Acute Ankle Injuries

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Acute Ankle Injuries

- Ligaments
- Tendons
- Fascias
- Fractures
- Nerves
- Arteries
“Walk it off, Billy! It’s just a turned ankle!”
Epidemiology

• Most frequent injury of lower limb
• Risk factors
  – Beginners in training
  – More than 40 years
  – Recent injury
  – < 3 years of running
  – Change in training regime or environment
  – ↑ stress fracture risk with pes cavus/planus
  – Restricted joint movements eg subtalar coalition, hallux rigidus
  – Hypermobility eg Ehlers Danlos syndrome, Marfan
  – ↓ strength eg peroneal tendon weakness
* Lateral Ankle Sprains

- Most common injury
- 20% of all ankle injuries
- 45% of all basketball & 31% of all football injuries

- Lateral ligamentous complex (ATFL, CFL, PTFL)
- ATFL most common injury
Ligaments of the Ankle

Anterior inferior tibiofibular ligament (AITF)
Deltoid ligament
Interosseous ligament
Superficial, deep or transverse tibiofibular ligament
Posterior tibiofibular ligament
• 85% of all ankle sprains involve some plantar flexion of the ankle and inversion of the foot.

• The remaining 15% consist of eversion mechanisms which are often the result of an outside force such as being fallen on from the outside.
Inversion injury
Associate injuries

- Partial/complex/Linear tears of Peroneus tendons/Dislocations
- OCD of talus
- MCL injuries
- Syndesmotic injuries
- Avulsion fracture 5th Metatarsal
- Fractures of lateral process of talus & Calcaneous
- Nerve injuries - Lateral branch of superficial Peroneal nerve
- Arterial injuries - Peroneal artery
Classification Systems for Lateral Ankle Sprains

• **ANATOMIC SYSTEM**
  • Grade I: ATF sprain
  • Grade II: ATF and CF sprains
  • Grade III: ATF, CF, and PTF sprains

• **AMA STANDARD NOMENCLATURE SYSTEM**
  • Grade 1: ligament stretched
  • Grade 2: ligament partially torn
  • Grade 3: ligament completely torn

• **CLINICAL SYSTEM**
  • Mild sprain: minimal functional loss, no limp, minimal or no swelling, point tenderness, pain with reproduction of mechanism of injury
  • Moderate sprain: moderate functional loss, unable to rise on toes or hop on injured ankle, limp when walking, localized swelling, point tenderness
  • Severe sprain: diffuse tenderness and swelling; patient prefers crutches for ambulation

**RELATED TO TREATMENT**
  - Type I: stable ankle by clinical testing (with anaesthesia if necessary); symptomatic treatment
  - Type II: unstable ankle with positive anterior drawer and/or positive talar tilt test by clinical examination
  - Group 1: non-athlete or older patient; functional treatment*
  - Group 2: young athlete
  - Type A: negative stress x-ray findings; treat functionally
  - Type B: positive tibiotalar stress x-ray findings (talar tilt >15 degrees; anterior drawer >1 cm); treat by surgical repair
  - Type C: subtalar instability; treat functionally
Clinical Evaluation

- Patients describe popping sensation
- Pain on weight bear
- Tenderness

**Physical Examination**

Swelling
Bruising
Tenderness
Instability

?involvement of tendons/bones/nerves
Ankle Ecchymosis
Instability test

- Drawer Test Illustrated
- Anterior subluxation of talus
- Anterior talofibular ligament - torn
- Ankle Sprain (ligament is torn)
Anterior drawer test
Radiologic evaluation

• Ap / Lat / Mortise view - Weight bearing

• Gravity test

• Talar tilt / Stress test
  – 15 degrees in 95%
  – >4mm of displacement

• C.T. / MRI
Anterior drawer test
Ankle stress radiograph
Prognosis

• 32% of patients will complain of chronic pain, ache, swelling, feeling of instability or weakness, or recurrent sprain
Prevention

• Taping before & after exercises improve proprioception
• Braces are effective / Insoles
• Muscle strengthening
• Well designed shoewear / Hiking boots
Ankle braces
Treatment

• Grade I & II – Non operative treatment
  – Good / excellent results

• Grade III – Could be managed non-operatively
  – 85% healing rate

• RISE

• ? Immobilisation period

• Weight bearing in brace/plaster/boot

• Physiotherapy

• Taping/bracing to prevent recurrence
Surgical Treatment

• Repair / reconstruction of ligaments
  – Brostrom/internal brace

• Results at 8 years better than non operative treatment with decreased pain, recurrent sprains, giving way
Syndesmosis Injuries

- Sprain alone or in association with Meissonnerve fracture and
- rupture of MCL +/- medial maleolar fracture +/- posterior maleolar fracture
Clinical diagnosis

- Local tenderness
- External rotation test
- Squeeze test
External rotation test
Radiologic evaluation

- Stress X-ray – MRI for solitary Syndesmotic injuries

- AP / Lat /Mortise view of Ankle to detect fractures
Meissonnerve type fracture
MRI of syndesmotic disruption
Treatment

• Plaster immobilisation for incomplete ruptures

• Surgical treatment for complete ruptures
  – Stabilisation of Syndesmosis and repair of MCL
  – Fixation of medial/ posterior malleolus
Fracture stabilisation
Peroneal Tendons Subluxation

- 92% traumatic
- Congenital deficiencies
Peroneal tendon dislocation
Treatment

• Acute injuries – 50% good results with plaster immobilisation

• Surgical treatment when recurrent
Acute Peroneal Tendon Repair
Peroneal Tendons Stabilisation
* Peroneal Tendon Ruptures

- Direct tenderness on tendons +/- Synovitis
- MRI/US confirmation
- Surgical repair / tenodesis
Achilles Tendon Ruptures

- Etiologic factors
  - Overtraining
  - Overstretching
  - Cavovarus foot
  - Tibia vara
  - Tight hamstrings-gastrocsoleous complex
  - Large body weight
  - Hereditary-bilateral
  - Medication – Steroids, Ciprofloxacin
Clinical Evaluation - Treatment

- Local tenderness
- Palpable gap
- Inability to perform single stand
- Squeeze test (+)
- Tension test

- M-T Junction, Tendon, Avulsion from heel
Treatment

- Plaster immobilisation
- Boot with wedges
- Surgical repair
Achilles tendon rupture
Compare the contour
Achilles Tendon Tear and Repair
* Fractures Around the Ankle

- Medial/lateral maleolus
- Bimaleolar
- Trimaleolar
- Fracture of lateral Talar process
- Fracture of lateral Calcaneal process
- Ankle dislocations
- Avulsion fractures (Talus, Fibula)
Name the injuries
Name the fractures
Name the injuries
Name the injury
Name the injury
Thank You