

A case report on delayed replantation of avulsed permanent anterior tooth

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Abstract

Dental avulsion is one of the most serious dental injuries, frequently associated with anterior teeth. Immediate replantation is the treatment choice which cannot be carried out in every situation. This case report presents one case of delayed replantation of avulsed maxillary central incisor after an extended dry extra-alveolar period. A 30-year-old female patient reported with avulsed maxillary right central incisor due to RTA. Treatment was carried out according to IADT guidelines. After repositioned, the tooth was stabilized for 4 weeks and prophylactic antibiotics was prescribed. During the follow-up periods the replanted tooth remained in a stable, functional position but revealed resorption radiographically.

Keywords: avulsion, replantation, maxillary central incisor

Introduction

Avulsion refers to the complete displacement of a tooth from its socket, representing about 0.5 percent to 3.0% of all severe injuries (1). Tooth avulsion has a variety of

causes depending on the type of dentition. Most commonly occurs in the maxilla in both permanent and primary dentition, with the maxillary central incisors being the most commonly affected teeth (2). Although it usually involves a single tooth, tooth-supporting tissue injuries, lip injuries, and multiple avulsions have also been documented (3).

Immediate reimplantation into the socket is the best treatment for permanent tooth avulsion. The viability of periodontal ligament cells is the most significant component in allowing reattachment after replantation. Other considerations include the patient's overall health, root maturity, duration the tooth has been out of its socket, and storage media. The storage medium and the amount of extra-oral time have the greatest impact on the condition of PDL cells (4). The probability of root surface resorption increases as the extra-oral time lengthens. It is unlikely that the periodontal ligament will heal because it will be necrotic. Pulp necrosis, infection-related (inflammatory) resorption, and

ankylosis-related replacement resorption are all possible consequences of replantation (5).

The aim of this case report was to provide a case of avulsed maxillary central incisor being replanted after an extended dry extra-alveolar period.

Case report

A thirty-year-old female patient reported to the Department of Conservative dentistry and endodontics, after a road traffic accident, which resulted in dental trauma. The trauma happened one day before referral. Following the injury, the avulsed tooth was kept dry in a plastic container. There was no history of loss of consciousness, vomiting, ENT bleed or seizures. Extra oral examination revealed abrasive wounds on upper lip. Intra oral examination revealed permanent dentition and avulsion of maxillary right central incisor and Ellis class 3 fracture of upper left central incisor (Fig1). The case under study was in good general health status.

The avulsed teeth had intact structure with dry periodontal tissue on the root surfaces and closed apical foramina. Tooth was cleaned with gauze soaked in saline and left in saline while examining the patient (Fig 2). To complete the examination, periapical radiographic examinations were performed, the findings of which revealed fracture line on the tooth socket (Fig 3). Patient was informed about the possible risks of delayed replantation. Following the application of local anesthetics (i.e., lidocaine 2%, 1.5 mL), the alveolar sockets were carefully debrided with physiologic saline solution to remove any coagulum. In the next stage, the tooth was replanted and fixed through the application of a flexible splint (Rib bond) and acid-etch composite resin technique for a period of four weeks (Fig 4,5). In order to reaffirm the correct repositioning of the teeth, another periapical radiograph was performed (fig 5).

Root canal treatment was initiated the same day on both central incisors. The access cavity was prepared, and the root canal debridement was carried out for teeth intra-orally with hand K-files (Dentsply, Maillefer, Ballaigues, Switzerland). In addition, 5.5% sodium hypochlorite and normal saline solution were used as root canal irrigants. The canals were dried with sterile paper point. The canals of both teeth were filled using calcium hydroxide. Systemic antibiotics were prescribed for one week and oral hygiene instructions were given to the patient. Accordingly, she was recommended to use chlorhexidine (0.12%) mouthwash twice a day for one week and follow a soft food diet for up to two weeks. Root canal treatment was completed within 1 month. The splint was removed after four weeks. Maxillary left central incisor was restored with post and core followed by exam crown (fig 6). Root resorption was noticed on replanted teeth during follow up period (fig 7).

Discussion

Avulsion is one of the most serious dental injuries which requires appropriate management for its best outcome. The ideal treatment for an avulsed tooth is immediate replantation (6). However, it cannot always be carried out immediately. If it cannot be carried out, it should be stored in appropriate storage media. The choice of treatment depends upon the maturity of root and extraoral dry time. In this case, the avulsed tooth was kept in a plastic container for 19 hours.

According to the International Association of Dental Traumatology (IADT) guidelines, delayed replantation has a poor long-term prognosis. The PDL becomes necrotic and not expected to regenerate (7). Even though in this case, tooth has a low probability of survival, treatment is attempted to prevent tooth loss and maintain aesthetic and functional properties. Patient was informed about the possible consequences and Other treatment

options might have included prosthetic replacement or auto transplantation (8). Replantation was done following IADT guidelines.

Splinting was done to maintain the replanted teeth in correct position, to provide patient comfort and improve function. Passive and flexible splints for 2 weeks is needed for stabilization. In this case splinting done with a flexible splint for a period of 4 weeks as there is associated alveolar fractures. As the tooth was a permanent one, RCT was initiated within 2 weeks, calcium hydroxide medicament was placed for 1 month and treatment completed.

Antibiotics was advised to prevent infection related reactions and inflammatory root resorption. Replanted teeth must be monitored carefully and clinical/ radiographical findings should be recorded. During follow up, resorption was noted in this case but clinically the tooth was asymptomatic.

Conclusion

Even though all the replanted teeth does not have long term survival, it should always be carried out making the patient aware about the consequences and outcome of such treatment.

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Legend Figures



Figure 1:



Figure 4:



Figure 2:



Figure 5:



Figure 3:



Figure 6:



Figure 7:



Figure 8: