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Intentional Replantation The survival Treatment: Case Report

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ABSTRACT

Background intentional replantation is not a new procedure. It has been used for many years as a treatment option in case of a tooth has been non-surgical retreated and disease persists. **Objectives** it is to evaluate the tooth replantation and to preserve the tooth loss. **Materials and Methods** 23 year's old patient attended the Conservative Department complaining from slight mobility and pain of the lower left first molar. **Results** apical surgery may be contraindicated because of anatomic factors such as mental foramen, mandibular canal, thick bone and periodontal attachment loss or because of medical conditions. **Conclusion** the intentional replantation procedure should be considered as an alternative to the tooth extraction.

Keywords: Endodontic manipulation; periodontal ligament; periodontal attachment; splints; tooth replantation.

Introduction

The teeth replantation or re-implantation means reinsertion of a tooth in its socket after complete avulsion due to trauma or other defective etiologies. While the intentional re-implantation (IR) refers to the tooth extraction for extraoral root canal therapy, curettage of the apical lesion, then its replacement to its socket (Ward, 2004). Historically, this method was used by many practitioners according to Rouhani et al, (2011). It's first used in the 11th century AD by Abulcasis who designated the first account of replantation and the use of ligatures to splint a replanted tooth (Weinberger, 1948). Fauchard in 1712 reported

that intentional replantation after 15 mins of tooth extraction (Fauchard, 1746) and according to Dryden and Arens, (1994). Thomas Berdmore studied this option of treatment for mature and immature teeth (Berdmore, 1768). The intentional replantation of diseased teeth by Woofendale, (1783), stated that an extracted tooth was boiled to remove tooth disease before replantation by John hunter (Hunter, 1778). Several studies focus on the periodontal ligament (PDL) essential role to enhance intentional replantation. In 1890, Scheff referred to the PDL effect in the prognosis of replanted teeth. The importance of

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intact PDL on intentional replantation success by Hammer, 1955. He believed that healthy tooth PDL is essential for the reattachment and retention of replanted teeth. In addition, 10 years of replantation lifespan could be expected as a consequence of technically ideal manner. In 1961, Loe and Waerhans tried to replant teeth immediately, to keep the PDL vital (Loe and Waerhans, 1961). Sherman revealed that the normal PDL could be reestablished following IR (Sherman, 1968). Grossman, (1982) stated that it is essential to remove and reinsert the tooth immediately into the socket. This may correct the clinical appearance or to avoid radiographic endodontic failure. These might relate to examination, diagnosis, endodontic manipulation, and repair returning. Moffat et al considered intentional replantation as one-stage treatment that would maintain successful and natural tooth aesthetics (Moffat et al, 2002). Since intentional replantation is less common than the implant and endodontic treatment, the modern dentistry has been shown arising interest in IR with advances in bio-materials in several dental aspects including root end biomaterials and periodontal regenerators (Khalid et al, 2004).

Case report

A twenty-three years old male patient attended the Conservative Department at Karbala Specialized Dental Center, Iraq complaining from slight mobility and pain of the lower left first molar. Intraoral examination showed a defective composite filling. Intra-oral radiograph was taken to the accused tooth, which revealed root canal treatment with a large periapical lesion and bifurcation involvement. Treatment options were discussed. Tooth re-implantation was recommended as a clinical procedure. The IR procedure armamentarium as shown in figure (1). After administration of local anaesthesia, the tooth was

extracted in atraumatic way and it has been held in a forceps for the entire work. The wound was packed with sterile gauze and the patient asked to close his teeth together to immobilize the pack. Resection of both the mesial and distal roots were performed by beveling the root tip with a bur in a straight handpiece. Retro-preparation of the mesial and distal roots was accomplished using a round bur in a contra-angle handpiece with copious irrigation. An MTA retrograde filling was placed in the root canals. After completion of the extra-oral procedure, the socket was irrigated gently with a normal saline solution to remove the clot and the tooth was replanted again in its socket in an out of occlusion relation with its antagonist tooth and splinted with a non resorbable suture for one week and then for another two weeks with an orthodontic wire. The clinical steps showed in figures (2a, 2b, 2c, 2d, 2e). After three months, the replanted tooth was firm in its socket and the patient was asymptomatic. Radiographic examination revealed a decrease in radiolucency around the roots which indicate healing and bone formation (Figure 3). After eight months, the healing process was uneventful and the tooth was asymptomatic, and with no evidence of resorption was noticed on the periapical radiograph (Figure 4). The patient was examined 13 months after the procedure. The tooth was functional, asymptomatic with no evidence of bone resorption or apical pathology in the radiographs (Figure 5).

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Figure 1: Armamentarium for the treatment case study.

