**Dental Trauma**

- Comprise 5% of all injuries that people seek treatment for
- 25% of all school-age children experience trauma
- 33% of all adults have experienced trauma to the permanent dentition (DiAngelis et al. 2012)

- Most common types of injuries
  - Preschoolers - Falls
  - School-age children - Sports-related injuries, hit by someone else
  - Adolescents and young adults - Assault and traffic accidents (Glendor 2009; Guedes et al. 2010; Perheentupa et al. 2001)

**Trauma Management**

- Dental trauma is one of the few "emergencies" we need to manage in the dental surgery
- The prognosis of certain trauma (i.e. avulsion) is time dependent
- But not all types of trauma need to be managed immediately
- Effective triage
  - Prioritize patients effectively
  - Manage their anxiety
  - Reduce stress on yourself and your staff

**Outline**

- Initial Triage
  - Things you/your staff need to consider when taking that first phone call
- Emergency Triage
  - Examination and diagnosis
  - General trauma management at the first appointment
  - Available resources
  - Any other considerations

**Initial Triage**

- Things to consider
  - What questions should your staff ask the patient/parent/caregiver on the phone?
  - How do you prioritize the patient?
  - What advice should you give patient/parent/caregiver to manage injury until they can be seen by the dentist?

**Questions**

- When did the injury happen?
- Are there any other injuries that require medical attention first?
  - e.g. loss of consciousness, bodily injury, facial fractures
  - Advise patient to attend emergency department first
- Then ask specific questions to assess the dental injury
- Work methodically through a list or an algorithm (Zadik 2008)
**Initial Triage**

1. Has the tooth been knocked completely out of the mouth?
   ✦ If **YES**
   ✦ Can they find the tooth? Handle carefully by the crown only
   ✦ Is the tooth visibly soiled? Rinse for 10 secs under running water and reimplant the tooth if possible (best prognosis)
   ✦ If tooth cannot be reimplanted, then place in a container in an appropriate storage medium (NOT water) and come in ASAP
   ✦ Hank’s balanced salt solution, sterile saline, milk, saliva
   ✦ **Avulsion has the most time-dependent outcome**

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**Initial Triage**

1. Has the tooth been knocked completely out of the mouth?
   ✦ If **NO**
   2. Has the tooth/teeth been displaced? (pushed out of line with the other teeth)
      ✦ Can the patient close their mouth properly? (are any of the teeth getting in the way?)
      ✦ Has the tooth been pushed up into the socket?
      ✦ Is the tooth mobile?
      ✦ Are there any injuries to the lips or other soft tissues?
      ✦ e.g. torn gums, bleeding around the teeth, puncture wounds in the lips

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**Initial Triage**

2. Has the tooth/teeth been displaced? etc...
   ✦ If **NO**
   3. Is the visible part of the tooth fractured?
      ✦ If **YES**
# Initial Triage

1. **Initial Triage**

   - **Prioritize**
     - Avulsions must be seen ASAP
     - The sooner the tooth can be reimplanted, the better the pulpal and periodontal prognosis
     - Tell the patient to come immediately to the practice without delay
     - Let dentist/staff know
     - Inform any patients who will be affected

   - **Prioritize**
     - Luxations and alveolar fractures
     - Teeth need to be repositioned to reduce negative pulpal and periodontal consequences
     - Should be seen within a few hours of injury
     - Patients can be given an appointment later in the day
     - Rearrange appointment book to make time, or see during lunchtime, or at end of day

   - **Prioritize**
     - Crown fracture +/- pulp exposure
     - The fragment (if available) should be reattached or the exposed dentine covered with composite resin
     - Vital pulp therapy if there has been pulp exposure
     - This injury can be managed subacutely i.e. see within 24 - 48 hours
     - Advise patient on good oral hygiene practices in the meantime

2. **Initial Triage**

   - **Prioritize**
     - Can they see pink tissue exposed in the fractured tooth surface?
     - Can they find the fractured fragment(s)? Store the fragments in physiological medium and bring them in
     - The tooth has a crown fracture +/- pulp exposure

3. **Initial Triage**

   - **Prioritize**
     - Can they see pink tissue exposed in the fractured tooth surface?
     - Can they find the fractured fragment(s)? Store the fragments in physiological medium and bring them in
     - The tooth has a crown fracture +/- pulp exposure

4. **Initial Triage**

   - **Prioritize**
     - If NO - the tooth has been concussed, or not injured
     - If YES - the tooth has been subluxated

   - **Prioritize**
     - Is there any bleeding around the gums?
     - If YES - the tooth has been subluxated
     - If NO - the tooth has been concussed, or not injured
Emergency Triage

