Foot and Ankle Injuries in the Weekend Warrior: Diagnosis and Treatment

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Overview

- Ankle sprains and associated injuries
- Achilles tendon injury
- Talus and calcaneus injuries
- Navicular fracture/LisFranc injury
- First Metatarsal-phalangeal joint
- 5th metatarsal fractures
- Accessory bones and enthesopathies

Lateral Ankle Sprain

- X-ray or Not?
- The Ottawa Criteria (J.A.M.A.)
In a nutshell . . .

- Bony tenderness along the posterior 6 cm of the fibula or tibia.
- Inability to weight bear in the E.D.
- Validated for rotational ankle injuries only. Does not rule out other possible associated bony injuries.

Those other bony injuries?

- Osteochondral Lesion of the Talus
- Lateral Process Talus Fracture
- Anterior Process Calcaneus Fracture - the “sprain fracture”
- EDB Origin Avulsion

Some of these may require NWB and immobilization -- You need to make the diagnosis now.
Grading Ankle Sprains?

- Everyone agrees that Grade I sprains are completely stable, Grade III sprains imply complete tears.
- Grade II is variably defined. Some use it to define grades of instability, others use it to imply ATFL / CFL disruption with PTFL intact.

Anatomy
The Role of the Ligaments

- ATFL - Primarily restricts Internal Rotation of the Talus. Sees the higher strain, most isolated in plantarflexion.
- CFL - Primarily restricts adduction and subtalar motion. Has the higher load to failure. Most isolated in dorsiflexion.

Physical Exam
Stress Views?

Pijnenburg et al
JBJS-B 2003

- Surgery versus functional treatment
- Prospective randomized study
- 317 patients with mean 8 yr follow-up
- Surgical group less pain, instability at follow-up
The Gould modification of the Brostrom Procedure

- Improves the ability of the Brostrom to address subtalar instability.
Osteochondral Lesions of the Talus

- Kappis, 1922 - applied the unfortunate term “osteochondritis dessicans” to the talus (already around for knee lesions)
- Berndt / Harty - 1959 - emphasized the importance of trauma in the etiology

Berndt and Harty Proposed Mechanism
Lesion Location

Lateral More Anterior
Medial More Posterior

Lateral Lesions

43 % of total (Berndt/Harty)
Thin and Wafer Shaped
Almost all have a known trauma history
**Medial Lesions**

- 57% of total
- tend to be deeper and cup-shaped
- only about half of patients have a known history of trauma
- less symptomatic, true incidence unknown

**Treating Acute Lesions**

- Stage I or II - cast immobilization
- Stage III or IV - ORIF versus excision
- Truly acute lesions are rare events in practice!
Treating Chronic Lesions - *an unsolved problem*

- Get to them sooner than later
- O’Farrell and Costello, JBJS-B, 1982
  - long term review of operated cases
  - cases operated < 12 months after injury did better
  - excision and drilling improved results
  - medial versus lateral didn’t matter
  - results will deteriorate over the long term

Retrograde drilling

Bone grafting
Alternative Treatments - Mosaicplasty

Medial Malleolar Osteotomy
Alternative Treatments - Autologous Chondrocytes (Genzyme Technique)

- Requires harvesting from the knee, 2 month incubation time
- Injection of cells under a periosteal flap sutured over the defect.
- Giannini et al, Foot and Ankle 2001 -
  - universally excellent results
  - all done in Italy

Anterior Ankle Impingement

- “Footballer’s ankle”
- Seen commonly in 25-40 yo males with history of running or kicking sport
- Mechanism thought to be traction of ankle capsule on anterior tibia/talar neck leading to bone spur formation
Achilles tendon ruptures

- Acute vs Chronic

Acute Rupture
To Operate or Not to Operate?

