



Case Report

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Reviving a Hopeless Tooth: Intentional Reimplantation as a Last Resort

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Abstract

This case report describes the management of a 35-year-old female patient who presented with mobility and extrusion of the maxillary incisors (#21, #22) following trauma. Clinical examination revealed Grade III mobility, extrusion, and loss of vitality in tooth #21, while tooth #22 exhibited Grade I mobility with a delayed response. Radiographic findings showed periodontal ligament widening, periapical radiolucency, and bone loss extending to the middle third of the roots. Following Phase I therapy and root canal treatment, intentional replantation of #21 was performed, involving atraumatic extraction, root surface conditioning with 17% EDTA, and reimplantation. The tooth was stabilized initially with extracoronal and occlusal splints, later replaced by permanent intracoronal splinting. At the one-year follow-up, the reimplanted tooth was functional, asymptomatic, and esthetically acceptable. Radiographs demonstrated bone fill, although ankylosis was noted. This case highlights intentional replantation as a conservative, cost-effective, and tooth-preserving treatment option in situations where otherwise extraction and replacement with implants may be considered.

Keywords: Intentional reimplantation, Tooth mobility, Extrusion, Tooth preservation, Ankylosis, Maxillary central incisor

INTRODUCTION

The primary goal of periodontal therapy is to restore lost hard and soft tissues and reestablish function and comfort. In advanced periodontal breakdown, conventional approaches often fail, making extraction the usual choice. In select cases, intentional replantation (IR) offers a proven, tooth-preserving alternative, allowing functional retention of the natural tooth before prosthetic replacement becomes necessary [1].

Intentional replantation is defined as the planned, atraumatic extraction of a tooth, followed by extra-alveolar inspection and management of the root surfaces (including endodontic procedures as indicated), and re-insertion of the tooth into its original socket [2].

Clinical indications for intentional replantation (IR) include limited access or visibility, proximity to vital anatomic structures, and impracticality of nonsurgical retreatment (e.g., obstructed canals or inaccessible perforations). Other indications are persistent endodontic pain, iatrogenic avulsion, unwanted orthodontic extrusion, and failure of retreatment or apical surgery [3,4]. However, recent evidence indicates that strict adherence to protocol, minimizing extraoral time, preserving PDL vitality, and using regenerative adjuncts, can achieve favorable outcomes even in such cases [5]. Complications like ankylosis or resorption (≈4-12%) are minimized by careful PDL handling and limiting extraoral time. In elderly patients with limited alternatives, a stable, asymptomatic ankylosis may be acceptable for short-term function and treatment planning. This case emphasizes intentional replantation as a viable tooth-conserving option that can provide functional stability and esthetic preservation when strict protocols and careful selection are followed..

CASE REPORT

A 35-year-old woman presented with mobility and extrusion of #21 and #22 following a self-fall injury. Intraoral examination revealed generalized gingival pigmentation, blunted papillae, bleeding on probing, and localized inflammation around #21–22 with probing depth of 6 mm. Tooth #21 showed Grade III mobility with 4 mm extrusion and was non-vital, while #22 exhibited Grade I mobility with a delayed response. Radiographically, PDL widening, periapical radiolucency, and bone loss up to the middle third of the roots were noted in relation to #21 and #22 (Figure 1).

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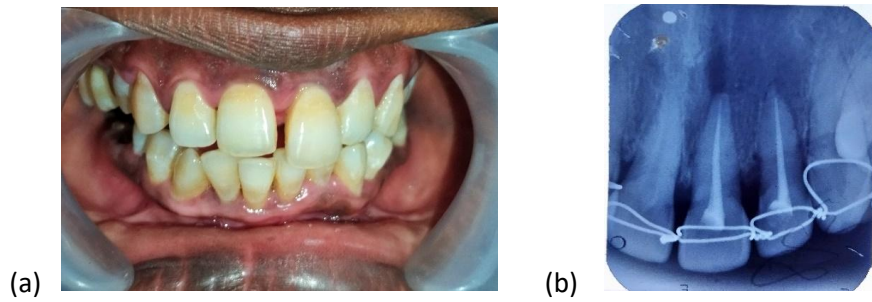


Figure 1: Pre operative images (a) clinical image (b) radiographic image



Figure 2: (a) atraumatic extraction of 21 (b) drilling at the extraction socket using pilot drill (c) reimplanted tooth stabilized by extra coronal splinting (d) acrylic splint for occlusoapical stability (e) one week post op (f) two week post op (g) six week post op – intracoronal splinting and composite build up

As the patient strongly desired to retain her natural tooth for esthetic reasons, intentional replantation of #21 was planned after informed consent. Phase I therapy was completed, followed by root canal treatment on #21 and #22. The replantation procedure was scheduled one week after RCT completion.

