

Ankle arthritis in different age groups....

Pete Rosenfeld
Imperial NHS

Why is Ankle OA less common

- Highest WB forces of any joint:
 - Small surface contact area 350mm² cf Hip & Knee >1100mm²
- Is the shape better?
 - Rolling joint with high congruency
 - Malleoli act as buffers for early incongruency?
- Is Cartilage better?
 - Some of the thinnest cartilage in the body - 1-1.7mm (Knee up to 6mm)
 - Superficial layers form greater percentage of cartilage thickness. (Majority of compressive loading absorbed in these layers)
 - Stiffer and more resistant to compression than Hip/Knee



Presentation: Ankle pain?

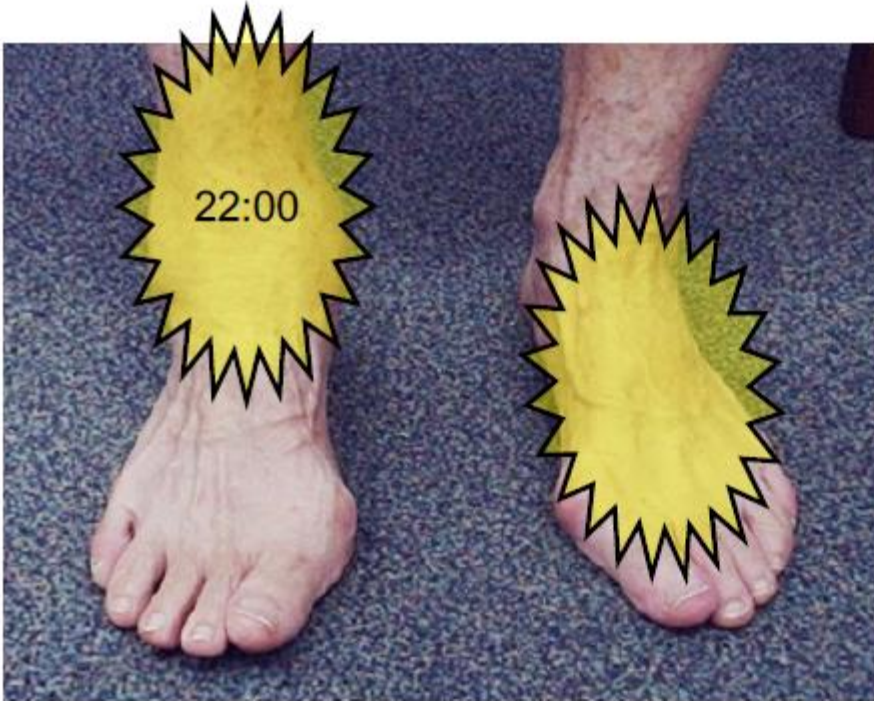
- Mechanical pain
- Regular site
- Rest pain only after prolonged use.



Is it Ankle OA?



Is it Ankle OA?





OA & Age

Ankle OA: Conservative rx



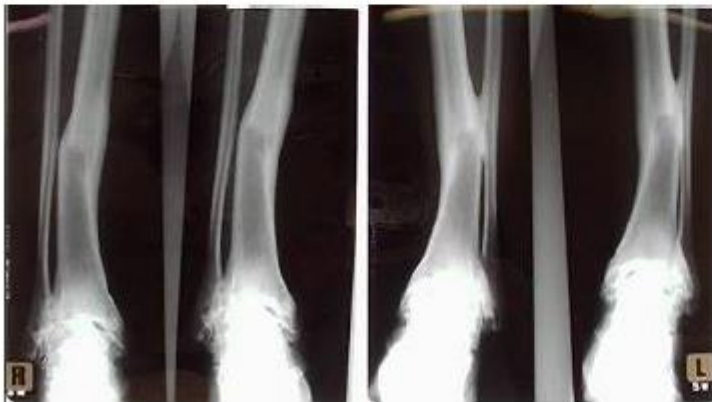
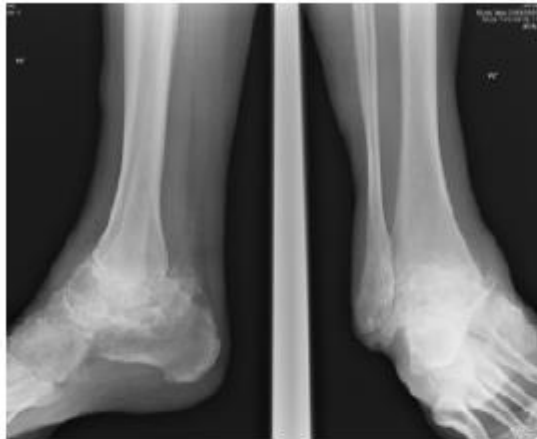
- Activity Mods
- Analgesia
- Shoeware mods
- Weight loss
- Orthotics
- Physiotherapy

