

COMMON FOOT COMPLAINTS IN PRIMARY CARE



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Objectives

- Ankle injuries
 - Sprain
 - Achilles rupture
 - Avulsion fracture 5th metatarsal
- Foot pain
 - Metatarsal stress fractures
 - Plantar fasciitis
 - 1st MTP symptoms
- Skin conditions
 - Onychocryptosis
 - Corns



Ankle Sprains

- > 20,000 occur daily in U.S.
 - 72% report residual symptoms 6-18 months
- 20% of sporting injuries
- Types:
 - Lateral: ATFL, CFL, PTFL
 - Medial: Deltoid
 - High: syndesmosis, AITFL
 - Chronic

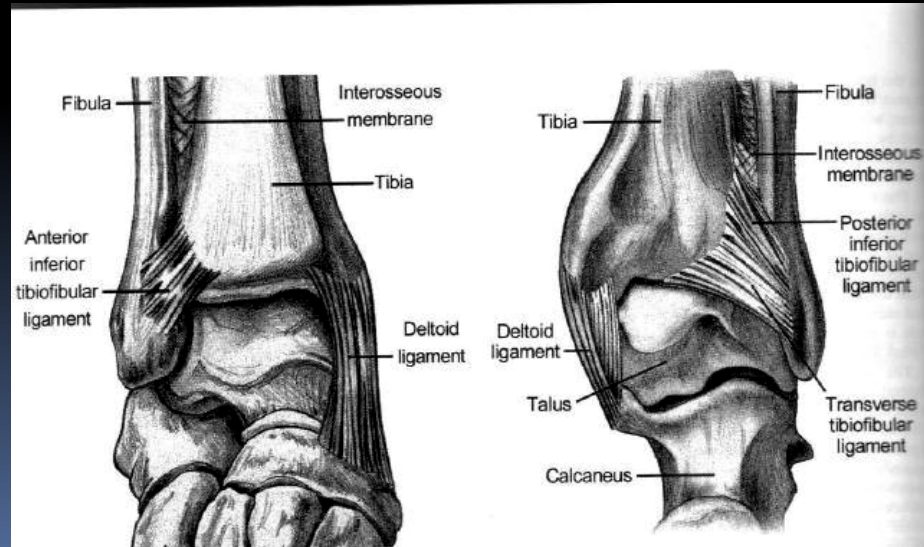
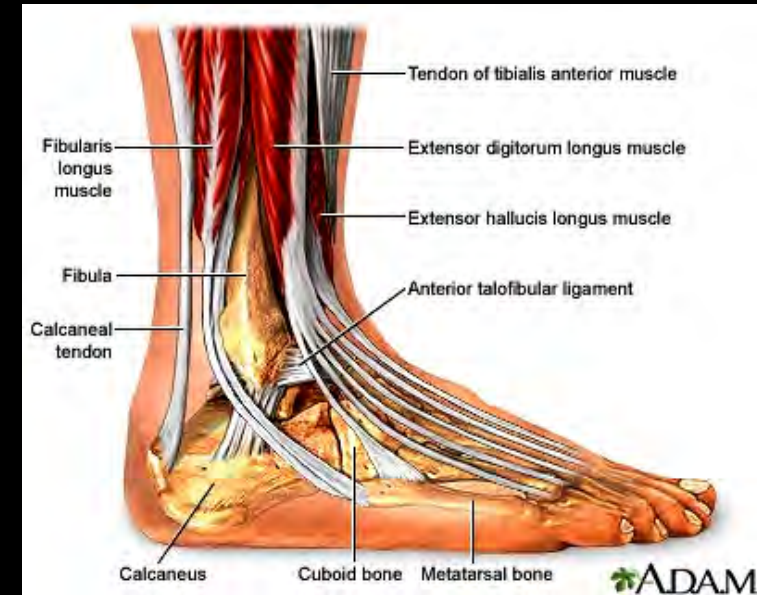
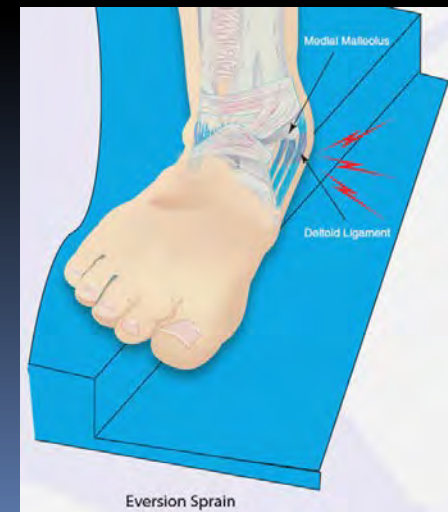
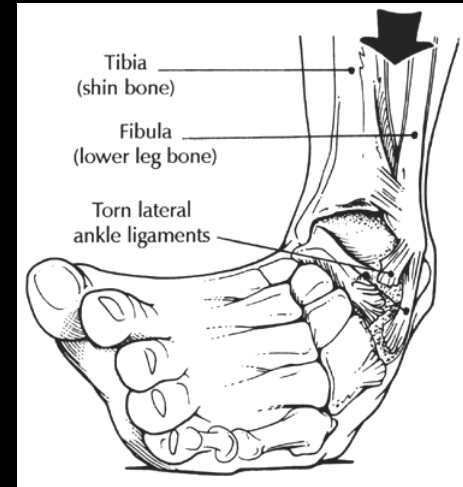


