Dental Trauma Management

Overview

1. Dental injuries are common in multi trauma patients.
2. The spectrum of injury includes tooth avulsions, fractures, luxations and intrusions.
3. Acute morbidity from dental injury includes pain, bleeding and infection. Long term morbidity arises from the need for cosmetic and functional tooth replacement and costs the patient thousands of dollars.
4. Dental ‘first aid’ is cheap, simple and has a low complication rate.
5. Dental ‘first aid’ minimizes analgesic requirement and may well salvage teeth – particularly if the avulsed/displaced tooth is repositioned and secured early, or the exposed pulp in a fractured tooth is covered early and adequately.

Dental Trauma Management

1. The secondary and tertiary survey includes an inspection of the mouth, and dental injuries (and intervention) must be noted.
2. A ‘Dental Trauma Tray’ is available in the ED. It includes the necessary dental materials, a laminated guide to managing dental injuries and a Dental Injury Audit form.
3. Only Medical Staff trained and familiar with the management of dental injury are permitted to use the materials provided. The patient name and MRN should be recorded on the sheet provided in the box, for auditing purposes.
4. ED Registrars and Staff Specialists will be responsible for the management of injuries recognised in the ED.
5. Appropriately trained Plastic Surgical Registrars, on call for Maxillofacial injuries, will be responsible for injuries recognised outside of the ED (ICU, HDU, Wards). This may occur when life-threatening injuries prohibit adequate oral assessment and management in the ED.
6. The dental injury should be managed with appropriate local anaesthetic infiltration/block and the patient covered with antibiotics.
7. If there any concerns, the maxillofacial registrar/consultant should be consulted.
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Dental Trauma - Why Bother?

- Most dental first aid is easy, but time critical
- A single dental implant to replace an avulsed tooth costs $4000 to $5000. Root treatment and crowns have similar expense.
- As long as the teeth are retained in the mouth or the exposed pulp adequately covered with early intervention, most sequelae can be overcome relatively cheaply with modern follow-up dentistry.
- Analgesic requirements are minimised if first aid is applied.

Crown Fractures

A. Enamel fractures (Diag A)
B. Crown fractures involving Dentine (Diag B)
C. Crown fractures which have exposed tooth Pulp (Diag. C)

- Enamel fractures:
  - No ED treatment required
  - Dental follow-up
  - Usually < 2mm of tooth surface involved.
• Crown fractures involving dentine:
  ▪ Dentine is more yellow compared to the peripheral enamel
  ▪ Patient feels thermal/tactile sensitivity
  ▪ Usually > 2mm of tooth lost but no “red pulp” visible in centre of #
  ▪ Treat by covering # surface with Glass Ionomer Cement
  ▪ Keep built up surfaces clear of opposing teeth when patient closes mouth completely

• Crown fractures with exposed tooth Pulp:
  ▪ “red pulp” visible in centre of #
  ▪ Give local anaesthetic (27G needle available) if patient conscious. Pain from pulp would be similar to that of a compound fracture.
  ▪ Flush exposed pulp surface with saline then stop haemorrhage with small cotton or gauze swab.
  ▪ Cover “red pulp” with calcium hydroxide gel.
  ▪ Once set, cover all of # surface with glass ionomer cement
Exposed pulp 1st covered with calcium hydroxide gel, then whole # covered with glass ionomer cement.
Root Fractures

- Difficult to treat
- For # level to or <5mm below gum, cover any accessible exposed pulp with calcium hydroxide gel then glass ionomer cement on top.

- For deeper fractures, reposition coronal piece of tooth and splint.
Luxations

- Intrusive
- Extrusive
- Lateral - nearly always has alveolar bone fracture also present.

For all above at least OPG radiograph to be ordered.

Intrusive Luxations

- Give LA then reposition tooth with firm pressure using either forceps, large needle holders or even pliers.
- Follow level and contour of adjacent teeth to help in repositioning.
- Splint 1st then treat any coronal fractures as described earlier.

Extrusive Luxations

- Give LA.
- Using fingers, grab extruded teeth and surrounding alveolus then reposition teeth and attached bone all together.
- After repositioning, splint with attention to bite relationship.
Avulsions

Steps:
- Best if done within a few hours of injury.
- Give local anaesthetic.
- Clean tooth and socket using saline but don’t touch the root surface.
- Insert tooth into socket. Use adjacent teeth as a reference and take care it doesn’t interfere with occlusion.
- Splint with glass inonomer cement.
Splinting Teeth

• Once teeth have been repositioned glass ionomer cement is placed between teeth at centre level of crown, always on the ‘lip facing’ surface of the teeth.
• The tooth position is maintained using finger pressure until GIC sets.
• Any pulp exposures are covered using calcium hydroxide gel followed by glass ionomer cement.
• Duration of splinting is 4-6 weeks.

• Deep root fracture with extensive extrusive luxation just short of avulsion.
• Socket is teased open then tooth is pushed back into socket using finger pressure.
• Tooth is then splinted.
- Incisor has been extruded.
- Note where to give LA.
- Finger reduction followed by splinting.