2024 Primary Care Hawaii Conference

Facial and Eye Injuries in the Athlete

Robert Sallis, MD, FAAFP, FACSM

Director; Sports Medicine Fellowship

Kaiser Permanente Medical Center

Fontana, California, USA

Clinical Professor of Family Medicine

Kaiser Permanente Barnard J Tyson

School of Medicine

Robert Sallis, MD

I have no disclosures

Introduction

- The face is vulnerable to sports related injury that can be very severe.
- Trauma may be from an opponent or foreign object such as ball, puck or stick.
- Injury may involve the skin, cartilage, bone or eye.
- Most injuries can be managed by the sideline physician.

Overview

- Review a general approach to the evaluation of facial & eye injury in the athletic patient.
- Discuss common injuries in the athlete involving the nose, ear, mouth and teeth, as well as the eye.
- Emphasis on sideline diagnosis and treatment.

Hector Pardoe
Team GB

Epidemiology

- Facial injuries represent 4-19% of all reported athletic injuries.
- Boys are 2-3 times more likely than girls.
  - Baseball accounts for the majority of sports related facial injuries.
  - Basketball, Baseball and Softball account for the majority of eye injuries.
- Sideline physician's should be prepared to diagnose and manage these injuries to prevent serious complications.

Mechanism of Injury

- **<u>Low speed injury</u> (elbow or fist)** – most likely to cause soft tissue trauma.
- **<u>High speed injury</u> (ball/puck/stick)** – most likely to cause fractures of facial bones and teeth.

“The Punch”

Rudy Tomjonovich

On-field Assessment
(History)

- Are ABC's required?
- Mechanism of injury?
- Do the teeth mesh normally?
- Are there missing teeth? Where are they?
- Are there any associated symptoms of concussion? Neck pain?

On-field Assessment (Exam)

- Observe facial symmetry, swelling, laceration or bruising (Battle sign or Racoon eyes take 1-2 days to appear).
- Inspect nares for hematoma or CSF leak.
- Palpate along the orbital rims, nasal bones, maxilla, jaw, and TMJ for tenderness, crepitus, or step-off.
- *Assess* stability of mid-face by grasping upper front teeth (Le Forte fracture).

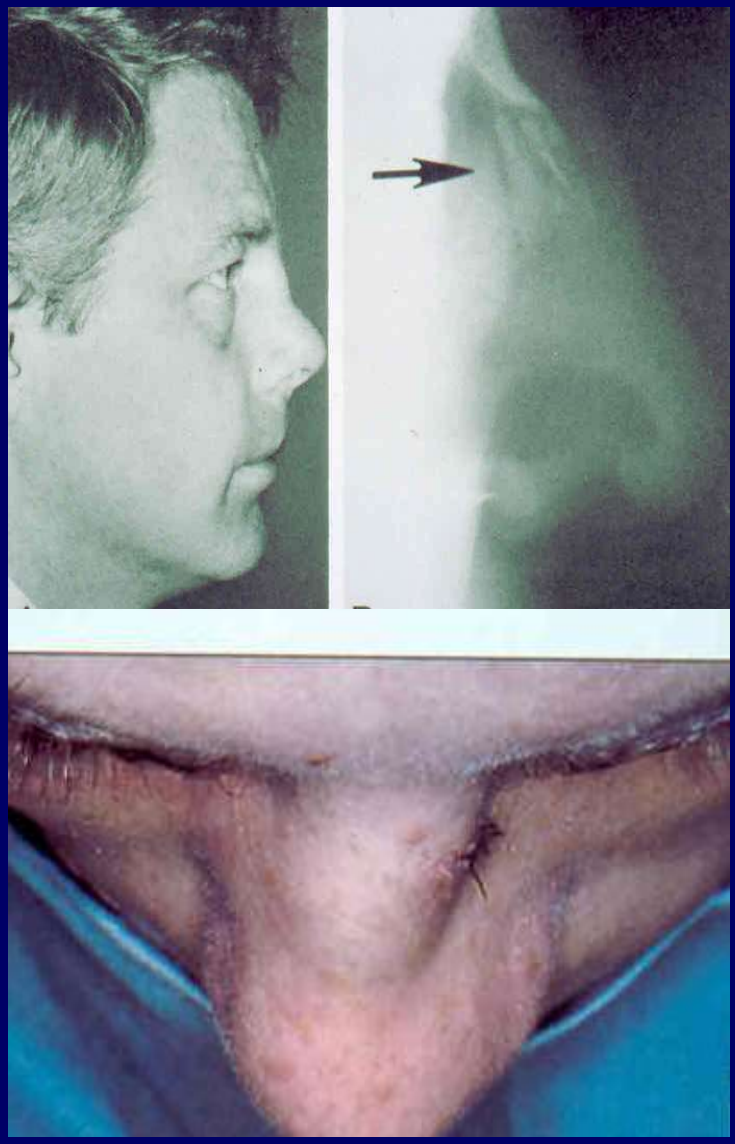
Return to Play

- Base decision on history and exam results.
- No play if suspected fracture, active bleeding, CSF leak, airway obstruction, visual difficulty or concussion.
- X-rays or CT scan may be helpful.

Common Facial Injuries

Nasal Contusion / Fracture

- Lateral blow to nose usually produces simple fx with deviation, *while* end-on blow may result in comminuted fx and “pug nose”.
- **Symptoms**: often feel crack with severe pain & tearing.
- **Exam**: look for deformity – this is a clinical diagnosis.
  - Internal exam for hematoma.
  - X-ray seldom helpful for clinical decisions.

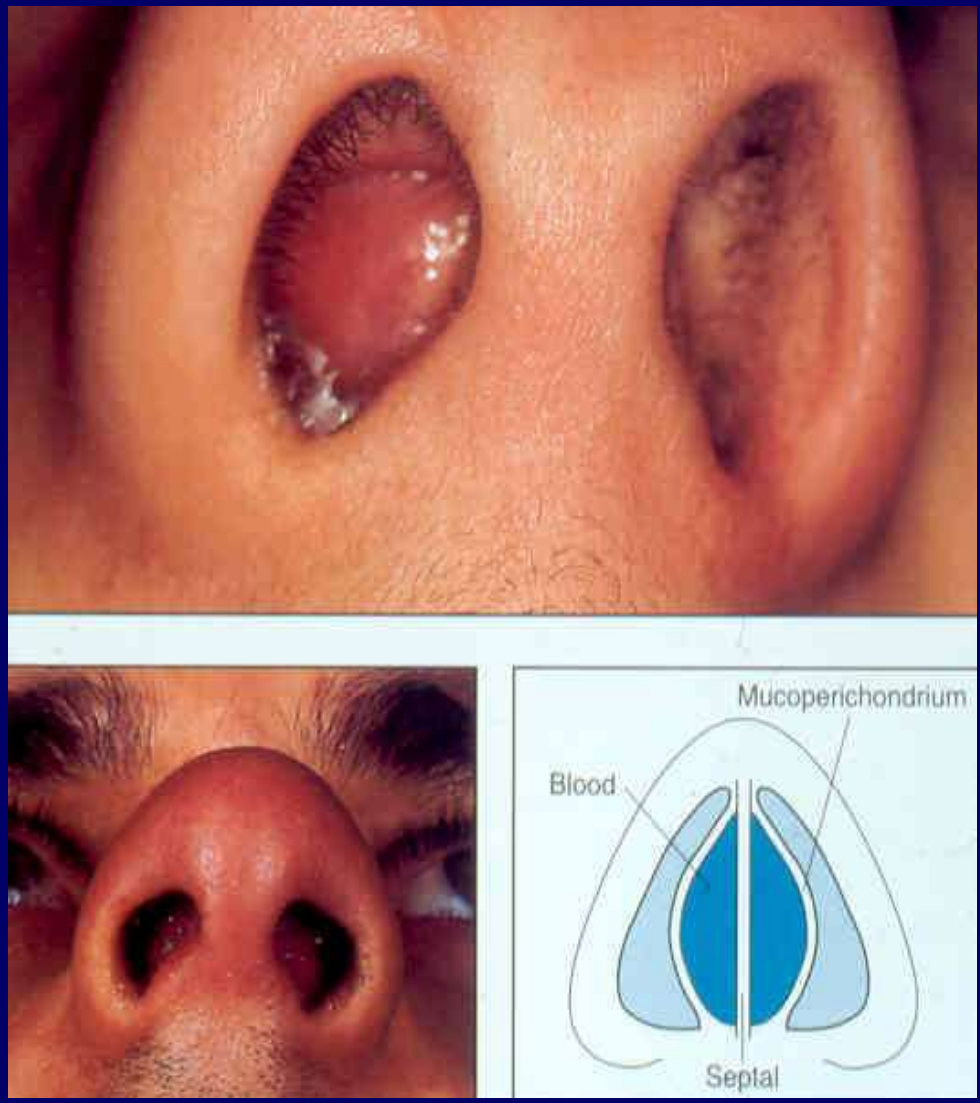


Nasal Contusion (Treatme

- Swelling may preclude ac assessment for deformity repeat exam in 5-7 days.
- Reduction should be done Difficult beyond 14 days.
- *Consider* quick manipulat
- Avoid play for at least 1 w fracture.
- *Consider* external protective *device*.

