

# Dr John Negrine

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# Ankle Arthritis



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# Why replace an ankle?

- Pain
- Progressive deformity

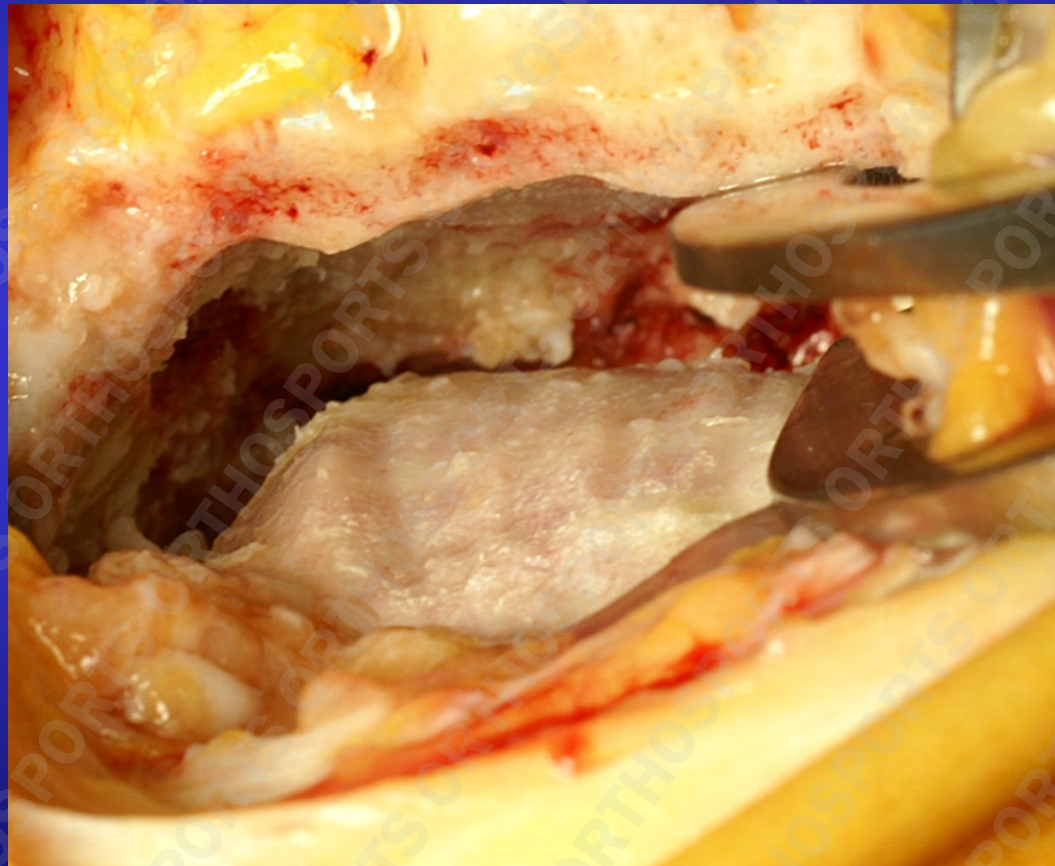


# Symptoms of ankle arthritis

- Pain
- Stiffness
- Swelling
- Limitation of function



# Clinical appearance



# CT ankle arthritis

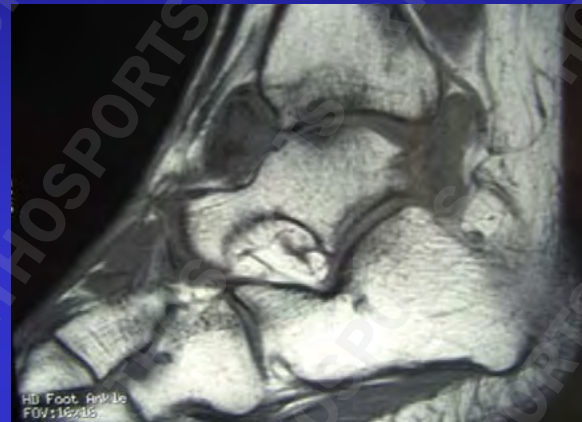
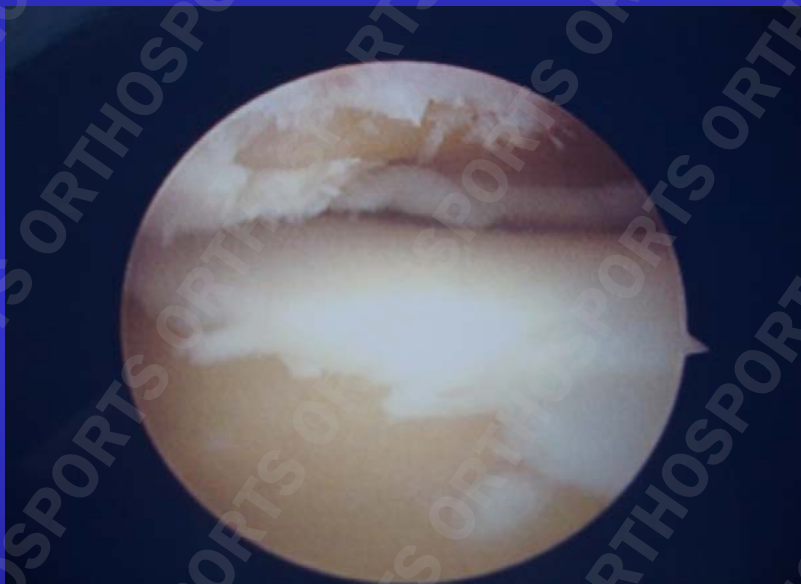


# Causes of ankle arthritis

- Osteoarthritis secondary to trauma &/or abnormal ankle biomechanics (primary osteoarthritis is exceedingly rare)
- Inflammatory arthropathies
- Haemochromatosis
- Infection
- Neuropathic arthropathy
- Tumour



# 22 yo lady 12/12 ankle pain





# Incidence

- 0.75% general population (compared with knee 6%)
- Average 14% risk post-trauma, however lesser or greater depending on severity & location of original fracture



# Non-operative management

- *Analgesics*
- *NSAIDs*
- *Walking aids*
- *Activity modification:*
  - Work
  - Social / sport
- *Weight-loss*
- *Intra-articular corticosteroid injection*
- *Orthotics:*
  - Modified footwear
  - Lace-up ankle support
  - Rocker bottom sole with solid ankle cushion
  - Polypropylene AFO

