INTENTIONAL REPLANTATION: THE LAST RESORT

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ABSTRACT:
When nonsurgical retreatment and surgical endodontic treatments are ineffective for teeth with a despairing prognosis, intentional tooth replantation may be the last remaining alternative. Using this surgery rather than a prosthesis or implant replacement could help preserve a natural tooth. Apical surgery or endodontic retreatment may be impossible or impractical in several circumstances. In these circumstances, deliberate replantation may be viewed as a last-ditch effort to save the tooth. The survival rate of the replanted teeth is decreased by root resorption, notably replacement resorption (ankylosis). Even though intentional replantation (IR) is a generally quick, inexpensive, and uncomplicated treatment, it is directly related to how long the tooth is out from the mouth for the surgery This case report details the nonsurgical endodontic treatment, intentional replantation, and six-month follow-up of a mandibular molar.
Keywords: Dental implantation, Stabilizations, Oral surgical procedures, Surgical procedures, Endodontics, Root canal therapy
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INTRODUCTION

Even while traditional endodontic therapy often has good success rates, it occasionally fails. If the initial treatment fails, other measures, such deliberate intentional replantation, may be pursued[12345]. Intentional replantation is the deliberate removal of a tooth to repair it, followed by insertion of the tooth back into its socket[1]. This technique involves atraumatic tooth extraction, curettage of apical pathological tissue, and rapid replacement into the alveolus. Endodontic treatment is done intraorally before the replantation or extraorally followed by extraction[7]

This type of surgery has a history that dates back almost a thousand years. In 1982, Grossman provided the following definition: "an intentional tooth is taken out and put back in the socket fairly shortly after the apical foramen have been sealed. The deliberate removal of a tooth and subsequent placement of the tooth back into its socket following examination, diagnosis, endodontic intervention, and repair to address an apparent clinical or radiographic endodontic failure according to him, is known as endodontic reimplantation[8]. The first account of tooth reimplantation and the use of ligatures to splint the implanted tooth was provided by Abulcasis in the eleventh century AD[9]. After replantation, splinting is required to prevent tooth mobility and promote early

periodontal repair. But transplanted teeth need to be splinted for 1-2 weeks.

The periodontal ligament's (PDL) function in the prognosis of replanted teeth was discussed by Scheff in 1890[10]. Hammer discussed the need of maintaining the PDL on purposefully replanted teeth in 1955. He hypothesized that a strong PDL was necessary for the retention and reattachment of newly implanted teeth. According to him, "an average life span of 10 years might be anticipated when replantation was carried out in a technically perfect manner[11].

Extra-oral time is a very major aspect of this operation, which should be minimized as much as feasible. Many researchers think that the maximum amount of time that can elapse between extraction and replanting is between 20 and 30 minutes. Some authors believe that RCTs should be performed extraalveolar, some believe that RCTs can be done before or after reimplantation.[8,12,13,14]. This case report details the effective nonsurgical endodontic treatment, replantation, and six-month follow-up of lower mandibular molar (46)

CASE REPORT

A 33-year-old female patient with a non-significant medical history was referred to Teerthanker Mahaveer Dental College Moradabad's Department of Conservative Dentistry and Endodontics with the chief complaint of pain in her lower right first molar area since one week. The pain was mild, continuous, and aggravated by mastication Upon intraoral inspection, the lower right first molar (number 46) was found to be sensitive to percussion. The adjacent buccal mucosa was tender to palpation. Further clinical and radiographic examination showed a well-defined radiolucency involving enamel, dentin, suggesting deep dental caries, and radiolucency shows signs of periapical abscess in relation to 46. Tooth showed negative response to pulp sensibility tests.

Patient was advised to take antibiotics and analgesics 1 hour before the procedure. Local anesthesia, 2% lidocaine with adrenaline 1:80000 was administered. 46 had its access prepared, and the root canals had been adequately cleaned and over-obturated. Forceps were used to delicately remove the tooth, ensuring that neither the buccal/lingual cortical plates nor the tooth were harmed. A sterile gauze was used to hold the tooth while a straight carbide bur was used to trim the root apices up to 3 mm and the overextended gutta percha points. The tooth was irrigated with sterile saline and replanted into its socket within 30 minutes after extraction. A ribbond splint was placed from 45 to 47 as a functional splint. The occlusion was checked.

The patient was recalled for clinical and radiographic assessment after 15 days and ribbond splint was removed. There was minimal inflammation with no pain on biting. The patient returned after one month, three, and six months for follow up; the healing period was unremarkable, with no clinical symptoms. Radiographically, there was no root resorption with an intact root surface and periodontal ligament. Radiographic evaluation showed progressive bone formation.

