

**KNOWLEDGE OF TOOTH AVULSION AND ITS ENDODONTIC
MANAGEMENT: A REVIEW**

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ABSTRACT

Instead of precautions, traumatic injuries do occur in the life of individuals. Among the dental traumatic injuries, avulsion is one of the most common and serious injury. It is necessary to know the early management protocol and the precautions to be taken after avulsive traumatic injury, as the immediate treatment can save the patient's teeth and which are necessary for the esthetic, social, functional as well as psychological point of view. The following article gives brief, but

important discussion for patient point of view, about the dental avulsion.

Keywords: Avulsion, Endodontic treatment, Storage media, Trauma.

INTRODUCTION

Traumatic injuries to teeth and the associated parts are one of the most common dental problems in children and adolescents throughout the world. Among the dental traumatic injuries, accidents involving the anterior teeth are very common.^[1,2] Because of the involvement of the anterior teeth, there is a negative impact on quality of life due to loss of function, social and psychological discomfort, financial burden, lowered self-esteem and embarrassment upon smiling.^[2]

Commonly occurring dental injuries are as follows^[3]

1. Tooth avulsion (complete tooth knocked out),
2. Luxation (tooth in socket),
3. Tooth fracture, and
4. Soft tissue laceration.

According to previous studies, 10% of the population has experienced some kind of dental trauma, of which 0.5 to 16% were cases of avulsion of permanent teeth.^[4,5] Among all dental traumatic injuries, avulsion is the most serious one. Avulsion is characterized by the complete displacement of the tooth out of its socket, severely affecting the pulp, periodontal ligament and alveolar bone. Usually avulsion involves a single tooth but multiple avulsions are occasionally encountered.^[1,6]

Dental trauma, such as luxations and avulsions, fractures of the tooth root and alveolar bone require immediate treatment including repositioning and the installation of a semi-rigid or flexible splint for stabilization.^[7] However because of lack of awareness among common people as well as other professional doctors, this immediate treatment modality rarely occurs. When the tooth is not replanted immediately after avulsion, the patient should be guided to keep it in an appropriate medium and search for a dentist for the next proper treatment protocol.^[1,2]

Therefore, as it is necessary to have fundamental knowledge about the avulsion and its management, the following review is planned.

Examination of patient: For the assessment of the patient's condition and to give the necessary treatment, detailed examination of the patient should be done about the history of injury, medical history, neurological evaluation, any extraoral swelling, and dental examination; all of these can be helpful in the future treatment planning of the patient.^[8]

First aid of avulsed teeth: Prognosis of the certain dental traumatic injuries like avulsion depends on the actions taken at the place of accident and promptly after the avulsion.^[5,9]

According to International Association for Dental Traumatology (IADT) and the American Academy of Pediatric Dentistry (AAPD), there are two main guidelines for the immediate management of avulsion injuries^[10]

1. Immediate replantation of the tooth.

2. If the tooth cannot be replanted within 5 minutes, storage of the tooth in a suitable storage medium to maintain the vitality of the periodontal ligament. In such cases, the tooth should be washed with cold running water for a maximum of 10 seconds before replantation.^[10]

Storage media: Length of extra-alveolar time and type of storage are significant factors that can affect the long-term survival of replanted teeth. If extraoral time is more, there is desiccation of the root surface, increasing the risk of loss of vitality of the periodontal ligament cells.^[11] Immersion of avulsed teeth in milk at room temperature preserves the viability of periodontal ligament cells for one hour and storage in refrigerated milk, maintain cell viability for the additional 45 minutes.^[12]

The storage medium should be capable of preserving the viability periodontal ligament cells, so that the cells can be capable of undergoing mitosis and form clones of the damaged fibroblasts of the periodontal ligament and its generating cells.^[11]

IADT and AAPD guidelines for the management of dental trauma state that, the physiological transportation media for avulsed teeth include Hank's Balanced Salt Solution (tissue culture medium), saline, and cold milk. Other storage media that can be used are coconut water, contact lens solution, ascorbic acid, propolis, viaspan and eagles medium.^[10,11,13]

Treatment guidelines with endodontic considerations

A. Root surface treatment

The tooth should be washed with cold running water for a maximum of 10 seconds before replantation.^[10]

B. Preparation of socket

It consists of removal of destructions as blood clots and bone fragments in order to facilitate the replantation.^[12]

C. Root canal treatment: The replanted teeth should be endodontically treated because the necrotic pulp and its toxins affect the periodontal ligament cells through the dentinal tubules and play a decisive role in the resorption process.^[12]

Endodontic therapy carried out by pulp extirpation, instrumentation and calcium hydroxide intracanal dressing for 7-10 days. Some authors suggest that the first dressing must have a hydrosoluble aqueous vehicle (distilled water, saline or anesthetic solution).⁷ Calcium hydroxide have antibacterial, mineralizing and histocompatible properties, which decreases the inflammatory process of the dentine structure and the surrounding tissues leading to healing at physiological levels. One week later, the dressing changed to viscous hydrosoluble vehicle of slow ionic release (propylene glycol, polyethylene glycol, glycerin). In case of immature apex, apexification is required prior to root canal treatment.^[7,12]

D. Splinting

For splinting of the replanted tooth, the literature highlights the semi-rigid or the flexible type, differing for the time of permanence and the rigid splint with stainless steel is only indicated when bone fracture or dental fracture occur simultaneously.^[7]

E. Antibiotic therapy

The goal of antibiotic therapy is to avoid bacterial proliferation in the area of ongoing process and contribute to the prevention of inflammatory resorption. Ideally a broad-spectrum antibiotic should be administered for seven days.^[7,12]

Follow-up

The most essential instructions given to patient are soft diet for two weeks, brush with a soft toothbrush for two weeks and chlorhexidine mouthwash 0.2%.⁸ Most common complications after replantation are root resorption and ankylosis. Therefore, clinical and radiographic follow-up of tooth replanted should be carried for a longer period.^{1[2,14]}

CONCLUSION

Traumatic injuries are common in children and young people, thus immediate treatment is essential for the benefit of the patient, as it decides whether the tooth can be saved or not. Therefore, it is necessary to increase awareness among lay people and the dentists should be updated to the current protocols for the management, so that it can be beneficial to the patient.

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