CASE REPORT

Decision making in delayed management of avulsion: A case report with 8 years follow-up

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Abstract

Avulsion is one of the most common traumatic injuries in school going children. Reimplantation is a successful treatment modality for the same. Although the procedure is most of the times delayed, it has shown to provide good aesthetics, functionality, and psychological benefits. The following case presented here is of an avulsed tooth with an 8-year follow-up. The case emphasizes the importance of each step in increasing the longevity of the implanted tooth.

Keywords: Avulsion, ankylosis, reimplantation

Introduction

Preserving the avulsed tooth and the surrounding periodontal structures is the main objective of treatment. Furthermore, treating the avulsed tooth gives a psychological benefit to the patients. Anterior teeth are very important for the appearance of an individual, so treating the avulsed teeth gives a psychological advantage to the patient. Reimplantation of the avulsed tooth gives us time for allow healing of the periodontium, allows further growth of the alveolar bone, and makes the socket eligible for any implant prosthesis in the future. There are various guidelines how to re-implant an avulsed tooth and what to expect. However, reimplantation is always recommended if it can be done.¹

Ankylosis followed by root resorption is the most common sequelae of reimplanted tooth. Usually, ankylosis is frequently seen to be associated with prolonged dry time of tooth, improper extraoral storage of tooth, and infections related to the tooth socket. Ankylosis results in infra-occlusion of the affected tooth. This is due to a direct union between alveolar bone with root cementum, along with loss of periodontal ligament (PDL) space.²

The aim of this article is to present a case of avulsed maxillary permanent teeth with prolonged extraoral dry time with a conservative treatment approach and a follow-up of 8 years.

Case Report

An 8-year-old female had reported with the right upper central incisor (tooth 11) avulsed during play at school [Figure 1]. The patient reported the next day to the department of Pediatric Dentistry. Thus, the extra-alveolar time was more than 24 h when they reported. Medical and dental history of the patient were irrelevant. Clinical dental examination revealed the presence of an empty socket. The avulsed tooth was a mature permanent incisor with closed apex without a crown fracture and without pulp exposure. Radiographic examination showed an empty upper incisor socket and no sign of fracture. The treatment was started quickly. The tooth was placed in normal water and inspection of alveolar socket was done and clot cleared. The avulsed tooth was kept in acidulated phosphate fluoride (APF) gel for 10 min and washed. Then, the avulsed tooth was treated endodontically extraorally. It was replanted with slight digital pressure with position verified radiographically. Splinting was done using an orthodontic round wire. An orthodontic wire splint had been bonded on the adjacent teeth first and finally on the tooth 11. There was slight supraocclusion with 21 [Figures 2 and 3]. Antibiotics, anti-inflammatory, and a mouth rinse were prescribed and home care instructions explained to the patient (soft diet for up to 2 weeks, soft toothbrush use). We recommended anti-tetanus vaccine for the patient. Ten days...
later, we received the patient again, the gingival healing was good and the tooth consolidation satisfactory. The replanted tooth monitoring was done clinically and radiographically each 3 months for 1 year. Thereafter, the patient reported 7 years later. We made a follow-up radiograph for subsequent 2 years. Furthermore, the implanted tooth was seen to be infra-occluded. The tooth is still firm and the case under follow-up.

Discussion

The decision to re-implant the avulsed tooth is an obvious one. Even though the prognosis of avulsed teeth is poor, replantation is the best option.

The treatment is usually complex with uncertain prognosis. Although there are multiple solutions available to treat this kind of problem, ideally, treatment is usually the most conservative option, where individual aesthetics and functional requirements are met.\(^3\)

The final decision concerning about the treatment and patient care lies mostly in the hands of the dentist. The parents and guardians should also be asked and correctly informed about the decision.\(^1\)

The decision to implant the tooth was according to the guidelines given by the International Association of Dental Traumatology (IADT).\(^1\) The IADT also suggests that it cannot specifically guarantee the successful treatment outcome based on their decision chart. There is an inclination toward a favorable outcome depending on the treatment as suggested by them.

Almost all replanted teeth have a tendency toward ankylosis followed by inflammatory resorption. This may be attributed to severe damage to the PDL ligament cells in such cases resulting in bony replacement of cementum and dentin in avulsed tooth.\(^4\)

The following case paper stresses the importance of first aid at the site of trauma along with treatment at the earliest possible time. In the following case, the tooth was avulsed for more than 60 min. Extraoral time was for more than 60 min. Furthermore, the tooth was not kept in any storage medium. The tooth was dry when it was brought. As suggested by the IADT, the PDL cells were non-vital. This is generalized for all teeth where extraoral time has exceeded 60 min irrespective of the storage media.

There is no abnormal tissue reaction seen in the PDL structure even after considerable amount of delay in reimplantation. If the avulsed tooth is appropriately debrided, there is partial acceptance by the gingiva and alveolar bone.\(^5\)

The goal for this case was restoring the esthetic, functional, and psychological needs of the patient. The patient is still under follow-up. The patient would be referred to the department of oral and maxillofacial surgery once she has attained her growth spurt. If the implanted tooth is lost before the age specified, we would give a R.P.D. as an interim prosthesis.

Interdisciplinary approach to the treatment of anterior tooth injury has been long advocated. Furthermore, it is clear that without sufficient cooperation among the various disciplines, treatment of these cases will not be favorable.\(^5\)

We had applied APF on the root surface due to absence of any other topical fluoride at our disposal. However, authors have suggested use of stannous fluoride to delay resorption in avulsed teeth. Zoledronic acid, BMPs, EMDs, and endogain also show promising results. Out of these, Zoledronic acid needs more of research.\(^6\)

This paper has attempted reporting a case, wherein clearly the after effects of delayed implantation can be seen. Figure 4 denotes the follow-up radiographs. It can be clearly observed that the implanted tooth is infraoccluded. As a consequence, the teeth would eventually be lost forcing the patient to opt for other alternative
treatments. However, one good aspect is that the avulsed tooth has been there for 8 years. Thus, allowing a good bone growth in height and density. Based on the findings reported, it is suggested, to implant an avulsed tooth almost every time whatever maybe the extra oral time. Awareness for these suggestions is essential and needs to be incorporated in every level of health care.

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