

Delayed Replantation of Avulsed Teeth -A Case Report

Abstract

Management of Avulsed teeth often presents a challenge to the clinician. Avulsed teeth need to be replanted at the earliest in order to restore esthetic appearance and occlusal function. However, the long term survival of replanted avulsed teeth is low due to ankylosis and root resorption. This article describes the delayed replantation of a avulsed maxillary central incisors that had an extraoral dry time of 24 hours. Tooth No. 11 showed replacement resorption at the end of 9 months indicating poor, long term prognosis. However, the function and esthetics were satisfactorily maintained in the young adult.

Key Words

Injuries, Maxillary Central Incisors, Replantation, Tooth Avulsion.

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Introduction

Avulsion of teeth is defined as total displacement of the tooth out of its socket. Incidence of avulsion constitutes 0.5 to 16% of all traumatic injuries in the permanent dentition¹. Avulsion is more commonly seen in children and young adults, at an age when the alveolar bone is resilient and provides only minimal resistance to extrusive forces. The maxillary central incisors are the teeth most commonly affected².

Prolonged extra oral storage of an avulsed tooth before Replantation will lead to total necrosis of periodontal ligament. Replantation of a tooth beyond 5 minutes has been defined by And reasen³ as delayed Replantation. This can lead to complications like inflammatory resorption and replacement resorption.⁴

The reported clinical success rate of delayed replanted avulsed teeth has been low. One of the causes for this poor rate is the lack of recognition that avulsed teeth are presented in the dental office under different conditions that require different treatments. There are two main reasons for delayed replantation of avulsed teeth. People present at the site of injury are usually lay persons who rarely know how to manage an avulsed tooth⁵. Avulsion injuries are associated with soft tissue lacerations and bleeding. The

mechanism of the injury is a particularly important aspect of history as avulsion of teeth is frequently caused by severe trauma. Avulsed teeth with nonvital periodontal ligament can be replanted and will remain functional for several years⁶. This article describes the management of avulsed maxillary central incisors of an young adult after an extraoral dry time of 24 hours.

Case Report

A 22-year-old young adult attended for emergency treatment at the dental clinic with a history of fall at a playground the previous day and both his maxillary central incisors had been avulsed (Fig.1). The avulsed teeth had been left

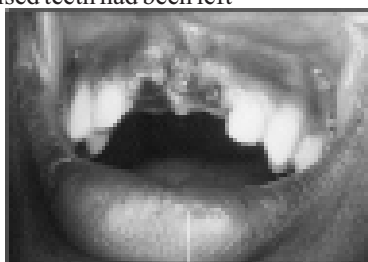


FIG. 1. PATIENT 24 HOURS AFTER AVULSION

dry in an uncovered container following injury. His medical condition was non contributory. Intraoral examination revealed fair oral hygiene. Teeth 11 and 21

were avulsed and a blood clot was found in the alveolar socket. The labial frenum was also injured. Extraoral radiograph obtained showed no other hard tissue injury in the surrounding region. Examination of the avulsed teeth revealed intact tooth structure. The root surface was dry.

Treatment options available were explained to the patient and it was decided to replant the avulsed incisors. Preoperative intraoral periapical radiographs of the empty sockets were taken. Local anesthetic was administered and the blood clot was removed from the alveolar socket. The injured frenum was sutured. The sockets were cleaned and irrigated with normal saline. The roots of the teeth were rinsed thoroughly and endodontic treatment was carried out. The teeth were then replanted into the respective sockets (Fig 2). An Intraoral periapical radiograph was



FIG 2. MAXILLARY INCISORS AFTER REPLANTATION

then taken to verify the position of the teeth in the socket (Fig 3).

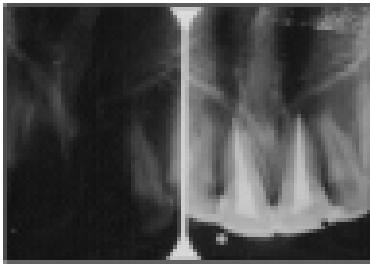


Fig 3. RADIOGRAPH TAKEN BEFORE AND AFTER REPLANTATION

The avulsed teeth were then splinted to the adjacent teeth with stainless steel wire and composite resin (Fig 4).

