Evaluation of Orofacial Trauma

Stay calm

A thorough evaluation leads to:
- An accurate diagnosis
- The appropriate treatment.
- The best prognosis

Orofacial Injury Assessment

- Review Health history
  - A – Allergies
  - M – Medications currently taking
  - P – Past medical History
  - L – Last meal
  - E – Events/environment leading to the injury
- Also, ask about previous injuries.
Orofacial Injury Assessment

- Assess systemic/neurological effects
  - A period of unconsciousness is followed by lethargy or confusion.
  - Vomiting and nausea is present.
  - There are signs or symptoms of head injury – a headache.
  - Visual disturbances exist.
  - The eyes have a raccoon appearance.
  - CSF comes from ears or nose.
  - The behavior changes.
- Evaluate tetanus immunization
- Be alert to potential child abuse

Extra Oral Examination

Facial Bones – Nose and Mandible

- Facial asymmetry
  - Fracture of the mandible
  - Condylar fracture
- Swelling in the midface
  - Nose fracture
  - Orbital fracture

Intra-Oral Soft Tissue Injuries

- Lacerations
  - Lips
  - Gingiva
  - Tongue
  - Frenum
  - Palate

Intra-Oral Soft Tissue Injuries

- Swelling
- Hematoma
  - Mucosa
  - Floor of Mouth
- Foreign Bodies

Steps To Recovery

- Stop hemorrhage and cleanse the soft tissue wounds
- Determine the need for suturing
- Check the soft tissues for swellings
- Check soft tissues for foreign bodies
- X-ray for broken bones
- X-ray for misplaced teeth
- Check teeth for mobility
- Look for pulpal exposure

Examination of Dentition

A. Subjective symptoms
1. Spontaneous pain
2. Sensitivity to percussion or pressure
3. Pain to temperature stimuli
4. Reaction to sweet and/or sour foods
5. Mobility or displacement
6. Variations in occlusion

B. Objective symptoms
1. Palpation of alveolar and facial bones
2. Percussion and vitality testing
3. Determine mobility
Examination of Dentition

C. Classification of Tooth Injuries
   1. Crown craze and crack
   2. Crown fracture
      a. Enamel
      b. Enamel and dentin
      c. Enamel, dentin and pulp
   3. Crown-root fracture
   4. Root fracture

Examination of Dentition

C. Classification of Tooth Injuries – Cont’d
   5. Concussion
   6. Subluxation
   7. Displacement
      a. Intrusion
      b. Extrusion
      c. Labial displacement
      d. Lingual displacement
      e. Lateral displacement
   8. Avulsion

Photo and Radiographic Documentation

Document the injured teeth, the adjacent teeth and the teeth in the opposing arch

A. Initially look for root fractures, bony fractures, displacements, size and shape of the pulp and record immediate changes
B. Subsequent visits – Look for:
   1. Periapical pathology – 2 weeks
   2. External root resorption – 3 weeks
   3. Internal root resorption – 3 weeks
   4. Disturbed root development – 6 weeks

Photo/Radiographic Evaluation

Extraoral Radiograph

Alveolar Fracture

Positioning Extra-Oral Radiograph

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Pulp (Vitality) Testing

- Electric Pulp Test (EPT)
- Thermal Sensitivity Tests
  - Cold
    - CO₂
    - Refrigerant Spray
  - Hot
- Tests that Measure Blood Flow
  - Laser Doppler Flowmetry (LDF)
  - Pulse Oximetry

Timing of Vitality Testing

- Initial Trauma Assessment
  - 2 weeks
  - 4 weeks
  - 6 weeks
  - 8 weeks
  - 6 months
  - 12 months

TREATMENT

Primary Dentition

Hard Tissue Injuries

- Crown Craze and Crack
- Crown Fracture
  - Enamel and Dentin
  - Enamel, Dentin and Pulp
- Crown-Root Fracture
  - Is the fracture restorable?
  - Does the fracture involve the pulp?
- Root Fracture

Treatment of Soft Tissue Injuries

- Pressure to Control Hemorrhage — Gauze or Moist Black Tea Bag for Gingival Injuries
- Cleanse the wound — Chlorhexidine and Saline
- Antibiotic — Tetracycline for age 10 and over; Amoxicillin or Clindamycin under age 10
- Topical Analgesic — Benadryl and Maalox 50:50 mixture
- Oral Analgesic and Anti-inflammatory — Tylenol or Motrin
- Soft Diet — 14 Days
- Suture as Necessary

Root Fractures
Primary Teeth with Necrotic Pulps and/or Inflamed PDLs Should Be Removed

Diagnosis of Color Changes
- Dark Teeth – Indicates Pulpal Necrosis
- Pink Teeth – Indicates Internal Resorption
- Yellow – Indicates Pulpal Calcification

Treatment of Discolored Primary Teeth
- Gray/Brown – Observe for Periapical Infection
  - Observe for color change – Light Gray to Yellow
  - Observe for Internal Resorption - Remove
  - Observe for External Resorption
    - Chronic and Does Not Show Periapical Radiolucency - Watch
    - Acute with a Periapical Radiolucency - Remove
- Yellow – Observe for Periapical Infection
  - Chronic and Does Not Show Periapical Radiolucency - Watch
  - Acute with a Periapical Radiolucency - Remove
- Pink – Look for Internal Resorption
  - Observe for Internal Resorption - Remove
  - Observe for Severe External Resorption - Remove