J Bone Joint Surg Am. 2012 Intra-articular injection of hyaluronic acid is not superior to saline solution injection for ankle arthritis: a randomized, double-blind, placebo-controlled study.
DeGroot H 3rd1, Uzunishvili S, Weir R, Al-omari A, Gomes B.

EVIDENCE?

- Glucosamine
- Hyaluronic acid
- Steroid injections.

Ankle OA: Surgical options



- Fusion?
- Replacement?
- Arthroscopy?
- Realignment?
- *Distraction?*

Ankle OA: Young adult



- 19 yrs
- Warehouse worker
- Ankle pain
- Mainly lateral WB pain



| Custom Boots

Ankle OA: Young adult



- Fusion?
- Replacement?
- Arthroscopy?
- Realignment?

Ankle arthritis: Adults 25-60



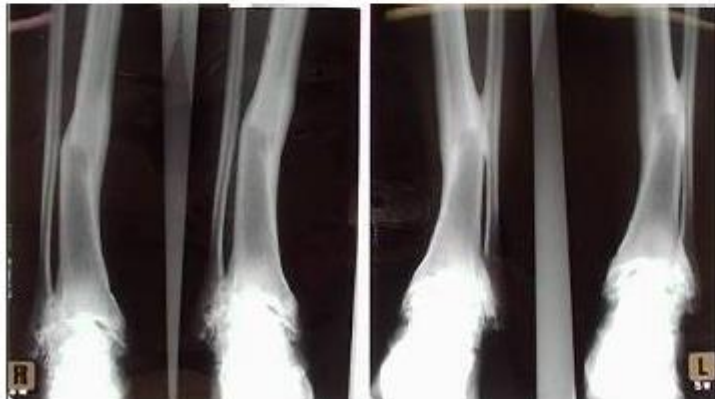
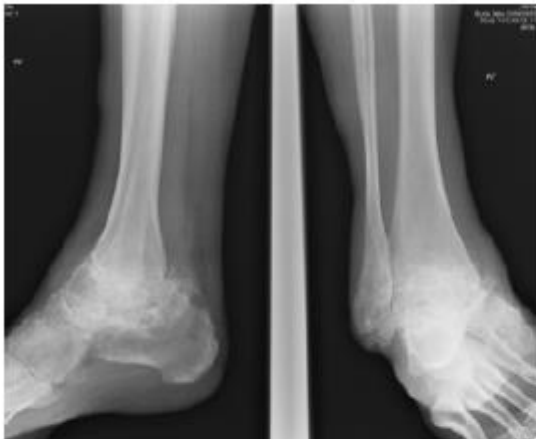
- 38 Female
- Currently in between jobs
- Ankle pain only.

Ankle arthritis: Adults 25-60



- Fusion?
- Replacement?
- Arthroscopy?
- Realignment?

Ankle OA: 60's plus



- Fusion?
- Replacement?
- Arthroscopy?
- Realignment?

Other considerations.....

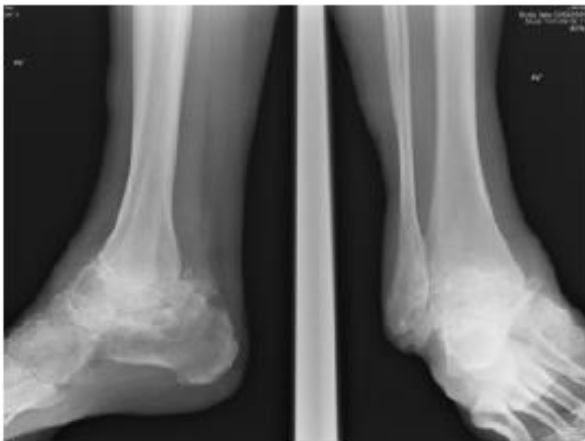


Contra Indications

- Soft Tissues
- Avascular
- Infection
- Severe Deformity (20° varus/30° valgus)
- Non Compliance
- Charcot
- Absent Deltoid?



