

Immediate Reimplantation: Saviour of Avulsed Tooth - A Case Report

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Abstract: Avulsion is one of the most complex types of trauma to the teeth where the tooth is completely displaced from the alveolar socket. Intentional reimplantation is a surgical procedure which has gained a rising interest in the last decade as it is less invasive than surgery and preserves anatomical, functional, and aesthetic rehabilitation of the patient. This treatment mainly depends on the tooth's extraoral dry time and a management pathway involves extraoral endodontic treatment of the tooth and its reinsertion into its own alveolus.

Keywords: Avulsion, Intentional reimplantation, extraoral endodontic treatment, ligature wire

1. Introduction

Avulsion is one of the most complex types of trauma to the teeth where a tooth completely displaces from the socket. According to previous studies, Andreasen et al concluded that avulsion of permanent teeth contributes to a prevalence of 0.5% to 16%.⁽¹⁾

The various advancements in Dentistry in the last decade has made Reimplantation, A boon to dentistry where a partly or completely avulsed tooth can be inserted back in the socket to re-establish all the functions of the teeth.⁽²⁾ The extra-oral dry time of tooth and the stage of development of its root are two important criteria which are taken into consideration during Reimplantation of an Avulsed tooth.⁽³⁾

There are various storage media available when reimplantation procedure could not be done immediately. These media help in preserving the vitality of the periodontium and prevents drying of the teeth. The various storage media includes Hank's Balance Salt solution (HBSS), Via Span, milk, saline, patient's saliva, coconut water.⁽⁴⁾

2. Case Report

A 45 year old female patient reported to the department of Conservative Dentistry and Endodontics at Narsinhbhai Patel Dental College and Hospital with chief complaint of

pain and swelling in lower right back teeth region.



Pre-Operative Extra-oral Photograph

The intraoral examination showed the presence of metal prosthesis in relation to 44, 45, 46 and 47. Vertical tender on percussion was present in relation to 44. The radiograph showed periapical abscess in respect to 44.

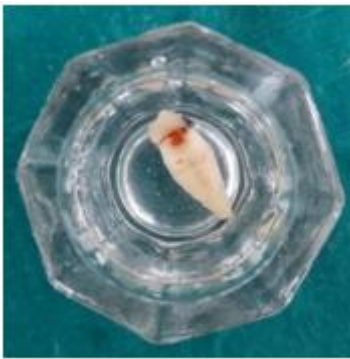


Pre-Operative Intra-oral Radiograph



Alveolar socket cleaned & bleeding induced

The tooth was accidentally avulsed during bridge removal but the patient's oral hygiene was fair and examination revealed that the crown was intact and the root had a closed apex. The tooth was cleaned, and the debris was thoroughly washed out and later stored in normal saline. The following procedures were performed thereafter.



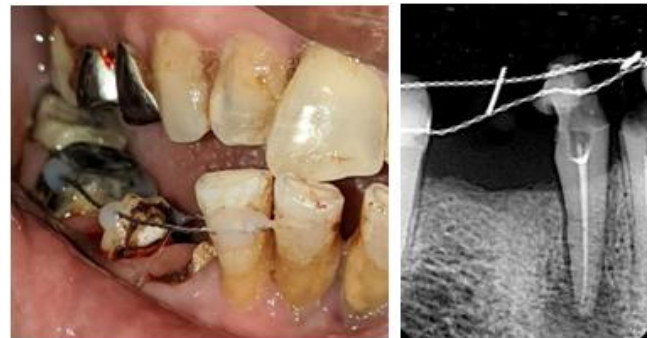
Accidentally Avulsed Tooth –Cleaned & Stored in Normal Saline



Reimplantation of Root Canal Treated Tooth

Two stainless steel ligature wire of 26 gauge were intertwined in a spiral manner to create splints for the reimplanted tooth. The wires were adapted with the help of Ivoclar Composite on buccal as well as lingual surface of the reimplanted tooth and splinting was carried out from lateral incisor to first molar.

