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Case Report

Treatment of avulsed teeth with Emdogain® – a case report

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Abstract – The present case report describes the reimplantation of avulsed teeth with the treatment of Emdogain®. Case was avulsed right maxillary permanent central and lateral incisor in a 9-year-old girl suffering from a traumatic injury. After pretreatment of avulsed teeth, Emdogain® was applied to the root surface and into the extraction socket with subsequent replantation of the tooth. Evaluation parameters included horizontal and vertical percussion sound and periapical radiographs. At 1–2–6–12-month follow-up period, the clinical and radiographic appearance of the teeth showed resolution of mobility and no signs of replacement resorbption.

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Key words: Emdogain®; avulsed teeth; reimplantation

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Traumatic injuries to newly erupted permanent anterior teeth are common during childhood (1). Teeth that are replanted immediately after avulsion usually show excellent healing and they have been found to have a good prognosis (2). With increasing extra-alveolar time in an unsuitable environment such as air-drying, or with an improper wet medium prior to replantation, the prognosis becomes poor. When a tooth is accidentally avulsed, a number of storage media have been investigated as to their ability to maintain the viability of the periodontal ligament cells and thus to permit longer extra-alveolar periods prior to replantation. Examples of such media are saliva, milk, physiological saline and tissue culture media (3–5). Recently, an enamel matrix derivative (EMD) has been found to improve periodontal regenaration after replantation (6–7). The purpose of the present paper to evaluate the treatment of a case of avulsed teeth treated with EMD.

Case report

The patient, a 9-year-old girl suffering from dental injury because of tumbling over a stone at the schoolyard visited Department of Pediatric Dentistry, Marmara University Dental School from a village 2-h destination from downtown. Parents explained that her teacher tried to keep the traumatized teeth in wet condition (mouth). Storage condition was the oral cavity by replantation of the avulsed permanent central incisor in misdirection (Fig. 1). Clinical and radiographic examination

Fig. 1. Permanent central incisor. Replanted in the incorrect position.

indicated the loss of right maxillary permanent central and lateral incisors, primary canine, first and second molars. Permanent lateral incisor and the primary avulsed teeth (first molar was absent) were dry kept by the parents (Figs 2 and 3). Central incisor (extracted and reimplanted later) and avulsed permanent lateral incisor (reimplated later) were diagnosed immediately regarding their periodontal ligament and apex. Both teeth had open apices and periodontal ligament seemed intact. Teeth and the sockets were treated with Emdogain® (Biora AB, Malmö, Sweden) according to the manufacturer's instructions. Two minutes prior to the re-implantation the sockets and roots were washed with 5 ml of normal saline and then sockets and roots were coated with Emdogain® gel, which squeezed through a 1 mm diameter blunt needle. Teeth were reimplanted into the sockets with the help of finger pressure (Figs 4 and 5). They were splinted with a semi rigid arch wire for the following 10 days (Fig. 6). Patient and her parents were

Fig. 2. Avulsed primary teeth.

Fig. 3. Avulsed lateral incisor that was dry for 2 h.

Fig. 4. Treatment with Emdogain®.

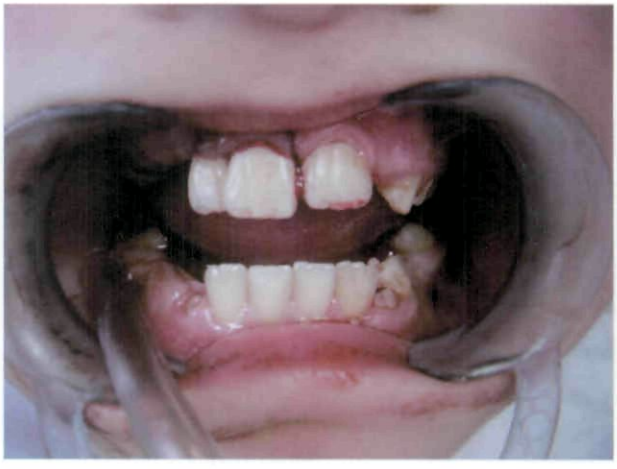

Fig. 5. Teeth reimplanted.

Fig. 6. Splint in place.

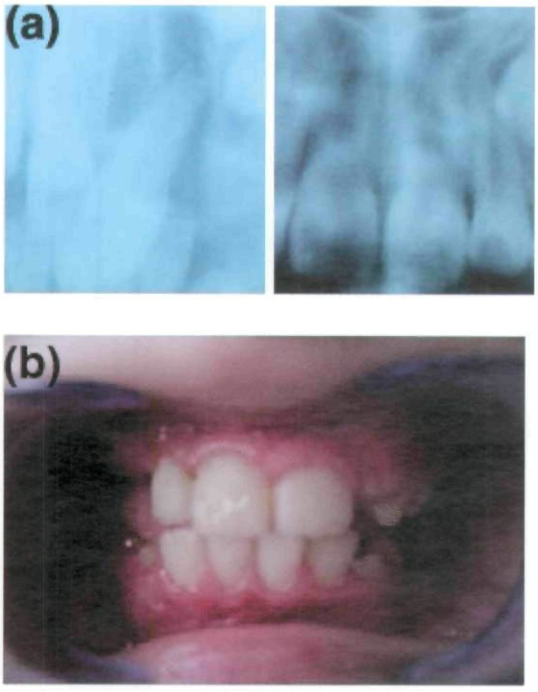

Fig. 7. (a) Beginning and 12 months follow-up radiographs. No signs of replacement resorption or apical periodontitis are present. (b) Clinical view.

instructed about the bite plane usage, oral hygine and quitting acidic beverage consumption. Pulp vascularization is thought to be effective on the reimplanted teeth because of the open apices. During the following observation periods of 1, 2, 6 and 12 months teeth neither exhibit endodontic lesions nor inflammatory root resorption (Fig. 7).

Discussion

The most preferable management for the avulsed tooth is replantation within 20–30 min after the injury or keeping in an appropriate storage medium until the patient can be seen by a dentist for replantation (8, 9) However, in the present case, the injury occurred before 5 h. The avulsed central incisor was kept in the oral cavity as the teacher was aware of dental trauma instructions; however, she replanted the central incisor in the lateral socket. The lateral incisor was kept in a dry condition. The statement 'increased extraoral time results in a decreased incidence of healed periodontium' is questionable. Iqbal and Bamaas stated that the application of Emdogain® on root surfaces of exarticulated teeth may promote the healing of damaged root surfaces with periodontal ligament rather than bone (6). No root canal treatment was carried out with regard to the age and the anatomy of the permanent teeth as there is pulp vascularization. As the environment was suspicious regarding sepsis, EMD may have had a positive effect on the composition of bacterial species in the post-surgical periodontal wound (10). We used EMD to gain periodontal healing; however, at the end of the 12-month follow up its outcome appears to be promising.

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