Leg and Ankle Problems in Primary Care

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Leg and Ankle Presentations

- **Trauma**
  - Twist and Fall: fractures/sprains
  - Felt a ‘pop’: soft tissues

- **Pain**
  - Arthritis or Overuse
Ankle Trauma
Twist and Fall

- Common reason for clinic visits
- You have to exclude a fracture.
- Are there any short-cuts?
Ottawa Ankle Rules


How to Rule out a Fracture Clinically

- **Ottawa Ankle Rules**
  - Order an **xray** if there is tenderness at either posterior malleolus, 5th metatarsal base, navicular AND an inability to take 4 unassisted steps.
  - When in doubt just get an xray.
Ottawa Ankle Rules

A series of ankle x-ray films 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 bear weight both immediately and in emergency department

A series of ankle x-ray films is required only if there is any pain in mid-foot zone and any of these findings:
- Bone tenderness at C
- Bone tenderness at D
- Inability to bear weight both immediately and in emergency department
Ankle Landmarks
Ankle Landmarks
Example One

- Twisted ankle.
- Ottawa rules employed.
- Patient unable to walk unassisted.
- Tender at base of 5th metatarsal.
- XRs ordered: Foot AP/Lat/Oblique (non-weight bearing)
5th Metatarsal Fracture

Figure 4. A 35-year-old woman was running and twisted her ankle on uneven ground. An anteroposterior radiograph (a) demonstrates a nondisplaced avulsion fracture of the base of the fifth metatarsal. The fracture extends into the fifth metatarsocuboid joint (arrow) but is not displaced. A lateral radiograph (b) shows that the fracture is located in the tuberosity of the fifth metatarsal (arrow). Because of her active lifestyle, she chose to wear a short leg walking cast for comfort instead of a wooden shoe or tennis shoe. Her symptoms resolved in 4 weeks.
5th Metatarsal Fracture

- Are they all the same?

- “Jones” fracture
  - diaphysis not metaphysis
  - Usually a stress fracture
  - NON weight bearing cast
Jones Fracture
Example Two

Twisted ankle

Ottawa rules employed

- Unable to walk unassisted.
- Tenderness at posterior edge of lateral malleolus.
- XRs: AP/Lat/Mortise or ‘3v ankle’ or ‘ankle series’
Lateral Malleolus Fracture
Lateral Malleolus Fractures

- Are they all the same?

- Medial side of ankle is just as tender as lateral

- XR shows widening of the medial clear space

- ‘Surgical’ ankle
Lateral Malleolus fracture with deltoid ligament tear
Non-displaced lateral malleolus or 5th metatarsal base fractures

TREATMENT

WBAT in fracture boot or cast for 4-6 weeks,
then
PT referral to regain motion, strength, proprioception.
Example Three

- Twisted ankle
- Ottawa rules employed.
- Able to walk (poorly).
- Tenderness is in front of lateral malleolus.
- Therefore, XRs **NOT** ordered.
Sprains

- ‘Rolled ankle’. Inversion mechanism.
- **ATFL** (anterior talo-fibular ligament) commonly injured.
- Tenderness is anterior to malleolus.
- Grading System:
  - Mild (localized lateral swelling) or
  - Severe (diffuse swelling and tenderness).
Sprains

- Fibula
- Tibia
- Posterior talo-fibular ligament
- Anterior talo-fibular ligament
- Calcaneus
- Calcaneo-fibular ligament

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Ankle Sprains

- **Mild**: ATFL only injured.

- **Severe**: ATFL + calcaneofibular ligament (CFL) +/- PTFL.
Sprain Treatment

- MILD Sprain
- RICE
- Crutches for a few days
- Functional splint
- Early weight bearing and ROM
- 3-7 days to recover
Sprain Treatment

- **SEVERE Sprain**
- Consider Fracture or Walking Boot
- Bear weight as tolerated
- ROM as pain allows
- 6 wks + to recover
- Surgery?
Sprain Braces
Sprains

- Treatment/Rehabilitation
  - After immobilization period start:
    - RANGE OF MOTION
    - WEIGHT BEARING
    - TOE RISE EXERCISES
Ankle Sprains

Recent Studies

- There are no ‘minor’ sprains
- Early mobilization works best
- High MD visits; low PT visits
- Re-injury and residual symptoms are common
Recurrent Sprains

- Sometimes it is just bad luck. Usually the problem is **inadequate rehabilitation**.

- Other reasons:
  - invertor/evertor imbalance
  - weight transfer
  - abnormal knee angles.
Persistent Pain after Sprains

- Usually due to inadequate rehab: stiff or swollen or weak.

- Other causes:
  - Sinus tarsi syndrome: scarring and ‘crowding’ laterally; arch support
  - Osteochondral talar lesions: bone scan or MRI; 6 wks of casting prior to referral.
  - Peroneal tendon pathology: posterior to malleolus; 6 wks of casting prior to referral.
Other Sprains

- **Deltoid**: rare; medial side of ankle. Refer if medial clear space is widened.

