Common Sports Medicine Injuries

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Objectives

- Discuss common acute injuries
  - Shoulder
  - Elbow
  - Wrist
  - Knee
  - Ankle/Foot
Shoulder Injuries
Clavicle Prominence
Clavicle Fractures

- 5% - 15% of all fractures seen by primary care
- Most are middle third, followed by distal third
- Mechanism: FOOSH, onto shoulder, direct trauma

PE:
- Edema and point tenderness over fracture site
- Assess ROM of neck, shoulder
- Motor strength, sensation
- SC dislocations
Imaging

- AP, 45° cephalic tilt
Treatment

- Conservative
  - Sling
    - Comfortable, accessible
  - Immobilize for 3-6 weeks in kids, 4-8 weeks in adults
    - ROM as soon as possible
    - Discontinue when non tender at site
  - Figure of 8 – not commonly used
    - Significant displacement, use of arms for ADL’s

- No contact sports for 6 weeks
  - Depends on site, sport, individual factors
Surgical Fixation

When to Refer?

- Neurovascular compromise
- Open fracture
- Displaced; Bayoneting
- Symptomatic non-union at 12 weeks
- Throwing athlete
- Cosmesis
- Distal third
  - Questionable physeal injury, AC injury
- Proximal third
  - SC joint dislocation
AC Separations
AC Separation Types

Google Images: AAFP.org
AC Separations

- Usually direct blow to shoulder
- PE: “step” deformity, TTP AC joint, (+) crossover sign
- Radiographs: AP, Zanca ($10^\circ$ cephalic tilt), axillary
- 6 grades
- Grade 3 and above should be referred for possible surgical fixation, otherwise conservative care (sling)
- RTP when pain-free with abduction, crossover
Rotator Cuff Disorders
**Tear vs. Tendonopathy**

- **Tears usually > 40yrs old unless traumatic**
- **Insidious onset, worse w/ overhead activity, night pain**
- **PE:ROM, Rotator cuff strength, Hawkins/Neer’s,**
- **Subacromial injection diagnostic and therapeutic**
- **Imaging**

**DDX:**
- Instability
- SLAP
- Bursitis
- Referred pain
- Calcific tendonitis
- Thoracic outlet syndrome
- Adhesive capsulitis
Shoulder Exam
Imaging

[Images of various medical imaging scans, including X-rays and MRIs of shoulder regions.]
Treatment

- **Conservative:** NSAIDs, ice, avoiding painful activity, PT, injections
- **Surgical:** arthroscopy vs. open
Elbow
Tennis Elbow

- **Hx:** New activity or overuse
- **PE:** Pain over lateral epicondyle. Pain w/ wrist extension. Chair Test.
- **Tx:** Counter force brace, injection, PT, prolotherapy, surgery usually not required.
- **DDX:**
  - C6, C7 nerve root compression
  - PIN syndrome
  - Radial head arthritis
Radial Head Fracture Types

- **Mason Classification**
  - I = not displaced
  - II = displaced
  - III = Comminuted
  - IV = Dislocated

- **Type I & II** – Conservative management w/ sling and early mobilization.

- **Type III & IV** – Ortho referral

![Radial Head Fracture Classification Diagram](image_url)
Radial Head Fracture Type 1
Wrist and Hand Injuries
Colles’ Fracture
Colles’ Fracture

- 90% of distal radius fx
- Usually FOOSH
- Factors in conservative vs. operative
  - Intra-articular
  - Instability
  - Dominant hand
  - Age
  - Concomitant injuries
**Colles’ Fracture**

- **Conservative Treatment**
  - Closed reduction (ER)
  - Short arm cast 6 weeks
    - Munster cast to limit sup/pron
  - Close supervision to monitor reduction
    - Week 1, 2, 4, 6
  - 15° angulation of radius acceptable
  - Look for ulnar variance
Scaphoid Fractures

- Most common carpal fracture
  - 70-80% of carpal injuries
  - 8% of all sports injuries
    - 1% of football players

- FOOSH injuries

- Blood supply from radial a., anterior interosseous branch
  - Distal to proximal flow

- 80% of scaphoid fx occur at waist
Imaging

- AP, Lat, oblique, scaphoid views
  - Can be negative
    - Repeat in 10-14 days
    - Thumb spica splint
- May obtain bone scan 72 hrs post injury
- MRI/CT
Scaphoid Fx Treatment

**Conservative**
- Thumb spica cast
  - 6-8 weeks distal fx
  - 10-12 weeks horizontal oblique waist
    - Vertical oblique ORIF
- 12-24 weeks proximal
  - Referral with probable ORIF suggested
- Radiographs
  - Every 2-3 weeks until healing seen
  - Repeat 3, 6, and 12 months
- PT post cast removal

**Surgical**
- Displacement
  - 1mm or 15° angulation
- Non-union
  - 6-8 weeks immobilization
- Carpal instability
- Delayed presentation
  - Greater than 3-4 weeks
- Proximal fx
Mallet Finger

- Rupture of extensor tendon distal to DIP
- Stability: no volar subluxation, <30% of articular surface involved.
- Tx: stack splint 8 weeks (may play), surgery if unstable
Jersey Finger

- FDP avulsion
- Forceful extension of DIP while actively contracting FDP
- Most commonly to ring finger
- Tx: Almost always surgical
  - May delay surgery to end of season unless retracted
- RTP 2-8 weeks
Knee Injuries
Patellofemoral Pain Syndrome

- Common cause of atraumatic anterior knee pain
- More common in females
- Treatment: HEP and PT
ACL Injury

- **Hx:** Valgus stress, rapid deceleration, hyperextension, or marked internal rotation of tibia on femur
  - Pop
  - Effusion
  - Limited ROM
- **PE:** Effusion, Lachman’s, Anterior drawer
- **Imaging:** MRI
Imaging
ACL Treatment

