

Management of Avulsed Tooth: a Case Report

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Case Report

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Abstract: Traumatic dental injuries are very common and mainly affect children and adolescents. Maxillary incisors are more prone to fracture. It affects the facial appearance of the patient. This case report described the management of avulsed maxillary right lateral incisor with longer extra alveolar dry time in a 15 year old healthy boy. Replantation is the only treatment of the choice. Before replantation, root surface was cleaned with scaler and then placed in sodium fluoride for 20 minutes. Extra oral root canal treatment was done. The replanted tooth was secured with wire-composite splint for 4 weeks. After one year follow-up, the tooth was asymptomatic, normal mobility, normal percussion sound, no radiographic evidence of resorption, bone loss and periapical pathology.

Keywords: Traumatic Dental Injuries, Avulsed Tooth, Replantation.

INTRODUCTION

Loss of front teeth at a very young age may have severe speech, mastication and psychological consequences. The term avulsion implies complete displacement of tooth from the socket [1]. This traumatic injury is more prevalent among males, primarily affects the maxillary incisors, in individuals aged 7 to 10 years. Tooth avulsion is a complex injury that affects the pulpal tissue, periodontal ligament and alveolar bone. Tooth avulsion accounts for 0.5 to 16% of all traumas to the permanent teeth, and 7 to 13% to the deciduous teeth [2]. When a tooth is avulsed, periodontal attachment damage and pulp necrosis occurs. Tooth avulsion mainly occurs in contact sports, physical violence and road traffic accidents.

In case of permanent dentition, the immediate replantation of an avulsed tooth is essential to restore the esthetics and function and required for long term success. The prognosis of replantation procedure is depending on extra-alveolar dry time, condition of avulsed tooth, patient age and root development [3]. Vitality of periodontal membrane attached to the root and alveolus are of great importance to the success of replanted tooth. Replantation should be attempted whenever possible. The healing mechanism of delayed replantation is different from immediate replantation. In delayed replantation, endodontic treatment is performed outside the oral cavity before replantation [4]. This case report related to delayed replantation of avulsed maxillary right lateral incisor in 15 years old healthy boy.

CASE REPORT

A 15 year old boy reported with chief complaint of pain and loss of tooth in upper front teeth region. While obtaining his trauma history, it was found that the patient was fall on cricket ground 16 hours before presentation. The patient was well oriented, conscious to time, place and person during examination. Extra oral examination revealed swollen upper lip and laceration on inner surface of lip. On intraoral examination, missing maxillary right lateral incisor (12) and tender on percussion in relation to maxillary right central incisor (11). The patient's father had preserved the avulsed tooth which he carried to the hospital. An intra oral periapical radiograph was advised to rule out alveolar fracture and to check for any foreign body (Figure 1 a-c).

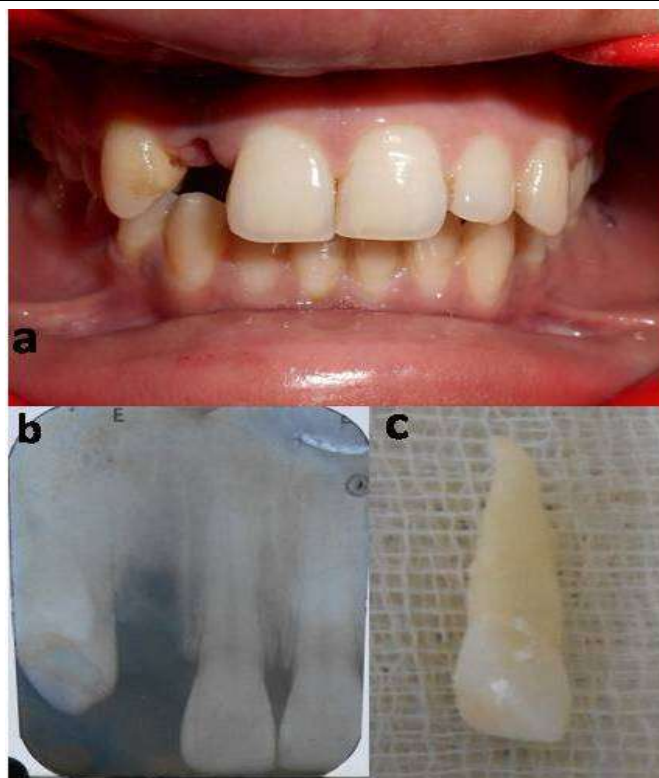


Fig-1: (a-c): a- Preoperative Photograph, b- IOPA irt 11-13, c- Avulsed tooth

The potential consequences and risks associated with replantation were explained to the parents. After obtaining informed consent from the parents, it was decided to replant the avulsed tooth (12). The avulsed tooth was carried dry in a handkerchief (non-physiological condition) for more than 60 minutes. The avulsed tooth was inspected first for any fracture in

crown or root. The avulsed tooth was intact and the root was completely formed.

