



Treatment of the Avulsed Permanent Tooth

Recommended Guidelines of the American Association of Endodontists

Updated 10/95

I. Management at Site of Injury

- A. Replant immediately, if possible. If contaminated, rinse with water before replanting.
- B. When immediate replantation is not possible, place tooth in the best transport medium available.

II. Transport Media

- A. Hank's Balanced Salt Solution (H.B.S.S.)
- B. Milk
- C. Saline
- D. Saliva (buccal vestibule)
- E. If none of the above is readily available, use water.

III. Management in the Dental Office

A. Replantation of Tooth

1. If extraoral dry time is less than one hour with or without storage in a physiological media (such as Hank's Balanced Salt Solution, milk, or saline), replant immediately.
2. If extraoral dry time is greater than one hour, soak tooth in an accepted dental fluoride solution for 20 minutes, rinse with saline, and replant.

B. Management of the Root Surface

1. Keep the tooth moist at all times.
2. Do not handle the root surface (hold tooth by the crown).
3. Do not scrape or brush the root surface or remove the tip of the root.
4. If the root appears clean, replant as is after rinsing with saline.
5. If the root surface is contaminated, rinse with H.B.S.S. or saline (use tap water if above are not available). If persistent debris remains on root surface, gently use cotton pliers to remove remaining debris and/or gently brush off debris with a wet sponge.

C. Management of the Socket

1. Gently aspirate without entering the socket. If a clot is present, use light irrigation with saline.
2. Do not curette the socket.
3. Do not vent socket.
4. Do not make a surgical flap unless bony fragments prevent replantation.
5. If the alveolar bone is collapsed and prevents replantation, carefully insert a blunt instrument into the socket to reposition the bone to its original position.
6. After replantation, manually compress (if spread apart) facial and lingual bony plates.

D. Management of Soft Tissues - tightly suture any soft tissue lacerations, particularly in the cervical region.

E. Splinting (indicated in most cases)

1. Use acid-etch/resin alone or with soft arch wire, or use orthodontic brackets with passive arch wire. Suture in place only if alternative splinting methods are unavailable. (Circumferential wire splints are contraindicated.)
2. Splint should remain in place for 7-10 days; however, if tooth demonstrates excessive mobility, splint should be replaced until mobility is within acceptable limits.
3. Bony fractures resulting in mobility usually require longer splinting periods (2-8 weeks).

4. Home care during splinting period should encompass:

- a. No biting on splinted teeth
- b. Soft diet
- c. Maintenance of good oral hygiene

IV. Adjunctive Drug Therapy Considerations

- A. Systemic antibiotics
- B. Referral to physician for tetanus consultation within 48 hours
- C. Chlorhexidine rinses
- D. Analgesics

V. Endodontic Treatment

- A. Tooth with open apex (divergent apex) and less than one hour extraoral dry time:
 1. Replant in an attempt to revitalize the pulp.
 2. Recall patient every 3-4 weeks for evidence of pathosis.
 3. If pathosis is noted, thoroughly clean and fill the canal with calcium hydroxide (apexification procedure).
- B. Tooth with open apex (divergent apex) and greater than one hour extraoral dry time:
 1. Thoroughly clean and fill canal with calcium hydroxide.
 2. Recall the patient in 6-8 weeks.
 3. Because of poor prognosis, consider alternative treatment options.
- C. Tooth with partially to completely closed apex and less than one hour extraoral dry time:
 1. Biomechanically clean the root canal system in 7-14 days.
 2. Medicate the canal with calcium hydroxide for as long as practical, usually 6-12 months.
 3. Then, obturate canal with gutta percha and sealer unless complications are apparent.
- D. Tooth with partially to completely closed apex and greater than one hour extraoral dry time:
 1. Perform root canal therapy either intraorally or extraorally.
 2. Prior to replantation, remove tissue tags from the root surface and soak the tooth in an accepted dental fluoride solution.

VI. Restoration of the Avulsed Tooth

- A. Recommended Temporary Restorations (placed prior to final obturation)
 1. Reinforced zinc oxide eugenol
 2. Acid etch/composite resin
- B. Recommended Permanent Restorations (placed immediately after final obturation)
 1. Dentin bonding agent
 2. Acid etch/composite resin

VII. Additional Considerations

- A. Avulsed primary teeth should not be replanted.
- B. Avulsed permanent teeth require follow-up evaluations for a minimum of 5 years to determine the outcome of therapy.
- C. Inflammatory resorption, replacement resorption, ankylosis and tooth submergence are potential complications when avulsed teeth are replanted.