



MULTIDISCIPLINARY MANAGEMENT OF AN AVULSED PERMANENT TOOTH

Arun Kumar^{1*}, Komal Meena², Sanjay Chachra³, Meenakshi Bodh¹

¹Department of Pedodontics & Preventive Dentistry, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India


¹Dental Department, Adesh Medical College and Hospital Mohri- 136135, Ambala, Haryana, India.

³Department of Pedodontics & Preventive Dentistry, Swami Devi Dyal Hospital and Dental College, Barwala Panchkula, Haryana, India.

ABSTRACT

An avulsed permanent tooth is one of the few real emergency situations in dentistry. Dentists should always be prepared to give appropriate advice to the public about first aid for avulsed teeth. An appropriate treatment plan after an injury is important for a good prognosis. Management of tooth avulsion in the permanent dentition often presents a challenge. Definitive treatment planning and consultation with specialists is seldom possible at the time of emergency treatment. Replantation of the avulsed tooth can restore esthetic appearance and occlusal function shortly after the injury. Dentists should always be prepared to give appropriate advice to the public about first aid for avulsed teeth. If a tooth is avulsed, make sure it is a permanent tooth. This article describes the management of a child with an avulsed maxillary permanent incisors in a pediatric child patient with retained esthetic appearance and functionality 2 years after replantation.

Key words: Avulsion, Resorption, Teeth, Permanent, Periodontal Ligaments.

Access this article online		
Home page: http://www.mcmed.us/journal/ijacr	Quick Response code 	
DOI: http://dx.doi.org/10.21276/ijacr.2018.5.2.7		
Received: 15.06.18	Revised: 20.06.18	Accepted: 29.06.18

INTRODUCTION

Avulsion of a tooth is defined as the complete displacement of a tooth out of its socket. This type of injury has been designated as complete ex-articulation. It is associated with severed periodontal ligaments and frequently associated with fractures of the alveolar socket. It is most frequently seen in children between the ages of 7 to 9 years. It is reported that up to 30% of children have been exposed to accidental injuries to the teeth by the adolescent phase. About 0.5% - 16% of all accidental injury to the teeth involves avulsion or total displacement of the tooth out of its socket. The most commonly affected

teeth are the upper anterior permanent central incisors [1].

The avulsion of teeth is mainly attributable to falls, collisions and accidents at home, school or playground. In young children, the relatively resilient alveolar bone provides only minimal resistance to extrusive forces. The extrusive forces impinging on the teeth can cause a tooth to be displaced out of its socket. The periodontal ligaments ruptured leaving thin remnants on the cementum and the inner walls of the alveolar socket. The vessels entering the pulp through the apical foramen would also have been severed with cessation of blood supply to the pulp [2, 3].

The prognosis of teeth depends on appropriate management at the place of accident or the extra-alveolar time immediately after the avulsion. Replantation is the treatment of choice, but cannot always be carried out immediately. Every measure should be taken to replant the

Corresponding Author

Arun Kumar

Email: drarun922@gmail.com

avulsed teeth as far as possible. Although most of these teeth are usually lost by replacement resorption, nevertheless, their presence allows preservation of the alveolar bone height, making future replacement simpler. This works well as an interim measure before a more definitive treatment plan can be made later. The chances of revascularisation are greatest when the apical foramen is wider, the extra-alveolar time is short and the tooth is stored in an appropriate storage medium. The absence of bacterial contamination is also considered to be an essential requirement for complete revascularisation. Currently, there is an apparent lack of knowledge among parents, teachers, healthcare professionals and children themselves on the management of this problem when such an accident occurs [4,5]. The case report presents the multidisciplinary management of a paediatric patient with avulsion in relation to upper central and lateral incisor with 18 months follow up.

CASE REPORT

A 12 year old female child reported to the Department of Pedodontics and Preventive Dentistry, Rohtak with the chief complaint of a fall from a bicycle resulting in teeth loss in upper anterior region. Medical and family histories were taken and found to be unremarkable. A thorough general examination was carried out to rule out the presence of other associated injuries and the patient did not show any signs or symptoms of neurological or extraoral injury.

The intraoral examination revealed child in a mixed dentition with avulsion in relation to 21 and 22 with Ellis class III fracture of 11 (Figure 1a). The blood clots were found around and in the alveolar sockets. No other oral injury was detected clinically. All of the adjacent teeth

showed positive response to a vitality test. The avulsed teeth had been taken by placing them dipped in milk after the injury. Pre-Operative intraoral periapical radiograph was taken with different angulations to rule out associated dentoalveolar fractures or the presence of foreign body inside the sockets (Figure 2). Examination of the avulsed tooth revealed that the crown was intact and that the root had a nearly closed apex, but the root surface was covered with remnants of periodontal tissue (Figure 1b).

The available treatment options were explained to the parent, and it was decided to replant the avulsed incisors as an intermediate treatment. Local anesthetic was administered and the blood clot removed from the socket. The teeth were then replanted into its socket and were splinted to the adjacent teeth with a stainless steel rectangular wire and composite resin (Figure 3). Intra-operative periapical radiograph was taken to confirm proper positioning of the replanted incisors and the splint was left in place for 6 weeks (Figure 4a,4b,4c,4d). Antibiotics and anti-inflammatory drugs were prescribed for a period of 5 days. The patient was referred to the medical practitioner for an antitetanus booster. On follow up visit, the access openings were made in 11, 21 and 22. Tooth 11 with Ellis class III fracture was root canal treated followed by composite restoration. The intracanal calcium hydroxide was placed in relation to 21 and 22, follow ups after 3 months on regular basis.

