

# FACULTY PERSPECTIVE

## VIEWS ON DENTAL TOPICS & TRENDS

### Intentional Replantation: Better than a Last Resort Procedure

#### WHAT IS IT?

Today, modern endodontic root end surgery is considered the “second arm” of endodontics when it comes to saving teeth and giving them a second chance at remaining with the patient after unsuccessful root canal treatment or re-treatment. During the clinical and radiographic assessment of these cases, however, root end surgery may be deemed not a favorable option. Ironically, the best alternative to avoid extraction and loss of the tooth altogether, is to actually perform the extraction and replant it; a treatment option established today called “Intentional replantation.” The procedure essentially involves removing the diseased tooth, repairing it outside of the mouth, and then reinserting it into its socket. No longer should this procedure be considered a “last resort,” but it should be recognized as a treatment alternative for patients.

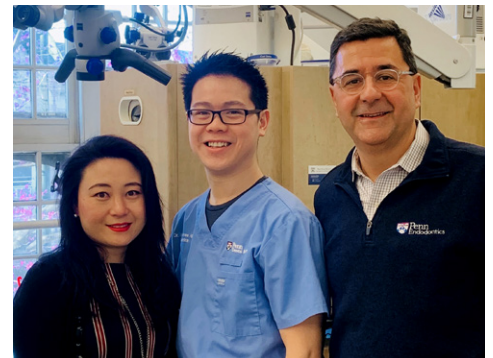
#### CLINICAL CONSIDERATIONS FOR CASE SELECTION

- Patient motivation to save his/her tooth
- Tooth with tapered root morphology and intact interseptal bone
- Minimal periodontal involvement
- Difficult access (i.e., 2nd molars)
- Complications in the areas not accessible surgically (i.e., perforation, separated instruments)
- Close proximity to nerve structures (i.e., mandibular canal, mental foramen)
- Foreseeable difficult patient management (as with the elderly) for root end surgery

#### CLINICAL PROTOCOL

The prognosis of intentional replantation relies heavily on the atraumatic extraction of the tooth being worked on in addition to its delicate handling during and after extraction.

The recommended extraoral time of the tooth is between 10–15 minutes. To begin, the tooth should be gripped just slightly above the CEJ with extraction forceps, and time taken to slowly extract the tooth without damaging the cervical area or causing a fracture. Apical curettage of the extraction socket is not advised and any granulation tissue could be removed using surgical suction to avoid touching the alveolar walls. After successful extraction, a rubber band is placed around the forceps to maintain a firm grip of the tooth and it is moved to above a basin filled with Hank’s Balanced Salt Solution (HBSS) or Pedialyte. Here the tooth is constantly bathed in the selected medium, which maintains cell viability for up to 30 minutes. The apical 2–3 mm is then resected using a Lindemann surgical bur or any straight carbide bur to avoid any bevel. After resection, the apex is stained with methylene blue and inspected under high magnification through a microscope to observe anatomical variation, presence of isthmus, missed canals, as well as any signs of fracture. Root end preparation is then completed using a 330 carbide bur to approximately 3 mm in depth. Mineral Trioxide Aggregate (MTA) or Bioceramic (BC) Putty are the current materials of choice for root end filling due to their hydrophilic nature and biogenic with zero shrinkage properties. After condensing the material, the tooth is then inserted gently into its socket, and the buccal and lingual cortical plates are gently compressed with finger pressure and the patient is asked to bite down gently. Splinting is rarely required. Unnecessary splinting may cause ankylosis, which is the number one cause of failure for replantation. When indicated, however, sutures can be placed in a non-taut, diagonal manner temporarily to reduce mobility and incidence of ankylosis.



Contributed By: Drs. Sumin Lee, Nhan James Ngo, and Bekir Karabucak, Dept. of Endodontics

#### OUTCOMES OF INTENTIONAL REPLANTATION

The survival rate of these replanted teeth can reach up to 93% at 12 years if performed with modern techniques and materials. The most recent systematic review states a success rate of 89.1%, along with the comments that a replantation is more cost-effective than a single tooth implant and if a replantation is not successful, there is always the alternative of an implant. In addition, our group’s recent retrospective study demonstrated that 88% of the cases (20 of 25) showed successful results, including 72% in the completely healed group and 16% in the healing group. Only 13% of the cases were considered failures with mean follow-up period of 22.3 months.

#### SUMMARY

With the advent of magnification, bioceramics as well as updated instruments, intentional replantation has become a well-established, and scientifically supported treatment modality today in endodontics. It has been shown to be successful and most importantly very appreciated by many patients. Our challenge now as endodontists is to increase the awareness of our colleagues in the dental field of this very viable treatment option for patients when applicable. ■

View full article at:  
[www.dental.upenn.edu/replantation](http://www.dental.upenn.edu/replantation)