

ORIGINAL RESEARCH

Replantation of tooth with extended extra-oral time: A Case Report

Amit Saragade¹, Priyanka Patil¹, Sumedh Lone¹, Avadhesh Tiwari¹, Monica Mahajani¹, Kuldeep Patil¹, Devendra Warghane¹, Amol kumar Lokade²

¹Department of Periodontics, Dr.H.S.R.S.M's Dental College and Hospital, Hingoli.

²Department of Pediatric Dentistry, H.P. Govt. Dental College and Hospital, Shimla.

ABSTRACT

This case report presents case of delayed replantation of avulsed maxillary left central incisor after an extended dry extra-alveolar period. Fourteen-year-old boy presented with avulsed maxillary left central incisor due to trauma occurring 19 hours earlier. Treatment guidelines for avulsed mature/immature permanent teeth with prolonged extra-oral time were carried out for the teeth. After having been repositioned, the teeth were stabilized for 6 weeks and prophylactic antibiotic was prescribed. Clinical and radiographic controls were done after 6 months for patient. During the follow-up periods the teeth reported in these cases have remained in a stable, functional position but revealed clinical initial replacement resorption and ankylosis.

Key words: Avulsion, Delayed replantation, Splinting, Incisor

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Corresponding Author: Dr. Amit Saragade, MDS III Year student, Department of Periodontics, H.S.R.S.M's Dental College and Hospital, Hingoli, Maharashtra, India. Pin code: 431513

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INTRODUCTION:

Tooth avulsion is defined as the complete displacement of the tooth out of its alveolar socket. It is well known that serious injury to the tooth results in damage to the periodontal ligament (PDL), cementum, alveolar bone, as well as the gingival and pulpal tissues[1]. Avulsion of tooth is seen in 1-16% of traumatic injuries to permanent. Young adults involved in various sports activities are more prone to the avulsion [2]. The most common teeth to be involved are Maxillary central incisors with a male predilection (male: female = 3:1) [3]. Children between the age of 7-14 years are the most commonly affected, which makes it difficult in maintaining the tooth and surrounding bone until completion of facial growth. Hence, success does not necessarily mean that the tooth is healthy and functioning for the entire life of the patient and maintaining the tooth; surrounding bone for a few additional years are to be considered as a successful treatment in children and adolescents[4]. The etiology of tooth avulsion is different according to the type of dentition. Avulsion seen in primary dentition is typically a result of hard objects hitting the

teeth, whereas avulsion in permanent dentition is generally a result of falls, fights, sport injuries, automobile accidents, and child abuse [5,6]. Replantation of tooth beyond 5 minutes has been defined as delayed replantation by Andersen [4]. The important reasons for the delayed replantation are lack of knowledge of the people at the site of injury for the management of an avulsed tooth and also as the soft tissue lacerations and bleeding mask the loss of teeth [7]. Preservation and treatment of the supporting tooth tissues and replantation of the avulsed teeth is the primary goal in treating an avulsed tooth. The success of replantation depends on the maturity of the root, the patient's general health, the time the tooth is out of its socket, and storage medium [8]. The period of extra-oral time of tooth and the storage medium have the important effect on the status of the PDL cells [9]. The aim of this case report was to present the case of delayed replantation of avulsed maxillary left central incisor after an extended dry extra-alveolar period.

CASE REPORT:

A 14 years old boy reported to the department of periodontics with a chief complaint of broken upper front tooth due to trauma. He met with an accident while riding the bicycle. His maxillary left central incisor got avulsed and maxillary right central incisor got fractured due to the trauma (Figure 1, A). He wrapped the avulsed tooth in the paper. He visited the department for the treatment of avulsed tooth with the extra-oral time of approximately 19 hours. Intraoral examination revealed blood clot in the socket of maxillary left central incisor region and Ellis Class II fracture in relation to the maxillary right central incisor.