- Emergency trauma kit
- Cheek retractor
- Self-etching primer
- Flowable composite
- Light nickel-titanium orthodontic wire
- Wire-cutter (orthodontic)

Emergency Triage

- Accurate history (especially extra-oral dry time for avulsions)
- Assess the injury
- Clinical and radiographic examination
- Diagnosis
- Acute management - refer to www.dentaltraumaguide.org
- Long-term management plan
- Appropriate review period
- Adjunctive treatment e.g. endodontics, orthodontics, surgery
- Consider specialist referral as appropriate

Emergency Triage

- Examination at the initial visit
  - Extraoral - palpate for any “step defects” and tenderness
  - TMJ, zygoma, inferior border of mandible, chin
  - Note any contusions, haematomas, lacerations, grazes

Emergency Triage

- Examination at the initial visit
  - Intraoral
    - Soft tissues - lacerations/tears, degloving, contusions/haematomas, bleeding from gingival margin

Emergency Triage

- Examination at the initial visit
  - Radiographic
    - PA radiographs
    - Horizontal shift, vertical shift
    - Occlusal film
Emergency Triage

Avulsion

- Reimplant the tooth if not already done at the scene of injury
- Endodontic treatment does **not** need to be instigated at the initial visit

Prognosis is determined by the condition of the PDL cells

- Cells most likely **viable** - tooth replanted immediately or shortly after
- Cells may be viable but **compromised** - tooth kept in appropriate storage medium, total extra-oral dry time < 60 minutes
- Cells **non-viable** - total extra-oral dry time > 60 minutes, or stored in non-physiologic storage medium e.g. water (Andersson et al. 2012)

Luxations/Alveolar fracture/Root fractures

- Reposition tooth/teeth and splint
- If tooth is seriously displaced, several teeth luxated, or comminuted alveolar fracture, may need to refer to OMFS for management
- Endodontic treatment does **not** need to be instigated at the initial visit

Crown-root fractures

- At the initial visit, fragment can be simply stabilized by bonding to adjacent teeth
- Patient can be reappointed to remove fragment and assess prognosis

Crown fractures

- If no pulp exposure, rebond fragment if available, or build-up in composite resin
- If pulp exposure, determine if vital pulp therapy indicated, or endodontic treatment

Available Resources

- Online resource for professionals
**Available Resources**

- Smart phone Dental Trauma ‘App’ for parents, teachers, coaches
- Endorsed by the IADT

**Available Resources**

- Contact your local endodontist or paediatric dentist
- Advice on management at any stage
- Guidelines are only there to act as a guide
- Each injury needs to be assessed on its own merits
- Be wary of using forums or social media (e.g. facebook) for advice
- Difficult to convey all the relevant info in a few sentences and photos
- Often anecdotal evidence/isolated cases
- Usually not specialists offering advice

**Emergency Triage**

**Other considerations**

- Soft tissue injuries
  - Lacerations crossing the vermillion border or on skin should be referred to an OMFS or plastic surgeon
  - Systemic antibiotic prophylaxis
  - Lack of evidence, consider for major soft tissue/horny injuries
  - For avulsion injuries, tetracycline (unless patient is <12 years then penicillin V/amoxycillin)
- Tetanus booster
  - Consider for avulsion injury, especially if tooth contacted soil

**Emergency Triage**

**Other considerations**

- Dietary advice
  - Soft diet for 2 weeks
  - Following avulsion, normal diet afterwards
  - Oral hygiene advice
  - Soft tooth brush, chlorhexidine mouthwash for 1-2 weeks, or longer if teeth are splinted for longer
  - Avoid contact sports to prevent further injury to teeth

**Summary**

- Accidents will always happen at an inopportune time
- You are looking after a person, and their anxious family members, not just their tooth!
- Work through a methodical list of questions to assess the injury appropriately
- Be calm, reassuring and offer appropriate advice
- Understand how to manage each injury, and how to prioritize its management, to reduce stress on yourself and your staff

**Summary**

- The only true dental trauma emergency is an avulsion
  - The patient should be seen ASAP in order to reimplant the tooth
- Periodontal injuries (i.e. extrusion, intrusion and lateral luxation injuries) should be seen on the same day
- Technically crown-root fractures and root fractures could be seen the next day, but practically it is best to assess the injury yourself on the same day
- Crown fractures can be seen within 24 - 48 hours without a negative impact on prognosis
- If you are unsure, don't be afraid to ask!
Take Home Message

- Trauma Management Basics at the First Appointment
- Reimplant and reposition loose and displaced teeth
- Mobile teeth will most likely need to be splinted
- No need to initiate endodontic treatment at the first visit
- Analgesic advice, oral hygiene advice, dietary advice
- Reappointment for appropriate review

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