



Managing Dental Trauma

Adapted from DiAngelis and Bakland

- Dental trauma is a significant problem. Approximately 25% of Americans aged 6- 50 years have had trauma to their upper and/ or lower incisors
- Traumatic injuries are both unexpected and inconvenient. Both the patient and the patient's parents are likely to be in emotional distress, so a decisive plan to evaluate and handle dental trauma should be established.

•Trauma Assessment Checklist

1. History of the accident— When, where, how, why.
2. Chief complaint
3. Neurologic exam — Headache, nausea, loss of consciousness, amnesia, disorientation.
4. Examination— Extraoral, intraoral, occlusion, TMJ.
5. Documentation
 - Record all findings of fractures, color changes, and pulp exposures.
 - Pulp testing— Immediately following trauma, pulp tests are unreliable, but they serve as a baseline for future pulpal evaluations
 - Radiographs
 - Photographs
6. Refer the patient to their physician to evaluate the need for a tetanus booster.

Tooth Fractures

•Uncomplicated crown fractures— Involves only enamel and dentin (no pulp exposure).

•**Treatment:** Protect the exposed dentin and restore the tooth as soon as possible. If available, the fractured segment can be bonded back in place.

•Complicated crown fractures—Involves the enamel, dentin, and pulp.

•**Treatment:** If the root apex is closed and mature, then root canal therapy performed, followed by crown placement.

However, if the root apex is open and immature, then every effort should be made to maintain pulp vitality and encourage natural root formation and apex closure. This is done by a 3mm shallow pulpotomy with a diamond bur and water coolant. Once bleeding stops, then a calcium hydroxide dressing is placed, a thin layer of cement is applied, and a composite restoration is placed. Place the patient on recall to re-evaluate the area to make sure that pulp vitality has been maintained. If pulpal symptoms occur, then endodontic therapy should be started, followed by apexification with calcium hydroxide.

•Horizontal Root Fractures— Root fractures that are solely contained within bone and do not communicate with the gingival sulcus have a good prognosis. Root fractures near the alveolar crest have a poorer prognosis.

•**Treatment:** The teeth should be splinted with a RIGID splint to the adjacent teeth for at least 3 months. As long as there is no communication with the sulcus, then the teeth should be monitored, but no further treatment is indicated unless symptoms arise or radiolucencies appear.

If symptoms arise, and only the coronal segment is involved, then apexification techniques should be initiated on the coronal segment only, and the apical segment should be left alone.

If the apical segment is also involved, then endodontics can be performed on both segments (if possible) or the apical segment can be removed.

•Vertical Root Fractures— Vertical root fractures which spread down the long axis of teeth have a very poor prognosis. The tooth should be extracted, and other restorative options should be explored (bridge or implant).

Management of Avulsed Teeth

Adapted from the American Association of Endodontists

At the Time of the Accident

- Replant immediately. If the tooth is contaminated, rinse with water before replanting.
- If replantation is not possible, place the tooth in the best transport media possible.

Transport Media (ranked best to worst)

- Hank's Balanced Salt Solution
- Milk
- Saline
- Saliva (buccal vestibule)
- Water.

Management in the Dental Office

- If the extraoral DRY time is less than 1 hour, replant immediately.
- If the extraoral DRY time is greater than 1 hour, remove the necrotic periodontal ligament, soak the tooth in fluoride for 5+ minutes, and replant.

Management of the Socket

- Gently aspirate the socket. If a clot is present, gently irrigate with saline. Do not curette the socket.
- After replantation, manually compress the buccal and lingual cortical plates.
- Suture any soft tissue lacerations.

Splinting of the Involved Teeth

- Use acid etch/ resin alone or with a soft, passive arch wire. Leave in place for 1-2 weeks.

Endodontic treatment

1. Tooth with an open apex and less than 1 hour dry time. Replant in an attempt to revitalize the pulp. Recall the patient every 3-4 weeks to check for pathosis.
2. Tooth with an open apex and greater than 1 hour dry time. Do not replant. This situation has a poor prognosis.
3. Tooth with a closed apex. Replant. Clean the root canal system within 7-10 days and medicate the canal with calcium hydroxide. The calcium hydroxide can be replaced with gutta percha when an intact lamina dura can be traced around the entire root surface. Usually, if root canal treatment is initiated at the end of the ideal 7-day period, external resorption is prevented and obturation can be done within a month. However, if root resorption is already visible, calcium hydroxide is needed for an extended period of time. The status of the lamina dura and the presence of calcium hydroxide in the canal should be evaluated every 3 months.