The avulsed tooth was washed with saline and root surface was scrapped with scaler to remove the dead PDL remnants and debris. The avulsed tooth was treated with 1.23% sodium fluoride for 20 minutes and then extra-oral root canal treatment was done (Figure-2 a-f).

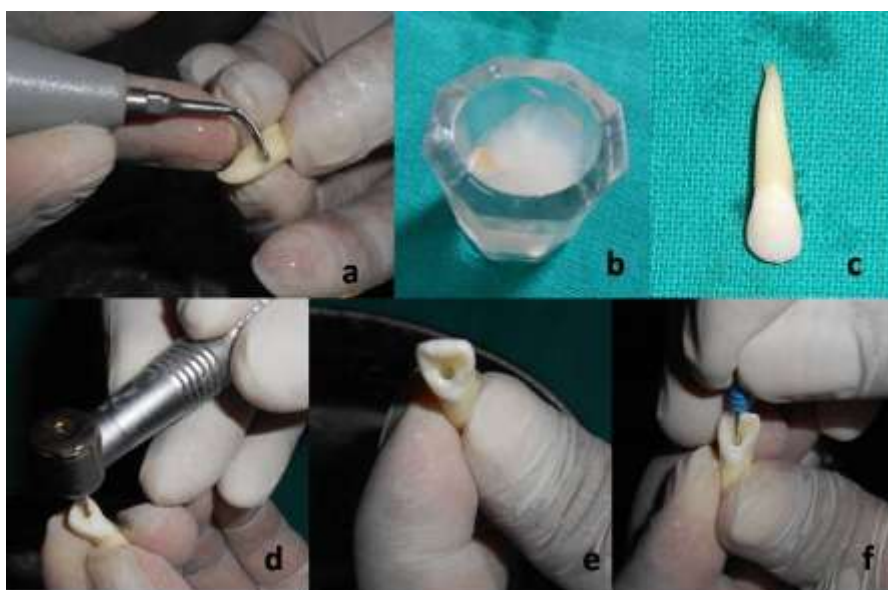


Figure-2: (a-f): a- Removal of dead PDL and debris, b- Tooth placed in 1.23% of sodium Fluoride for 20 minutes, c- Cleaned root surface, d, e, f- Extra oral Root Canal Treatment

The socket was gently irrigated with povidone iodine and saline. After administration of local anesthesia, the tooth was placed back in the socket with light digital pressure. It was secured in place with wire-composite splint. Oral antibiotics and analgesic were

prescribed for 5 days. After 7 days, patient was complained of severe nocturnal pain in maxillary right central incisor (11). Therefore, root canal treatment was done in maxillary right central incisor (Figure 3 a-c).

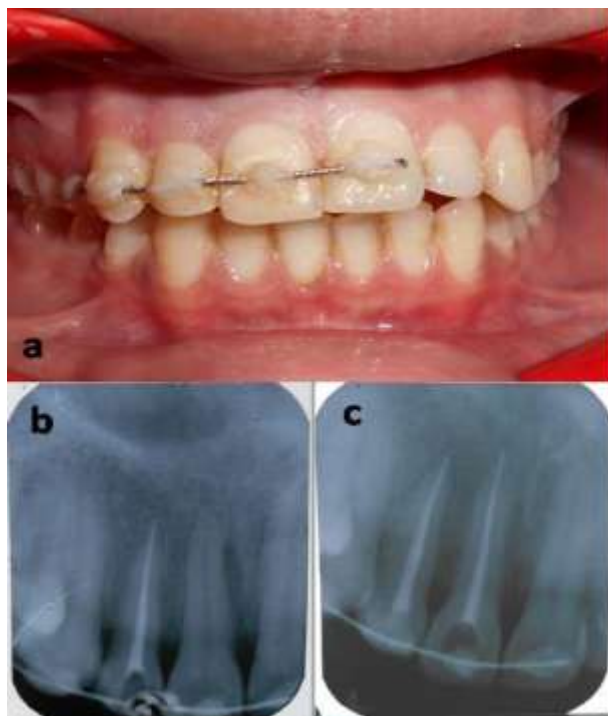


Fig-3: (a-c): a- After replantation, b- IOPA irt 12, c- IOPA irt 11, 12

The wire-composite splint was removed after 4 weeks and follow-up clinical and radiographical examination were done at the interval of 3 months and

12 months, which revealed intact crown and root structure without any resorption and periapical pathology (Figure-4 a-d).

