

INTENTIONAL REIMPLANTATION: A CASE REPORT

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ABSTRACT

Intentional reimplantation is a procedure in which an intentional tooth extraction is performed followed by reinsertion of the extracted tooth into its own alveolus. In this article, intentional reimplantation is described and discussed as a treatment approach for failed root canal treatment with broken instrument periapically in mandibular first molar. A 1 year follow up revealed the patient to be asymptomatic, the tooth to be functional and a recall film showed no evidence of root resorption. The indications for and limitations of intentional replantation as well as recommended literature on the subject are discussed.

Keywords- Reimplantation, Intentional, Extraction, Broken Instrument.

INTRODUCTION

Intentional replantation has been proposed as an alternative to routine extraction; it is a conservative treatment modality that aims to preserve the natural tooth. Intentional reimplantation was defined by Grossman as the purposeful removal of a tooth and its reinsertion into the socket almost immediately after sealing the apical foramina.¹ He also stated that it is 'the act of deliberately removing a tooth and – following examination, diagnosis, endodontic manipulation and repair – returning the tooth into its original socket.'² Many authors agree that it should be reserved as the last resort to save a tooth after other procedures have failed or would likely to fail.³ The main reason of failure in replanted teeth is root resorption, specifically ankylosis or replacement resorption. This is directly related to the amount of time the tooth is out of the mouth during the procedure.¹ Kratchman has given a thoroughly listed and well illustrated description of both

indications and contraindications for intentional reimplantation.⁴ Dryden and Arens described the histological perspective of intentional reimplantation and included indications, contraindications, technique, and an extensive review of the literature pertaining to this subject.⁵ There are several indications for intentional replantation. First, it is an alternative treatment option when the conventional endodontic retreatment is not feasible. It is the last treatment option for cases that present with canal obstruction due to a cemented post, complicated perforation, or separated instrument.⁶ Second, intentional replantation is indicated when the surgical approach to the apices is impossible, especially if the tooth is symptomatic. Surgical complications are most likely when there is proximity to a major anatomical structure such as the mental nerve, or in cases where extensive bone removal is required and injury to the surrounding anatomical structures is expected; for example, odontogenic maxillary sinusitis is

associated with an infected tooth.⁷ On the contrary, in some cases, intentional replantation is contraindicated if atraumatic extraction cannot be performed. The clinical crown of the tooth should be of a sufficient length to provide the necessary space for a stable forceps grip. The morphologic variations of the posterior teeth should be examined properly. Severely curved or flared roots in multirooted teeth are difficult to extract. Intentional replantation is contraindicated for a periodontally compromised tooth. The presence of a deep pocket, furcation involvement, or marked mobility can lead to treatment failure. The present article describes mandibular first molar with fractured instrument periapically.

CASE REPORT

A 35 year old female reported to the department with chief complaint of persistent pain in right lower back tooth after 1 year of root canal therapy of that tooth. 46 was endodontically treated 1 year back by a general dentist. After taking an IOPA, periapical infection, and broken instrument in periapical area was detected [Fig-1,2]. The patient was advised that a periapical surgery was necessary. He declined to the surgery but did not want to lose the tooth. Because of the anatomical limitations, the patient was offered the alternative of intentional reimplanatation, and appraised of its risks and limitations. He accepted this recommendation and was given prescription of amoxicillin 625mg for three times a day for three days. He was then scheduled for an intentional reimplanatation procedure. Local anesthesia was administered and the tooth was removed with forceps without

complication [Fig-3]. Using a sterile gauze sponge, the tooth was held by hand on the crown and the roots were beveled using high speed handpiece. Retrofil preparations were made with straight bur in a high speed handpiece [Fig-4] and MTA was condensed into the preparations [Fig-5]. The broken instrument was carefully taken out [Fig-6]. The tooth was then irrigated with sterile saline and replanted into its socket. The procedure took 12 minutes. A sling suture around the tooth was used as the splint for three weeks [Fig-7]. The occlusion was adjusted on that tooth. Postoperative instructions were given. After three weeks the sutures were removed and the patient was asymptomatic. The patient was placed on 6 months recall for one year. After one year the patient was completely free of symptoms. Percussion was negative and elicited a normal sound.