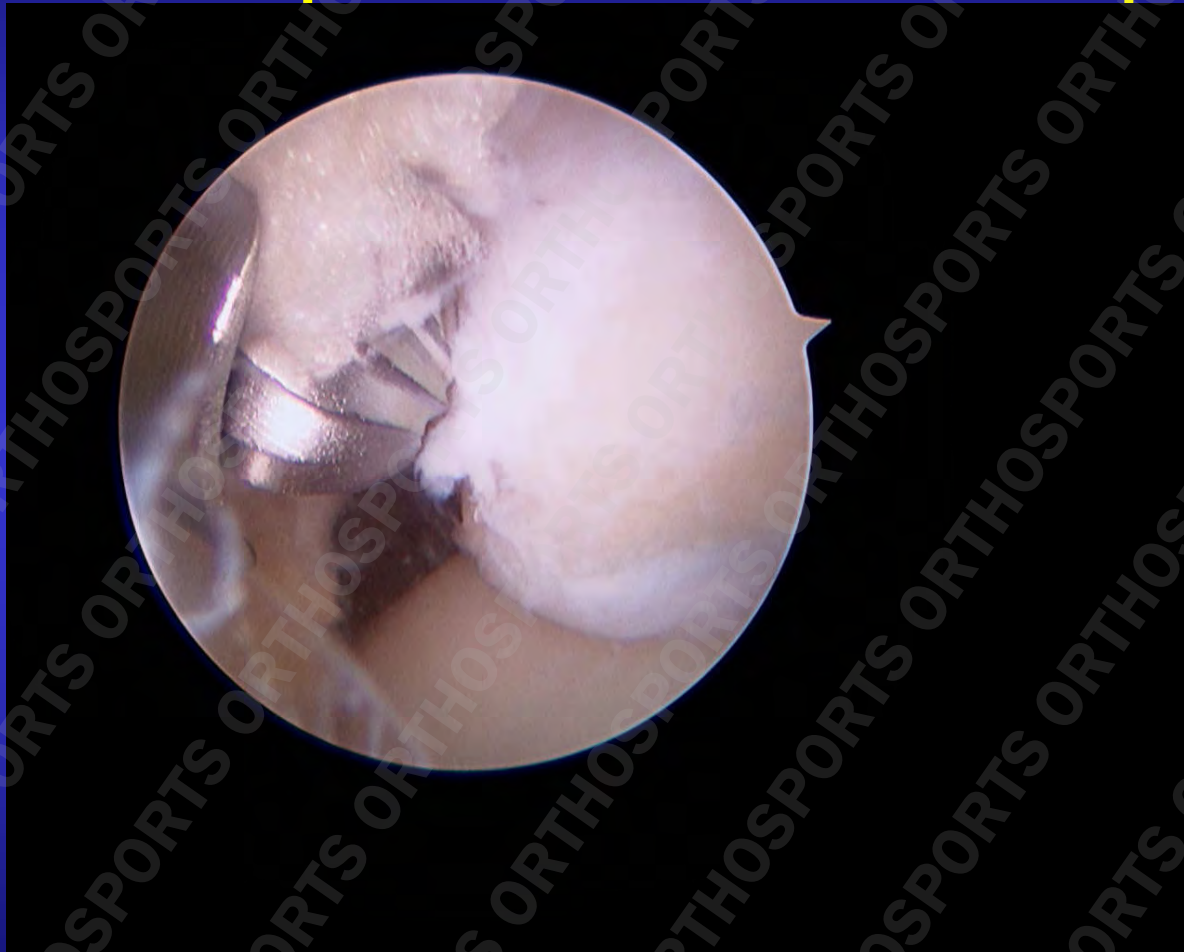


# Operative Management

- Arthroscopy
- Osteotomy
- Arthrodesis
- Arthroplasty



# Arthroscopic removal of osteophyte



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# Arthroscopy

- Debridement of impinging osteophytes, chondral defects, & removal of loose bodies
- Contraindications
  - Advanced arthritis
  - Joint-space narrowing
  - Marked fibrosis
  - Deformity



# Osteotomy

- Realignment of a deformed joint
- Tibial
- Calcaneal



# Arthrodesis

- Debilitating post-traumatic arthritis
- Pain & deformity secondary to previous infection
- Osteochondral defects
- Osteonecrosis of the talus
- Osteoarthritis
- Inflammatory arthropathies
- Rheumatoid arthritis
- Neuropathic ankle arthropathy
- Salvage of failed arthroplasty