Figure 1. Anterior inferior tibiofibular syndesmosis.

Figure 2. Posterior inferior tibiofibular syndesmosis.

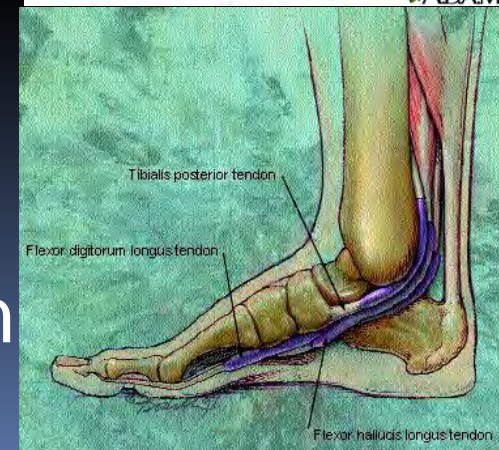
Ankle Sprains

- History: mechanism, timing, limitations, previous injuries and treatments
 - Inversion/plantar flexion
 - Classic ankle sprain
 - Peroneal tendon strain
 - 5th metatarsal fracture
 - Eversion/dorsiflexion
 - High ankle sprain
 - Maisonneuve fracture
 - Tibial fracture
 - Talar dome fracture
 - Posterior tibial tendon strain



Ankle Exam

- Inspection: swelling, ecchymosis, deformity
- ROM: Ankle DF 20 PF 40
Heel inv/ev 15 /10
- Palpation
 - Distal 6 cm of medial/lateral malleoli, midfoot, base of 5th metatarsal
 - Lateral ligament complex
 - Achilles tendon, peroneal/posterior tibial tendon
- Strength: DF/PF/inversion/eversion



Stability Testing

Anterior drawer

- ATFL: ankle in 20° plantar flexion, gentle traction to heel; + if 3mm of translation



Talar tilt

- CFL: foot in neutral, apply inversion stress; + if > 15°



Stability Testing

Squeeze test

- Compress tibia and fibula together with production of pain at ankle



External rotation

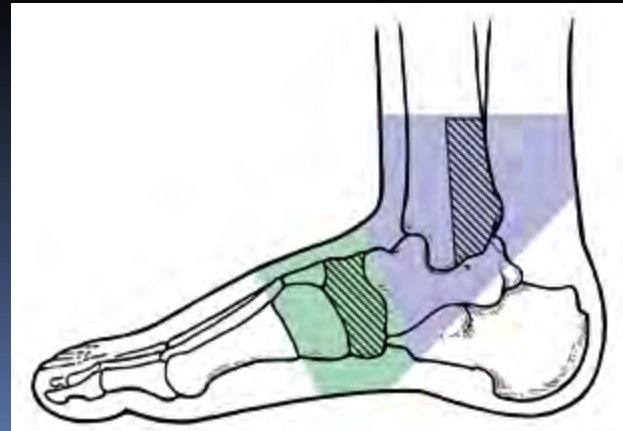
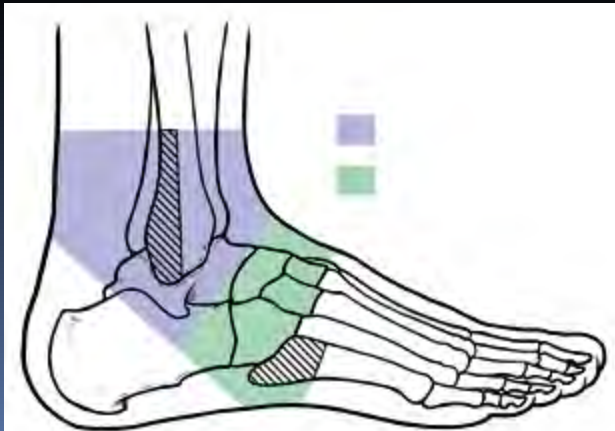
- External rotation of foot in neutral with pain at anterior tibiofibular ligament