Tooth replantation was carried out at department of Periodontics and consisted of the following steps:

- (1)The avulsed tooth was rinsed carefully with normal saline from a syringe. All the contaminants were removed with the help of curettes.
- (2) Root canal treatment of the maxillary left central incisor was done extra-orally. Composite restoration was done with the maxillary right central incisor.
- (3)The socket was flushed with saline the bleeding was induced in the socket by curettes and the avulsed tooth was slowly replanted with digital pressure. (Figure 2, A)
- (4)Splinting of the avulsed tooth was done with a semi rigid splint for 4 weeks. (Figure 2, B)
- (5)Antibiotic regimen was advised to the patient.
- (6) Patient was recalled after 4 weeks to remove the splint. Grade I mobility was observed with the replanted tooth. So removal of splint was postponed to extra two weeks.
- (7) Splint was removed after 6 weeks after checking the stability of replanted tooth.
- (7) Six months clinical and radiographical evaluation was done. (Figure 4, A, B)

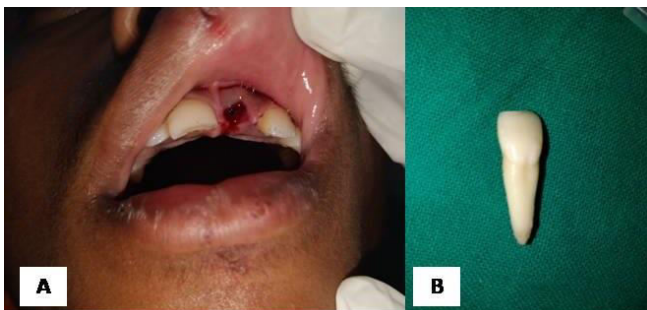


Figure 1: A: Avulsion of Maxillary left central incisor, B: Avulsed tooth decontaminated



Figure 2: A: Reimplantation of Maxillary left central incisor with digital pressure, B: Splinting with semi rigid splint

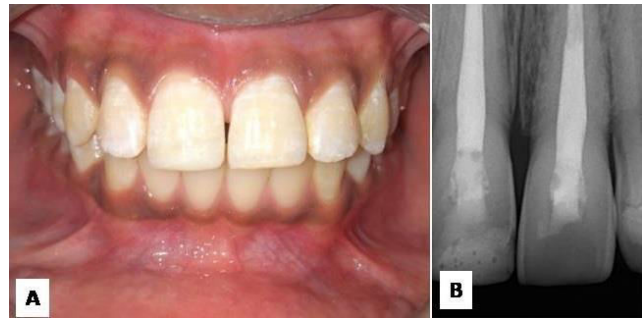


Figure 3: A: Six month Photograph, B: Six month radiograph

DISCUSSION:

The treatment options of avulsed permanent teeth vary, but the consensus is that the ideal treatment for an avulsed tooth is immediate replantation [10]. The treatment decision regarding avulsed teeth depends on the maturity of the root apex and the condition of the PDL cells. The condition of PDL cells depends on the storage medium and the time the tooth has been out of the mouth [11]. The extra-oral period of tooth significantly affects the outcome and is directly related with the survival of PDL cells. Various Clinical studies have indicated that teeth replanted within 5 minutes after avulsion have the best prognosis [12]. After a dry time of 60 minutes or more, all PDL cells are nonviable and then prognosis of replantation is somewhat compromised [10]. The storage and transport media during the extra-oral time of avulsed tooth are also important. In patients with a prolonged extra-oral time, the avulsed tooth should be stored in a suitable media, such as HBSS, saline, milk, or saliva until it is replanted by a dentist [13]. In the present cases, the teeth were kept in dry pieces of paper, and the extra-oral dry time was more than 19 hours. Intraoral examination revealed blood clot in the socket of maxillary left central incisor region and Ellis Class II fracture in relation to the maxillary right central incisor. It is indicated that, if the tooth has been dry for more than 60min before replantation, the root canal treatment may be done extra-orally prior to replantation or later. Because there were no chances of obtaining pulp space revascularization and the periodontal ligament will be necrotic and not expected to heal, it was decided to treat the root canals extra-orally.

Replanted teeth must be monitored carefully and clinical/radiographical findings should be recorded. In children and adolescents, ankylosis is frequently associated with infraposition of the replanted tooth. The replanted teeth of the case presented here showed signs of ankylosis.

CONCLUSION:

Teeth with delayed replantation might be retained in a stable and functional position in the dental arch despite an extended extra-alveolar dry storage time. Objectives of replantation can be successfully accomplished by proper pretreatment of the avulsed tooth even if replantation is done in unfavorable condition. All dentists, school teachers, road traffic police, and primary healthcare personnel including nurses must be educated regarding the importance of preserving an avulsed tooth, methods of preservation, and rationale for replantation, and update them with the recent guidelines on management of such teeth.

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