CASE REPORT

INTENTIONAL REPLANTATION OF MANDIBULAR PREMOLAR WITH RARE MORPHOLOGY-A CASE REPORT

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ABSTRACT

Intentional replantation is done in those cases where conventional root canal treatment and surgical endodontic treatments are not recommended. Even though intentional replantation is not commonly used, it is a treatment alternative that dentists should consider. Three important points that should be kept in mind for the success of replantation procedure are 1) The surgical procedure have to be accurate 2)The extra-alveolar time should be properly managed 3)The splint should be secured tightly. When the standard protocols of intentional replantation are followed, clinical and radiological success is predictable.

Keywords:Reimplantation,Extraction, PDL, RCT

INTRODUCTION

Conventional root canal treatment is considered the treatment of choice for managing pulpal and periapical inflammation. However, in some cases when non-surgical treatment has perfectly been performed, periapical lesions may still persist[1].Thus, apical surgery is often

the last resort to treat persistent periapical lesions in such teeth; this allows millions of people to preserve their natural teeth. Despite providing high long-term survival and success rates, apical surgery may be difficult to perform due to anatomical obstacles such as the mental foramen or the mandibular canal, and it might be challenging in molars because of limitations in instrumental access, mainly on the lingual or palatal roots[2]. Intentional replantation may be the treatment of choice for such cases that cannot be treated with conventional root canal treatment, such as those with ledge formation, instrument separation, calcifications,anatomical limitations, perforations in areas not accessible to surgery, failed apical surgery and persistent chronic pain. (According to Grossman,intentional reimplantation is defined as the purposeful removal of a tooth and its reinsertion into the socket almost immediately after sealing the apical foramina[10]). Reimplantation was first reported in 1593, when Pare reimplanted three avulsed teeth. Messkoub reported success rate in retaining reimplanted teeth between 52-95%. But, over the years, the procedures for intentional replantation have been progressively refined. In an effort to retain the natural tooth, intentional replantation should be considered as a reliable and expected procedure. The aim of this case report is to summarize the knowledge of the intentional replantation procedure and discuss the criteria for the best possible case[4].

CASE REPORT

A 25-year-old female patient reported to the Department of Conservative Dentistry and Endodontics with a chief complaint of persistent pain in the right lower back tooth for past 6 months. After taking her full history, an RVG was taken.The tooth was symptomatic and efforts to eliminate the pain were fruitless. Apical surgery was ruled out due to the presence of mental foramen in this region. It was then decided to replant the tooth intentionally.The treatment plan was explained to the patient, and a written consent was obtained for the same procedure from the patient. After obtaining adequate anaesthesia, the tooth was extracted atraumatically with an extraction forceps. This mandibular 2nd premolar had 3 roots and 3 canals with a rare incidence of 0.46 -0.5% out of which one canal was fully calcified. Surgical elevators were not used and care was taken to ensure that the beaks of the forceps did not go beyond the Cemento-Enamel Junction (CEJ), as this could lead to damage of the cementum and the periodontal ligament[3]. The tooth was kept moist by immersing it in normal saline. Root canal treatment was done extra orally and obturation was done.Afterward, a cavity was prepared in mesio-lingual, mesiobuccal and distal canals with an inverted cone bur following which retrograde filling was done with MTA.

The extraction socket was irrigated with normal saline and gently suctioned and curetted to remove blood clots.The tooth was reinserted into its socket and brought into occlusion with digital manipulation and patient bite force. The entire procedure was completed in 20minutes. The tooth was splinted and stabilized with ligature wire.

Clinical and radiographical evaluation revealed that the patient was asymptomatic and there were no signs of vestibular tenderness or percussion and the tooth was not mobile. Post replantation radiograph was taken with ligature splint in place. Patient was recalled after 2 months and 6 months for follow-up and the tooth was asymptomatic and in function. The radiograph showed signs of healing.

