No Financial Disclosures
Objectives

- Discuss facial and dental injuries in sports
- Discuss on-field assessment
- Review injury management
- PREVENTION IS KEY
Epidemiology

- 18% of all athletic injuries
- Boys: 3 times more facial injuries than girls
- Most frequently associated sport:
  - < 1964 Football
  - 1965 - present Baseball (40%)
Epidemiology

• **50 : 50**
  • 50% mouth & teeth
  • 50% ears, nose & face

• **Low Speed**
  • elbows & fists
    • soft tissue lacerations & contusions

• **High Speed**
  • balls, pucks, sticks
    • bone / tooth fractures
On Field

- ABC’s always come FIRST
  - Airway
  - Breathing
  - Circulation
  - Don’t get distracted!

- C-spine precautions
On Field

- History
  - Mechanism?
  - Other Injuries?
    - Respiratory symptoms
  - Concussion?
    - Symptoms
  - Leakage of fluid (CSF)?
  - Able to move jaw?
  - Teeth mesh normally?
On Field

- Risk of returning to play

- Inspection
  - Obvious deformity
  - Asymmetry
  - Swelling
  - Bleeding – Loss of Fluid
    - Otorrhea
    - Rhinorrhea
On Field

- Ecchymosis
  - Raccoon’s eyes
  - Battle’s sign

- Dysfunction
  - Neuro exam
    (EOM important)

- Dental exam
Sideline Examination

- Palpate
  - Orbital rims
  - Maxilla
  - Zygomatic arches
  - Nasal bones
  - Jaw & alveolar ridges
  - Temporal mandibular joints
  - Teeth
  - Malocclusion
Sideline Examination

- Special tests
  - Ring test for CSF
  - Septal hematoma
  - Hemotympanum
Facial Fractures

- Craniofacial disjunction fracture
- Fracture of tuberosity of maxilla
- Fracture of maxillary alveolar process
- Puncture type fracture of maxilla
- Fracture of maxilla
- Transverse fracture of maxilla
- Pyramidal fracture of maxilla
- Fracture of alveolar process
- Fracture of symphysis region
- Fracture of edentulous mandible
- Unilateral fracture of posterior fragment (fracture of the body of the mandible)
- Bilateral fractures of the symphysis of the mandible
- Fractures of body and angle of opposite side (multiple fractures of the mandible)
- Double fractures of body (multiple fractures of the mandible)
- Fracture of the subcondylar area of the mandible
Imaging

- Plain film x-rays
  - Facial series
    - Waters view (Occipitomental)
    - Caldwell (PA) view
    - Lateral
    - Submentovertex (SMV) view
Imaging

- Lower face series
  - Panorex
  - Lateral oblique

- CT Scan – (Hi Res)
Common Injuries

Nasal Injuries
Mouth Injuries
Teeth Injuries
Eye Injuries
Nasal Injuries

- Most commonly injured structure of the face
  - Fractures
  - Septal deviation
  - Epistaxis
  - Septal hematoma
    - Saddle deformity
Nasal Fracture

- Swelling
- Ecchymosis
- Deviated appearance
- Epistaxis
- Crepitus to palpation
- Indentation to palpation
Nasal Fracture Management

- Exam: septal hematoma, midfacial injuries
- Preferable to reduce quickly after injury
- Manual realignment is the easiest method of closed reduction
- Local or general anesthesia
- Manipulation after 10 days is very difficult
Epistaxis

Cross-section of the nasal cavity and its vascular sources:
- Anterior ethmoid arteries
- Hard palate (roof of the mouth)
- Network of arteries in the back nasal cavity
- Posterior ethmoid arteries
- Bleeding from the nostril
- Bleeding down the throat
- Kiesselbach's plexus (network of arteries in the front nasal cavity)
Epistaxis

- Anterior
  - 95%
  - Kiesselbach’s plexus
  - Traumatic
  - Visualized
  - Squeeze & Pack
  - Profuse anterior bleeding after fracture/anterior ethmoid artery laceration
Epistaxis

- Posterior
  - 5%
  - Larger vessels
  - Atraumatic
  - Non-visualized
  - Consult & Admit
Epistaxis → Compression, ice, nasal spray → Locate site

Anterior (95%)

Anterior packing

Anterior cautery / QR powder

Posterior packs/surgery

Posterior (5%)

Posterior packing

ENT consult

Surgery

Admit
Epistaxis Management
Epistaxis Management

- QR Powder
  - Hydrophilic polymer
    - Absorbs $\text{H}_2\text{O}$ from blood $\rightarrow$ polymer swells
  - Potassium salt
    - Binding agent forms artificial scab
Septal Hematoma