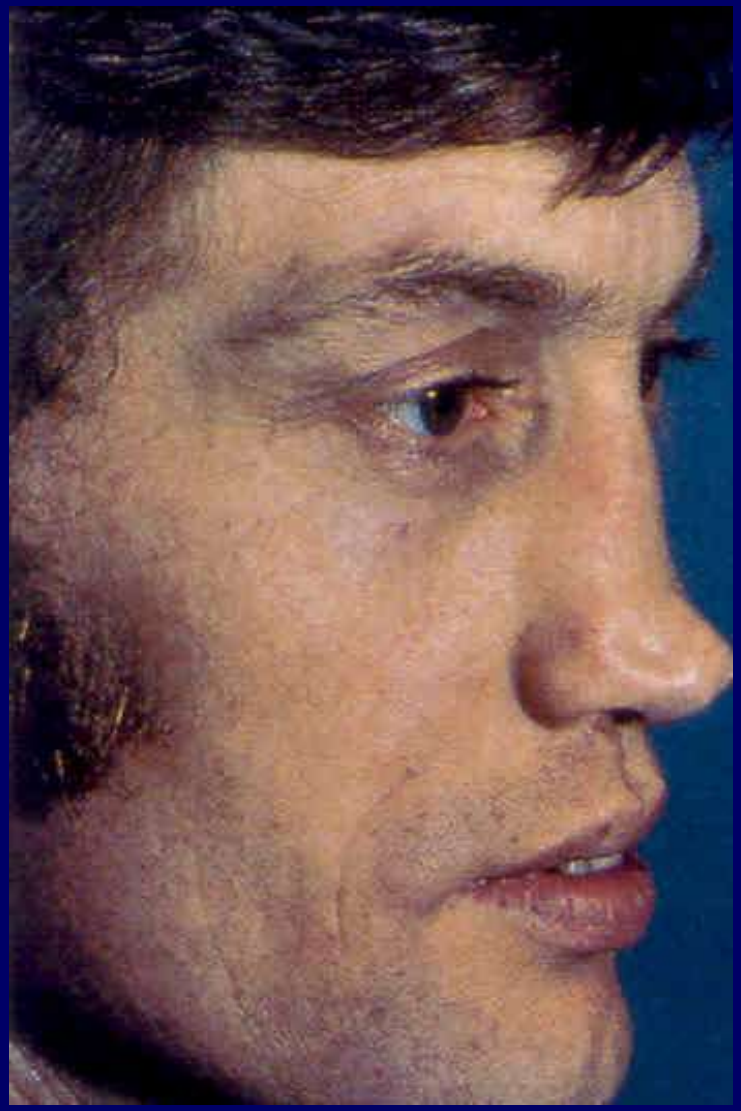
Septal Hematoma

- Rare complication of a nasal fracture. Blood accumulates between septal cartilage and overlying mucosa.
- **Symptoms**: nasal obstruction along with significant pain.
- **Exam**: look for pinkish bulge from medial nasal septum.



Septal Hematoma (Treatment)

- Prompt aspiration is critical, followed by nasal packing for several days.
- Should use prophylactic antibiotics (Keflex).
- Failure to treat can lead to pressure necrosis, abscess formation and eventually a saddle nose deformity.

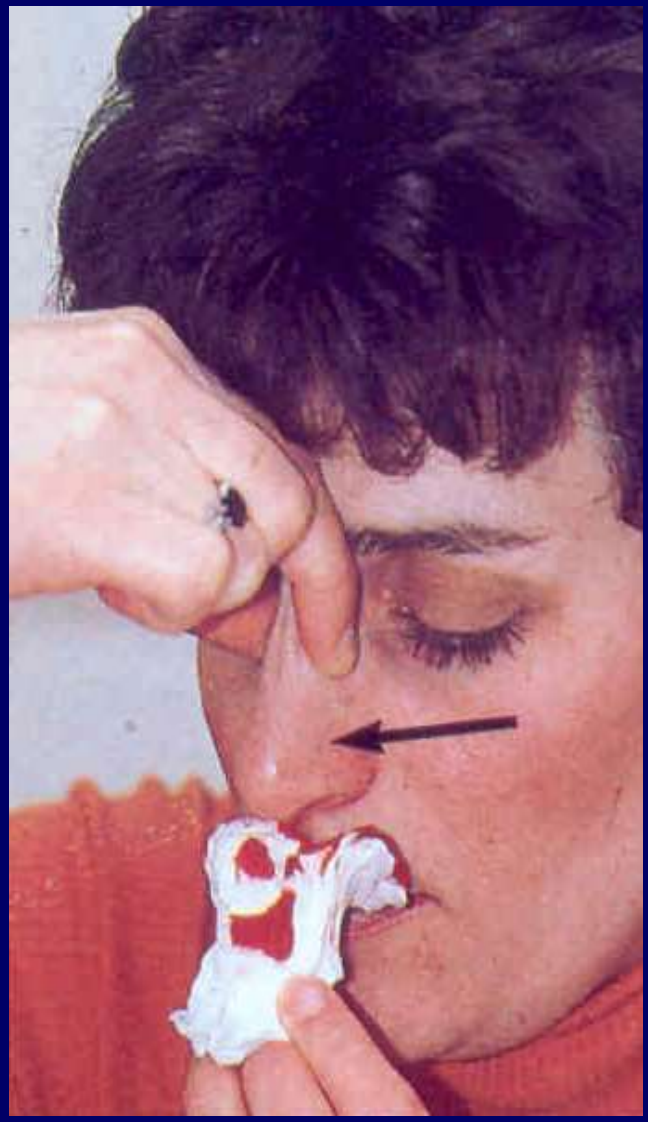


Epistaxis

- 95% anterior (Kisselbach's plexus) – may be from trauma or dry mucosa.
- <5% posterior (often a/w underlying disease).
- *Nasal* fracture may tear Ant. Ethmoid artery.
- **Symptoms**: anterior bleed drips mostly from nostrils and stops with pressure.
- **Exam**: can usually visualize anterior bleed.

Epistaxis (Treatment)

- Sit forward with neck extended and gently blow each nostril.
- Pinch anterior nose between thumb and index fingers for 2-5 minutes.
- Pack with nasal tampon or Vaseline gauze soaked with Neo-Synephrine.
- Failure to stop may be due to nasal fracture or a posterior bleed.

