Common Ankle Injuries

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Skin Injuries

- Contusions
- Lacerations
  - Beware tendinous or ligamentous injury
- Blisters
  - Rare but not impossible
- Insect bites
  - Frequently become infected
- Infection
Skin Injuries: Treatment

- Contusions: RICE, activity modification, protect injured area
- Lacerations: protect from infection
- Blisters: protect from becoming worse and infection, eliminate the cause
- Insect bites: protect from becoming infected
- Infection: treat with appropriate antibiotics
Ankle Sprains

- One of the most common injuries in sport
- Accounts for 40% of all athletic injuries
- 53% of basketball injuries
- 29% of soccer injuries
Ankle Sprains: General stats

- More than 3 million per year in “at risk populations”
- Peak incidence ages between 15 and 19
  - Males between 15-24 higher incidence than females
  - Females over 30 higher incidence than males
- Nearly half (49.3%) occur during athletics
  - Basketball > football > soccer
Ankle Sprains

- The inversion sprain
- Most common ankle sprain accounting for 75% of all ankle injuries
- No difference in incidence between males and females in 15-19 age group
- The classic “rolled ankle”
Ankle Sprains

- Inversion sprain
  - First the Anterior TaloFibular Ligament (ATFL) is injured
  - 2/3rds of ankle sprains are an isolated ATFL injury
  - Second the CalcaneoFibular Ligament (CFL)
  - Take much higher forces to injure the CFL
Ankle Sprains: Classification

Grade I
- Ligament stretch not so much a tear
- Minimal pain and swelling
- No instability

Grade II
- Torn ATFL Intact CFL

Grade III
- Torn ATFL and CFL
Ankle Sprains: Treatment

- Most recover with conservative care
- Rest
- Ice
- Bracing/compression
- Early weight bearing
- Physical therapy
- Prevent another injury
Ankle Sprains: Treatment

- **Grade III**
  - Compared primary repair, casting and functional bracing
  - Return to work was faster in the functionally treated group
  - Functionally treated group did better than those with primary surgical repair
Ankle Sprains

- Prevention

- Taping/Bracing
  - Helps prevent second injury in those who have already had a sprain
  - Both braces and tape loose some effectiveness with activity (Stretch. become loose)

- Rehabilitation
  - Proprioception, neuromuscular training, strength
Ankle Sprains

- The eversion sprain
- Deltoid ligament injury
- Much less common
- Check the proximal fibula
- Check the syndesmosis
Ankle Sprains

- The high ankle sprain
- Syndesmotic sprain
- Forced external rotation, dorsiflexion and axial load

- While relatively uncommon overall can be seen in gymnasts landing a trick short
- Offensive lineman pushing off
Ankle Sprains

- Syndesmotic injuries
  - Associated with deltoid ligament injury
  - Tender over the sydesmosis
  - Squeeze test
  - Cotton test: attempt to move the talus laterally
  - Stress radiograph in plantar flexion and external rotation
  - Syndesmotic widening radiographically
Ankle Sprains

- Subtalar injury
- Often seen with an ankle sprain
- 10% of those with chronic lateral ankle instability with have subtalar instability
- Covered in the foot lecture
Ankle sprains

- Ottawa ankle rules: when to x-ray
  - Boney pain at the base of the 5th metatarsal, medial or lateral malleoli
  - Inability to bear weight immediately after the injury and for four steps in the ER
  - Reduced cost in one ER by 3 million dollars per 100,000 patients
  - Of those xrayed by the Ottawa ankle rules 22% had a fracture
Ankle Sprains

- SOFAR study, Ottawa ankle rules with US
  - Evaluated with US if the OAR applied
  - Also evaluated with xray
  - Pts treated according to xray findings
  - Blinded to xray results and vice versa
  - US missed one fx due to the operator not scanning the fibula high enough
  - Promising technology
Chronic ankle instability

- Recurrent ankle sprains
- Chronic ankle pain
- Patients often have failed PT and bracing
- Some of my happiest patients once stabilized
- Chronic pain and swelling
- Can have intra-articular pathology
Chronic Instability