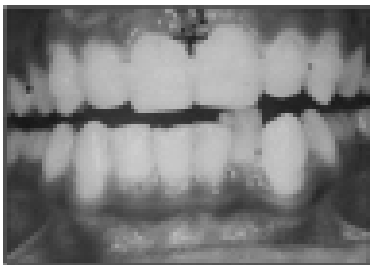


Fig 4. Splinting Of Anteriors.

The splint was left in place for 4 weeks. A course of antibiotics were prescribed and patient was administered an antitetanus booster. The patient was then recalled after 2 and 4 weeks. After 4 weeks the splint was removed. An Intraoral periapical radiograph taken at a recall visit after 9 months showed progressive replacement root resorption in tooth No. 11 (fig 6). The teeth however remained functional and were esthetically acceptable (Fig 5). The adjacent teeth were asymptomatic and responded to vitality test.

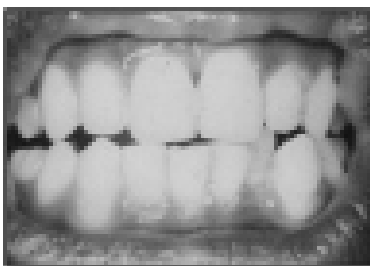


Fig 5. Anterior View Of Replanted Teeth 9 Months Later

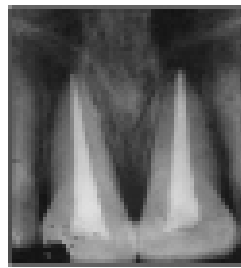


Fig6. Radiograph Taken 9 Months After Replantation.

Discussion

Trauma to the dentition is considered an emergency situation. It results in functional and esthetic disturbances accompanied by concern from both the patient and the parents. Similar to other luxation type injuries, avulsion of teeth is a serious assault on the gingival and periodontal ligament. Studies have shown that teeth replanted within 5 minutes after avulsion had the best prognosis. The chance of pulpal and periodontal healing was inversely related to the stage of root development and the period of dry storage⁷.

High rates of avulsion injuries caused by road traffic accidents may be one of the reasons for delayed treatment. When a serious accident occurs, teeth are not the subject of greatest interest. While teeth are not of primary interest in an emergency situation endangering life, they are important for function and esthetic.

In the case presented here, the avulsed incisors had been air dried for a 24 hours and this might lead to delayed healing. Hence splinting was done for 4 weeks. The treatment objective was to retain the avulsed incisors to maintain esthetic appearance and occlusal function. Further the presence of a blood clot would hinder the replantation of the avulsed teeth and needs to removed prior to conditioning of the socket.

In cases of avulsed teeth with avital periodontal ligament, treatment with various agents such as tetracycline, stannous fluoride and emdogain before Replantation have been suggested in the hope of slowing down the resorption process^{8,9}. However it was not used in this case due to non availability in the situation.

The long term prognosis for the replanted incisors in the case presented here is not good. Teeth replanted after 60 minutes of

dry storage become ankylosed and are resorbed. Andreason et.al¹⁰ found that the progression of root resorption in teeth with extended extra-oral periods is related to age. In patients 8-16 year old at the time of avulsion, the rate of root resorption was significantly higher compared with 17-39 year old patients.

Recent clinical studies have classified the different post operative outcomes. Pohl et.al¹¹ classified the post operative healing as functional healing, infection related resorption and replacement resorption.

Complications after replantation of avulsed teeth are common with a reported prevalence of 57-80%.^{3,11} Replantation can restore the patient's esthetic appearance and occlusal function shortly after the injury and the replanted incisor can functional for some years.

Conclusion

In case of avulsed permanent teeth in with prolonged non-physiological storage, especially in adolescents and young adults, replantation should be performed irrespective of the outcome despite the risk of progressive replacement resorption and subsequent tooth loss.

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