- **“High”**: syndesmosis sprain (connects tibia to fibula. Pain is in leg, worse with ext rot.)
Chips and Flakes

- Represent ligament avulsions

- It is “old” if it looks smooth or rounded
Chips and Flakes
Ankle Trauma

1. Twist and Fall

2. Felt a ‘pop’
Felt a Pop

- Posterior Ankle

- Gastrocnemius unit: high (muscle) or low (tendon)

- Always examine the patient prone
Gastroc-Soleus ‘Unit’
Tendo-achilles Rupture

- Young to middle-aged patients
- Local tenderness/swelling. Can still walk.
- Diagnostic: palpable defect, abnormal resting position, Thompson test
- Refer
Palpate prone and Resting Position
Thompson Test
Medial Gastrocnemius Muscle Tear

- Pain is higher, mid to upper medial calf.

- Swelling can be mild to severe. Mimics DVT.
Medial Gastrocnemius Tear

- **Treatment:**
  - **Mild swelling:** ace, ice, crutches. Takes 1-3 weeks to return to activity.
  - **Severe swelling:** posterior splint, NWB with crutches for 3-6 weeks.
  - **Never surgical** (‘like sewing wet Kleenex’)
Leg or Ankle **Pain**

- As the reason for the clinic visit:
  - Arthritis
  - Overuse
    - Of tendons
    - Of bone
    - Of muscle
Ankle Arthritis

- Rare. Usually history of injury/surgery
- Diffuse aching with weight bearing
- Decreased ROM
- XRAY is diagnostic
- Treat like any other arthritic joint but add contrast soaks, cushioned insoles, brace.
Ankle Arthritis Radiograph
Overuse

- Achilles tendinitis
- Posterior tibial tendinitis
Achilles Tendinitis

- Usually related to significant increase or change in type of activity.
- Pain with push-off (if they can walk).
- Can be swelling, tenderness to palpation.
- Takes weeks/months to resolve.
- Heel lift +/- boot/cast. Soaks, NSAIDs.
- (can be prelude to rupture)
Achilles Tendinitis
Posterior Tibial Tendinitis

- ‘Acquired Flatfoot’
- Underdiagnosed/unrecognized
- Middle aged patient, medial ankle/foot pain
- Check for tenderness, swelling, arch, toe rise ability.
- Associated with hallux valgus, tight heelcord, sometimes knee pain.
- Treat with arch support and heel lift; sometimes needs casting; surgery can be needed.
Posterior Tibial Tendon

Medial view

- Tibialis anterior tendon and sheath
- Sheath of tibialis posterior tendon
- Superior extensor retinaculum
- Medial malleolus and subcutaneous bursa
- Inferior extensor retinaculum
- Tibialis posterior tendon and sheath
- Tibialis anterior tendon and sheath
- Sheath of extensor hallucis longus tendon

Calcaneal (Achilles) tendon
Sheath of flexor digitorum longus tendon
Posterior tibial a. and n.
Sheath of flexor hallucis longus tendon
Subcutaneous and subtendinous calcaneal bursae
Calcaneus
Flexor retinaculum
Abductor hallucis m. (cut)
Plantar aponeurosis (cut)
Metatarsal 1 Sheath of flexor Sheath of flexor
Posterior Tibial Tendinitis
Overuse of Bone

- Shin Splints, aka, medial tibial stress syndrome
  - Sore after stopping exercise
  - Diffusely tender at medial edge of tibia
  - Must stop aggravating activity
Shin Splints

- Tibialis Anterior
- Tibia
- Soleus

Common site of anterior shin splints
Common site of posterior shin splints
Overuse of Bone Stress Fracture

- Often young, woman, runner
- Sudden increases in duration/intensity
- Can have pain with walking, but much worse with running.
- Focal tenderness
Stress Fracture

Figure 3: A 16-year-old rhythmic gymnast had increasing pain in her leg when she increased the intensity of her training for international competition. Plain radiographs were normal, but anterior (a), posterior (b), left medial (c), and right medial (d) bone scans show focal increased uptake (arrows) indicative of a stress fracture.
Ankle Rehabilitation

- Swelling
- Stiffness
- Weakness
- Giving out
Swelling

- “It’s going to look swollen for at least 3 months”
- Elastic supports and Time
Stiffness

- “Let’s compare the motion to the other ankle”
- ROM doesn’t return by itself. Self-stretching to start, formal PT prn.
- Some discomfort is normal and does not mean something is being damaged.
Weakness

- “Let’s try the toe rise test together”
- Easy demonstration of plantarflexor power.
- Patient won’t walk or feel right until it returns. May take a month or two.
Giving out

- Usually a combination of weakness and loss of proprioception.
- After toe rise is regained, balance on toes of one foot and walk on tiptoes.
- This is needed to return to sports.