The patient had been followed for 24 months; the teeth remained functional and were esthetically acceptable (Figure 5a,5b and 5c). All of the adjacent anterior teeth remained symptomless and showed no sign of pulp death or root resorption. The patient is still under regular review regarding future dental treatment.

Fig 1a & 1b. Pre-Operative View showing avulsed 21, 22 and Ellis class III of 11.



Fig 2. Pre-Operative Intraoral periapical radiograph



Fig 3. Showing composite splinting



Fig 4 a,4b,4c,4d and 4e. Showing Intra-Operative periapical radiographs

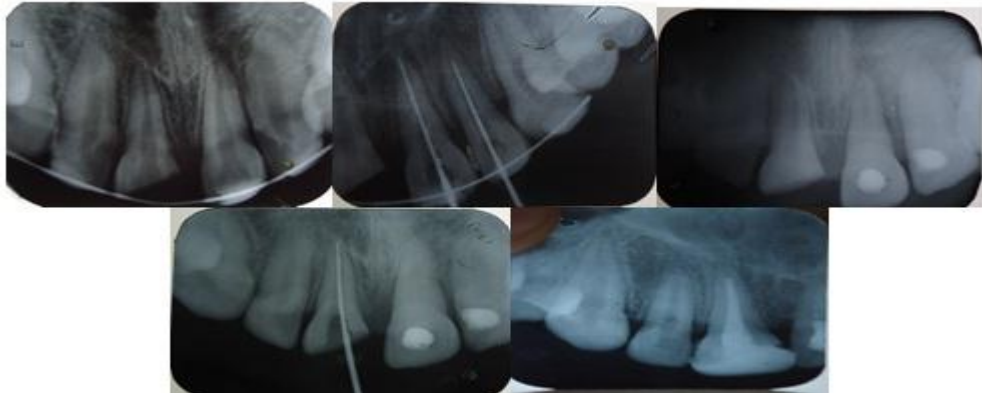


Fig 5a,5b and 5c. Post Operative View.



CONCLUSION

Inadequate treatment of this trauma and lack of knowledge of lay people on how to manage this event could have serious consequences on the outcome. As the outcomes of replantation is mostly dependant on the timely and appropriate management of the avulsed teeth, it is important to disseminate the knowledge among healthcare providers, as well as to lay people, in order to bridge the gap. This can be facilitated through the development of appropriate training modules and quick references.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors

ACKNOWLEDGEMENTS

Nil

DECLARATION OF INTEREST

None declared.

REFERENCES

1. Andreasen JO, Andreasen FM. Avulsions. In: Andreasen JO, Andreasen FM. (1994). Textbook and colour atlas of traumatic injuries to the teeth. *Copenhagen*, 383-425.
2. Andreasen JO, Borum MK, Jacobsen HL, Andreasen FM. (1995). Replantation of 400 avulsed permanent incisors. 1. Diagnosis of healing complications. *Endod Dent Traumatol*, 11(2), 51-8.
3. Gregg TA, Boyd DH. (1998). Treatment of avulsed permanent teeth in children. UK National Guidelines in Paediatric Dentistry. Royal College of Dental Surgeons, Faculty of Dentistry. *Int J Paediatr Dent*, 8(1), 75-81.
4. Barrett EJ, Kenny DJ. (1997). Avulsed permanent teeth: a review of the literature and treatment guidelines. *Endod Dent Traumatol*, 13(4), 153-63.
5. Kinirons MJ, Gregg TA, Welbury RR, Cole BO. (2000). Variations in the presenting and treatment features in reimplanted permanent incisors in children and their effect on the prevalence of root resorption. *Br Dent J* 2000; 189(5):263-6.
6. Flores MT, Andreasen JO, Bakland LK, Feiglin B, Gutmann JL, Oikarinen K et al. (2001). International Association of Dental Traumatology Guidelines for the evaluation and management of traumatic dental injuries. *Dent Traumatol*, 17, 193–8.
7. Andreasen JO, Andreasen FM, Bakland LK, Flores MT. (2003). Traumatic Dental Injuries. A Manual, 2nd edn. Oxford: Blackwell Munksgaard.
8. Trope M. (2002). Clinical management of the avulsed tooth: present strategies and future directions. *Dent Traumatol*, 18, 1–11.
9. Andreasen JO, Andreasen FM, Skeie A, Hjorting-Hansen E, Schwartz O. (2002). Effect of treatment delay upon pulp and periodontal healing of traumatic dental injuries – a review article. *Dent Traumatol*, 18, 116– 28.
10. Kenny DJ, Barrett EJ, Johnston DH, Sigal MJ, Tenenbaum HC. (2000). Clinical management of avulsed permanent incisors using Emdogain: initial report of an investigation. *J Can Dent Assoc*, 66(1), 21.
11. Filippi A, von Arx T, Lussi A. (2002). Comfort and discomfort of dental trauma splints – a comparison of a new device (TTS) with three commonly used splinting techniques. *Dent Traumatol*, 18, 275–80.

Cite this article:

Arun Kumar, Komal Meena, Sanjay Chachra, Meenakshi Bodh. Multidisciplinary Management of an Avulsed Permanent Tooth. *International Journal of Advances In Case Reports*, 5(3), 2018, 53-56.

DOI: <http://dx.doi.org/10.21276/ijacr.2018.5.2.7>



Attribution-NonCommercial-NoDerivatives 4.0 International