DISCUSSION

The intentional replantation procedure provides an alternative treatment pathway by which we can avoid the complications and prolonged treatment time of the nonsurgical retreatment. With good case selection, intentional replantation is easier than nonsurgical endodontic retreatment, making it an available option for a skilled general practitioner.⁸ The concept of this conservative treatment aims to save the natural tooth, and subsequently, to avoid the sequelae of missing teeth. This procedure provides a final chance for a natural tooth to heal, and it preserves the tooth's functional and aesthetic properties. The successful outcome of this treatment depends primarily upon the maintenance of aseptic conditions and limited extra-oral time, survival of

periodontal ligament cells on the root surface, and gentle atraumatic extraction with minimal manipulation of the socket. The patient should avoid chewing on the tooth during the healing period to avoid any excessive mastication forces that might affect the healing process.⁶ Splinting of the tooth for 2 weeks as indicated can enhance healing and support the tooth when mobility is present.⁹ An oral hygiene checkup should be considered to prevent plaque accumulation. Certainly, patient cooperation and willingness for routine checkup appointments should be discussed before the treatment. Although the success rate of this treatment is high, it is crucial to follow the procedural instructions. The ideal root-end filling material fulfills specific properties. It should have a good sealing ability, biocompatibility, antibacterial activity, and cementogenesis. Although the ideal material has yet to be found, MTA has been accepted as one of the most suitable materials used in apicoectomy procedures.¹⁰ MTA showed a long-lasting sealing ability, minimal leakage, compared to other root-end filling materials.¹¹ However, MTA is a technique-sensitive material that requires proper handling and manipulation. Studies have shown that the healing process following peri-radicular surgery is initiated by mesenchymal cells that differentiate into mature cells such as osteoblasts, fibroblasts, or cementoblasts, which in turn induce osseous regeneration and apical healing.¹⁰ The procedure of intentional replantation involves critical surgical steps that must be handled with precision to achieve a favorable outcome. Case selection and the anatomical structure of the tooth should be

examined carefully to prevent tooth fracture. It is ideal to have single, straight-rooted teeth as central incisors and premolars. Extraction should be performed using the appropriate forceps. The use of surgical elevators is contraindicated. The tips of the forceps should not exceed the cemento-enamel junction to avoid any unnecessary trauma to the periodontal ligament. Maintenance of the periodontal ligament lining the socket is important for the healing process. Some studies considered the vitality of PDL is crucial the healing and prevention of ankylosis and root resorption complications.¹² Studies recommend minimal manipulation of the walls of the socket during extraction or debridement. Some authors reject the use of curettage. Others advocate for curettage of the most apical portion without touching the walls.¹³ Several case reports suggests that intentional replantation is a reliable procedure and the retention rate of the teeth after replantation is high even after more than 10 years follow up.¹⁴ Intentional replantation is a conservative treatment that should be considered before tooth extraction in order to maintain the natural dentition.⁶

CONCLUSION

Some authors consider Intentional Reimplantation to be a last resort; whereas others consider it as another treatment modality. This alternative treatment may be predictable and suggested for certain cases when routine treatment cannot be undertaken or has failed, where periapical surgery would either be impracticable or refused by the patient or unlikely to succeed.

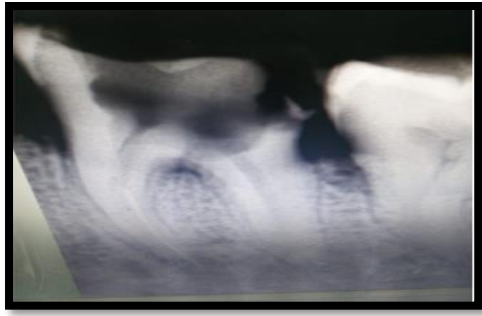


Fig 1

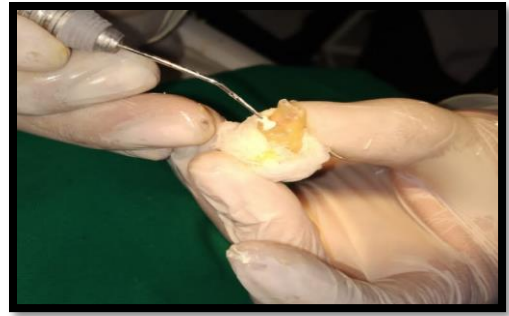


Fig-5



Fig 2



Fig-6



Fig 3



Fig-7



Fig-4



Fig-8

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