Fig .1. Preoperative Radiograph

Fig.2. After Obturation

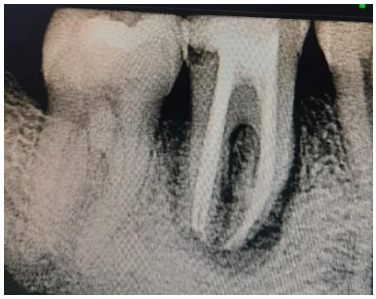

Fig .3. After Replantation

Fig .4. Stabilization by Ribbond Splint for 14 Days

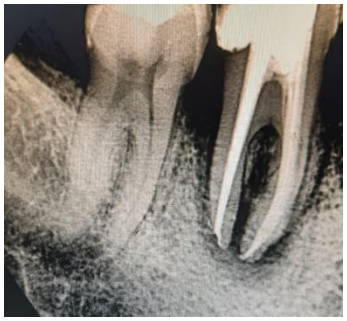

Fig .5. After 1 Month

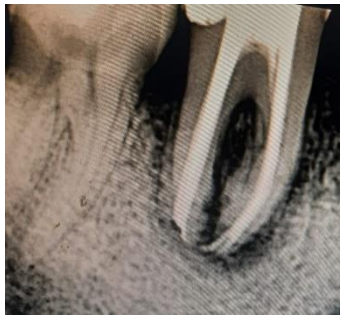

Fig .6. After 3 Months

Fig .7. After 6 Months

DISCUSSION

Intentional replantation is a single-stage procedure that would prepetuate the retention of replanted tooth. For teeth with anatomical restrictions, accessibility issues, or severe chronic pain, as well as for individuals who have issues cooperating or refuse to have periapical surgery, intentional replantation is recommended. This procedure should only be done as a "last resort," when all other therapies have failed or when endodontic periradicular surgery is not a possibility.[15,16,17,18] When periradicular surgery cannot visualize the area of the root that has to be healed or there is a chance of harming nearby critical structures, it is a therapy option. Its contraindications include vertical fractures, teeth with curved or flared roots, and moderate to severe periodontal disease that has already existed. There are high chances that the tooth may tend to fracture in between the extraction procedure[5].

However, the biggest drawback of intentional replantation is the possibility of replacement resorption or ankylosis, which makes it the final option for saving a tooth for the majority of dentists. Recent long-term investigations have shown that the success rates of purposeful replantation are comparable to those of apical surgery.[4,19,20,21,22]

The health of PDL cells determines whether the IR is successful or unsuccessful. These cells can be kept vital for at least 15 to 20 minutes when the tooth is out of the socket, provided they are kept wet. Soaking the

PDL in fluids like saline solution appears to prolong the life of the PDL cells.[13,23]

The patient in the scenario we described had, chronic pain, and tenderness to palpation and percussion. Based on the clinical rationale and the patient's refusal to have periapical surgery, intentional replantation was selected as the therapeutic choice. After completing root canal treatment, extraction was done. Before extraction, critical parameters are adequately evaluated, such as the risk of vertical root fracture, periodontal ligament condition, and amount of remaining bone/extent of bony destruction. After the tooth replantation, splinting was done to reduce the mobility, which will further help in initial periodontal healing It may be connected to a variety of issues and failures, including ankylosis brought on by PDL damage and external inflammatory or replacement resorption.[7] Radiographic and clinical evaluations was done in one month, three months, and six months. No resorption was seen along the root, and typical sound to percussion with no mobility. Progressive bone formation around the tooth was seen in the radiographs taken periodically.

It is challenging to compare the success rate of IR with conventional RCT because deciding whether or not the tooth in question will be retained presents a significant challenge in assessing the success rate of purposely replanted teeth.[24] In the field of IR, numerous success and failure studies have been carried out. Success rates range from 50% to 95% with an average retention of 3 to 5 years.[18]. According to some research, the tooth can last up to 20 years or, in extremely unusual circumstances, up to 41 years.[19,25,26]

CONCLUSION

Intentional replantation can be the last resort in managing a hopeless tooth. In situations where conventional treatments are likely to fail, purposeful replantation should be more commonly considered as a therapeutic option to retain the original dentition. Intentional replantation can produce results that are on par with those of apical surgery over the long run with careful patient selection, annual clinical assessments, and post-treatment radiographic evaluations.

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