The extraoral endodontic treatment was performed within 20 minutes after patient came to the department of Conservative Dentistry and Endodontics. The tooth was constantly kept moist during the procedure with normal saline. Simultaneously, the patient was anaesthetized, and the socket was curetted and irrigated with normal saline. After complete debridement of the socket, fresh bleeding was induced, and the tooth was inserted back in the socket with mild finger pressure. After stabilization of the tooth, the patient was asked to bite on the sterile gauze piece.



Splinting

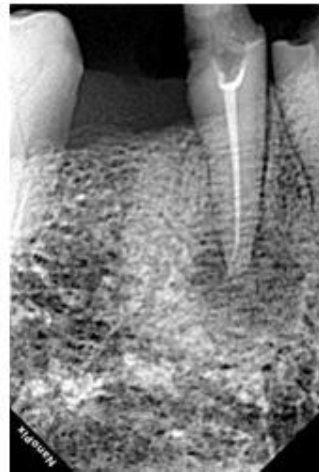
The patient was prescribed antibiotics and analgesics and was instructed to consume soft diet for one week. The patient was recalled for follow up after 1 week. On clinical examination, there was absence of metallic sound on percussion and the crown showed no colour change. On subsequent follow ups after 2 and 3 months, the tooth showed no signs of ankylosis or external root resorption.



Access opening followed by BMP & Obturation



1 Week Post-OP



1 Month Post-OP



2 Months Post-OP



3 Months Post-OP

3. Discussion

The immediate reimplantation is a substitute treatment to save the natural tooth and to avoid the sequelae of missing teeth. This treatment procedure provides a possibility for natural tooth to heal and preserve its functional and aesthetic properties.⁽⁵⁾ The prognosis of the avulsed tooth depends primarily on maintenance of aseptic conditions, reduced extra oral dry time and survival of periodontal ligament cells on the root surface.⁽⁵⁾

The success of this treatment depends on the extra oral dry time of the avulsed tooth which is the most important criteria. An extra oral dry time of 15-20 minutes is considered optimum where periodontal healing can be expected. Reimplantation was planned in this particular case because the extra oral dry time was within the golden hour.⁽⁶⁾

The storage media for avulsed teeth has been shown to affect the incidence of root resorption, ankylosis and pulpal healing.⁽⁷⁾ According to American Association of Endodontists Hank's Balanced Salt Solution is considered as medium of choice. According to recent studies, milk has also shown to be successful in maintaining PDL cell viability for at least three hours and its universal availability enhances its utility.⁽⁷⁾ Prevention of dehydration and damage to PDL cells is most essential in the

periradicular healing process and prevention of resorptive processes such as replacement resorption, ankylosis, and internal and external root resorptions.⁽⁸⁾

It is always necessary to handle the avulsed tooth from the crown portion otherwise it would lead to destruction of periodontal ligament and eventually will reduce the prognosis of the treatment. Following extraoral endodontic treatment, a complete debridement of the socket is necessary with saline to remove the blood clot and create fresh bleeding out of the socket to improve the prognosis of the reimplanted tooth.⁽³⁾ Semi rigid fixation after reimplantation is recommended for at least 7-10 days depending on the mobility of the tooth.

Apart from these factors, proper coronal and apical seal is crucial to prevent reinfection and the ability of biomaterials induce healing and improves the success rate of reimplantation.⁽⁹⁾

There are absolute contraindications to the procedure such as immunocompromised patients, patients with high risk of fracture, poor patient compliance and poor oral hygiene. Systemic antibiotics given at the time of reimplantation are effective in preventing bacterial invasion of the necrotic pulp and therefore subsequent internal and external resorption.⁽¹⁰⁾

4. Conclusion

According to few authors, Immediate Reimplantation is a last resort, but it can be considered as an another treatment modality. This alternative treatment can be suggested for certain cases where routine treatment procedures have failed or periapical surgeries would be impracticable. With proper case selection and good training, it can have high success rates with bioregenerative material and far less expensive than other treatment procedures.

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