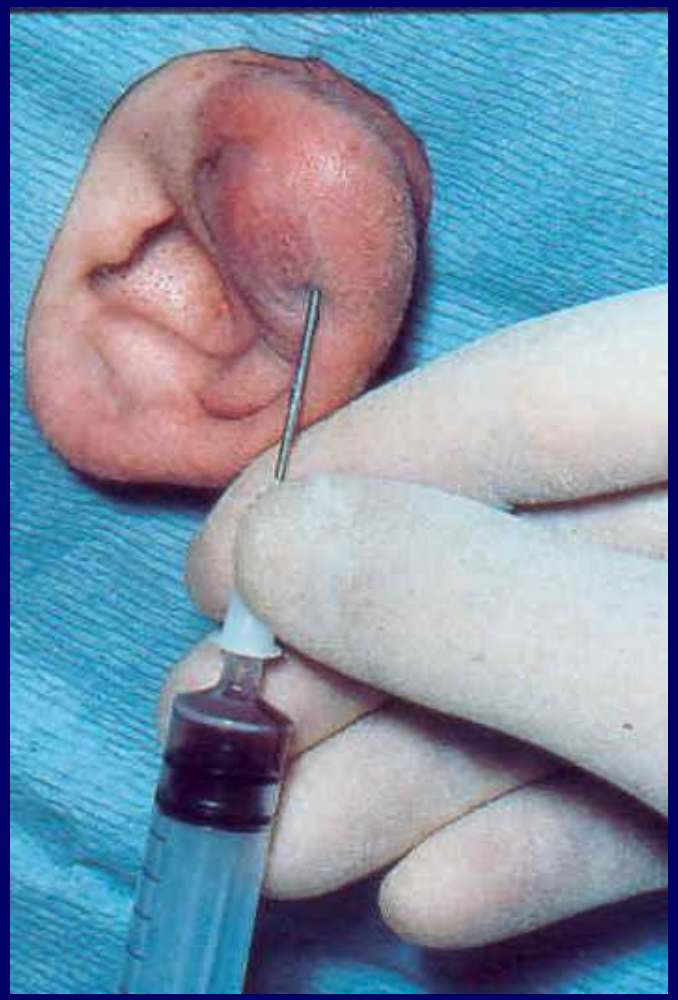


Auricular Hematoma

- Trauma to ear causes bleeding between the skin and auricular cartilage.
- **Symptoms**: ear is swollen and painful.
- **Exam**: due to trauma a soft hematoma forms within the helix fossa.

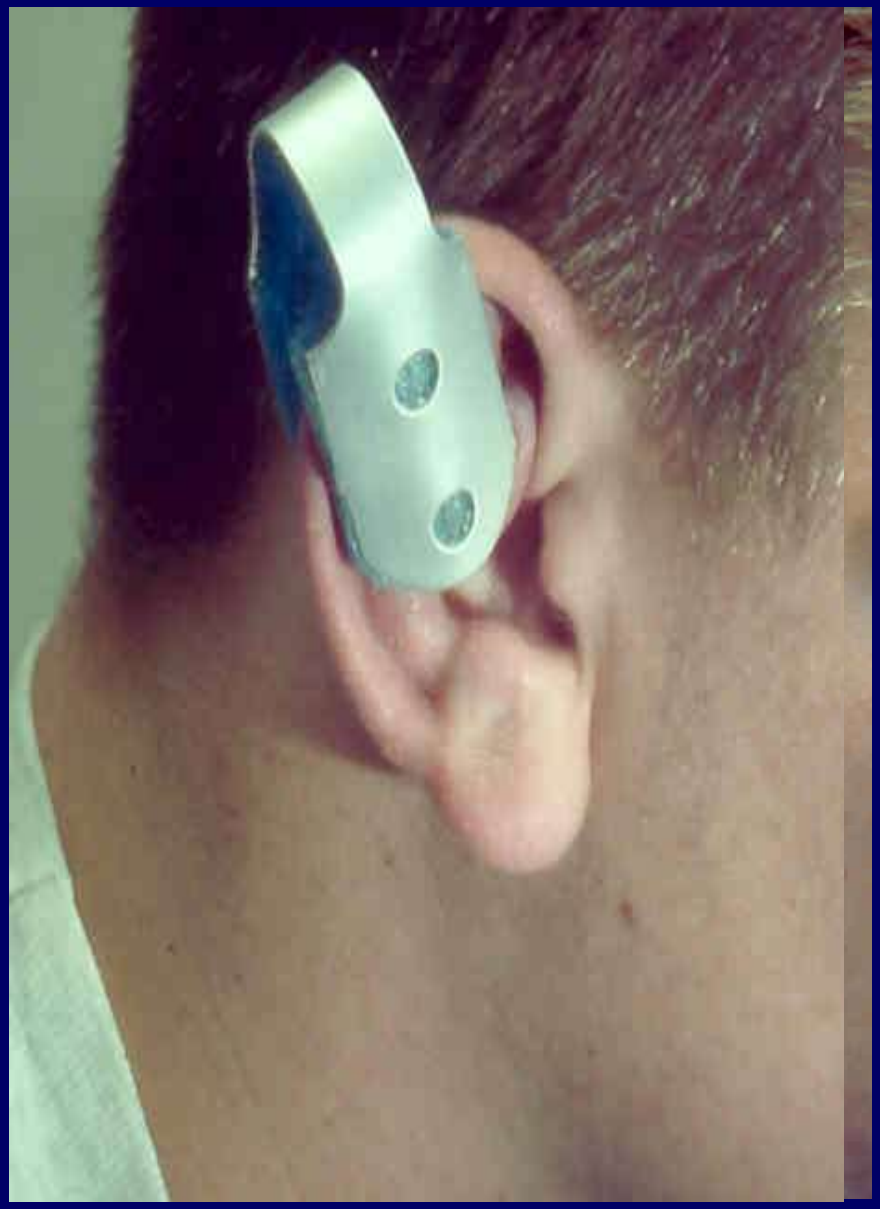
Auricular Hematoma (Treatment)

- Ice and pressure dressing initially. Apply Vaseline to "hot spots" to decrease friction.
- *Aspirate* hematoma under sterile conditions using a 20 g. needle.
- Prophylactic antibiotics (Keflex) are indicated.
- Need compression to prevent re-bleeding.



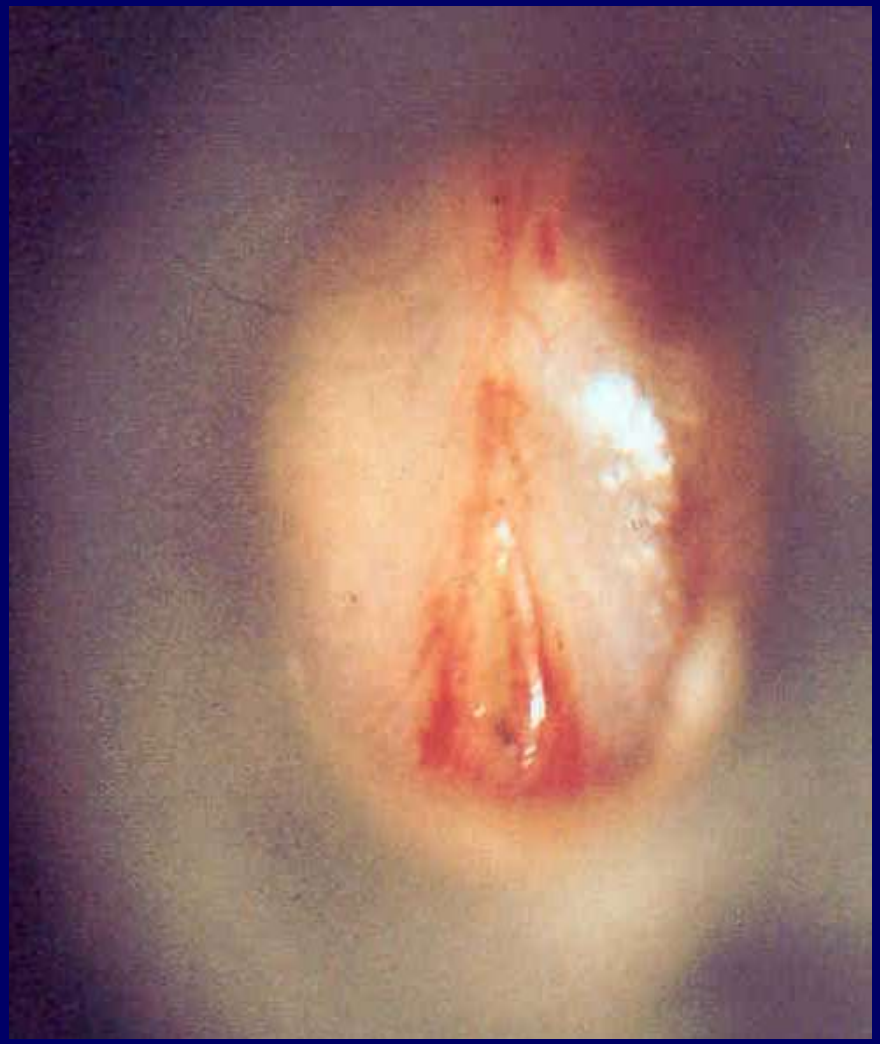
Auricular Hematoma (Treatment Options)

- Repeated aspirations of hematoma (this gives the poorest cosmetic result).
- *Numb* the ear with Lido.
- *Through*-and-through sutures around dental rolls or a button, left in place for 7-10 days.
- *Cast* made of cotton soaked with Flexible Collodion, *placed* in helix fossa for 7 days.



