Foot & Ankle Anatomy
- its importance in surgery

Gavin Bowyer

Trauma & Orthopaedics
Southampton University Hospitals
Foot & Ankle Anatomy

• Anatomy is a guide to diagnosis
• Knowledge of anatomy is essential in planning safe operative treatment
Hindfoot Bones

- Talus
- Calcaneum
Forefoot Bones

Hallux

Phalanges

Metatarsals
Ankle Bones

- Fibula
- Talus
- Tibia
- Os Trigonum
Ankle Anatomy - Joints

- Talus is in close contact with mortise
- Close contact important for load distribution
Ankle Anatomy - Joints

- Talus slides, rotates & translates within mortice
- Fibula translates/rotates with ankle movement
Subtalar Joint

- Talus glides on calcaneum
- “Torque conversion”
  - in and out movement of foot converted to twisting of talus/tibia/leg
Facets of ST Joint
Hindfoot Joints

• Ankle
• Talo-Navicular
• Subtalar
• Calcaneo-cuboid
Ankle Anatomy - Ligaments

• Lateral Collateral Complex
Anterior Talo-Fibular Ligament (ATFL) Injury
Pathology – Mechanism of Injury

• Foot position
• Direction of deforming force
• Magnitude of deforming force
• Coupling/torque conversion from foot to ankle
Ankle Anatomy - Ligaments

- Inferior Tib-Fib Complex ("syndesmosis")
Foot and Ankle Arteries

- (Anterior Tibial) Dorsalis Pedis
- Posterior Tibial
- Peroneal
Foot and Ankle Nerves

- Tibial
- -plantar
- Peroneal
- Saphenous
- Sural
Foot and Ankle Nerves

- Tibial
- -plantar
- Peroneal
- Saphenous
- Sural
Foot and Ankle Nerves

- Tibial
- -plantar
- Peroneal
- Saphenous
- Sural
Important Tendons

- Achilles
- Tibialis Anterior
- Tibialis Posterior
- Peronei
Important Tendons

- Tibialis Anterior
Important Tendons

Tibialis Posterior
Important Tendons

- Achilles
- Peronei
The Hallux (Great Toe)

- Medial Approach
The Hallux (Great Toe)

- Sesamoids
Surgical Steps

• Position
  – Tourniquet
  – Imaging

• Approach
  – Respect nerves
Distal Tibial Metaphyseal-diaphyseal and Pilon Fractures

- High energy
- Soft tissues often seriously injured
- Swelling/blisters common and early
Distal Tibial Articular Fixation

- Wires
- Screws
Distal Tibial Wires

- Fibula thru’ to antero-medial
  - Beware saphenous nerve
Distal Tibial Wires

- Postero-medial thru to antero-lateral
  - *Push back the posterior n-v bundle*
  - *The superficial peroneal nerve has divided into branches*
Plano-valgus hindfoot

- Tibialis Posterior
- Orthotics
- Operations
  - *Tib post reconstruction*
  - Osteotomy (calcaneal)
  - Arthrodesis