Surgical options



- Fusion?
- Replacement?
- Arthroscopy?
- Realignment?
- Distraction?

Ankle Fusion



- Remove arthritic surfaces
- Open / Arthroscopic?
- Fixation
 - Plates
 - Screws
 - IM Nail
 - Exfix
- POP NWB 6w.
- High success rates 95%+
 - Esp Arthroscopic

Ankle fusion: Biomechanics



- Normal ROM: 15' DF to 30' PF
- Arthrodesis: 50% ROM 5' DF – 15' PF

Courtesy of Solan Motion Pictures

Ankle fusion: Gait

- “Normal” on flat ground
- PF & DF reduced by 50-75%
- Problems on hills and stairs



Complications

- 2-5% Non Union
- 2% Infection
- 2% Malunion
- OA in distal joints....guaranteed!



Ankle fusion : Results at 22 years

Long-term results following ankle arthrodesis for post-traumatic arthritis. JBJS Am 2001 Coester & Saltzman

- 23 pts : 100% OA in surrounding hindfoot joints.
- Non disabling pain.
 - 2/3 Moderate / Significant Handicap
 - 50% Original employment



Total Ankle Replacement - TAR

Advantages

- Maintain ankle ROM
- Better Function
- Hindfoot Joints protected
- Rapid recovery (FWB 2/52)
- Gain in QALY makes it more cost effective than arthrodesis



Courville et al CORR 2011
SooHoo JBJS Am 2004

TAR - Gait

- Ankle arthroplasty and ankle arthrodesis: gait analysis compared with normal controls.
JBJS am 2013 Singer et al
- 3 groups : TAR / AF / Control
- Sagittal ROM better in TAR esp DF
- Gait closest to normal in TAR
- Decreased power of PF in both groups (esp. at terminal stance phase)
? Cause in TAR.



TAR

- Disadvantages
 - Failure due to Loosening & Osteolysis
 - Complex Revision
 - Infection rate similar to AF
 - Higher repeat surgeries than AF





Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Foot and Ankle Surgery

journal homepage: www.elsevier.com/locate/fas



The Salto total ankle arthroplasty – Clinical and radiological outcomes at five years



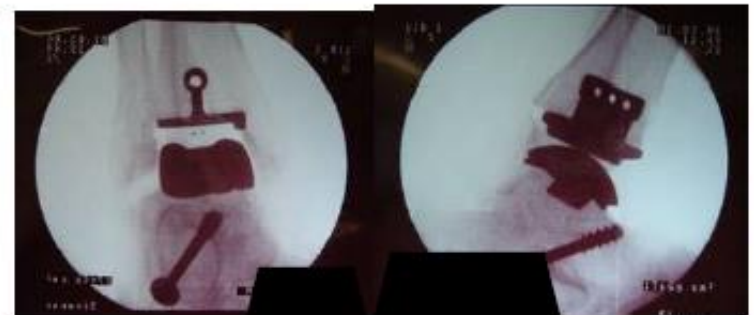
K. Koo^{a,b,c,*}, A.D. Liddle^b, P.S. Pastides^b, P.F. Rosenfeld^{b,c}

^aSingapore General Hospital, Outram Road, 169608, Singapore

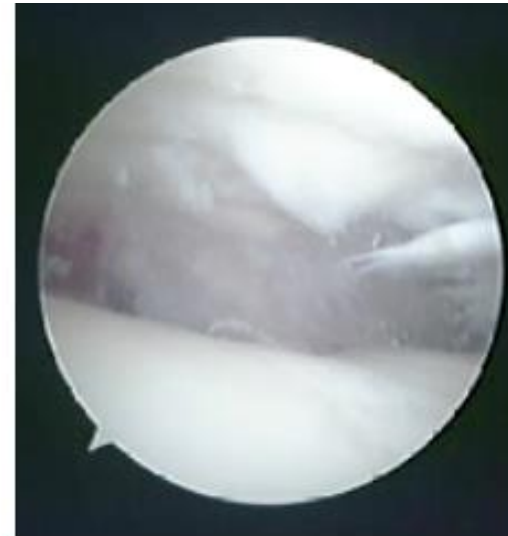
^bImperial College Healthcare NHS Trust, The Bays, South Wharf Road, St Mary's Hospital, London W2 1NY, United Kingdom

^cFortius Clinic, 17 Fitzhardinge Street, London W1H 6EQ, United Kingdom

- 53 TARs (50 patients)
- F/U 2-12yrs
- Survival 98% (Revision as end point)
- Survival 92% for further procedure
- VAS 1.3
- 100% Satisfied



Arthroscopy



- Arthroscopic treatment in mild to moderate osteoarthritis of the ankle.
KSSTA 2013 Choi & Lee JW.
- 63 cases
- Greatest improvement at 6 months - steady decline but beneficial for 2 years.
- BMI and associated intra-articular lesion are significant risk factors for poor outcome.