Under local anesthesia, a full-thickness mucoperiosteal flap was elevated with sulcular and interdental incisions for access. The right maxillary central incisor (#21) with periodontal destruction was

atraumatically extracted, preserving alveolar bone and viable PDL fibers. The socket was debrided, irrigated with povidone-iodine, and the tooth was cleaned of necrotic cementum and debris.

Root conditioning with 17% EDTA for one minute was performed, followed by saline rinse. A 2 mm apical pilot osteotomy was created, and the tooth was reimplanted with intimate root–bone contact. Stabilization was achieved using a 26-gauge wire extracoronal splint and an occlusal acrylic splint. The flap was sutured with interrupted sutures

to obtain primary closure (Figure 2).

Postoperatively, the patient received amoxicillin (500 mg TID, 5 days), ibuprofen (400 mg PRN), and 0.12% chlorhexidine rinse twice daily for two weeks. A soft diet, restricted use of the anterior region for 10–14 days, and meticulous oral hygiene were advised. Regular follow-up appointments were scheduled.

At 1 week, healing was satisfactory with minimal inflammation and the splint intact. By 2 weeks, sutures and the occlusal acrylic splint were removed, with favorable healing. At 4 weeks, the site was stable with no mobility. At 6 weeks, the extracoronal splint was removed and replaced with a permanent intracoronal splint (#13–23) using braided wire and composite, and the midline diastema was closed with direct composite. At 1 year, clinical mobility had resolved, and radiographs showed bone gain around #21 and #22 with loss of lamina dura, suggestive of ankylosis (Figure 3).



Figure 3: One year post operative clinical and radiographic images

DISCUSSION

Between the 6-month and 12-month follow-ups, the tooth remained functionally stable and asymptomatic. However, radiographic evaluation revealed loss of the periodontal ligament space around tooth #21, suggestive of replacement resorption or ankylosis. Despite this, significant bone fill was observed at the crestal level, indicating ongoing periodontal regeneration and favorable bone healing in the surrounding area.

The success of this technique depends heavily on appropriate case selection, atraumatic surgical technique, maintenance of periodontal ligament (PDL) viability, and meticulous postoperative care. This case report demonstrates the successful reimplantation of a periodontally compromised maxillary central incisor (#21) with a stable one-year outcome, despite radiographic evidence of ankylosis.

While traditionally viewed as a negative outcome, ankylosis does not necessarily imply failure, especially in adult patients where skeletal growth has ceased. In such cases, ankylosed teeth can remain in functional occlusion for extended periods without esthetic or structural complications [6,7].

A systematic review by Torabinejad et al. reported a success rate of approximately 88% for IR procedures, with ankylosis observed in only a small subset of cases and often without clinical symptoms [8]. Choi et al. (2014) also reported favorable outcomes in periodontally compromised teeth treated with IR, with no adverse effect on function despite occasional signs of replacement resorption [9]. Moreover, Walia et al. (2019) emphasized that ankylosis in mature patients may stabilize the tooth and enhance longevity if there is no associated progressive root resorption [10].

In our case, the presence of ankylosis did not compromise function, esthetics, or periodontal stability. In fact, the adjacent bone showed signs of regeneration, and the tooth remained firm and pain-free. This aligns with findings by Kling et al. (1986) and Demir (1997), who concluded that ankylosed teeth in adults may remain functional and asymptomatic for many years, especially when supported by proper splinting and occlusal management [11,12].

Additionally, the use of permanent intracoronal splinting in this case contributed to the long-term stabilization of the anterior segment. Splinting helps distribute functional loads and maintain alignment, particularly in cases where tooth mobility or structural compromise is present [13].

CONCLUSION

Intentional reimplantation, when performed with proper case selection and technique, can successfully retain periodontally compromised teeth. In this case, despite ankylosis at follow-up, the tooth remained functional, symptom-free, and esthetically acceptable, supporting reimplantation as a viable alternative to extraction.

Conflicts of Interest

The author reports no conflicts of interest.

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