Ankle Arthritis

- Causes include post-traumatic (50%), recurrent sprains / instability, inflammatory disease, or after infection.

- Traumatic causes:
  - 14% incidence after all ankle fractures
  - 33% after Weber C fibula fractures
  - 1mm widening of syndesmosis increases peak contact pressure by 50%
  - Talus fractures associated with arthritis in 50-97%

- Ankle biology:
  - Ankle bears 5 times body weight when walking
  - Thinner articular cartilage – 1 to 1.7 mm with contact area only 350 mm²

- Presentation:
  - Deep anterior ankle pain or dorsal foot pain
  - Assess ankle and hindfoot alignment, and ROM
  - Pedal pulses and monofilament sensory testing give extra information on healing potential
  - Special x-ray views: weight bearing hindfoot alignment view, Harris view for calcaneus axial alignment, Broden view for subtalar joint.

- Non-operative options:
  - Analgesia
  - Injections – also diagnostic
  - Contra-lateral stick
  - Weight loss
  - Low impact activities
  - Ankle boots or brace (AFO)
  - Rocker sole

Surgical Options:

- Debridement (open/arthroscopic)
  - 70% good results if for specific indications (loose body, impinging osteophytes, synovitis, chondral lesions)
  - 12% success if for generalised arthritis, with 75% requiring subsequent fusion or re-operation.

- Fibular osteotomy for mal-reduced fibula fractures
  - c/i = joint space reduction indicating generalised cartilage pathology
  - re-seat distal fibula into fibula incisura

- Tibial osteotomy for rare isolated angular deformity at ankle

- Distraction arthroplasty with Ilizarov frame
  - May offload joint while allowing intra-articular flow for cartilage repair or replacement with fibrous tissue
  - For younger patient with joint space reduction but preserved ROM
- 0.5 mm distraction BD until total of 5 mm distraction for 3 months
- FWB after 2 weeks
- Up to 75% satisfaction rate, but 25% need fusion within 2 years.

- Fresh allograft resurfacing of tibial plafond
  - Temporary distracting ex-fix to allow tibial cutting jig
  - NWB 3 months ± TA lengthening or gastrocnemius release
  - c/i = obesity, age >55, infection, severe bone loss/deformity
  - complications: medial malleolus fracture, collapse

- Ankle arthrodesis:
  - Provide a stable, painfree plantargrade ankle
  - 4-fold increase of non-union in smokers
  - Aim for neutral dorsi-flexion, 5° valgus, 5° external rotation
  - Complications: non-union (<10%), tibial stress fracture (conservative mx), soft tissue breakdown, infection
  - Late subtalar arthritis – 50% at 8 years (Coester 2001)

- Arthroplasty
  - Avoid if:
    - Age>60
    - High activity level
    - History of infection
    - Severe deformity (>15° hindfoot valgus/varus)
    - Charcot joint
    - Poor soft tissue envelope or medial instability
    - Talar AVN
  - Complications
    - Loosening
    - Talar tilt (poor soft tissue balancing)
    - Wound complications
    - Subsidence, osteolysis
    - Malleolar fracture
    - Persistent restriction ROM, with consequent altered kinematics and subtalar arthritis.
  - Agility TAR = fixed bearing 2 component prosthesis
    - Requires separate fusion of syndesmosis as tibial component incorporates lateral malleolar surface
    - 80% survival at 5 years – half of failed TARs required re-operation
    - Syndesmosis non union 8%
  - Scandinavian TAR
    - 3 component, mobile bearing design
    - Malleoli not resurfaced → no need for syndesmosis fusion
    - Distal tibio-fibula joint may be a source of persistent pain
    - 90% 5 year survival

- Below-knee amputation
  - Good if no reconstructive options – e.g. poor soft tissues, impaired vascularity, infection.