



Case Report

INTENTIONAL REIMPLANTATION OF MAXILLARY FIRST MOLAR WITH BIODENTIN USED AS A ROOT END FILLING MATERIAL: A CASE REPORT

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Abstract:

Intentional reimplantation is a rarely performed procedure in the dental practice. It involves intentional atraumatic extraction of the tooth followed by curettage of apical area or retrograde cavity preparation and the placing the tooth back into its socket. It is generally performed when all other options have failed. Though it presents a challenge to the clinician along with the risk of root resorption and fracture of the tooth. This case report presents a case of intentional reimplantation in the case of instrument separation beyond the apex along with retrograde cavity preparation and restoration with Biodentin.

1. Introduction

Pain management is the mainstay of any treatment modality. Endodontic procedures focus on the elimination of painful stimuli. However, at times unexpected procedural errors can occur during the treatment that present a challenging task to the dentist. The treatment approach in such cases, is changed from a non surgical to a surgical one. Instrument separation is a complication that occurs due to over use of fatigued files. The treatment plan for such teeth changes according to the level of instrument separation. Normally, K files are most commonly separated due to fatigue and excessive use. These files may be bypassed or retrieved. However, at times all of these options fail. In such cases, the clinician may employ the use of surgical techniques of reimplantation. Reimplantation can be done intentionally or in case of an avulsed tooth to place it back in the socket. Intentional reimplantation is the intentional extraction of the tooth and placing it back in the same socket.¹

Intentional reimplantation involves extracting the tooth with minimal trauma to the surrounding soft tissues. The extraoral time is a crucial factor that determines the prognosis of the treatment. To ensure the viability of the cells, it is important that the procedure is performed in the minimum extraoral time. Also, it is ensured that at all times, the tooth is kept moist. For this generally mediums like Hanks's balanced salt solution are used. After the required procedure, the tooth is reimplanted into the socket.²

Reimplantation allows the clinician to maintain the natural dentition and treat impending challenges like root caries, perforations, resorptive defects and instrument

separations to be treated in an efficient way. It also allows retrograde cavity preparation and restoration. While treating the tooth, it allows curettage of the soft tissue defects and granulation tissue simultaneously. Though, not commonly practiced due to lack of skill, it is an excellent treatment protocol that can save the tooth.³

2. Case Report

A 35 years old female patient reported to the Department of Conservative Dentistry and Endodontics with the chief complaint of pain in the upper right back tooth region since a month. On clinical examination, there was incomplete root canal treatment in the maxillary right first molar. The patient had undergone incomplete root canal treatment previously. The tooth was tender on percussion. On radiographic examination, there was presence of previously made access in the concerned tooth. Also, there was presence of a separated instrument in the apical third of the mesiobuccal canal that was extruded beyond the apex. (Figure 1) The persistent pain was attributed due to the extruded file in mesiobuccal canal. The patient was explained the procedure of reimplantation and she consented for the same.



Figure 1: Preoperative radiograph

After obtaining the written consent of the patient, tests were done to check the bleeding and clotting time. Patient was given prophylactic antibiotic coverage and anti-anxiety drugs before the procedure. After administration of local anesthesia, the tooth was extracted atraumatically. Care was taken to minimize injury to soft tissues during the procedure. Special atraumatic extraction forceps were used for the same. After extraction of the tooth, the tooth was kept in moist gauze and maintained in medium of Hank's balanced salt solution. (Figure 2)



Figure 2: Atraumatically extracted tooth

The extruded file was removed from the mesiobuccal canal (Figure 3). Canal was prepared and obturated (Figure 4). Cavity was the filled with permanent restoration (Figure 5). Retrograde cavity preparation was done using an inverted cone bur. Following this, the retrograde cavity was restored with Biodentin (Figure 6). Cleaning and shaping of the rest canals were done up to 25/0.06 and master cone rvg was taken. The root canal treatment was completed and coronal restoration placed. The socket was cleaned and the tooth was then reimplanted into the socket with firm pressure. The procedure was completed in a quickly while maintaining an extraoral time period of 15 mins.



Figure 3: Separated instrument removed



Figure 4



Figure 5

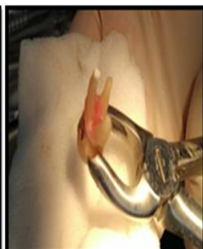


Figure 6

Figure 4,5,6: Mastercone placed, Coronal Restoration Done and Retrograde cavity preparation and restoration with Biodentin respectively.

The buccal and lingual socket walls were firmly compressed (Figure 7). Perio pack was placed to aid in postoperative healing of the tissues as seen in (Figure 8). Then fiber splinting was done in order to stabilize the tooth in the socket (Figure 9).



Figure 7- Tooth placed back in socket



Figure 8- Perio pack placed



Figure 9- Fiber Splinting Done

The patient was given postoperative instructions and follow up was maintained (Figure 10). At a follow up of one month, the patient showed complete post operative healing.

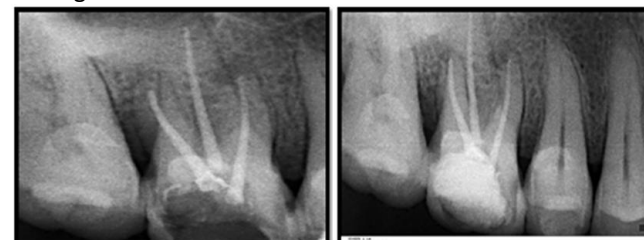


Figure 10 – Post Operative Follow up

Discussion

Intentional replantation is a reliable and predictable treatment for cases in which nonsurgical endodontic retreatment failed or is impractical and endodontic surgery is hampered because of anatomic limitations.¹

Intentional replantation (IR) is a surgical procedure that has often been regarded as the last treatment option. It is less popular than implant and endodontic retreatment. This decade has shown a rising interest in IR with (bio) materials in several dental disciplines, including root-end biomaterials, and periodontal regenerators.²

Intentional replantation is extraction of a tooth to do extraoral root canal therapy, curettage of apical lesion when present, and its replacement in its socket. It has been proposed as an alternative to routine extraction; however,

it should be considered a last resort because the root may be fractured during extraction.³

Difficultness of tooth extraction, the possibility of fracture during extraction and the risk of external resorption are some limitations of this treatment. The most common causes of failure in intentionally replanted teeth are external inflammatory resorption or replacement resorption and ankylosis caused by periodontal ligament damage.³

Intentional reimplantation is a procedure that enables the clinician to preserve the tooth when all other treatment modalities have failed. The introduction of biomaterials like Biodentin has increased the success of this procedure.

The properties of the ideal root-end filling material are as follows: biocompatibility, promotion of tissue regeneration without causing inflammation, ease of handling, low solubility in tissue fluids, bonding to dental tissue, non-absorbable, dimensional stability, radio-opacity and no staining of surrounding tissues.⁴

Biodentin is a novel biomaterial that shows properties similar to the normal tooth structures. It is highly biocompatible and serves as an excellent root end filling material. It has been used in this case as it has shown excellent results as a root end filling material.

Conclusion

Intentional reimplantation is not a common procedure but its importance cannot be underestimated as sometimes, it can be the last resort to save the tooth. The clinician must be aware of this procedure as it helps in preserving the tooth. It has gained popularity due to better instruments for atraumatic extraction and biomaterials that have improved its prognosis.

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