Surgical Procedures

Ankle and Foot

Daphne Burch, PT

Fractures

- Tib-Fib
  - http://www.youtube.com/watch?v=idAqeTHmlf8

- Ankle
  - http://www.youtube.com/watch?v=eDPstpkSBrQ

- Calcaneal
  - http://www.youtube.com/watch?v=KjY0T4Kf7eU&feature=related
Casted Tib-Fib Fractures

Unlocked IM Rod Fixation for Tibial Fx
Locked IM Rod Fixation for Tibial Fx

Comminuted Displaced Tibial Plafond Fracture
Plafond Fracture with Screw Fixation

- Bone grafting used to increase callus formation and stability of the fracture site
- Articular surface has been restored and smoothed for improved articulation with the talus
Plate Fixation of Tibia and Fibula

- Note how the most distal tibial screw extends into the fibula

- How would this method of surgical fixation affect mobility and ROM of the talocrural joint?

Avulsion Fracture of Lateral Malleolus
Fracture of the Lateral Malleolus

Bimalleolar Fracture
Bimalleolar Fracture/Dislocation

Bimalleolar Fixation
Trimalleolar Fracture

Trimalleolar Fracture
Talar Fracture with Fixation

Avulsion Fracture of the Calcaneous
Calcaneal Fractures

Plate Fixation of Calcaneal Fx
Fifth Metatarsal Fractures
Jones & Avulsion Fx’s

Phalangeal Fx with K-Wire Fixation
**Phalangeal Fx with K-Wire Fixation**

![Phalangeal Fx with K-Wire Fixation](image)

**Lateral Ligament Tears**

- Ankle Arthroscopy
  - [http://www.youtube.com/watch?v=Z8mi2qBU8bg&feature=related](http://www.youtube.com/watch?v=Z8mi2qBU8bg&feature=related)
- Ligament Repairs
  - Direct repair
    - Modified Brostrom/Brostrom-Gould procedure
    - Anatomic repair with direct suturing of torn ligament ends, imbrication of lax ligaments, or reinsertion of avulsed ligament to bone
      - Provides stability while retaining ROM
  - Brostrum
    - [http://www.youtube.com/watch?v=iYHBE9KvJ74](http://www.youtube.com/watch?v=iYHBE9KvJ74)
## Lateral Ligament Repair

- Tenodesis reconstruction
  - Evans, Chrisman-Snook and Watson-Jones procedures
  - Tendon autograft and transposition of peroneus brevis tendon
  - Typically used as revisions when direct repair has failed
- Capsular shift
  - Relatively new
  - Similar to shoulder

## Surgical Management

### Lateral Ligament Tears

- **Indications for Surgery**
  - Chronic instability during activity unresolved after conservative care
  - Acute grade III ankle sprain resulting in a complete tear of the ATFL and/or CFL

- **YouTube - YouTube Medical School Ankle Lateral Ligament Reconstruction & Arthroscopy LIVE**
  - [http://www.youtube.com/watch?v=ScAXzBsCNWQ](http://www.youtube.com/watch?v=ScAXzBsCNWQ)
Achilles Tendon Rupture

Primary repair
- Direct, end-to-end repair with re-opposition of torn tendon and suturing
- Posterior incision to avoid neural damage
- FHL tendon used in reconstruction
- Placed in posterior splint in 15-20° PF
- http://www.youtube.com/watch?v=dTEkQxmlGEQ

Total Ankle Arthroplasty

- TAA
  - Component design:
    - Minimally constrained or semiconstrained
    - 2 or 3 component design: requires less bone resection and often uses Bioingrowth Fixation
    - All allow for 5-10° DF and 20-25° PF
  - Anterior, longitudinal incision b/t ant tib and extensor hallicis longus most widely used
  - Extensor retinaculum and capsule incised and joint debrided
  - Osteotomy and implantation of prosthesis
  - Lengthening of achilles tendon performed if needed
  - http://www.youtube.com/watch?v=8GJI4BD-xzM
  - Complications:
    - Infection
    - Wound-healing
    - CRPS
Arthrodesis

- Ankle & Foot Procedures:
  - Deformity of the toes, foot, or ankle
  - Uses bone grafts coupled with internal fixation
  - Typically uses open approach but arthroscopy has been used in limited cases
    - Ankle
      - Fusion in 0° DF; 5° hindfoot valgus, & 5-10° ext. rot.
      - Loss of DF/PF affects functional mobility
      - Rarely done bilaterally
    - Hindfoot
      - Severe instability or chronic misalignment
      - Many times takes pronation/supination motion away
      - Positioned in 5° of valgus
    - First toe
      - Hallus rigidus and hallux valgus
      - Fusion in neutral rotation, 10-15° valgus, 15-30° MTP E
      - Provides adequate push-off during gait
    - IP joints of toes
      - Fusion in neutral

Ankle Triple Arthrodesis

- Fusion of 3 joints
  - Talonavicular
  - Subtalar
  - Calcaneocuboid

- Indications
  - Most frequently used for late-stage arthritis
  - Deformity of the hindfoot
  - Debilitating pain
  - Salvage procedure after failed TAA
Complications
- Non-union (10%)
- Infection
- Malalignment
- Smoking before and after
- Wound-healing
- Nerve damage
- Stress fracture

Lower Leg Compartment Syndrome

- Medical Emergency
  - Diminished Dorsal Pedal pulse
  - symptoms do not subside shortly with rest

- Anterior and Posterior Compartment Fasciotomy
  - http://www.youtube.com/watch?v=-1NDJkFH1vM&feature=related
Lisfranc Fracture
Dislocation with Fixation

- Lisfranc injuries can include sprains, dislocations, fractures or all of the above
- Two serious complications can be seen with Lisfranc injuries: injuries to the dorsalis pedis artery and compartment syndrome
  - These are both medical emergencies and need surgery right away

Foot Pain

- Plantar Fascitis: Arthroscopic Release
  - http://vodpod.com/watch/3499111-endoscopic-plantar-fascia-release
- New Procedure for Plantar Fascitis: Percutaneous Topaz
  - http://www.youtube.com/watch?v=Ca4lYQUr6ji
- Bunionectomy
  - http://www.youtube.com/watch?v=mURVvj_eDyg
  - http://www.youtube.com/watch?v=3Pkn6TKZ93I&feature=related