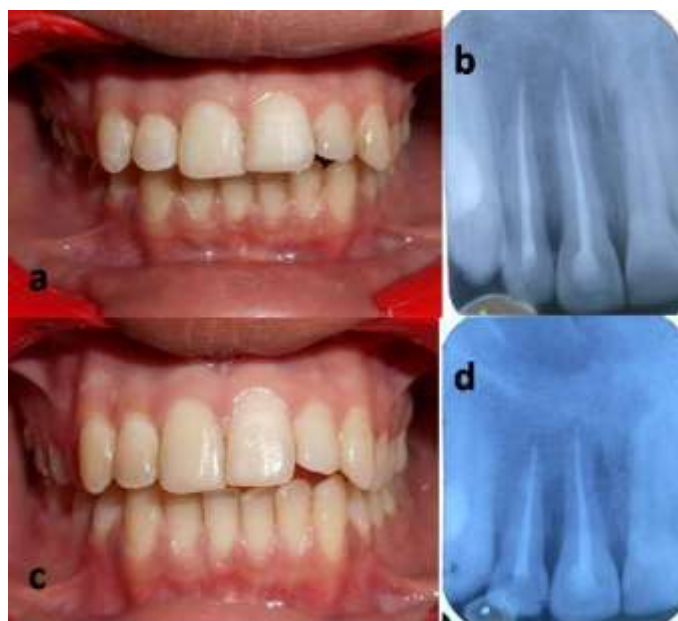


Fig-4: (a-d): a, b- After 3 months follow-up, c, d- After 12 months follow-up

DISCUSSION

The term 'avulsion' used to describe complete displacement of tooth from its alveolus. It is also known as exarticulation. The maxillary incisors are the most prone teeth for Ellis class V fracture, due to contact sports and automobile injuries. The prognosis of replantation is directly proportional to extra oral dry time of tooth [5, 6]. During this extra oral time, the storage media is required for maintain the viability of periodontal ligament cells. Hank's balanced salt solution (HBSS) is the most acceptable storage and transport media for avulsed tooth. Other storage media like cold milk, saliva, egg white, coconut water and contact lens solution are commonly used [7, 8].

In this case, the avulsed tooth had been in non physiological condition for 16 hours. So the chances of periodontal and pulpal healing would be very poor. Andreason claimed that periodontal ligament cells were not remained vital beyond 120 minutes of extra oral dry time (2). In this present case, root planning was done to remove the dead periodontal ligament to limit the surface resorption of root. In case of longer extra oral dry time, extra oral root canal treatment was performed to prevent the inflammatory resorption of replanted tooth.

McIntyre J *et al.*, recommended that the avulsed tooth was treated with 1.23% sodium fluoride for 5-20 minutes. In case of delayed replantation, fluoride treatment has been recommended to slower the resorption of root surface [9]. Flexible splint are recommended after replantation of avulsed tooth. Splinting should allow the physiological movement of teeth. This seems to prevent the ankylosis of replanted tooth. In the present case, a ligature wire-composite splint was used for 4 weeks, because it allows maintaining good oral hygiene and physiological movement of teeth.

In the present case, patient's esthetic appearance, occlusal function and favorable healing were met by the management of avulsed tooth. Patient was asymptomatic and absence of radiographic evidence of root resorption, bone loss, replacement resorption and periapical pathology over a period of one year. Long term follow up is still required to understand possible outcomes of the treatment.

CONCLUSION

The preservation of alveolar bone, esthetic appearance and function are the main goal for replantation of avulsed tooth with a longer extra-alveolar dry time. In case of delayed replantation, the risk of progressive replacement resorption is quite high. There is an also need to create awareness among school teachers, general public and sport persons regarding emergency management of dental traumatic injuries.

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Conflicts of interest

There are no conflicts of interest.

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