Tympanic Membrane Rupture

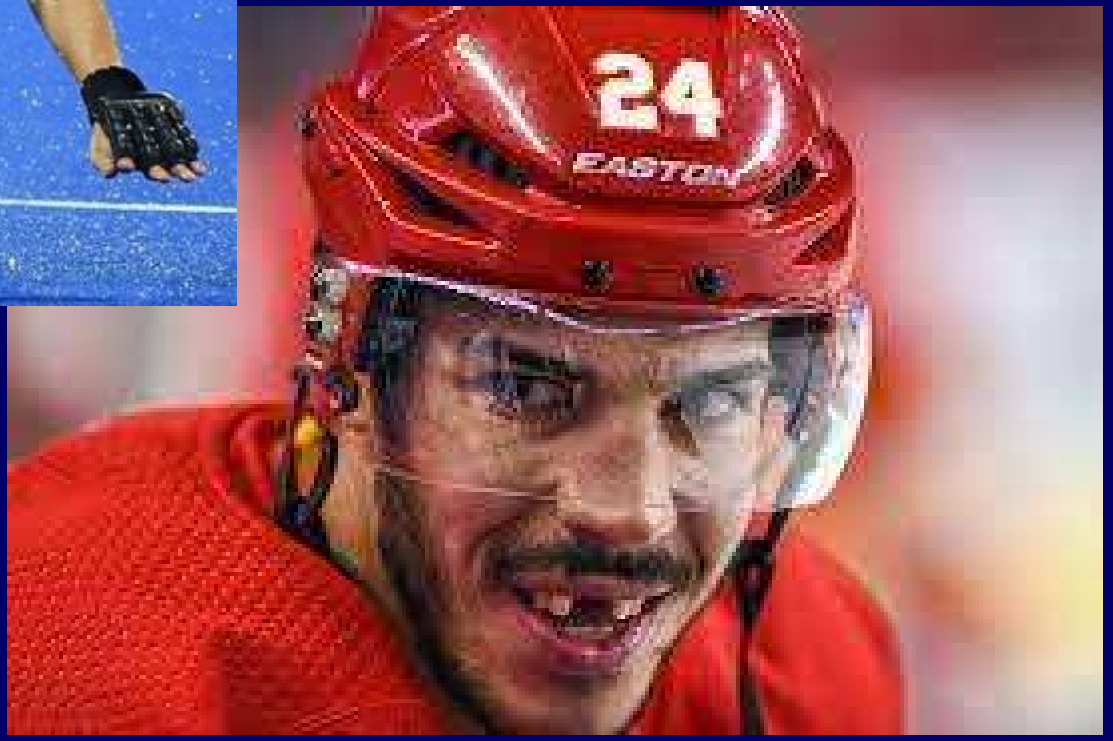
- May occur with head slap, diving sports or fall when water skiing.
- **Symptoms**: sudden and painful “pop”, often with hearing loss. May get vertigo in water.
- **Exam**: visualize hole in the TM with otoscope. Often see minor bleeding.



Tympanic Membrane Rupture
(Treatment)

- Usually only need “watchful waiting” to document healing (90% heal in 8 weeks).
- Avoid blowing nose and sneezing with mouth closed for a few weeks.
- Use antibiotic drops if contamination suspected (lake water) or blood in ear canal.

Dental Injury

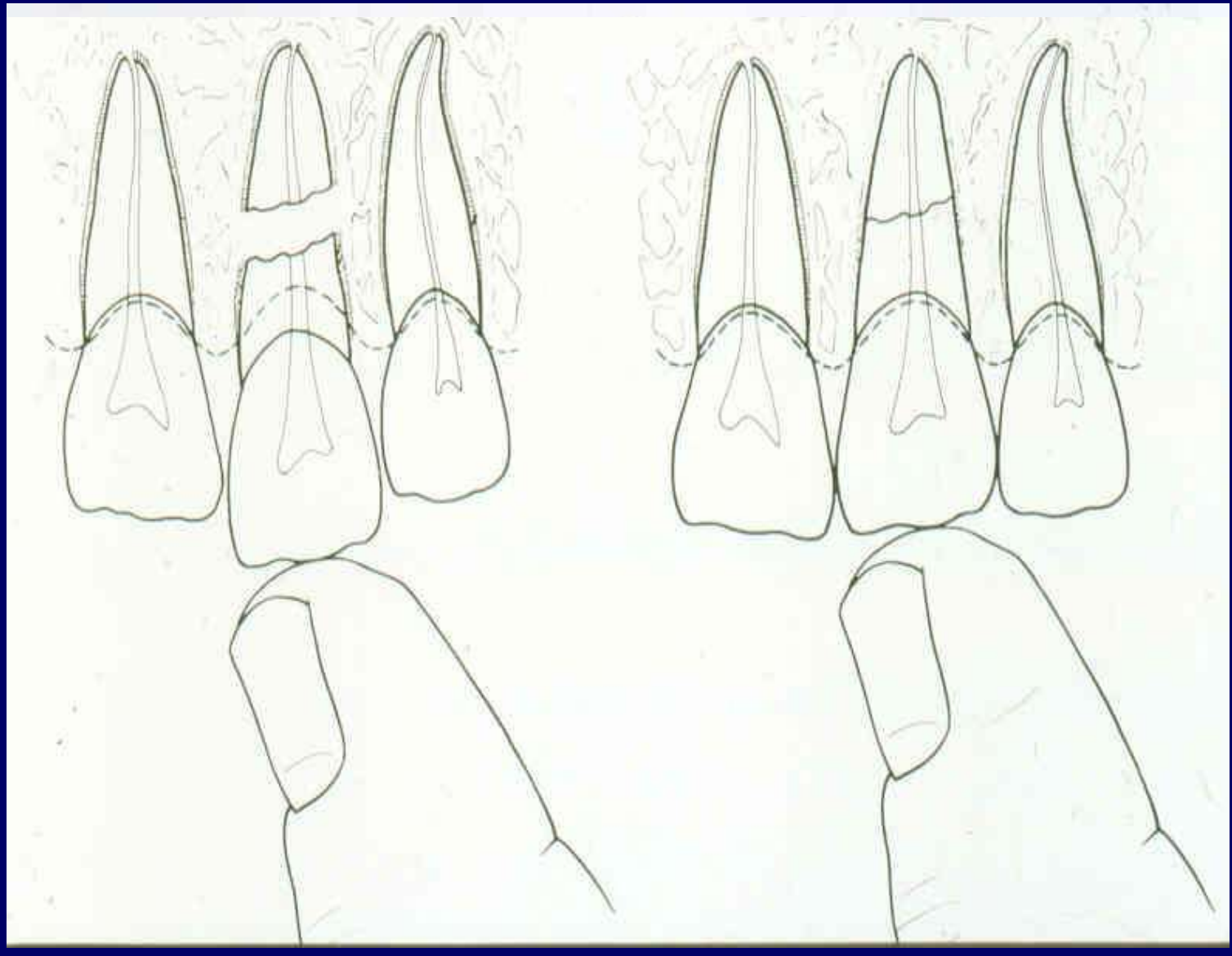


Tooth Fracture

- Sensitivity to inhaled air usually indicates more extensive injury.
- **Exam**: assess severity
  - May involve enamel (uniform color), dentin (yellow color) or pulp (red color).
  - Apply finger pressure to check for fracture.
- **Treatment**: if pulp exposed see dentist right away, if dentin exposed see within 48 hours.