- Operative treatment lower - rate of re-rupture, improved strength, quicker recovery
- Non-operative treatment - lower rate of wound complication and higher rate of re-rupture, diminished strength/power
Reconstruction Chronic Tear

- Resect scar/diseased tendon
- Up to 2cm gap – direct repair
- 3-5cm gap – VY or turndown flap
- More than 5cm gap – augment with FHL tendon transfer

Peroneal Tendon Subluxation

- Most severe cases relate to traumatic incidents
- Snow skiing most common
- Small “rim” sign occasionally visible (best seen on internally rotated views)
Superior Peroneal Retinaculum - Usually has two posterior bands:
1. Achilles sheath
2. Superolateral border of calcaneus
Conservative Therapy

- NWB SLC for 6 weeks minimum
  - About a 50% success rate
  - Minimal morbidity to trying it

Surgical Therapy - Direct Repair

- Advocated by many for acute injuries given:
  - the young patient population
  - 50% failure rate of conservative Rx
Surgical Therapy

- Tenoplasty

Surgical Therapy - Recurrent Dislocators

Groove-deepening
Flexor Hallucis Longus Tendonitis

- Association with dancers, runners, climbers
- Presents with ache in posteromedial ankle
- Hypertrophied muscle belly limits dorsiflexion of hallux
- Chronic thickening of tendon may lead to triggering
- Aggravated by barre exercises (plie, releve, tendu)

Conservative Treatment of FHL tendonitis

- NSAIDs/injection – reduce swelling and decrease triggering
- PT – modalities such as US and taping
- Functional orthotics for chronic cases
- Increase warm-up and cool-down times for dancers
- Water barre
Surgical Treatment

- Decompression of FHL tendon – excise os trigonum if present
- Repair of longitudinal tears if present
- Examine for peri-tendonous cyst

Bony Injuries to the Talus and Calcaneus
Occult talus fractures

- “ankle sprain” in the running athlete that doesn’t get better
- Usually starts as vague ankle pain that may progress to inability to bear weight
- Inability to bear weight is ominous sign, immobilize even if films negative
- MRI or CT scan

Occult talus fractures

- Lateral process of talus fracture – “Snowboarder’s fracture”, often missed on plain films; CT if high suspicion
- Repair large or displaced fractures, excise small fragments
- Talar neck/body fracture – insidious onset of pain in runner with no specific injury noted
Snowboarders Fracture
Calcaneus

- Anterior process injury
- Stress fractures in runners
- Tender to palpation of tuberosity medially and laterally (as opposed to plantarly)

Calcaneal Stress Fracture

- Pain on the sides of the heel rather than plantar (i.e., plantar fasciitis)
- History of sudden increase in activity
- Diabetic neuro-arthropathy, metabolic bone disease
Navicular/LisFranc injuries

- Navicular fracture - may be subtle, vague dorsal midfoot pain, initial x-rays may be normal, more common in running athletes
- If x-rays normal but high suspicion, bone scan or CT scan

Lisfranc injuries

- Bony or ligamentous injury
- The classic “foot sprain” diagnosis
- Lisfranc joint consists of ligament connecting medial cuneiform to base of 2nd MT (key structure in maintaining arch)
- If bony injury not obvious (MVA, fall from height), initial x-rays may appear normal
- If unable to bear weight, CT scan of foot may be required to detect subtle injury
Lisfranc Injury

Fluoro Stress Views
Great Toe Problems

- Sesamoiditis/Sesamoid fracture
- Turf toe and hallux rigidus
- Plantar plate injury

Sesamoids/Plantar plate

- Sesamoiditis, fracture, bipartate sprain – common in running athletes, can be difficult to dx
- Plantar plate injury- aka “turf toe”, a spectrum of injury to the FHB tendon/1st MTP joint capsule
Turf toe/Hallux rigidus

- Base of 5th metatarsal avulsion fractures
- Jones fracture
- Dancer’s fracture
Accessory bones/Enthesopathies

- Os trigonum
- Os peroneum
- Accessory navicular
Summary

- Most foot and ankle conditions/injuries can be managed conservatively
- Persistent pain, swelling, and/or inability to bear weight may be a sign of a more serious condition
- When in doubt consult your friendly neighborhood Orthopaedist or use online resources (www.aofas.org)