

**Management of Iatrogenic Complications Using Intentional Replantation Technique – A Case Report**

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**Abstract**

The goal of endodontic treatment is to treat or prevent apical periodontitis. Although nonsurgical root canal treatment has high survival and success rates, additional treatment is sometimes needed when apical periodontitis persists or because of iatrogenic errors like perforation and transportation as in the cases reported in this article. The first line of treatment is always nonsurgical retreatment or surgical retreatment. Extraction and replacement with a single-tooth implant is typically recommended when nonsurgical and surgical retreatments have an unfavorable prognosis or are risky. In these situations, intentional replantation may be an alternative to extraction and implant placement. The case report here present successful attempt of intentional replantation for iatrogenic

complications with tooth being asymptomatic and functional on follow ups.

**Keywords:** Transportation, chlorhexidine gluconate, retrograde, mineral trioxide aggregate, semirigid splint, intentional replantation.

**Introduction**

According to Ingle, Intentional Replantation is “the purposeful extraction of a tooth to repair a defect or cause of a treatment failure and then returning the tooth to its original socket.”[1] It is considered by most as a procedure of an endmost resort. This procedure is generally acceptable treatment alternative when there is limited mandibular opening, root canal obstructions, resorptive or perforation root defects that exist on areas that are not accessible via the usual surgical approach without excessive loss of root length or alveolar bone,[1]

failed previous nonsurgical endodontics, an apicoectomy procedure is unfavorable because of anatomical factors (e.g. buccal plate thickness, proximity to anatomical structures such as the mandibular nerve or inoperable sites such as lingual surfaces of mandibular molars) or financial factors preclude conventional implant placement. Buccal plate thickness may preclude surgical endodontic treatment in mandibular molars and the palatal root of maxillary molars.[2] Though removal of post is frequently successful in the hands of a skilled clinician, sometimes posts or separated instrument removal may pose risks greater than the potential benefits as compared with other options including extraction.[3]

It is avoided in cases of teeth with long, curved roots,[1] a more favorable prognosis with either conventional apical surgery or implant placement, active periodontal disease, a nonrestorable tooth, extraction requiring hemi-section or osseous recontouring, the tooth is part of a multiple-teeth prosthesis, or the roots are divergent. In these cases, a single tooth osteotomy may be considered. [4] Though, it is potentially more cost-effective and less time consuming than the alternatives, but there is a risk of root fracture or root resorption while performing the procedure or in later years respectively. In literature, Bender and Rossman reported a success rate of 81% of 31 teeth followed for up to 22 years. [5] Kingsbury and Weisenbaugh reported a success rate of 95% for 151 teeth followed for 3 years. [6]

### Case Report

A 40 years old female patient, reported to the department of Conservative Dentistry and Endodontics for evaluation of tooth #34. Her chief complaint was of pain in lower left region of mouth since 1 month. Patient was apparently asymptomatic until she felt pain in left mandibular region of mouth 1 month back. Pain increased since 1 week and did not subside on taking medications. Patient gave dental history of initiated root canal treatment 1 month back on

tooth #34 and since then the pain got severe and was not relieved on even taking medications. Medical history was noncontributory, no allergies or medications. No evidence of sinus was noted. Extraoral examination revealed no Facial Asymmetry Bilaterally, non-palpable lymph node, normal bilateral movements with no clicking or popping sound of TMJ. Intraoral examination revealed pain to percussion and palpation. Periodontal examination revealed mobility (Grade I), probing depths and gingival tone within optimal limits. Patient was advised root canal treatment but while taking working length radiograph transportation of the canal was observed. Thus, negotiation to bypass the transportation was attempted but it was not successful so the patient was advised root canal treatment followed by intentional replantation.

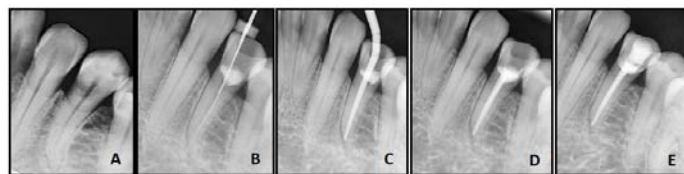


Figure 1: Root Canal Treatment - A. Preoperative Radiograph, B. Working Length Radiograph Confirming Transportation Of Canal, C. Mastercone Radiograph, D. Obturation Radiograph, E. Post endodontic Restoration Radiograph.