Realignment

Supramalleolar Osteotomy With Bone Marrow Stimulation for Varus Ankle Osteoarthritis: Clinical Results and Second-Look Arthroscopic Evaluation.

Am J Sports Med. 2014 Kim YS, Park EH, Koh YG, Lee JW.

- 31 pts at 27m
- VAS 7.1 - 4.1
- AOFAS 63 – 80
- ICRS grading correlated with outcomes.
- Improvements in Realignment measurements Tibial surface / Talar Tilt not related to outcomes



Distraction arthroplasty for ankle OA

Motion versus fixed distraction of the joint in the treatment of ankle osteoarthritis: a prospective randomized controlled trial.

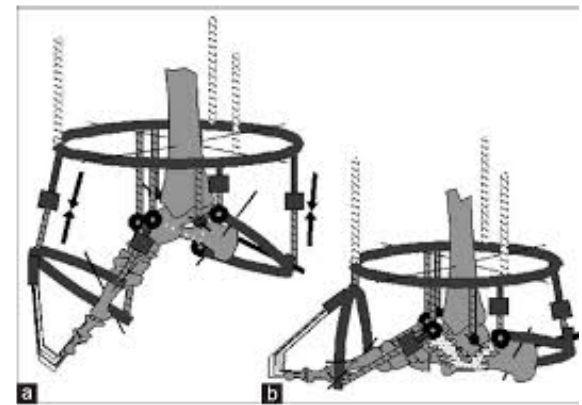
J Bone Joint Surg Am. 2012 Saltzman CL & Amendola A.

- 36 pts at 2 yrs
- Distraction improved the patient-reported outcomes of treatment of ankle osteoarthritis. Adding ankle motion to distraction showed an early and sustained beneficial effect on outcome.

Evidence-based indications for distraction ankle arthroplasty.

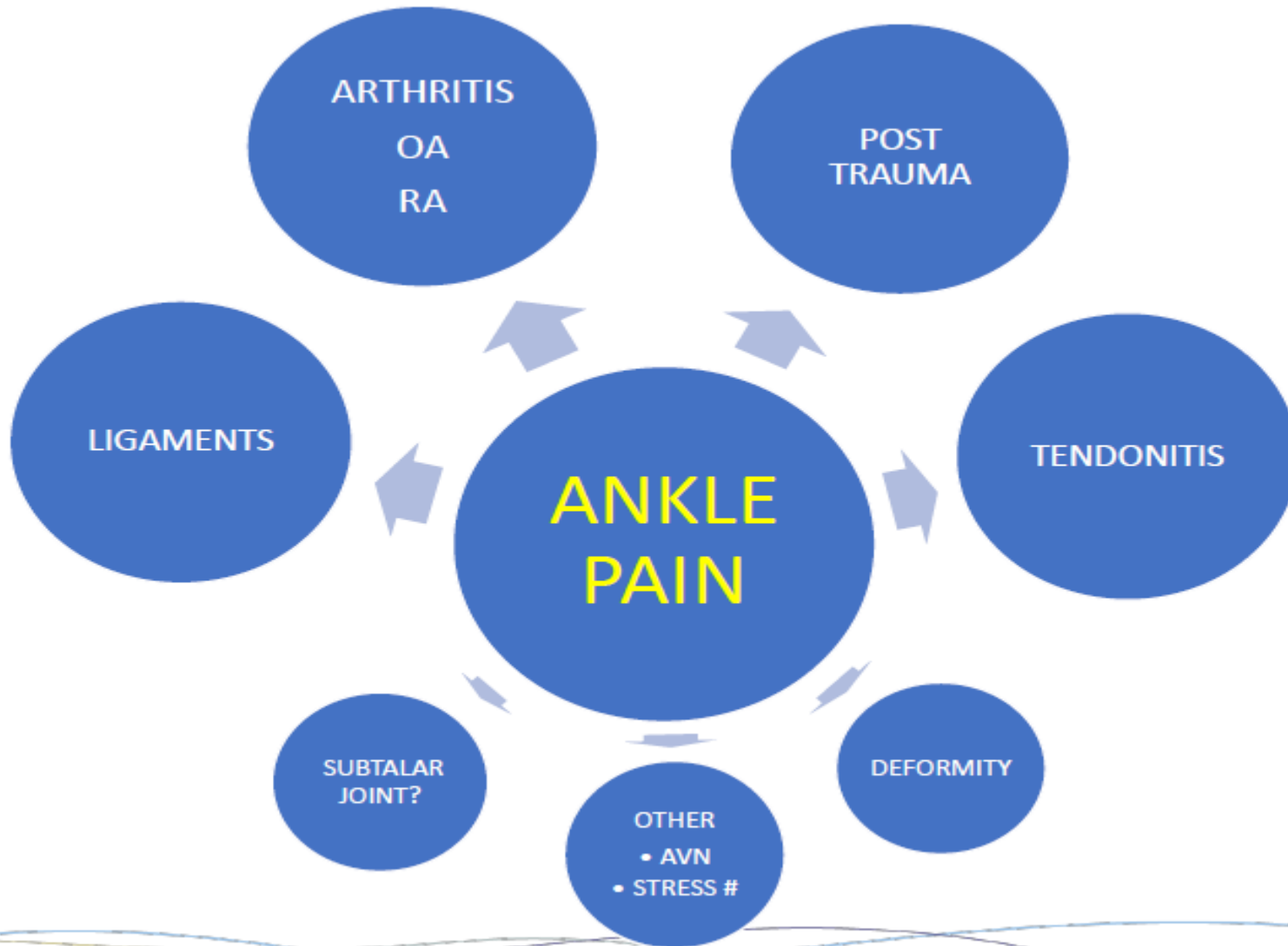
Foot Ankle Int. 2012 Smith NC & Glazebrook MA.