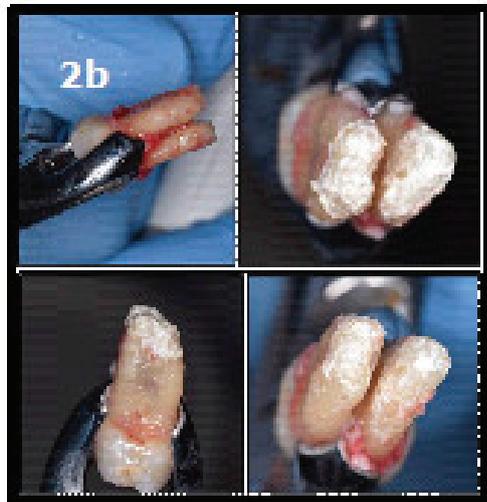
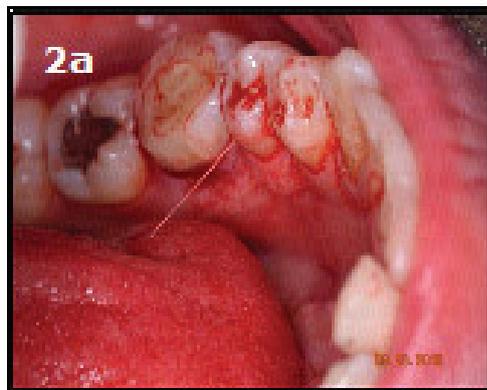


Figure 2: The clinical steps showed (2c, 2d, 2e).

Figure 2: The clinical steps showed (2a, 2b).



Figure 3: The radiograph revealed a decrease in radiolucency around the roots.

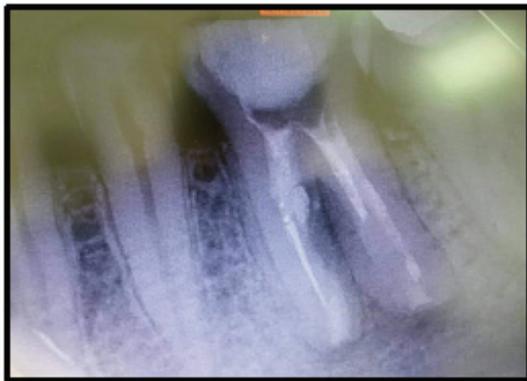


Figure 4: periapical radiograph showed no evidence of resorption.



Figure 5: periapical radiograph showed no evidence of bone resorption or apical.

Discussion

The IR is considered as an alternative treatment choice in cases when root canal treat-

ment is failure and apical resection might be difficult to perform. Thus, apicoectomy and retro-filling process were performed extraorally, then the tooth replanted into its alveolar socket (Allen, 2015). The successful intentional replantation procedure depends on two main factors, an atraumatic extraction and the short extraoral time which recommended being less than 10 mins. When the clinician following the proper selection of such cases alongside recommended steps, a highly and successful rate could be expected. An intentional replantation for the molar tooth is a costly-effective alternative procedure for a failing nonsurgical root canal treatment (NSRCT) than many other treatment options. It has an initial cost equivalent to that for apical surgery. IR is not a commonly performed procedure because of its unfamiliar and not a routine procedure as not easy to convenience the patient to re insert what it was already removed from the dental arch because of it was a diseased non treated tooth and somehow the technique sensitivity as its need well skilled dentist starting from case selection, the procedure itself till reinsertion of the tooth back again to its socket. Dental clinicians may unfamiliar with such a procedure to be considered as one of their treatment planning. Grossman, (1966) stated that intentional replantation should be the procedure of the last resort. Within our work in this case it must be mentioned that this procedure can be re considered as treatment plan to be used for treating hopeless teeth when persistent infection after nonsurgical re-treatment of the root canal systems and in case that the patient cannot afford payment for bridgework or dental implant and within the advancement of biomaterials such as Mineral Trioxide Aggregate (MTA) availability in the dental practice and with a little more effort from the dentist , this procedure of re-implantation should be consider to afford a good dental service

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for some selected cases. A study by Bender and Rossman, (1993) were reported a failure of intentional replantation case after 3 weeks of replantation. This could be related to missing preoperative antibiotics according to the author's opinion. However, the patient was then given preoperative antibiotics with a chlorhexidine rinse, and the tooth was replanted for a second time. Then, after 46 months, the researchers indicate that the tooth had healed without any complication. They reported 31 cases of intentional replantation with an overall success rate of 80.6%. The survival time for IR teeth ranged from one day to 22 years. Rouhani et al, (2011) reported 95% success rate on reimplanted cases with the retention average between 3 to 5 years. A study by Aqrabawi, (1999) evaluated two cases of intentional replantation and retrograde filling of mandibular second molars. Up to 5 years recall visit, radiographs showed no evidence of any pathologic changes. On the other hand, Nuzzolese et al, (2004) alongside many researchers stated that the literature confirmed the successful rate of intentional replantation at 5 years ranges from 70%-91%. An unconventional intentional replantation of a mandibular second molar by Chandra and Mahalinga, (2006) revealed that the tooth was still functional. Besides, the patient was asymptomatic and the recall intraoral periapical radiographs showed an intact periodontal ligament space and laminadura with no evidence of gross root resorption or ankylosis. Furthermore, a study by Muhamad Abu-Hussein et al, (2013) indicated a case of mandibular second molars that treated with intentional replantation and retrograde fillings after 8 year recall visit, the radiographs revealed no evidence of pathological changes.

Conclusion

Within the limitation of the present case report, the followings were concluded:

- The primary goal of any conservative is to preserve natural dentition.
- The intentional replantation for proper case selection could provide long-term results as good as those of apical surgery.
- The intentional replantation might be suggested as an alternative treatment plan for certain cases when routine treatments not applicable, have failed, or periapical surgery unlikely to succeed, impracticable or less acceptable by the patients.
- Although intentional replantation is considered as the procedure of the last resort, however, dental practitioners may still unfamiliar with the application of such a technique.

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