1º Tooth Displacements
- Lateral Radiograph to determine Apical Location
- Two Periapical X-rays – one at 60’ and one at 90’
- Re-eruption should occur within 1 to 6 months
- Do Not Stabilize
Alveolar Fracture

Primary Avulsion
Do NOT Replant

Permanent Teeth
Evaluate the Ability of the Pulp and the PDL to Revascularize
• Vitality Testing
• Periapical Testing
• Radiographic Evaluation

Pulp Matters
• Dentin Exposures
• Traumatic Pulp Exposure
• Irreversible Pulp Injuries
• Obliterated Pulp Space
• Internal Resorption

REVASCULARIZATION
Depends Upon:
• The amount of Closure of the apex
• The amount of debris that was introduced during the injury
• How well can you properly reposition the tooth
• Flexible splinting

PERIAPICAL TESTING
• Mobility
• Percussion
• Palpation
Radiographic Exam

- Look for Cracks and Crazes
- Identify All Fractures
  - Crown
    - Enamel Only
    - Enamel and Dentin
    - Enamel, Dentin and Pulp Exposure
  - Crown Root
    - Is the fracture restorable?
    - Does the fracture involve the pulp?

Radiographic Examination

- Root
  - Apical Area
    - With displacement
    - Without displacement
- Coronal Area
  - Mobility
  - Not Mobile

External Root Resorption

Crown Craze or Crack

- Examine with a Good Light
- Vitality Test with Ice Pencil
- Seal the Coronal Surfaces with a Pit and Fissure Sealant
- No Stabilization Needed
- Sensitivity (Concussion)
  - Adjust Occlusion
  - Vitality Test
  - Prognosis is Good

Enamel and Dentin Repair

- Protect the Pulp – Medicate the Dentinal Tubules
  - Vitra Bond
  - MTA
- Seal the Enamel and Dentinal Tubules to Prevent Bacteria from Entering
- Protect the PDL – Minimize the Amount of Tooth Preparation
- The Occlusion Must Be Non-Traumatic

Temporary Restoration
Cover the Pulp and Seal the Dentin

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From Diagnosis to Treatment

- The Proper X-rays are Needed to Make the Proper Diagnosis
- Protect the Pulp
- Seal the Dentinal Tubules
- Assure that the Occlusion is Non-Traumatic
- Evaluate PDL

Crown-Root Fracture

- Less than 1/3 of Root Involved
- More than 1/3 of Root Involved
- May Need to Extrude and Restore
- Possible Decoronation

Non-Restorable Fracture

Decoration

Saves Bone Height
Permanent Root Fracture

1. Flexible Stabilization
2. Stabilize for 2-3 weeks
3. Adjust occlusion to prevent occlusal forces
4. Monthly radiographs and vitality testing
5. Types of healing
   a. calcified tissue - callus of dentin, osteodentin, or cementum
   b. connective tissue
   c. bone and connective tissue
   d. granulation tissue

Traumatic Pulp Exposure

CVEK PULPOTOMY

1. Open pulp chamber
2. Control hemorrhage
3. Place MTA
4. Cover MTA with glass ionomer base
5. Restore crown

Irreversible Pulp Injuries

Neutralize pH in Pulp Space

Root Fracture

Root Closure

Pulp Matters
APEXOGENESIS
Internal Root Resorption

External Root Resorption

Patient is often asymptomatic.

Testing for Types of PDL and Neurovascular Bundle Injuries

- Radiographs
- Mobility
- Percussion
- Palpation

CONCUSSION

Palliative Treatment

- NSAID
- Topical Analgesic
- Soft Diet

Subluxation

- Adjust Occlusion
- Vitality Test
- Prognosis is good for Open and Closed Apices
Permanent Tooth Displacement Labial, Lingual and Lateral

- Reposition minor displacements with orthodontic movement.
- Reposition large displacement with gentle forceps manipulation.
- Splint for 2-8 weeks
- Vitality Test
- Possible MTA pulpectomy
- Prognosis – apices become stunted

Intrusion

- Pulpal evaluation
- MTA Pulpectomy – Within 1 week
- Orthodontic Repositioning – 2 to 3 weeks
- DO NOT SURGICALLY REPOSITION
- Prognosis is not good w/o treatment

Extrusion

- Flexible Stabilization
- 2-3 weeks of Stabilization W/O Bone Fracture
- Vitality Test
- Possible MTA Pulpectomy
- Prognosis
  - Immature Root – 90%
  - Mature Root – 50%

Avulsion Permanent Tooth

- Replant Immediately – Less than 60 minutes
- Stabilize for 10 to 14 days with flexible splint
- Do not scrub the root surface – rinse only
- If unable to replant, place in milk, Hanks solution, saliva or saline.
- Root canal therapy is necessary
Definitive Endodontic Treatment
Within One Week Of The Injury

Stabilization Schedule for Traumatically Injured Teeth

- Replanted tooth with mature root formation: 1 week
- Replanted tooth with immature root formation: 3-4 weeks
- Tooth displacement:
  - mobile tooth: 1-2 weeks
  - intrusion: 3-4 weeks
  - lingual displacement: 3-4 weeks
  - lateral displacement: 3-4 weeks
- Root fracture: 2-3 weeks

SAVE THAT TOOTH

Follow these steps:
1. Rinse the tooth gently in water. DO NOT SCRUB.
2. If possible, insert and hold the tooth in the socket. If you cannot insert the tooth, place it in a container of cool milk.
3. Take the tooth and go immediately to your dentist.

AAPD’S Trauma Treatment Recommendations

Academy for Sports Dentistry

Stay Calm:
A thorough evaluation leads to the best prognosis.

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