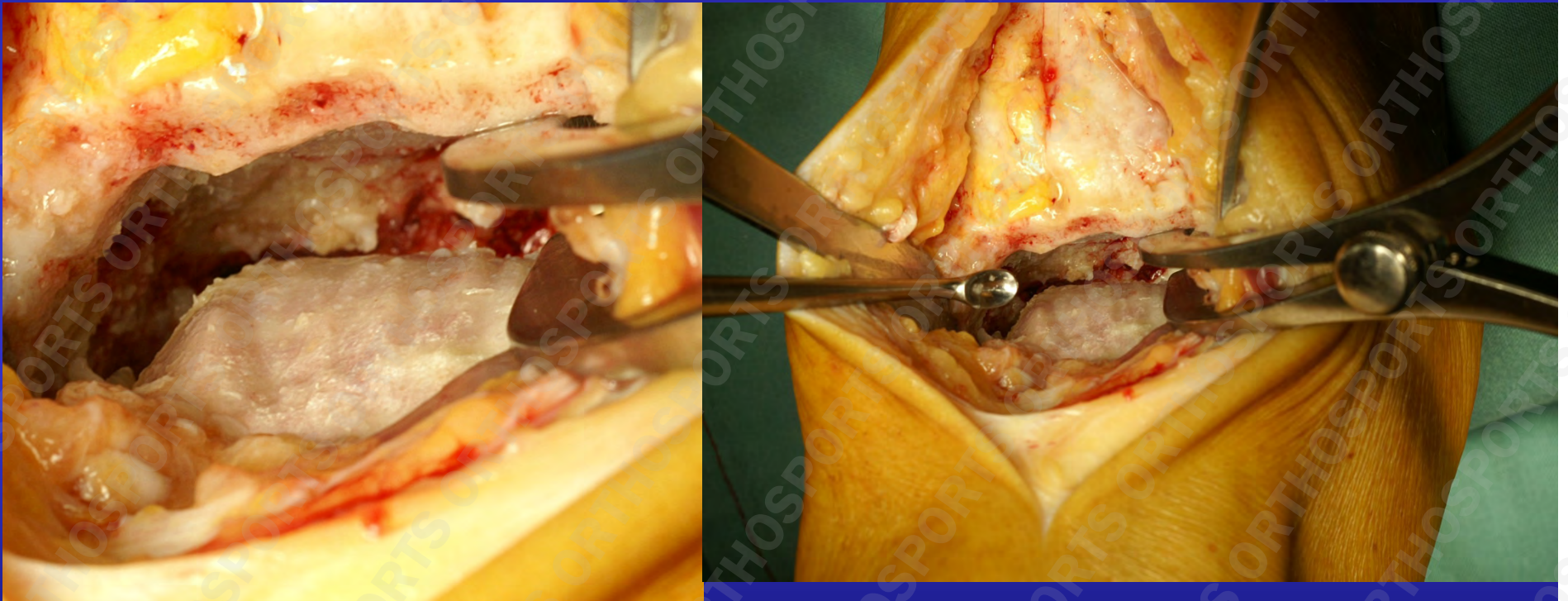
# Technique

- Approach anteriorly or laterally or arthroscopically
- Removal of remaining articular cartilage
- Preparation of joint surfaces
- Correction of deformity
- Rigid internal fixation
- Long period of non-weightbearing





# Ankle arthrodesis



# Ankle arthrodesis



# Ankle arthrodesis



# Results of arthrodesis

- 90% good to excellent
- Gait efficiency decreased by 10% with 3% increased energy expenditure



# Gait analysis of patients with a fused ankle has shown

- Decreased knee flexion before heel strike
- Less time in single-limb stance
- Reduced sagittal ground-reaction force, which is important only with barefoot walking



# Complications

- Non-union 5 – 10% incidence
- Factors associated with non-union include infection, smoking (4x greater risk), impaired vascularity, neuropathy, osteonecrosis of the talus, malalignment, poor technique, & post-operative non-compliance

- Mal-union
- Pseudoarthrosis
- Neurovascular injury
- Stress fracture of the tibia
- Infection

Subsequent arthritis development in joints of



# Longterm follow-up

- Saltzmann et al. JBJS 83A: 219, 2001.
- 23 patients followed for a mean of 22 years
- 100% developed arthritis in the surrounding joints
- More pain, disability and limitation of movement than contralateral limb
- ??were surrounding joints injured in the first place??



# Total ankle replacement

- Began in the 1970's
- Mostly disastrous...
- Failure because of poor techniques, poor implants, poor patient selection
- Largely abandoned for 25 years by most surgeons





# Case study

- 61 year old man
- Ankle pain
- Disabling
- Walking distance 100m
- Not responding to NSAIDS