FIGURE 1

FIGURE 2

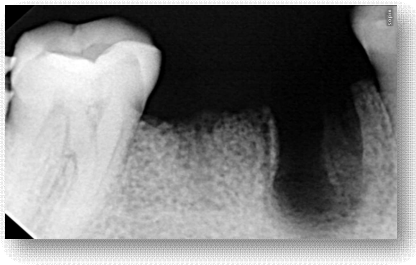

FIGURE 3

FIGURE 4

FIGURE 5

FIGURE 6

FIGURE 7

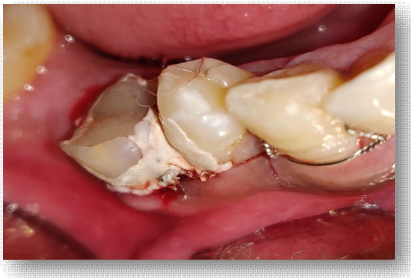

FIGURE 8

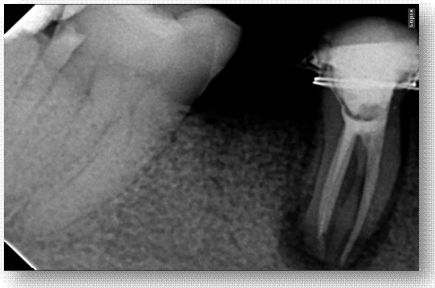

FIGURE 9

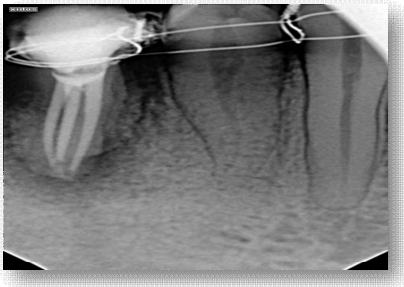

FIGURE 10

FIGURE 11

DISCUSSION

In the case of intentional replantation, the most common causes of failure are external inflammatory resorption/ replacement resorption and ankylosis which is caused by PDL damage, which lead to necrosis of the PDL and cementum. These complications are related to the extent of PDL damage. The success or failure of the intentional replantation depends on

vitality of PDL cells.These cells can be kept vital while the tooth is out of the socket by keeping the tooth moist and in sterile condition. The extraoral time is crucial and should be limited to 20 - 30 minutes. Some factors that increase the periodontal healing includes: 1) The extra-alveolar time: thirty minutes is the maximum time limit; an increase in this time can increase the possibility of root resorption. 2) Presence of preoperative radiolucency: Teeth with radiolucency tend to heal without root resorption, due to the facility of the extraction of teeth with apical radiolucency which results in less damage of the root. 3) Patient's age: Inflammatory resorption is more frequent in the age group of 10 to 30 years than in older age patients, which may be due to the wider dentinal tubules in younger patients[12]. 4) Root end filling: Replantation of teeth sealed by a filling material seems to be more successful than replantation without root canal filling. 5) Care should be taken to simply manipulate the root surfaces: Reimplanting teeth with the intact PDL increases periodontal remodelling and inhibits ankylosis and root resorption. After two weeks, the PDL has two-thirds of its original adhesion[16].

CONCLUSION

The success rate of intentional replantation is less than that of routine RCT or apical surgery and the most common causes of failure with the procedure are external inflammatory resorption or replacement resorption and ankylosis caused by periodontal ligament damage; still this modality should be considered as a treatment alternative when other options are not feasible. Knowledge of the prognosis, the surgical procedure, the risk and benefits may assist patients and dentists in making effective decisions.

Conflicts of interest: The authors declare that they have no conflicts of interest in relation to this article.

REFERENCES

1. Lee W, Shon W-J, Baek S-H, Kum K-Y, Kim H-C. Outcomes of intentionally replanted molars according to preoperative locations of periapical lesions and the teeth. Journal of Dental Sciences 2012;7:125-129.
2. von Arx T. Failed root canals: the case for apicoectomy (periradicular surgery). Journal of Oral and Maxillofacial Surgery 2005;63:832-837.

3. Wolcott J, Rossman LE. Intentional replantation of endodontically treated teeth: an update. Compendium of continuing education in dentistry (Jamesburg, NJ: 1995) 2003;24:68-72,74.
4. Song M, Chung W, Lee S-J, Kim E. Long-term outcome of the cases classified as successes based on short-term follow-up in endodontic microsurgery. Journal of endodontics 2012;38:1192- 1196.
5. Torabinejad M, Dinsbach NA, Turman M, Handysides R, Bahjri K, White SN. Survival of intentionally replanted teeth and implantsupported single crowns: a systematic review. Journal of endodontics 2015;41:992-998.
6. Grossman LI. Intentional replantation of teeth. The Journal of the American Dental Association 1966;72:1111-1118.
7. Weinberger BW. An introduction to the history of dentistry: Mosby.
8. Mendoza-Mendoza A, Solano-Reina E, Iglesias-Linares A, Garcia-Godoy F, Abalos C. Retrospective long-term evaluation of autotransplantation of premolars to the central incisor region. International endodontic journal 2012;45:88-97.
9. Kratchman S. Intentional replantation. Dental Clinics of North America 1997;41:603-617.
10. Niemczyk S. Re-inventing intentional replantation: a modification of the technique. Practical procedures & aesthetic dentistry: PPAD 2001;13:433-439; quiz 440.
11. Kany FM. Single–Tooth Osteotomy for Intention Replantation. Journal of endodontics 2002;28:408-410.
12. Blus C, Szmukler-Moncler S. Atraumatic tooth extraction and immediate implant placement with Piezosurgery: evaluation of 40 sites after at least 1 year of loading. The International journal of periodontics & restorative dentistry 2010;30:355.
13. Weiss A, Stern A, Dym H. Technological advances in extraction techniques and outpatient oral surgery. Dental Clinics of North America 2011;55:501-513.
14. Choi Y, Bae J, Kim Y. Atraumatic safe extraction for intentional replantation. J Korean Dent Assoc 2010;48:531-537.
15. Choi Y, Bae J, Kim Y, Kim H, Kim S, Cho B. Clinical outcome of intentional replantation with preoperative orthodontic extrusion: a retrospective study. International endodontic journal 2014;47:1168-1176.
16. Loe H. Waerhaug J. experimental replantation of teeth in dogs and monkeys. Arch Oral Biol 1961;3:176-84.