Tooth Fracture

- Enamel
  - white
- Dentin
  - yellow
- Pulp
  - red



Avulsed Tooth

- Hold by crown and avoid touching root.
- Immediate re-implantation within 30 min. Leads to 90% salvage (rare if >6 hrs).
- If unable to re-implant, transport in mouth inside cheek or commercial media vs milk.
- See dentist ASAP for bracing and x-ray.
- Prophylactic antibiotics and Tdap indicated.

Eye Injuries

- Commonly associated with facial trauma.
- 2/3 of patients with facial fractures sustain an ocular injury.
- 3 *mechanisms* of injury:

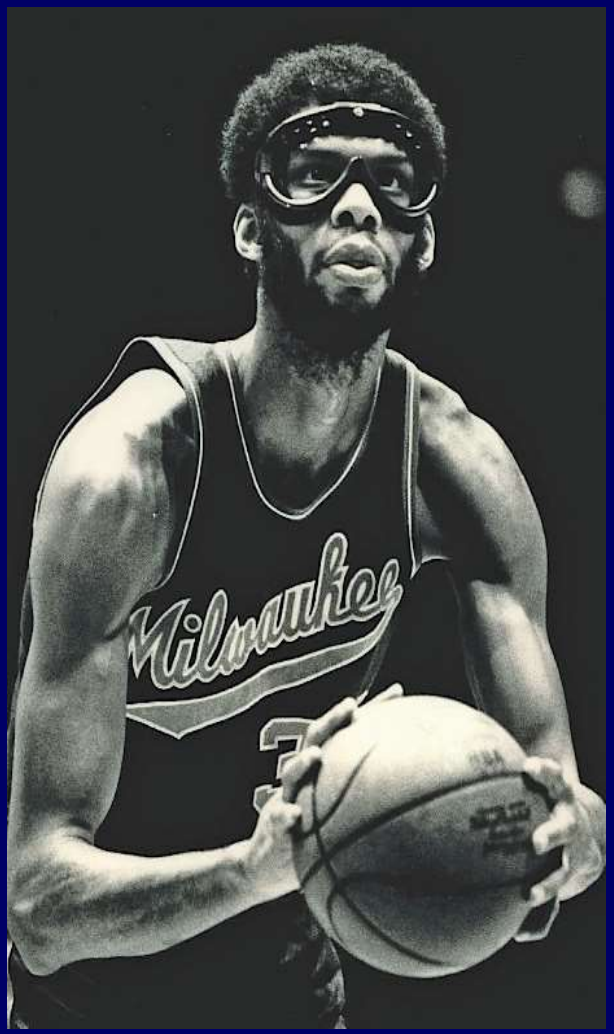
  penetrating injury, blunt trauma or a foreign body.

Potential to End Sports Career

- Bryce Florie
- Orlando Brown

Assessment of Eye Injuries (History)

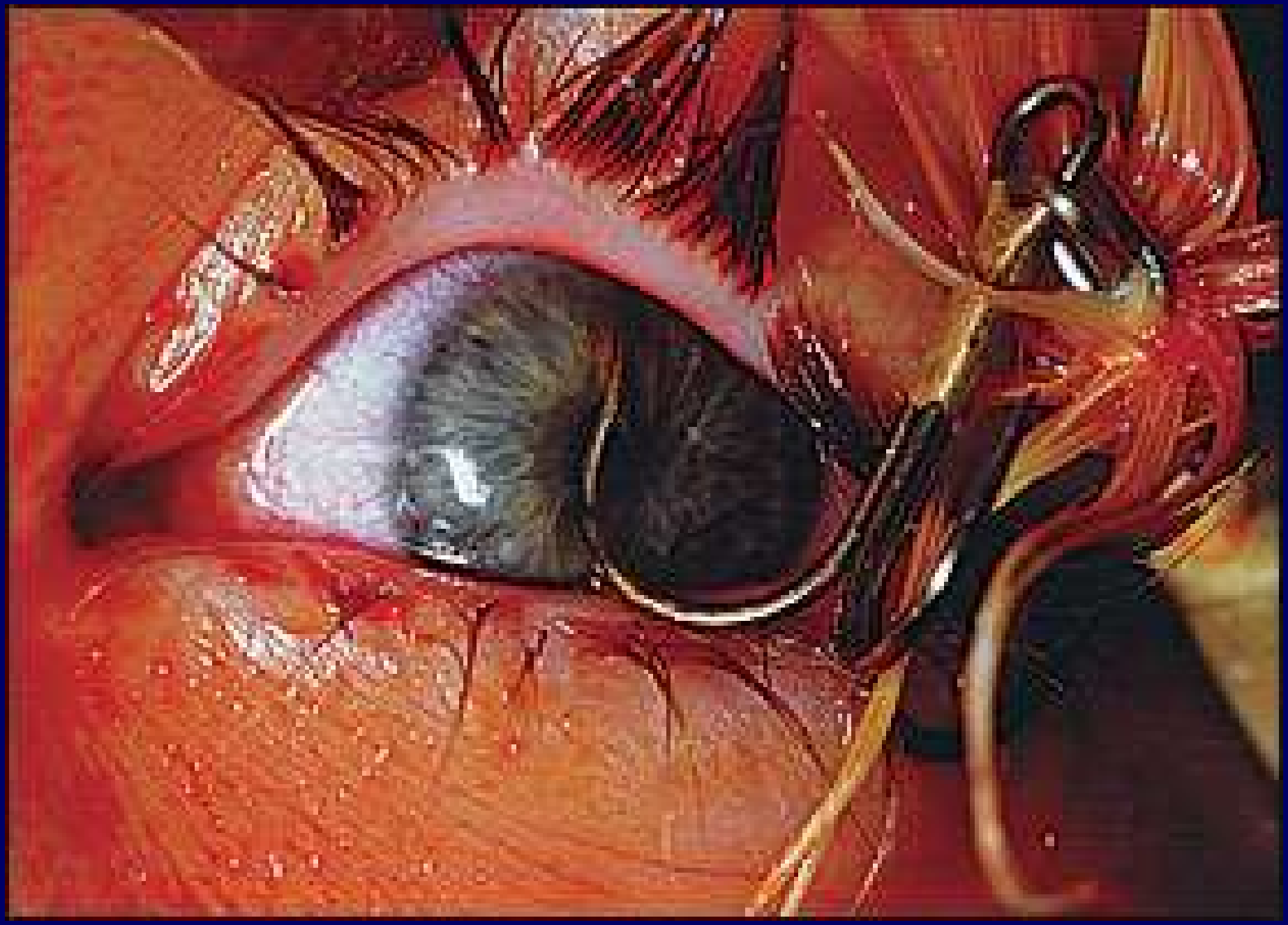
- Present history: mechanism of injury? Vision since injury?
- Past history: Baseline vision? Contacts or glasses? Lasik? *Past injury*?
- Symptom review: Pain (corneal abrasion); Blurred vision (hyphema); Tearing (foreign body); Floaters or Flashing lights (retina detachment), Diplopia (blowout fx).



Assessment of Eye Injuries
(Exam)

- Visual Acuity: most important (read text, count fingers, light perception).
- Inspect: lids, conjunctiva and sclera for blood, extruded tissue or gel (globe rupture).
- Anterior Chamber: look for hyphema.
- Pupils: Red reflex lost with hyphema or globe rupture; Anisocoria may be from iris sphincter tear.
- EOM: lose upward gaze with blowout fracture.
- Visual Fields: lost with retinal detach or nerve injury
- Cornea: look for FB or abrasion (stain).

Common Eye Injuries



Corneal Abrasion

- Caused by finger or foreign object.
- Symptoms: sharp pain, tearing, FB sensation.
- Exam: flip lids to look for FB. *Stain* with Fluorescein,
- Treatment: antibiotic ointment ± eye patch
  - Beware pseudomonas in contact lens wearer – use Cipro drops.
  - Cycloplegic (Homatropine) to paralyze ciliary muscle and relieve pain.
  - **No topical anesthetics**.
  - Re-check 18-36 hrs.