Ottawa Rules (X-ray if...)

- TTP of distal 6 cm of medial/lateral malleoli posterior margin
- Unable to bear weight 4 steps at injury and in ER/Urgent Care
- Foot film if: navicular or base of 5th metatarsal TTP

Steill IG, Greenberg GH. A Study to develop clinical decision rules for the use of radiography in acute ankle injuries. *Ann Emerg Med.* 1992; 21: 384-90.



X-rays

- Standard views
 - AP
 - Lateral: visualize posterior aspect of tibia and fibula, hind foot
 - Mortise: r/o talar dome fx; Syndesmosis injury if ≥ 2 mm difference around talus



Ankle Sprains

Summary of Cochrane Reviews 2007-2009

- PRICE (level B)
 - Ice 1st 72 hrs
 - NSAIDs: decrease pain, swelling, return to activity (piroxicam, naproxen, celecoxib)
 - Support: lace brace, semi-rigid brace
- Functional Rx (level B): return to sport/work 4/7 days quicker
 - Decrease pain/swelling
 - ROM, strength
 - Proprioceptive




Ankle Sprains

- Grade 3 ankle sprains or high ankle sprains
 - Immobilize for 4-6 wks
 - Crutches and posterior splint for 24-48 hr
- Consider orthopedic referrals:
 - Grade 3 ankle sprains
 - CFL injuries in athletes





Prevention of Recurrent Sprain

- Rehabilitation program (Level B)
 - Taping (Level B)
 - Brace (Level B)
- 

Achilles Rupture

- Occurs in men 30-50 y.o., increasing activity, beginning sports, history of Achilles tendinosis
- Distal 2-6 cm of Achilles tendon with tenuous blood supply
- 1/3 missed on initial visit
- History: acute posterior ankle/heel pain, pop in calf, decreased push off



Achilles Rupture Exam

- Defect in Achilles: may be obscured by hematoma
- + Thompson test: no dorsiflexion of toes when calf is squeezed



Achilles Rupture Rx

- Immobilization
 - Higher re-rupture rate (13.4% vs 1.4%)
 - Casting in equinus for 8-12 wks
 - 1st 4 wks non-weightbearing
 - Preferred for older individuals
- Surgical repair
 - Higher infection and skin breakdown 17% vs 0.8%
 - Preferred for younger and sporting individuals

Metatarsal Fractures

- 5-6% of fractures in primary care
- Stress fractures: recent changes in activity or shoe wear
 - Progression: pain with activity-pain at rest-frank fracture
- Exam: point tenderness of the metatarsal with reproduction of pain with axial loading



Metatarsal Stress Fractures

- Radiographs: usually negative if symptoms < 6 wks

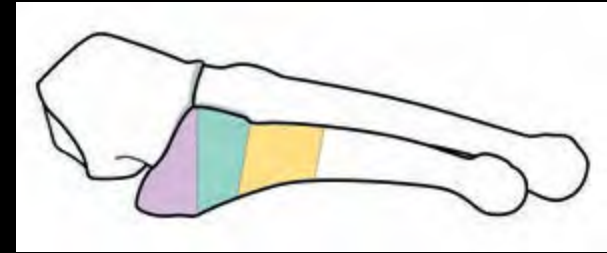


Metatarsal Stress Fractures

- Presumptive diagnosis vs advanced imaging
 - Bone scan
 - MRI
- RX (4-8 wks)
 - Cease aggravating activity
 - Shoe modification vs post op shoe vs SLWC
 - Weight-bearing as tolerated

