Early Attention, Vital Result: A Case of Partial Avulsion

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Abstract: Dental avulsion is relatively common in children, and should be considered as true emergencies. Time is one of the most important critical factors determining the clinical outcome, and all kind of injuries require quick attention. Definitive treatment planning and consultation with specialists is seldom possible at the time of emergency treatment. This article describes the emergency and immediate management of a partially avulsed permanent maxillary incisor and maintaining its vitality.

Key words: Avulsion, Tooth Re-implantation, splinting.

Introduction

Avulsion is defined as the clinical situation in which a complete separation of a tooth from its alveolus occurs following a traumatic injury which results in extensive damage to the pulp and periodontal tissues. Its incidence accounts for 0.5% to 16% of all traumatic injuries in the permanent dentition.¹ Dental avulsion of permanent teeth occurs most often in children 7 to 9 years old, when the relatively resilient alveolar bone provides only minimal resistance to extrusive forces and the teeth most commonly affected is central incisors.

Aim of the treatment in such injuries should always be to re-implant back into its socket as quickly as possible, followed by splinting and antibiotic prophylaxis. Tooth should be stored in proper medium to increase the chances of survival of PDL cell still attached to the root surfaces if it is impractical to re-implant the tooth immediately. In this case study we have used re-implanation as a treatment alternative for a traumatically partially avulsed central incisor.6 month follow up showing no sign of resorption, mobility and tooth being vital.

Case report

A 9-year old young boy reported to the Department of Paedontics and Preventive Dentistry for emergency treatment in morning session with a history of a road accident from motorcycle 20mins before (fig1).



Figure 1: 9 year old boy

The right central incisor was partially avulsed and was partially placed in the socket whereas right lateral incisor was avulsed and lost at the site of injury at the time of oral examination (fig2).



Figure 2: pre-operative view

Examination of the avulsed tooth revealed that the crown and root was intact. Pre-operative radiograph & clinical examination revealed no other hard tissue injury. The patient's medical history was non-contributory. The available treatment options were explained to the guardian of the patient and consent was taken. After which, immediate re-implantation of avulsed teeth was planned. Local anaesthetic was administered and the tooth was removed out of its socket and it was cleaned under running tap water to remove superficial debris from tooth surface. Then fresh bleeding was prompted in the alveolar socket and the tooth was placed into the alveolar socket. A intra-oral periapical radiograph was taken to check the proper placement of the avulsed tooth and then splinting was done with a 0.018inch stainless steel orthodontic wire and acid-etch composite(fig3).



Figure 3: Splinting of teeth

Another ortho pantomogram radiograph was taken to confirm proper positioning of the re-implanted central incisor (fig4).



Figure 4: OPG after splinting

A 5 day course of Amoxicillin was prescribed and oral hygiene instructions was explained. Adjacent tissues were irrigated with betadine solution and interrupted suture was placed with 8-0 silk. Patient was recalled after 7days for removal of suture and follow up examination was done. Patient was asymptomatic after 3 weeks, and splint was removed and radiograph was taken. Radiograph after 3 weeks revealed normal periapical tissues and vitality test showed the normal results. After that follow up was planned at 3months, 6months and 12months. At the interval of 3 months and 6 months, the tooth gave normal vitality results and radiographs showed normal periapical findings (fig 5-7).



Figure 5 : After 1 month



Figure 6: After 3 months



Figure 7: After 6 months

Discussion

Avulsion of teeth is considered as a serious assault on the gingival and periodontal ligament and always requires emergency dental treatment.² In case of road traffic accident endangering life teeth are not the subject of primary interest but should be considered important for function and aesthetic and psychological well being of young patients. This case was considered a case having good prognosis because patient reported immediately to the department and the other important thing was that tooth was kept partially kept in his socket. Immediate root canal treatment was not performed because of minimal extra oral time. Stabilizing the replanted teeth with splinting is a routine practice. Splinting technique that allows physiologic movement of tooth during healing and that is in place for a minimum time period results in a decreased incidence of ankylosis. Semi-rigid fixation of 7-10 days is recommended.³

Systemic antibiotic at the time of re-implantation is effective in preventing bacterial invasion but in case of effectiveness in preventing root resorption is unanswerable.³ Till date, the value of antibiotic therapy in replantation has been demonstrated only in the experimental setting. Andreasen and others, in their respective study, showed that systemic antibiotics had no effect on periodontal healing clinically.^[4,5]

Follow-up evaluation was done at 1, 3 and 6 months after replantation and case is still under follow up. While treating the avulsion cases, it is recommended that root canal therapy should be carried out either before placing the tooth into the socket or after placing the tooth according to extraoral time.

As in present case due to minimal extraoral time, the root canal therapy was planned after placement of the tooth into its socket. But when follow-up was done, the tooth gave normal vitality response and no periapical changes were seen in the radiographs. Till now, after completion of 6 months, tooth is responding normal to all the tests and no root canal therapy seems to be required for this tooth^[6-8].

Conclusion

The deficient knowledge of first-aid procedures in the case of dental injuries in all child-related environments makes the introduction and continuation of education on a wide-range scale. The prevention and management of dental trauma should be recognized as an acute emergency treatment. Immediate re-implantation of an avulsed tooth is the best treatment choice, even without proceeding for any other treatment. Re-implantation can restore the patients esthetic appearance and occlusal function shortly after the injury and its vitality is maintained for many years.

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