After root canal treatment was performed (Fig.1: A-E), on initiation of the procedure, the patient rinsed with chlorhexidine gluconate 0.12%, and profound inferior alveolar and lingual nerve block anesthesia was achieved with 2% lignocaine hydrochloride containing 1: 80,000 adrenaline. A mucoperiosteal flap was raised to gain access to the tooth apical to the crown margin to prevent damage to the crown. The tooth was extracted with minimal trauma through the use of forcep with no intraoperative complications (Fig.2: F). Operator carried the extracted tooth in the forceps (Fig.2: G) and the roots were evaluated for vertical fractures and transportation

site (Fig.2: H). Although recommended treatment of a vertical root fracture includes dentin bonding resin, no fractures were detected. The apex of the two root was bevelled with a bur and class I retrograde cavity prepared (Fig.2: I) removing 3 mm of gutta-percha and debris. Irrigation was performed with sterile saline and the apex was gently dried. Mineral trioxide aggregate (MTA Angelus) was mixed to the desired consistency according to the manufacturer's instructions, and root end filling was done (Fig.2: J).

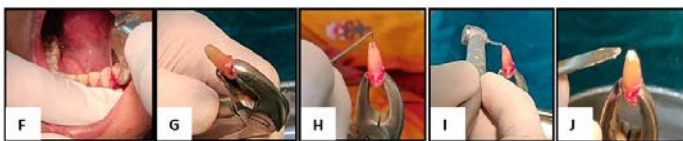


Figure 2: F. Extraction Of The Tooth After Loosening The PDL With Periosteal Elevator , G. Image Of Extracted Tooth, H. Site Of Transportation, I. Preparation Of Retrograde Cavity, J. Application Of Retrograde Filling Material – MTA.

As the tooth was being treated, the apical portion of the socket was curetted without disturbing the socket walls coronal to the apex. The tooth was replanted into the socket (Fig.3: K) and the buccal lingual cortical plates were lightly compressed and gauge piece placed over the tooth and the patient was asked to occlude (Fig.3: L). The tooth was replanted into the socket in around 10 min from extraction. A semirigid fiber splint along with flowable composite was used to splint the tooth with the adjacent teeth postoperatively (Fig.3: M). A postoperative intraoral radiograph was taken (Fig.3: N) and following postoperative instructions were given: chlorhexidine gluconate 0.12% rinse three times per day after meals for 7 days, Seratiopeptidase and paracetamol combination every 12 h for 72 h and soft diet for 2 wk.



Figure 3: K. Tooth Inserted Back In The Socket, L. Patient Asked To Occlude After Replantation, M. Tooth Replanted And Splinted, N. Postoperative Radiograph.

The patient was recalled in 2 weeks (Fig.4: O) for splint removal and evaluation of the surgical site. At 2 week, the soft tissues appeared pink in colour with minimal inflammation and pain upon biting had diminished. The patient was recalled after 1 month and 3 months. She reported after 6 months (Fig.4: P). Healing was uneventful and the patient's symptoms had subsided. Tooth mobility was normal. The patient was recalled after 12 months (Fig.4: Q and R) and clinical examination revealed no response to percussion or palpation, soft tissue probing depths and mobility were within normal limits. Radiographic examination revealed complete osseous healing of the peri-apical radiolucency.



Figure 4: O. 2 Week Follow Up Radiograph, P. 6 Months Follow Up Radiograph Q. 12 Months Follow- Up Radiograph, R. 12 Month Follow Up Clinical Picture.