- Extension Post-op brace locked at 0 deg
- ACE for swelling
- NSAID’s
- PT: “Prehab”
- Refer
- Consider Brace
  - MRI to R/O other injuries
- 6-9 mo recovery if reconstructed
Medial Meniscus Tear

- **History**
  - Twisting injury (Acute)
  - Degenerative
  - Swelling +/-
  - Locking/catching

- **PE:**
  - MJL tenderness
  - McMurray’s
  - Apley’s
  - Cyst

- **Tx:** conservative vs. surgical
Tibia Stress Fracture

- A spontaneous fracture that is the result of the summation of stresses that lead to failure of the bone.
  - Fatigue fractures: Normal bone
  - Insufficiency fractures: Abnormal bone
- Progressively worsening pain in the proximal or middle third of the tibia
- Common in distance runners
- Recent transition in training
- Patients often have symptoms for months but continue to train
- Exam
  - Focal tenderness
  - Tuning fork test
- Imaging
  - X-ray – often normal
  - MRI – bone marrow edema and/or fracture line
  - Bone scan – increased uptake
Tibial Stress Fracture

- **Treatment:**
  - Posterior medial cortex (compression type)
    - Crutches until walking is pain-free
    - Return to running after 8 weeks of rest
      - Slowly increase training intensity and mileage
      - Response to therapy is highly individual
      - Pain recurrence should prompt a return to whatever level of activity can be performed pain-free

- **Bracing**
  - Casts
  - Boots
  - Aircast stirrup

Ankle and Foot Injuries

To x-ray or not to x-ray, that is the question
Ankle x-ray is required only if there is any pain in malleolar zone and any of these findings:
- bone tenderness at A
- bone tenderness at B
- Inability to weight bear both immediately and in the clinic.

Foot x-ray is required if there is any pain in the midfoot zone and any of these findings:
- bone tenderness at C
- bone tenderness at D
- Inability to weight bear both immediately and in the clinic.
Ankle Sprains

- Anterior talo-fibula ligament – ATFL
- Calcaneo-fibula ligament – CFL
- Posterior talo-fibula ligament – PTFL
- Deltoid ligament
- Syndesmosis

http://www.hawaii.edu/medicine/pediatrics/pemxray/v3c03.html
Ankle Sprain

- Inspection
  - Deformity
  - Swelling
  - Ecchymosis
- Palpate for tender areas
- Anterior draw
- Talar tilt
- Squeeze test
- External rotation test
Treatment Progression

- RICE
- Bracing
- ABC exercises to Theraband exercises
- Stretching program
- Proprioceptive re-training
- Sport specific drills
  - Run 20 yds
  - Figure 8
  - Jumping/cutting
  - Balance
**Achilles**

- **Tendinopathy**
  - Common in jumping athletes
  - Tenderness at the insertion of the achilles
  - Pain with plantar flexion
  - Treatment
    - NSAIDs
    - Physical therapy
    - Stretching
    - Eccentric exercises
    - ?PRP, prolo, nitro

- **Rupture**
  - Pop and pain in the posterior ankle
  - Palpable defect
  - Weakness with plantar flexion
  - Thompson test
  - Referral to Ortho
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- bone tenderness at A
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- Inability to weight bear both immediately and in the clinic.

A **foot x-ray** is required if there is any pain in the midfoot zone and any of these findings:
- bone tenderness at C
- bone tenderness at D
- Inability to weight bear both immediately and in the clinic.
5th Metatarsal Fractures

1- Tuberosity avulsion fractures
   - Dancer’s fracture

2- Jones fractures – communicate with the 4-5 intermetatarsal joint

3- Stress Fracture – distal to the 4-5 intermetatarsal joint

Blood Supply of the 5th Metatarsal

- Vascular Anatomy
- 44% Non-union rate (even with NWB)

Smith J, Arnoczky SP, Hersh A: Intraosseous blood supply of the fifth metatarsal: Implications for proximal fracture healing. Foot and Ankle 13(3):144, 1992
Avulsion Fracture

- Inversion injury
- TTP base 5\textsuperscript{th} metatarsal
- Plantar aponeurosis pull
- Treatment
  - Boot, progress WB as tolerated
  - May wean in 2-4 weeks
  - RTP 8 weeks
  - PT
5th Metatarsal Stress Fracture

- Proximal Diaphysis
- Prodromal symptoms
- Risk of delayed union, nonunion and refracture with conservative tx
- Early stress fx
  - NWB 6wks
  - Protected weight bearing 6wks
  - Risk of delayed union and non-union
- ORIF
  - Percutaneous screw fixation
  - 4.5 - 7.0 mm fully-threaded cortical screw
Jones Fracture Treatment

- Metaphyseal-diaphyseal junction
  - 4th and 5th junction
- Can also have acute fracture on chronic stress injury
- Mechanism
  - Plantar-flexion and adduction force
- Conservative
  - Non-weight bearing immobilization
    - Short leg cast
      - 8-12 weeks
    - Progress to boot after 8 weeks if evidence of healing
  - High risk of non-union and refracture
- ORIF
  - Displaced
  - Athlete
  - Failed conservative treatment
  - Patient decision
Plantar Fasciitis

- Overuse injury at the insertion to the calcaneus
- Associated with pes planus and pronation
- Older athletes
- Heel pain and stiffness that is worse in the morning
- Point tenderness at the insertion on the calcaneus

Diagnosis
- Clinical
- X-ray to rule out other causes

Treatment
- Stretching, strengthening, and icing
- Physical therapy
- Heel cups
- Supportive shoes
- Night splints
- Walking boot
- Corticosteroid injection, PRP, prolotherapy
Thank You

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