5th Metatarsal fracture

- 3 types
 - Avulsion
 - Jones
 - Diaphyseal
- Rx
 - Avulsion: symptomatic-soft protective dressing vs SLWC
 - Weight bearing as tolerated
 - Healing 3-6 wks
 - Referral: Displaced 2mm, > 30% cubometatarsal joint, nonunion



5th Metatarsal fracture

- Jones: high incidence of delayed or nonunion
 - ORTHO REFERRAL
 - NWB 6-8 wks SLC, SLWC 8-12 wks
 - ORIF



5th Metatarsal fracture

- Shaft fractures: direct blow or twist
 - WBAT with soft dressing vs posterior splint x 3-5 days
 - Advance to post op shoe vs SLWC; repeat film 1 wk after injury
 - Referral: displaced 3-4 mm, plantar or dorsal angulation > 10



Lis Franc Injury

- LisFranc complex
 - LisFranc joints: 1st and 2nd MTs, medial and middle cuneiforms
 - LisFranc ligament: medial cuneiform to 2nd MT
- Direct trauma vs twisting
 - Sprain, dislocation, fracture (1%)
- Mid foot swelling, pain with ambulation



Lis Franc Sprain

- Radiographs: AP/lateral of foot weight-bearing
 - Widened angle between 1st and 2nd MT
 - Loss of alignment of 2nd MT to middle cuneiform
 - Fleck fracture base of 1st MT
- Suspicion-referral to ortho foot
 - Mild sprain: NWB cast 6wks
 - ORIF



Plantar Fasciitis

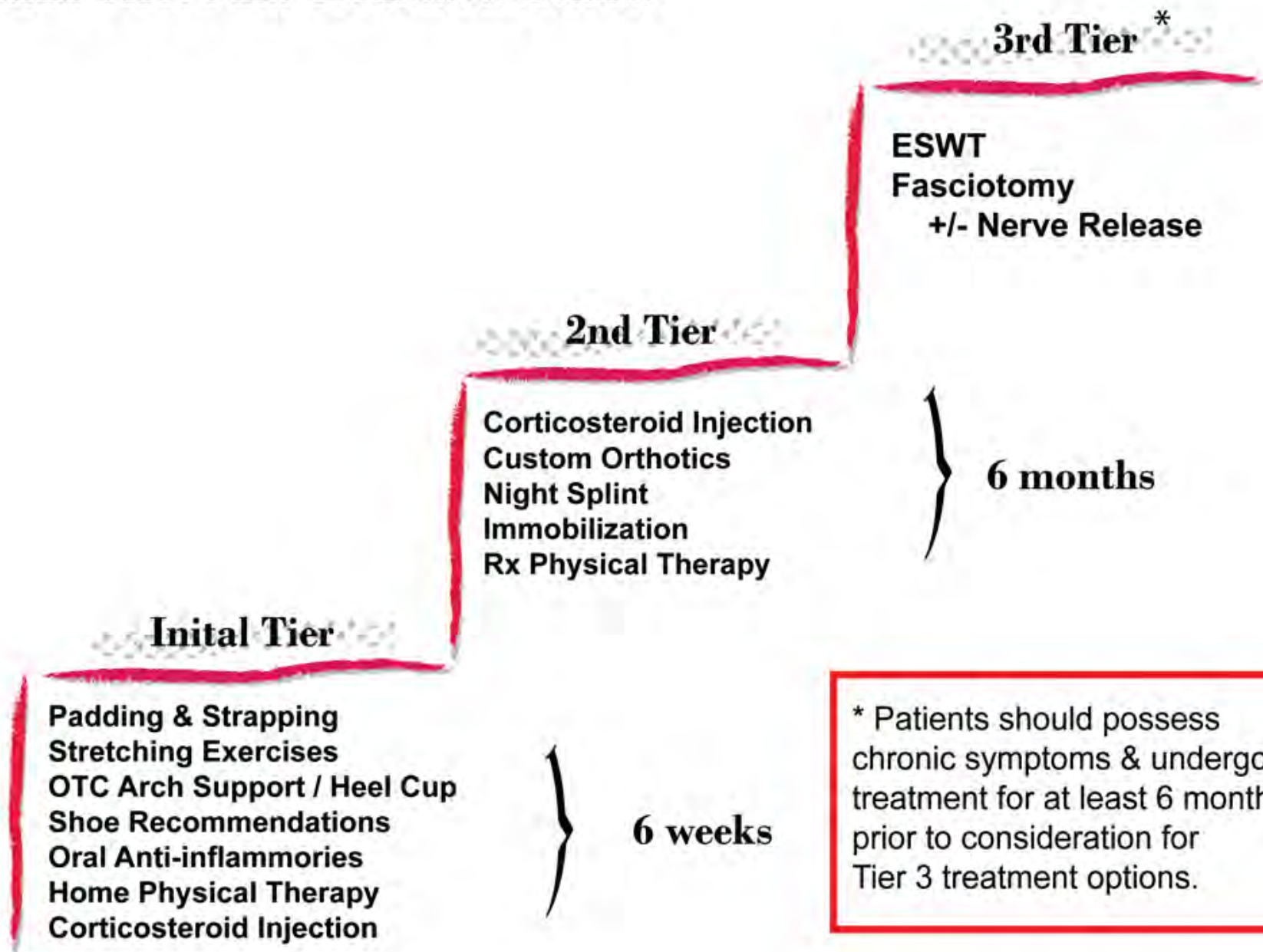
- Plantar heel pain worse with 1st step of day
- Prevalence 10%; 600,000 annual outpt visits
- Risk factors: obesity, prolonged standing, conditions associated with decreased ankle dorsiflexion
- Presence of heel spur
 - 20% of population