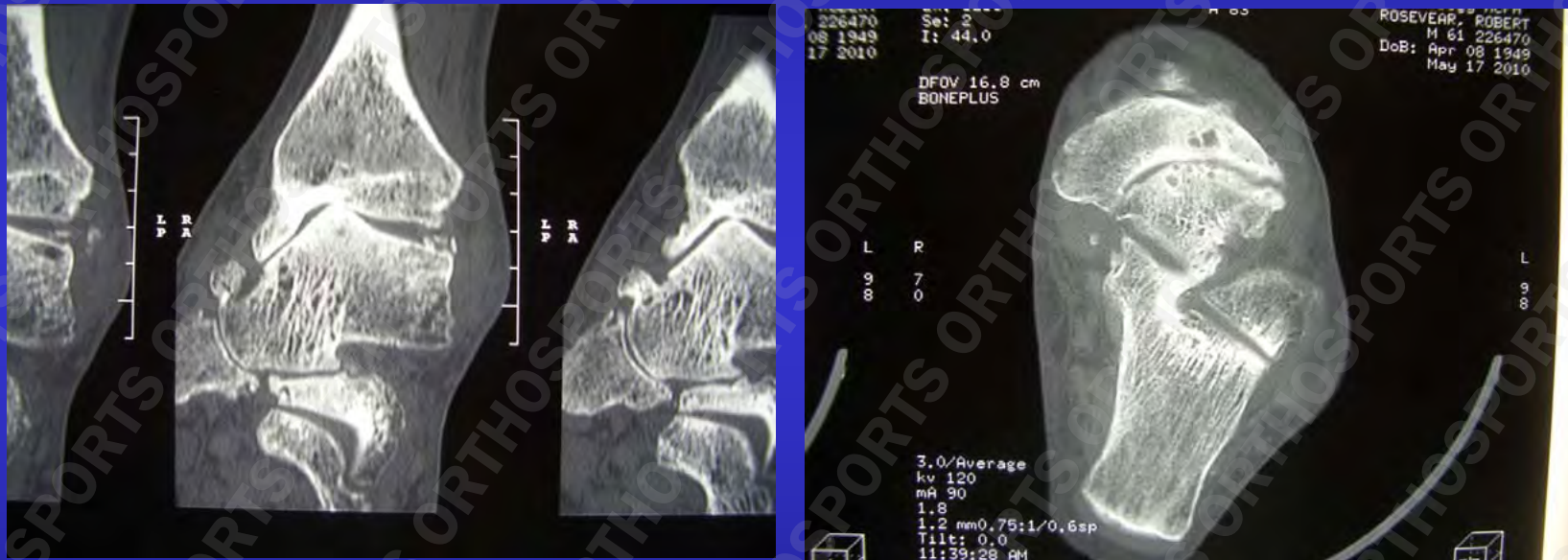
# Case study



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# Ankle and talo-navicular OA



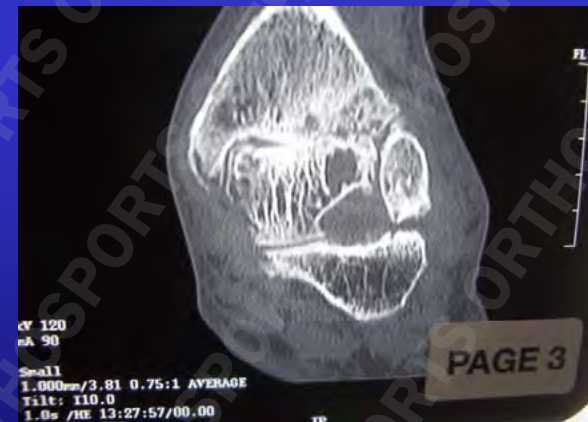
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# Rheumatoid ankle



# Same ankle CT



# Improvements

- Better pre-op investigations
- Cementless designs
- Better instrumentation
- Less bone resection
- Better surgical techniques



# Ankle arthroplasty



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# Ankle arthroplasty





# Contraindications to ankle replacement

- Active or recent infection
- Neuropathic joint disease (Charcot arthropathy)
- Osteonecrosis of the talus
- Severe malalignment
- Vascular impairment
- Compromised soft-tissue envelope
- Severe joint laxity
- Neurological dysfunction of the lower limb



# Complications of ankle replacement

- Loosening of the implant
- Delayed wound-healing
- Skin necrosis
- Deep infection
- Damage to nerve blood vessel or tendon
- DVT



# Salvage of failed ankle replacement

- Revision arthroplasty (depending on bone stock)
- Arthrodesis
- Below-knee amputation