Corneal or Conjunctival FB

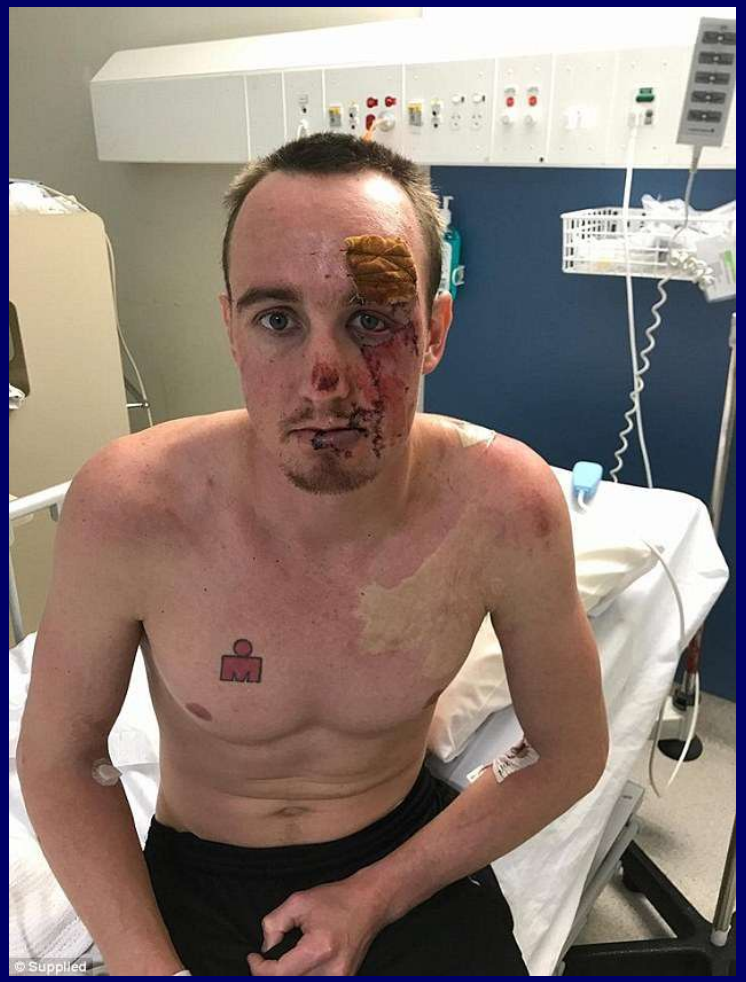
- Commonly dust or grass.
- Symptoms: FB sensation with pain, photophobia and tearing.
- Exam: use topical anesthetic. Evert lids. Consider x-ray for high speed metallic FB.
- Treatment: remove with moist Q-tip. May need eye spud or 18g needle if embedded.
  - Treat as corneal abrasion.
  - Beware of “rust ring”.

Hyphema

- Bleeding into anterior chamber. Caused by blunt trauma or foreign object.
- Symptoms: pain and photophobia. Vision often normal.
- Exam: see *blood* in ant. chamber (*may* need slit lamp if early).
  - Check Intraocular Pressure
  - Glaucoma is a common complication.

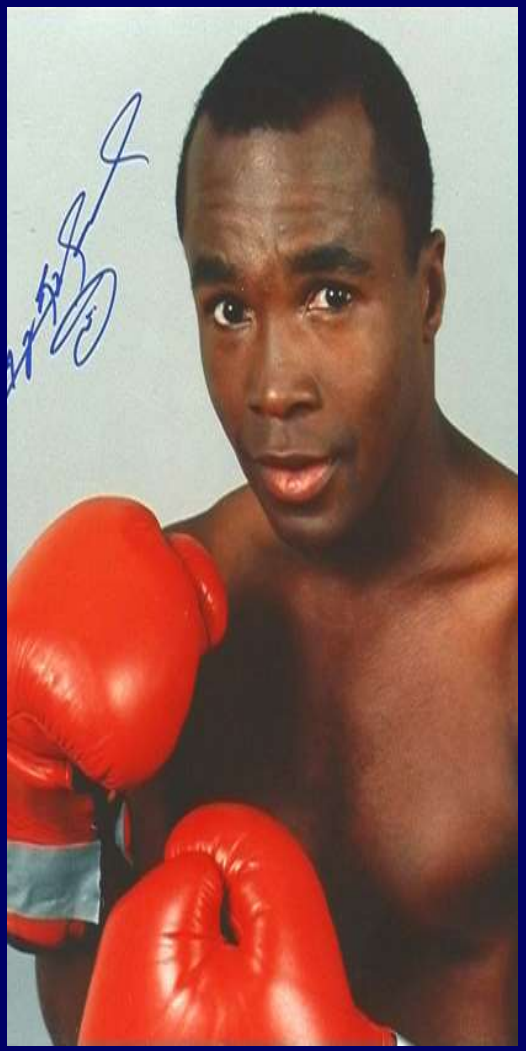
Hyphema (Continued)

- Treatment: strict bed-rest (elevate HOB 30°).
  - 1% atropine drops help pain.
  - Avoid ASA.
- Daily exam (25% re-bleed within 3-5 days).
- Consider hospitalization if:
  - Poor visual acuity
  - Increased IOP
  - Large hyphema (>1/3 – 1/2).



Retinal Detachment

- From blunt or penetrating trauma. Causes tears in retina.
- Symptoms: starts as blind spot at edge of visual field.
  - May see “sparks or lightening flashes”
  - Then “waving black curtain”.
- Exam: visual field defects, dilate to see detachment with ophthalmoscope.
- Treatment: urgent consultation for laser treatment to seal holes.



Sugar Ray Leonard

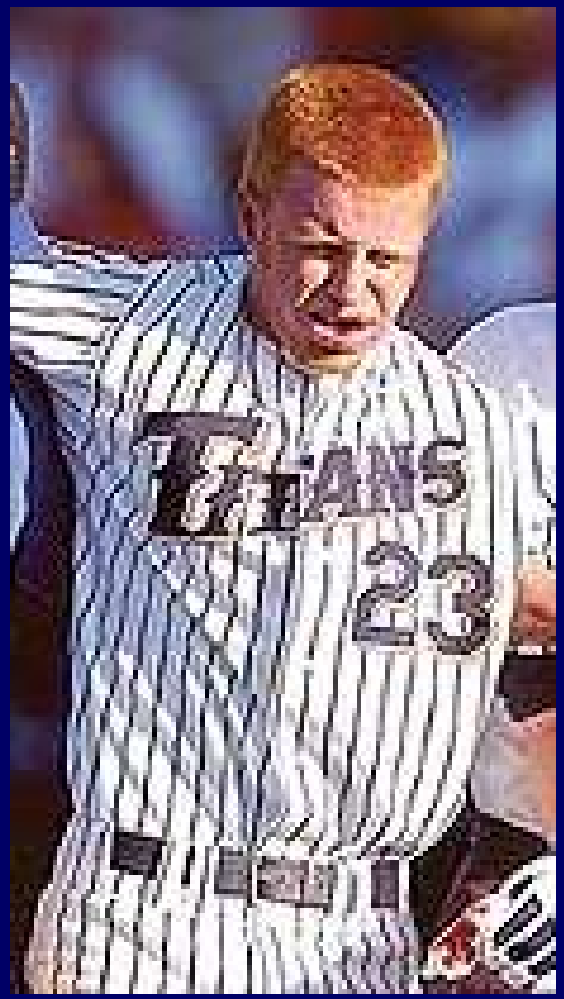
Orbit Fracture (Blowout)

- Caused by blunt trauma or foreign object (baseball).
  - Blows out floor of the orbit.
  - *Contents* displace into maxillary sinus, entraps inferior rectus muscle.
- Symptoms: pain (especially with upward gaze), diplopia, eyelid swells with blowing nose.
- Imaging: x-rays; including lateral, Water's, Caldwell, and optic canal views. CT scan most helpful.