Plantar Fasciitis

- Pathophysiology: repetitive microtrauma to origin of plantar fascia
- Red flags: night pain (tumor), bilateral
- Exam: TTP medial calcaneal tuberosity, tight Achilles and plantar fascia, fat pad quality



Plantar Heel Pain Treatment Ladder



Plantar Fasciitis Rx

- Analgesia: ice, NSAIDs (Grade I)
- Plantar fascia and Achilles stretching (Level B)
 - Focus plantar fascia > Achilles

DiGiovanni BF, Nawoczenski DA, Lintal ME, Moore EA, Murray JC, Wilding GE, et al. Tissue-specific plantar fascia-stretching exercise enhances outcomes in patients with chronic heel pain. A prospective, randomized study. J Bone Joint Surg Am 2003;85-A:1270-7

Plantar Fasciitis Rehabilitation Exercises



Prone hip extension



Towel stretch



Standing calf stretch



Sitting plantar fascia stretch



Achilles stretch



Frozen can roll

Plantar Fasciitis Rx

- Custom vs prefab night splints
- Foot supports
 - Taping (no evidence)
 - Prefab vs custom orthotics: heel cushions (Level B: NNT 5)
- Corticosteroid: no lasting benefit
 - Injection (Level B)
 - Iontophoresis (Level B)



Plantar Fasciitis Rx

- ESWT-runners with symptoms > 1 yr.
 - Rompe JD, Decking J, Schoellner C, Nafe B. Shock wave application for chronic plantar fasciitis in running athletes. A prospective, randomized, placebo-controlled trial. Am J Sports Med 2003;31:268-75.
 - Tier 3
- Plantar fascia release
 - Failure of conservative measures > 6 months
ACFAS

1ST Metatarsal Phalangeal Pain

- DDX: Bunion, bursitis, OA, Gout
- Hallux valgus: women > male, rounded 1st MT head, pes planus, hind-foot valgus, tight Achilles, shoe wear
- Exam: Effusion/Bursitis, Inspection/ROM of 1st MTP
- Radiographs
 - HVA < 15
 - IMA < 9



1ST Metatarsal Phalangeal Pain

- Conservative Rx
 - Appropriate shoes
 - Correct associated abnormalities
 - Medial posting for pes planus
 - MT pad for transfer lesions
 - Extra depth shoe with bunion flare
- Surgical Rx: failure of conservative management, no e/o PVD or infection



Onychocryptosis



- Occurs when nail plate enters the skin along the nail
- Foreign body—inflammation—infection—reparative
- Associated with improper nail trim, ill-fitting shoes, external pressure, trauma , genetics, onychomycosis
- Surgical indications: significant pain/infection, deformed nail, chronic paronychia