- Resultant instability from repeated sprains
- On PE anterior drawer and talar tilt
- Stress radiographs
- Anterior drawer: 10mm of anterior tibial translation
- Talar tilt 9 degrees
Case

- Former collegiate gymnast with history of multiple ankle sprains
- Complains of recurrent sprains and chronic pain
- Unable to participate in running
- Has daily pain with ADL
- MRI read “normal”
- PE: with anterior and lateral instability with swelling over the anterolateral joint line
Talar tilt radiograph
Anterior drawer radiograph
Chronic instability

- Over 80 described surgical procedures
- **Anatomic repair**
  - Direct late repair
  - Shorten and repair the ATFL and CFL
- **Non anatomic repair**
  - Tendon routing procedures to reconstruct the damaged ligaments
Chronic Instability

- Patients often have other pathology
  - Ankle impingment lesion
  - Peroneal pathology
  - Loose bodies
  - Synovitis
  - Osteochondral lesions
  - Osteophytes
Ankle impingement syndrome

- Anterior ankle pain with dorsiflexion
- Boney or soft tissue lesion
- Anterior osteophyte
- Palpable boney or soft tissue lesion
- Conservatively try to limit dorsiflexion by either heel lift or soft dorsiflexion block taping
- Rest, NSAIDs
Ankle impingement syndrome

- Can be excised arthroscopically
- “Meniscoid” lesion:
  - Cartilaginous transformation of a ruptured ATFL Vs.
  - Synovitis
- Post Op High good-excellent long term outcome (92-87%)
- Routine ankle rehab protocol
Ankle impingement syndrome
Ankle impingement syndrome
Ankle Fractures

- Another common injury
- Will see many in the non athletic population
- Lots of classification systems
- Used to determine treatment
Ankle Fractures

- Making sense of ankle films
  - Make sure you have good films
  - As an orthopedist it's not good enough just to know if it's broken or not
  - Need AP, lateral and mortise views
  - Lateral malleolar, bimalleolar, trimalleolar medial malleolar, posterior malleolar fractures, Pilon
  - Talus injuries/fractures
  - Decisions based on knowledge of stability of the fracture
Ankle Fractures

- Avulsion fractures
- MOI same as inversion ankle sprain
- Ligament pulls a piece of bone off
- Can treat in an aircast and early weight bearing
- PT when healed
Ankle Fractures
Ankle Fractures
Ankle fractures

- Fibular fracture with medial clear space widening
- Avulsion off the posterior tibia
- Needs surgical intervention
- ORIF of the fibula
- Be prepared to fix the deltoid ligament
- Be prepared for syndesmotic screw
Ankle Fractures
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Ankle Fractures: Peds

- They will often times fracture at the physis (Salter I) rather than sprain

- Special fractures
  - Juvenile fracture of Tillaux: Salter III fracture of the distal tibial epiphysis
  - Triplane fracture: Multiplanar salter IV fracture of the distal tibia
Ankle fracture case
Ankle fracture case
Ankle Talar dome injuries

- Talar dome injuries
- The ankle sprain that does not get better
- Often do not show up on the initial films
- Several different staging classifications
Ankle: Talar Dome Injuries

- Does the lesion involve the subchondral bone?
- Is there a free fragment?
- If so is it loose?
- Can it be repaired or will it heal on its own?
Ankle: Talar Dome Injuries

- Cheng et al developed the following arthroscopic staging system
- **Stage A** - Smooth, intact, but soft or ballotable; stable
- **Stage B** - Rough surface; stable
- **Stage C** - Fibrillation/fissuring; stable
- **Stage D** - Flap present or bone exposed; unstable
- **Stage E** - Loose, undisplaced fragment; unstable
- **Stage F** - Displaced fragment; unstable
Other Differential

- Tumor
- Infection
- Neuropathy
- Radiculopathy
- Bone bruise
Ankle Injuries

- **Things you do not want to miss**
  - Maisonneuves injury
  - Fracture of the base of the 5th metatarsal
  - Subluxing peroneal tendons
  - Stress fracture
  - Achilles injury
  - Talar dome injury or osteochondritis
  - Proximal fibula fracture
Ankle Injuries

- Thank you for your attention
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