Orbital Blow Out Fracture (Continued)

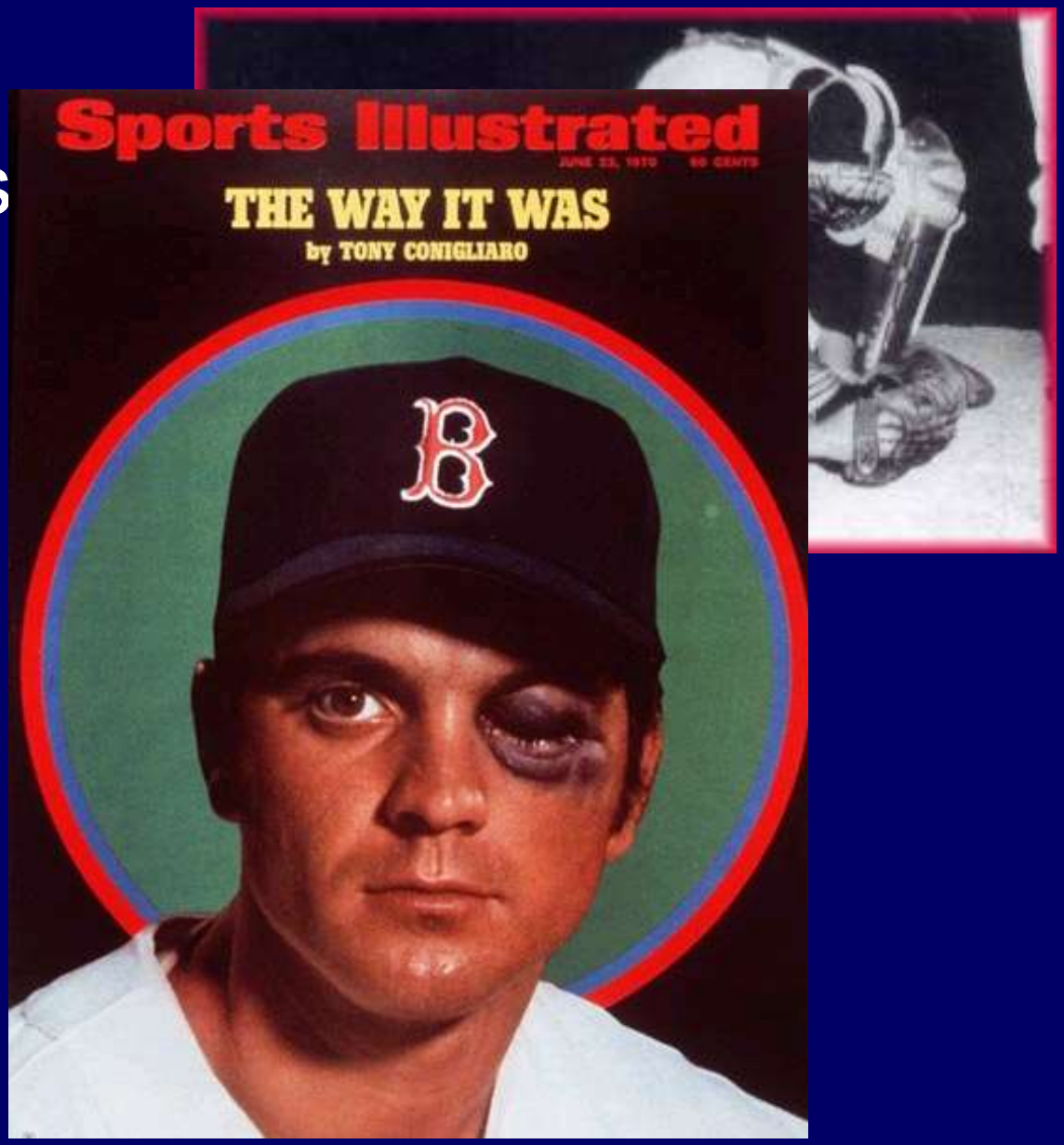
- Exam: restricted EOM (usually *upward* or lateral).
  - May see exophthalmos, then as swelling goes down enophthalmos.
  - Check for step-off (on orbit), crepitus, or hypesthesia (infra-orbital nerve).
- Treatment: ice pack, avoid blowing nose, nasal decongestants PRN, and antibiotics. Often need operative treatment.

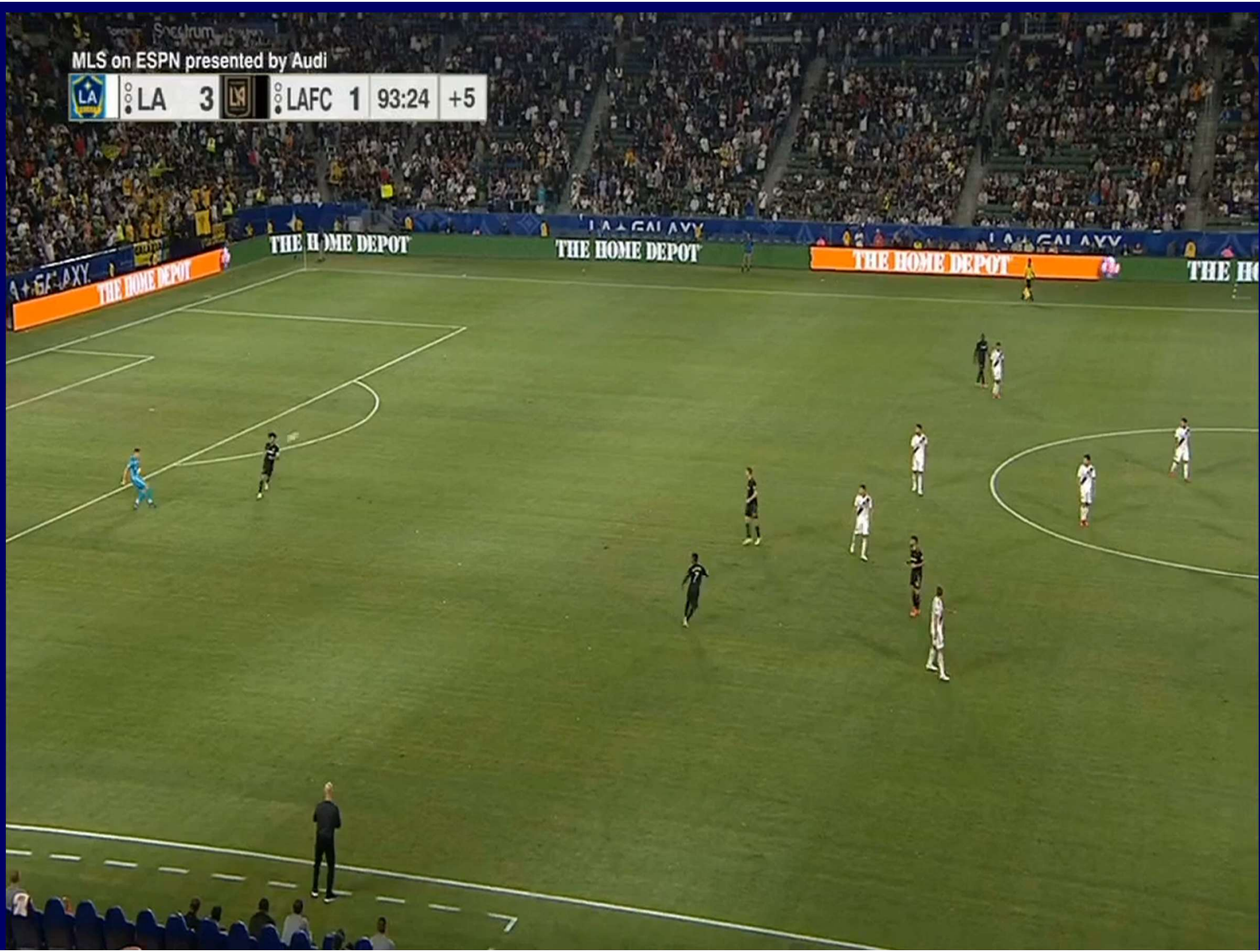
Justin Turner - CSUF
2003 College World Series