Mild to moderate lesion

- Minimal to moderate pain
- Little erythema
- No purulent drainage

Conservative therapies

- Soak with warm, soapy water and apply topical antibiotic ointment or mid- to high-potency steroid cream or ointment
- Insert cotton wisps or dental floss under ingrown lateral nail edge
- Apply gutter splint with or without a sculptured acrylic artificial nail

Conservative treatment failure

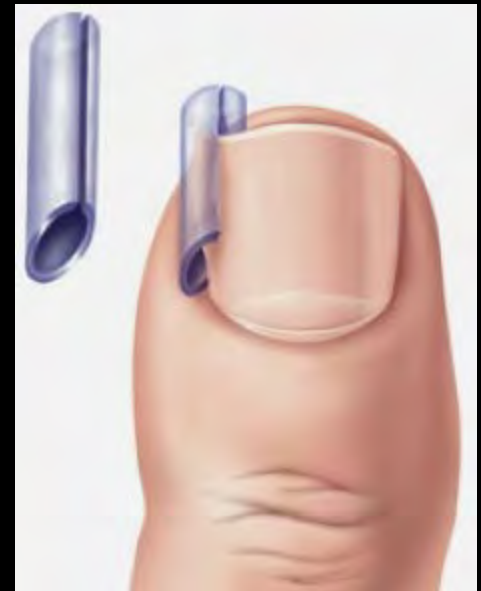
Surgical therapies (see Table 1)

- Partial avulsion of lateral nail plate versus complete removal of toenail with a nail splitter; can be performed with or without matricectomy
- In cases of recurrence with pain and infection, permanent destruction of the germinal matrix issue is recommended via:
 - Application of 80 to 88% phenol solution (phenolization)
 - Electrocautery, radiofrequency, or carbon dioxide laser ablation

Moderate to severe lesion

- Severe, disabling pain
- Substantial erythema
- Purulent drainage

Antibiotics not routinely recommended; they do not decrease healing time, postoperative morbidity, or recurrence rates



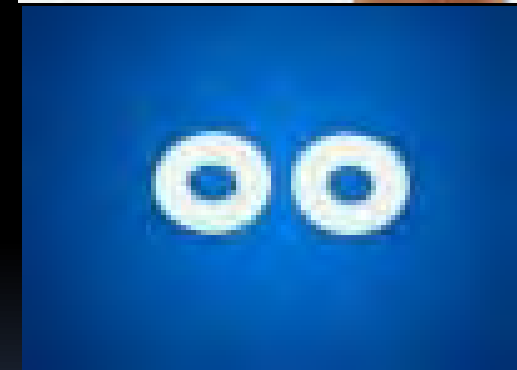
Corns

- Occur from mechanical trauma: faulty footgear, abnormal mechanics, activity
- Hyperkeratotic callus with central conical core of keratin
 - Heloma durum: hard on dorsal lateral aspect of 5th toe and dorsum IP of lesser toes
 - Heloma molle: maceration between toes (4th/5th)
- Painful when bursitis develops



Corn Rx

- Symptomatic relief: sharp debridement to remove plug
- Relieve mechanical stress
 - Hammertoe deformity: crest pad
 - Gel filled corn pad
 - Silicon sleeves
 - Shoe modification: low-heeled, soft upper, roomy toe box



Corn Rx

- Keratolytic agents
 - Avoid salicylic acid in DM/neuropathics/PVD
- Surgical correction of foot abnormality: failure of conservative management
 - Resection of prominent condyles
 - Excision arthroplasty of 5th proximal phalanx

Take Home Messages

- Ankle sprains are a source of chronic pain-encourage rehab programs
- Consider ACHILLES RUPTURE in patients presenting with “Ankle Sprains”
- Metatarsal bone pain is likely stress fracture if negative films and no red flags
- Look for the occasional LisFranc injury in patients with traumatic foot injuries
- Don't x-ray every plantar fasciitis
- Sharp debridement of corns makes a happy patient

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http://www.hss.edu/conditions_14633.asp (general foot/ankle exam video)

Patient ed handouts

[.merckmedicus.](#)

Foot appliance website

[.hapad.](#)