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Management of endodontic complication with separated instrument by intentional replantation: A case report

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Abstract
Intentional replantation 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 replantation is described and discussed as a treatment approach for failed root canal treatment with broken instrument periapically in mandibular third molar.

Keywords: intentional replantation, root resorption, periodontal ligament

Introduction

Intentional replantation was defined by Grossman as the purposeful removal of a tooth and its reinsertion into the socket almost immediately after sealing the apical foramina.[7] 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 [8]. 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 [1]. Messkoub [14] reported success rate in retaining replanted teeth vary between 52- 95%. 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 [7, 14]. Kratchman [12] has given a thoroughly listed and well-illustrated description of both indications and contraindications for intentional replantation.

Dryden and Arens [4] described the histological perspective of intentional replantation and included indications, contraindications, technique, and an extensive review of the literature pertaining to this subject. Mineral trioxide aggregate (MTA) has satisfactory properties, for solving many endodontic problems, including: biocompatibility, favourable sealing ability, mechanical strength and a capacity to promote periradicular tissue healing. Originally developed as a surgical root-end filling material, MTA has been used successfully in several clinical applications such as pulp capping, pulpotomy, perforation repair treatment of traumatized teeth with immature apices and for treatment of root resorptions [9]. The present case describe an intentional replantation of mandibular third 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 month of incomplete pulp space therapy of that tooth. 48 was endodontically treated 1 month back by a general dentist. After taking an IOPA, overextended broken instrument in periapical area was detected [Fig-1]. The patient was advised that a periapical surgery was necessary. She 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 replantation, and appraised of its risks and limitations. She accepted this recommendation and was given prescription of amoxicillin 500mg for three times a day for three days.

She was then scheduled for an intentional replantation procedure. Local anesthesia was administered and the tooth was removed with forceps without complication [Fig-2].

Using a sterile gauze sponge, the tooth was held by hand on the crown and the roots were beveled using high speed handpiece [Fig-4].

Fig 1: Preoperative IOPA

Fig 2: After Extraction

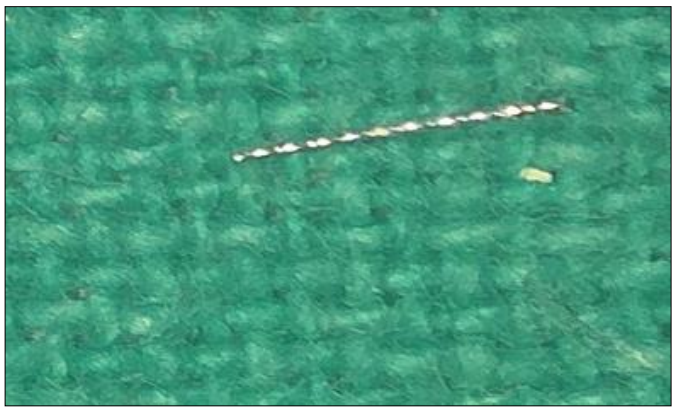

Fig 3: Instrument removed

Fig 4: Root end preparations

Fig 5: Prepared root ends

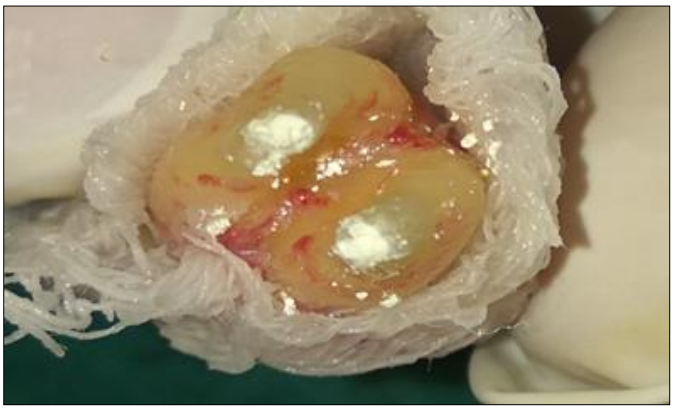

Fig 6: Restoration with MTA

Fig 7: Splintting done

Fig 8: After 3 Month

Retrofill preparations were made with straight bur in a high speed handpiece [Fig-5] and MTA was condensed into the preparations [Fig-6]. The alveolus was gently curreted and the pathology was removed [Fig-7] and the broken instrument was carefully taken out [Fig-3].

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-8]. The occlusion was adjusted on that tooth. Postoperative instructions and prescription for injection voveran for pain were given. After three weeks the sutures were removed and the patient was asymptomatic. The patient was placed on 6 months recall for two years. After two years the patient was completely free of symptoms. Percussion was negative and

elicited a normal sound. A periapical film showed no evidence of root resorption [Fig-9], and the root surface and periodontal ligament appeared intact.

Discussion

As reported by Kratchman [12], there are some advantages in performing intentional replantation when periapical surgery is refused. The procedure is typically less time consuming and invasive as compared to periapical surgery. He reported that indications included limited access, anatomical limitations, and perforations in areas not accessible to surgery, failed apical surgery and persistent chronic pain. With proper case selection, the procedure is simple and straightforward. There is less chance of damage of vital structures adjacent to the teeth. The third molar case had slightly curve shape roots which made the extraction and the manipulation during the procedure simple and less time consuming. In the present case reports, the teeth were outside the mouth approximately less than 15 minutes, manipulation was kept minimal, and the periodontal ligament was not removed as recommended by most authors. The best reimplantic prognosis is directly related to the amount of time the tooth is maintained extra orally during the procedure. From some reports, the potential for resorption in replanted teeth increases if they remain outside the mouth for more than 30 minutes [15]. Kratchman [12] also listed contraindications of this procedure like preexistent moderate to severe periodontal disease, flared roots, a non restorable tooth and missing interseptal bone. Dryden and Arens [4]. Cited refusal of the patient for periapical surgery as a viable indication for the intentional replantation. Certainly the risks of intentional replantation were considered and acknowledged and conveyed to the patients. Their desire to save the tooth was made with all these issues in the mind, fortunately to date; this procedure resulted in the continued retention of teeth in this case.

Conclusion

Some authors consider Intentional Replantation 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.

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