Ankle Pain
After a Sprain

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Anterior Drawer Stress Test
Talar Tilt

- Talar Tilt (CFL)
- Difficult to isolate from subtalar ROM
- Slight plantar flexion (dorsi = relative subtalar isolation)
- Compare to opposite side
- $5^\circ$ greater than opposite side or $10^\circ$ absolute value
Lateral Ligament Instability

- ATFL – resists inversion in plantarflexion
- CFL – resists inversion in neutral or dorsiflexion
- PTFL - resists posterior and rotatory subluxation of the talus
Posterolateral Ligaments

PTFL

CFL
• After physical exam?
Ottawa foot/ankle rules

• Prospectively validated data
  – Reduces unnecessary radiographs by 30% in ER
  – Requires 1 positive to order an XR
• Tender points (4)
• Ability to bear weight (4 successive steps)
• Age over 55
Ottawa foot/ankle rules: Tender zones indicating XR’s needed
Grading

- Grade 1 – Stretching of ATFL
  - Mild tenderness.
  - No evidence of mechanical instability.
- Grade 2 – Complete tear of the ATFL and partial injury of CFL.
  - Moderate tenderness.
  - Moderate laxity with anterior drawer, talar tilt test normal.
- Grade 3 – Complete rupture of ATFL and CFL.
  - Severe tenderness.
  - Anterior drawer test and talar tilt test grossly positive.
Nonsurgical Treatment

- Treatment of choice for all grades of lateral ankle ligamentous injury.

- Grades 1 and 2
  - Elastic wrap, short period of weight-bearing immobilization in a removable boot, ice, range-of-motion exercises.
  - Neuromuscular training – peroneal muscle and proprioceptive training

- Grade 3
  - Extended period of immobilization in weight-bearing boot may be necessary.
What does the literature say?

- 9 RCTs (level 1 evidence) comparing functional bracing to cast immobilization in the treatment of acute ankle sprains (grade not specified)

- Results for 5 outcomes:
  - Return to work/sport: roughly equivalent (about 90%)
  - Time to return to work: functional bracing slightly better in 4/5 studies
What does the literature say?

• Results (continued):
  – Subjective instability: slightly better for bracing in 3/5 studies
  – Reinjury: Better with bracing (RR=0.5-0.84)
  – Satisfaction: Better with casting (20% versus 5-15%)

Sequelae of ankle instability

• Up to 60% of patients continue to experience symptoms.

• Instability
  – Muscular weakness – neuromuscular rehab
  – Ligamentous instability - surgery

• Pain - continue the search
Case #2

• 17yo female with lateral ankle pain for 3 years after a left ankle sprain. She may have tweaked it a couple of times but can’t quite remember. She played volleyball in braces and tolerated it okay, but now her foot bothers her most of the time.

• PMHx: healthy

• PE: tender laterally over sinus tarsi
What’s the differential diagnosis?
Differential Diagnosis

- Fracture of the lateral process talus
- Fracture of anterior process calcaneus
- Osteochondral injury
- Loose body
- Peroneal tendon tear
- Peroneal tendon subluxation
- Traction injury to SPN
- Arthritis
What does our patient have?

• XR:
Tarsal coalition

• What is it?
• Not completely known but it seems to be a failure of segmentation of tarsal bones and formation of normal articular cartilage
• Circumstantial evidence from fetal feet shows intertarsal bridging supporting that etiology
Tarsal Coalition

- Incidence: 1% - unknown how many are asymptomatic with a coalition
- Bilaterality: 50-60%
- Genetics: autosomal dominant with high but not complete penetrance
Tarsal coalition

• Radiographic signs
  – Anteater
  – Talar beaking
  – C-sign
Tarsal coalition

• Treatment
  – Conservative
    • Period of casting
    • Inserts
  – Surgical
    • Calcaneonavicular – resection with EDB interposition graft
    • Talocalaneal – resection with fat graft versus fusion
Instability

• Mechanical – ligamentous laxity
• Functional – muscular weakness
• Initial treatment involves therapy program for peroneal muscle strengthening and proprioceptive training.
• Successful in 90%
Gould Modification of Broström Repair

- ATFL, CFL = condensations of capsule  
- usually attenuated, elongated

- Direct repair (shortening) of ATFL, CFL

- Reinforce repair with
  (i) inferior extensor retinaculum
  (ii) periosteal sleeve distal fibula
Gould Modification of Broström Repair
Outcomes of Modified Broström

• 91% good or excellent  
  Messer, 2000 FAI

• 27/28 good or excellent  
  Hamilton, 1993 FAI
Mechanism

• Position of instability in plantar flexion and inversion.
  – Narrow diameter of the talus posteriorly.
• Failure of:
  1. Anterolateral joint capsule
  2. ATFL
  3. CFL
Anterior Drawer Stress X-Ray

- Posterior edge tibia to posterior edge talus.
- 5mm greater than opposite side or 9mm absolute value.
- Highly variable and not useful.
  - Clin J Sport Med 1999