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ORIGINAL ARTICLE

Intentional Replantation: A Measure to Save the Natural Tooth

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ABSTRACT

Context:- Intentional replantation is the intentional removal (extraction) and replantation of the same tooth. This technique can be useful for teeth that cannot be treated with conventional endodontic therapy or surgery.

Aim:- To save the natural tooth with intentional replantation

Material and methods:- A female patient reported of pain with 46. A failed root canal attempt # 46 had been made, with the calcified root canals being assessed radiographically. The tooth was carefully extracted with no intra-operative complications. The root end cavities were prepared with the inverted cone bur and were filled with MTA. The tooth was rinsed in sterile saline and was replanted back into its socket.

Result:- Intentional replantation can be particularly helpful in the lower first and the second molars where the proximity to the mandibular nerve and the thickness of the buccal bone make endodontic surgery difficult.

Keywords: Intentional replantation, calcified canals, mineral trioxide aggregate

Key messages:-

- Intentional replantation as a treatment alternative should not be underestimated.
- It should be reserved as a “last resort” after other procedures have failed or when endodontic periradicular surgery is not an option.
- The success depends upon the maintenance of aseptic conditions during the intervention.

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Introduction

The preservation of natural dentition is the primary goal of any conservative treatment modality. Although it is not the primary therapy of choice, intentional reimplantation as a treatment alternative should not be underestimated, especially when conventional treatment is not applicable. This technique

should be reserved as a “last resort” after other procedures have failed or when endodontic periradicular surgery is not an option.[1],[2],[3],[4]

The indications for intentional replantation include failed previous nonsurgical endodontics, where an apicoectomy procedure is unfavourable because of anatomical limitations

and accessibility problems or where financial factors preclude conventional implant placement and for patients who refuse to undergo periapical surgery.[5] Bone thickness may preclude surgical endodontic treatment in mandibular molars and the palatal root of the maxillary molars. The contraindications to intentional replantation include: a more favourable prognosis with either conventional apical surgery or implant placement, active periodontal disease, a nonrestorable tooth, an extraction requiring hemi-section or osseous recontouring and where the tooth is a part of a multiple-tooth prosthesis or where the roots are divergent.[6]

Case Report

A 48 year old female reported to the department with the chief complaint of pain in the right lower back tooth region on occluding. Her medical history was non-contributory. Her dental history included the root canal treatment done # 47. A failed root canal attempt # 46 had been made and it was explained by the operator.

On clinical examination, tenderness # 46 and slight swelling in the buccal vestibule was present. Radiographically, the root canals were calcified [Table/Fig 1]. The treatment procedure of intentional replantation was explained to the patient, along with the risks and benefits involved and a written consent was obtained from the patient. One hour before the procedure, the patient was instructed to rinse the mouth with chlorhexidine gluconate 0.12%. The patient was prepared for surgery and inferior alveolar and lingual nerve anaesthesia was achieved. The tooth was carefully extracted with no intra-operative complications. The tooth was held in a sterile gauze sponge which was saturated with Hank's Balanced Salt Solution (HBSS) and was evaluated for any extraction fractures under the microscope. The root end cavities were prepared with the inverted cone bur and were filled with MTA. The tooth was rinsed in sterile saline and was reimplanted back into its socket. Two interrupted 4-0 silk sutures were used to stabilize the tooth. [Table/Fig 2] 8 semi rigid splinting was done with wire. A postoperative radiograph was taken.



[Table/Fig 1]: Pre-operative radiograph showing calcified canals #46

The following postoperative instructions were given: putting a cotton swab with chlorhexidine gluconate 0.12% over the site three times per day for 7 days. Analgesics and antibiotics were prescribed. The patient was instructed to be on a soft diet for 2 weeks. The patient was recalled after 1 week for suture removal and for evaluation of the surgical site. After 2 weeks [Table/Fig 3], the soft tissues appeared pink in colour with minimal inflammation and pain upon biting had diminished.

Discussion

The success of this treatment was primarily dependent upon the maintenance of aseptic conditions during the intervention, atraumatic extraction, minimal manipulation of the periodontal ligament, short extra-oral time, minimizing occlusal forces following replantation, as well as carefully controlled postoperative patient compliance.[6] The retention rate of intentionally replanted teeth is reported to range from 52% to 95%.[7],[8]



[Table/Fig 2]: Post-operative radiograph showing splinting and retrograde filling

Intentional Reimplantation may be associated to root resorption, specifically replacement resorption (ankylosis), which reduces the survival rate of the replanted tooth. According to Kratchman, extra-oral manipulation should not exceed 10 min.⁹ Semi-rigid splinting is necessary after replantation to reduce the mobility of the tooth and to aid the initial periodontal healing. However, replanted teeth should be splinted only for a short period of 2 weeks.



[Table/Fig 3]: Two weeks follow up radiograph

Intentional replantation has some advantages over apical surgery, which include: it being an easier, less-invasive, less time-consuming and a less-costly procedure. The disadvantages include a risk of root fracture and the greatest disadvantage is replacement resorption or ankylosis. However, recent long-term studies have shown that the success rates for intentional replantation are similar to those for apical surgery.^{[5],[9],[10]}

Conclusion

With proper case selection, intentional replantation can provide long-term results which are as good as those of apical surgery and so, it should more often be considered as a viable treatment option to preserve the natural dentition in situations where other procedures are likely to fail. Reimplantation is a predictable and an

acceptable method of treatment when the patients present with root canals that require retreatment due to failure or those that cannot be completed due to calcification of the canals.

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