- Inadequate evidence based literature exists to support or refute all currently accepted indications for distraction ankle arthroplasty and further high quality, scientific studies are needed upgrade to these recommendations.



Imperial Ankle Arthritis Centre - managing ankle pain

Mr Rosenfeld / Mr Mushtaq / Mr
Sivanandarajah



Ankle arthritis

- Increasing condition
- 70yr olds are increasingly active and no longer 'Elderly'
- Prior to 2000
 - Pain relief / put up with it
 - Custom Boots
 - Fusion
- After 2000
 - Ankle replacements
 - Realignment osteotomies

Ankle Replacement - TAR

- Prior to 2000
 - “Experimental”
 - Studies showed it could be a “success”
 - Many early failures
- After 2000
 - Designs improvements
 - Significant success
 - Still thought of as experimental
- After 2010
 - Mid term results show success – as good as TKR 8-10yrs
 - Better function than fusion
 - No Long term studies

Ankle replacements

- Currently 1% of volume of THR/TKR
- Only small numbers (5-10/ year) performed by many surgeons
- Complex operation
- Steep learning curve requires volumes

- GIRFT recommendations: Regional / National Centres necessary for best results

- *Financials £££*
 - *TKR & THR are saturated – most rapidly expanding area of arthroplasty*
 - *Many new implants with v limited results flooding market.*
 - *Need careful critique*
 - *Winners & Losers for patients too!*

Ankle Replacements at Imperial

- National Joint Registry
- 15 yrs study
- 100% FU – Annual Review
- 4% Revision rate
- Excellent pain relief and function (EQ5D & FAOS/AOFAS scores)
- Published results – latest results this year



Imperial Ankle Arthritis Centre

Our Goal is to develop a regional centre receiving referrals from CCG's and MSK centres to treat patients with suspected ankle arthritis.

- Not all require will require TAR
 - Careful consideration of Age / Needs / Co-Morbidities / Soft-tissue status / Vascularity
- Alternatives to TAR
 - Realignment osteotomies of tibia / calcaneum
 - Cartilage reconstruction 'OATS'
 - Fusion
 - Arthroscopy
- Conservative management
 - Access to on site Tertiary level Orthotics / Prosthetics at CXH

Imperial Ankle Arthritis Centre

- Improve patient outcomes using best current knowledge for best patient care
- Monitor, drive progress and improve outcomes in a developing field
- Get it right

Thankyou

Questions?

Pete Rosenfeld



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