### Discussion

In the above case report, intentional replantation was chosen as choice of treatment because of iatrogenic error that was type III apical transportation. The tooth was symptomatic and the patient wanted to save the tooth, instead of going for extraction followed by implant which was not cost effective for the patient, intentional replantation was suggested. In this case fibre splint was used to secure the reimplanted tooth because rigid splinting may harbour bacteria, delay healing and promote

replacement resorption by not allowing physiological mobility. [7] The success of intentional replantation is mostly dependent upon extraction with minimal trauma, short extra-oral time with copious irrigation and meticulous instrumentation as well as carefully controlled postoperative patient compliance. Successful completion, according to Kratchman, of extra-oral manipulation should not exceed 10 minutes, [7] and the procedure in this case was also completed within 10 minutes. Radiograph after retrofill and before replantation is a resource that one can avail for further apical evaluation. This radiograph allows the operator to confirm the apical fill adequately extends from the gutta-percha to the apex. It must be taken into account that additional extra-oral time could impede the overall success of the procedure. It was decided before treatment, not to take an immediate postoperative radiograph before reimplantation because of the additional extra-oral time required. MTA-Angelus was used as retrograde filling material after apicoectomy and to seal perforation site as it has been known to show better marginal adaptation than other retrograde filling material. [8]

The selection of intentional replantation as a treatment modality has always been controversial. There are many reported indications, yet the procedure has often been considered an endmost option to retain natural teeth. A recent systematic review of the literature by Torabinejad et al found an overall 88% survival rate for intentionally replanted teeth, with more contemporary studies demonstrating success rates as high as 95%. Because of recently reported high survival rates, intentional replantation might now be considered among more commonly accepted treatment options. [9]

Another systematic review and meta-analysis by Mainkar revealed a survival rate of 89.1% (83.8%–94.4%) of intentionally replanted teeth and of 96.3% for single tooth

implant. [10] Although the survival rate of implants is higher, intentional replantation is a more cost-effective treatment option. Intentional replantation should be discussed with patients as a treatment modality, especially because an implant can still be placed if intentional replantation is unsuccessful. The reason for most of the failures is due to some form of resorption or periodontal problem which is generally diagnosed after 1 year; however, inflammatory resorption and replacement resorption (ankylosis) can be usually observed earlier within 1–2 months. [11] No such signs were seen clinically and radiographically in the present case and patient was satisfied with the treatment outcome.

### **Conclusion**

Intentional replantation is an often-overlooked but cost-effective treatment that allows patients to retain their teeth. It provides patients an alternative to extraction and implant placement when nonsurgical and surgical retreatments are not feasible, even when finances are not a constraint.

### **References**

1. Ingle JI, Bakland LK, Baumgartner JC. Ingle's Endodontics 6. Hamilton, Ontario: BC Decker, 2008.
2. Jin GC, Kim KD, Roh BD, Lee CY, Lee SJ. Buccal bone plate thickness of the Asian people. *J Endod* 2005;31:430–4.
3. Ruddle CJ. Nonsurgical retreatment. *J Endod* 2004;30:827–45.
4. Kany FM. Single-tooth osteotomy for intention replantation. *J Endod* 2002;28:408–10.
5. Bender IB, Rossman LE. Intentional replantation of endodontically treated teeth. *Oral Surg Oral Med Oral Pathol* 1993;76:623–30.
6. Kingsbury BC Jr, Wiesenbaugh JM Jr. Intentional replantation of mandibular premolars and molars. *J Am Dent Assoc* 1971;83:1053–7.

7. Kratchman S. Intentional replantation. *Dent Clin North Am* 1997;41:603–17.
8. Xavier CB, Weismann R, de Oliveira MG, Demarco FF, Pozza DH. Root-end filling materials: apical microleakage and marginal adaptation. *J Endod* 2005;31:539–42.
9. Becker B.D. Intentional Replantation Techniques: A Critical Review, *JOE* January 2018, Volume 44, Issue 1, Pages 14-21
10. Mainkar A. A systematic review of the survival of teeth intentionally replanted with a modern technique and cost-effectiveness compared with single-tooth implants. *J Endod.* 2017;43:1963–8.
11. Asgary S, Alim Marvasti L, Kolahdouzan A. Indications and case series of intentional replantation of teeth. *Iran Endod J.* 2014;9:71–8.