–7). Root dilaceration is more common than dilaceration of the crown. Crown dilaceration of a permanent tooth accounts for 3% of traumatic injuries to developing teeth. It usually involves the maxillary incisors (8). Treatment of a rare case of crown dilaceration of the maxillary permanent central incisor and hypoplasia of the maxillary permanent lateral incisor is presented.

Clinical case

A 10-year-old girl with no systemic problem was referred to the pediatric dentistry clinic with esthetic problems in her permanent upper right central and lateral incisors. According to the history of the patient, she had had a trauma to her primary upper right central and lateral incisors when she was 18 months old. The trauma had occurred as a result of a fall and emergency treatment involving extraction of the traumatized teeth followed by suture of the gingiva was carried out at a hospital.

Clinical evaluation revealed that there was a coronal dilaceration in the permanent right upper central incisor and hypoplasia in the permanent right lateral incisor where the tooth was covered by gingiva (Figs 1 and 2). Ortopantomogram and occlusal radiographs were taken. Radiographic findings revealed no pathology of the periapical area and the teeth were vital (Figs 3 and 4). The level of the gingival margin of the dilacerated tooth was different from that of a normal incisor. Recontouring of the gingiva by periodontal surgery was planned.

Prior to the surgery, the patient was given oral hygiene instructions and full-mouth periodontal cleaning. Temporary composite restoration of the dilacerated tooth was performed. Surgical treatment was performed 2 weeks after the completion of the non-surgical phase.

The teeth were anesthetized and the depths of pathologic pockets in the surgery area were measured with a periodontal probe. Pocket elimination and recontouring of the gingiva around the involved teeth were performed by a gingivectomy procedure according to Goldman (9) (Fig. 5). The primary incision at a level apical to the bottom of the pocket was terminated and angulated to give the surface a distinct bevel. The secondary incision was performed through the interdental area and detached gingiva was removed with a scaler. After probing to detect residual pockets, periodontal dressing was applied close to the buccal and palatal wound surfaces as well as to interproximal spaces. The dressing

Fig. 1. Intraoral view of upper right central and lateral incisors.

Fig. 2. Dilacerated upper right central incisor and hypoplasic upper right lateral incisor covered with gingiva.

Fig. 3. Ortopantomograph.

was removed 7 days later and after gingival healing final restorations were performed by using a micromotor and a handpiece with diamond and steel burs. A saliva suction device and cotton wool rolls were used for

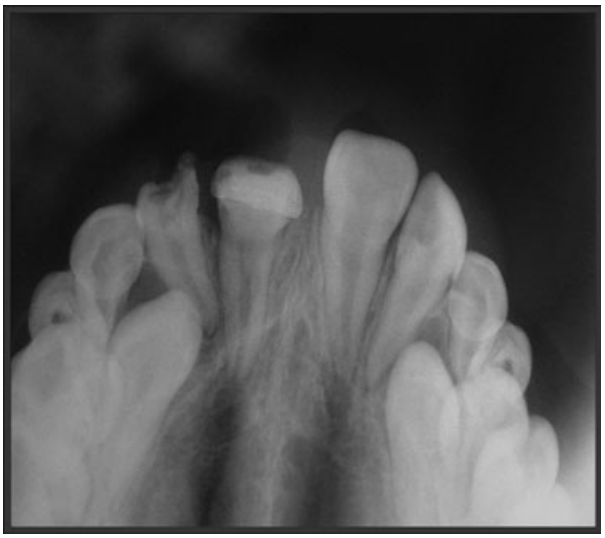

Fig. 4. Occlual radiograph.

Fig. 5. Gingivectomy procedure on upper right central and lateral incisors.

isolation. Teeth were etched with 37% phosphoric acid for 15 s, cleaned with water and air dried. After the application of dentin bonding system (Scothbond Multipurpose; 3M ESPE, Seefeld, Germany) final restorations were completed with composite resin (Filtek Z 250; 3M ESPE) in approximately 2-mm-thick layers. Each increment was light cured for 40 s using a halogen-curing light (Digital Optilight, Gnatus, Brazil). The restorations were then polished using extra-fine diamond finishing burs and alumina-oxide-containing disks (Fig. 6).

Discussion

It has been stated that children are more likely to encounter trauma between 18 and 30 months as they start walking. Falls are the most frequent traumas in both genders. Intrusions and avulsions are observed as the most severe injuries involving incisors (10, 11) An alteration in the secretory phase of the ameloblasts of the

Fig. 6. Composite resin restorations of upper right central and lateral incisors.

underlying permanent tooth germs may result in enamel hypoplasia whereas dilacerations of the crown or the root and discoloration are the other alterations observed in permanent dentition (6, 11). Furthermore, odontomas or malformations may be severe cases that require complex treatment approaches (6).

Formation of the germs of the permanent upper central and lateral incisors takes place at 20 weeks of gestation and calcification begins at the age of 3–4 months and 10–12 months respectively (12). Hence, in our case, following the trauma, the dental follicules may have been affected resulting in malformed permanent teeth to erupt as the trauma had occurred at the age of 18 months.

Pain management and prevention of permanent teeth germs must be our main goal in the treatment strategy of the traumatized primary teeth. Due to behavior management problems or a severe trauma with a soft-tissue bleeding, treatment of the traumatized primary teeth may be overlooked or treatment may be limited to extraction (13, 14). However, in the overall treatment, primary teeth must be followed up clinically and radiographically in the long term, so that sequelae of the permanent teeth could be treated as well.

Recently, improvements in adhesive dentistry provided successful results by conservative, one-step restorations by which less damage is given to healthy tooth tissues. Composite restorative materials are both esthetic and long lasting. Composite resin restorations can also be immediate solutions for improving the esthetic quality of the restored teeth (15).

Developmental disturbances occurring in permanent dentition after a trauma in primary dentition can cause esthetic and functional problems. In our case, a conservative approach with a minor surgical treatment gave very satisfactory results. Dentists must encourage conservative treatments of such cases rather than extraction or prosthetic treatment approach for more functional and esthetic results.

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