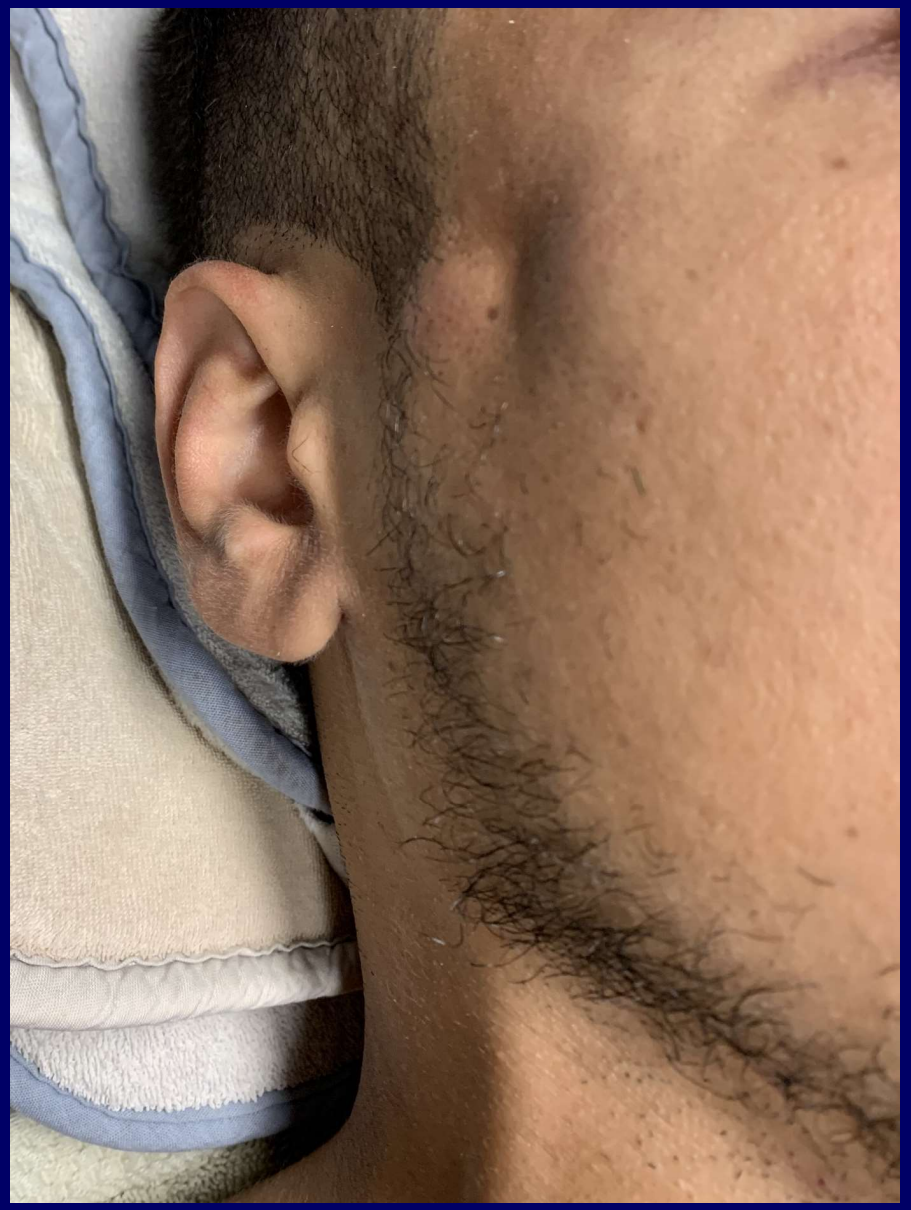
Baseball Blowout Fractures

- Herb Score
  - Cleveland Indians pitcher
  - 1957
- Tony Conigliaro
  - Boston Red Sox outfielder
  - 1967

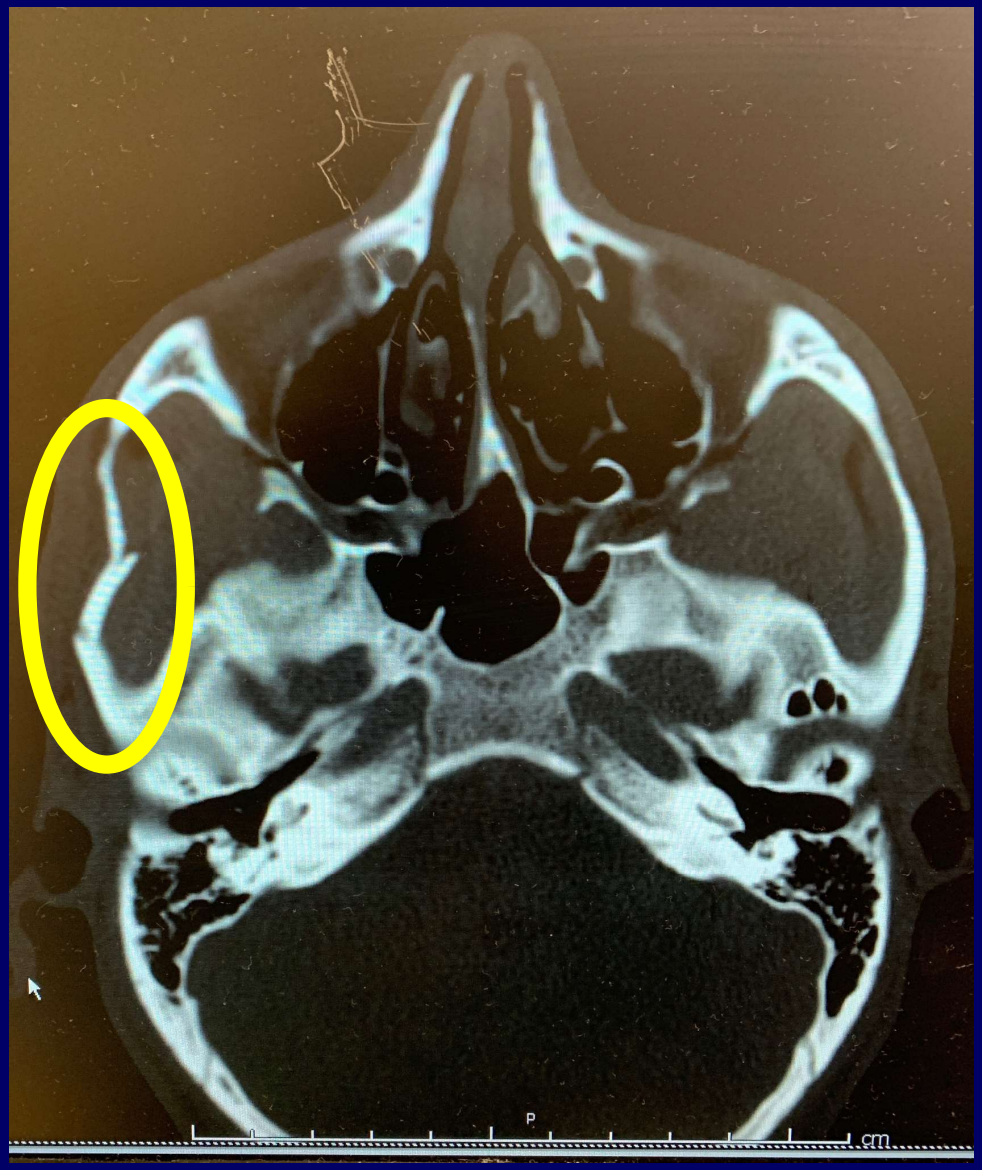



MLS on ESPN presented by Audi
LA 3
LAFC 1
93:24
+5
THE HOME DEPOT
THE HOME DEPOT
THE HOME DEPOT

LAFC Vs LA Galaxy 2019



LAFC Vs LA Galaxy; *2019*



Zygomatic Arch Fracture

- Most common facial fracture after nasal fractures.
- Clues to facial/skull fractures:
  - Look for asymmetry of facial bones and pupil level, along with orbital swelling/ecchymosis.
  - Trismus (limited/painful mouth opening), along with ecchymosis above upper teeth.
  - Abnormal sensation of upper/lower lid, or lateral nose (infraorbital nerve).
  - Epistaxis, crepitus (air emphysema).

Eye Injury Prevention

- Eye injuries are almost completely preventable with proper protection.
- Eye exam is an important part of PPE to identify functionally one-eyed athletes.
- *Molded* polycarbonate frames and lenses (≥3mm thick) are suggested in high risk sports (racquet sports, hockey, baseball, basketball etc.).

Summary

- Most sports-related facial injuries can be effectively managed by the primary care MD.
- Clinical exam is usually your best diagnostic tool.
- Rule out involvement of underlying cartilage or bone.
- Beware of hematoma formation around ear or nose.

Thank You!

Questions?