- Collection of blood b/w cartilage septum & muco-perichondrium
- Most often associated with fracture
- Dx: grape-like, blue bulge that obstructs nares
- Left untreated: can cause “saddle nose” deformity
Septal Hematoma

- Treatment
  - Prompt aspiration / drainage to prevent saddle nose
  - Packing / splinting
  - Prophylactic antibiotics
  - Tetanus prn
Nasal Injuries
Common Injuries

Nasal Injuries

Ear Injuries

Mouth Injuries

Teeth Injuries

Eye Injuries
Ear Problems
Auricular Hematoma
“Cauliflower Ear”
Auricular Hematoma

- Trauma causes bleeding between skin and cartilage
- Fluctuant bluish swelling in auricle
- Untreated →
  - Pressure necrosis
  - Fibroneocartilage formation
  - Unsightly scarring
- Tx: prompt drainage
Auricular Hematoma Needle Drainage

- Need to be promptly aspirated
- 20 gauge needle
- Sterile conditions
- +/- Prophylactic antibiotics
- After aspiration, apply compression for 7-10 days to prevent hematoma recurrence
YOU MAKE THE CALL OR

25
Common Injuries

Nasal Injuries

Mouth Injuries

Teeth Injuries

Eye Injuries
Lip Lacerations

-Compression of lip on teeth
-Look for associated dental and other bony injury
Lip Lacerations

- Mucosa-only lacs heal well w/o sutures
- Deep or thru & thru lacerations require layered repair
- Vermilion border: approximate border FIRST, then repair remainder (consider referral)
- Prophylactic abx
Tongue Lacerations

- Irrigate, remove foreign bodies
- Repair muscle with 3-0 absorbable if deeper than 5mm
- Repair mucosa if still necessary, absorbable is fine
TMJ Dislocation

• Cause: jaw suddenly depressed
• Condyle dislocates anteriorly
  • Spasm pulls it superiorly
• Signs
  • Chin deviated to side OPPOSITE dislocation
  • Unable to close mouth
• Treatment: reduction ASAP
  • Hook thumbs on third molars bilaterally
  • Apply postero-inferior pressure
  • Analgesics, soft diet, avoid opening wide for 1 week or more after dislocation
Common Injuries

Nasal Injuries
Mouth Injuries
**Teeth Injuries**
Eye Injuries
Tooth Fracture

• Enamel Fracture
  • Small chips in enamel
  • Uniform color at fracture site
  • Dentist referral to smooth rough enamel edges prn
  • Continue playing!
Tooth Fracture

- Dentin Fracture
  - Yellow dentin at fracture site
  - Relieve pain:
    - Apply Orajel or clove oil
    - Tooth kit cement (native tooth)
  - Splint w/ mouth guard
- Dental attention within 24 hours
Tooth Fracture

• Pulp Fracture
  • Pink or red pulp at fracture site
  • Relieve pain (cover)
  • Immediate dental referral for root canal and cap
Tooth Luxation

- Incomplete displacement
- Reduce tooth
- Provide splint if possible
  - Mouth guard
- Dentist <24 hrs
  - Repositioning
  - Custom splinting
  - +/- root canal therapy
  - Long-term follow up
Tooth Avulsion

- Pick up tooth by ENAMEL only, not roots!
- Re-implant w/in 30 min = 90% success
- After 6 hrs, <5%
- If can’t replace, transport in Save-A-Tooth solution > milk > saline > buccal pouch
- Dentist referral ASAP
Teeth Injuries

• Mouth guards
  • Effectively prevent most sports related dental injuries
  • Encourage athletes to wear!
Common Injuries

Nasal Injuries
Mouth Injuries
Teeth Injuries
Eye Injuries
Eye blunt trauma

- Globe rupture
- Blowout fracture
  - diplopia
  - dysconjugate gaze
Corneal Abrasions

- Topical or oral analgesics
  - Exam every 24 hours until healed
  - Refer if taking >72 hrs
- **NOT RECOMMENDED**
  - patch, mydriatics (dilating agents)
Retinal Detachment

- Ophtho referral
Foreign Body

- Superficial
  - Apply topical analgesic
  - Remove object w/ needle tip or Q-tip
- Deeper: REFER
Subconjunctival Hemorrhage
- Most resolve in 2-3 wks
- More extensive (~ 360°) → ophtho referral

Hyphema
- Ophtho referral
- Bed rest
Eye Injuries

Eyelid Laceration
REFER!!!

Eyelid Laceration
After Appropriate Referral
Eye Injury Prevention

- Ski Goggle
- Multifunctional Goggle
- Sports Goggle
- Swimming Goggle