Podiatry 25 Glasgow

Hallux rigidus – Practical pop up

Informal session

Q&A’s welcomed

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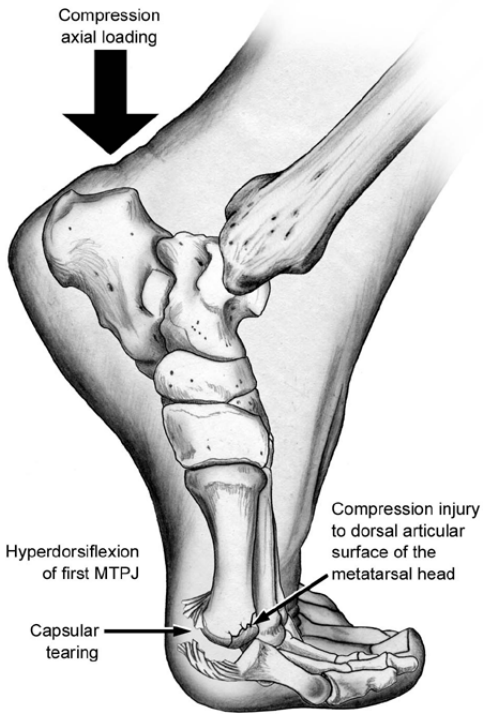
Aetiology

- Trauma
  - Direct trauma
  - Forced dorsi-flexion(Turf toe)
  - Repeated minor
  - Chondral / sub chondral damage
- Osteochondritis dissecans
  - Slow progression to secondary osteoarthrosis
- Pre-disposition..?

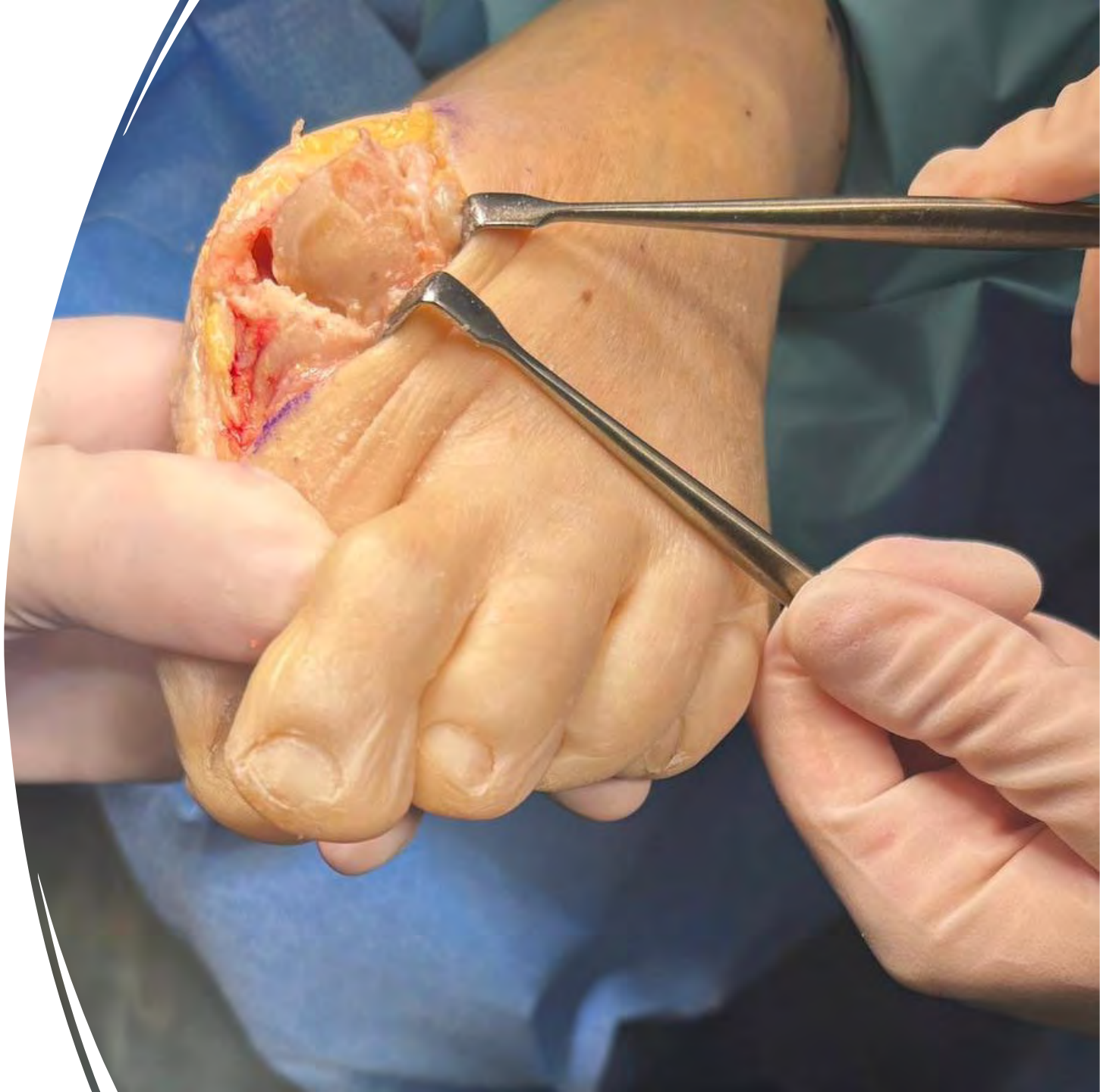


Hallux limitus/rigidus staging

- Hattrup & Johnson
  - Grade 1: Mild changes, maintained joint space, minimal osteophytes.
  - Grade 2: Moderate changes, joint space narrowing, bony proliferation at metatarsal head.
  - Grade 3: Severe changes: Marked joint space narrowing, extensive bony proliferation, dorsal exostosis, loose bodies

Hallux Limitus: Rationale for Surgery

- Reduce joint pain
- Increase ROM
- Increase joint function
- Improve gait
- Provide long term soloution



Hallux Limitus
- Imaging

XR

USS

MRI

CT

Hallux Limitus - XR

- Advantages
  - Quick / easy
  - Low cost
  - Gain good information
  - Serial comparison
- Disadvantage
  - May underrepresent level of DJD
  - OCD not easily seen
  - Subtle damage not seen

39 male

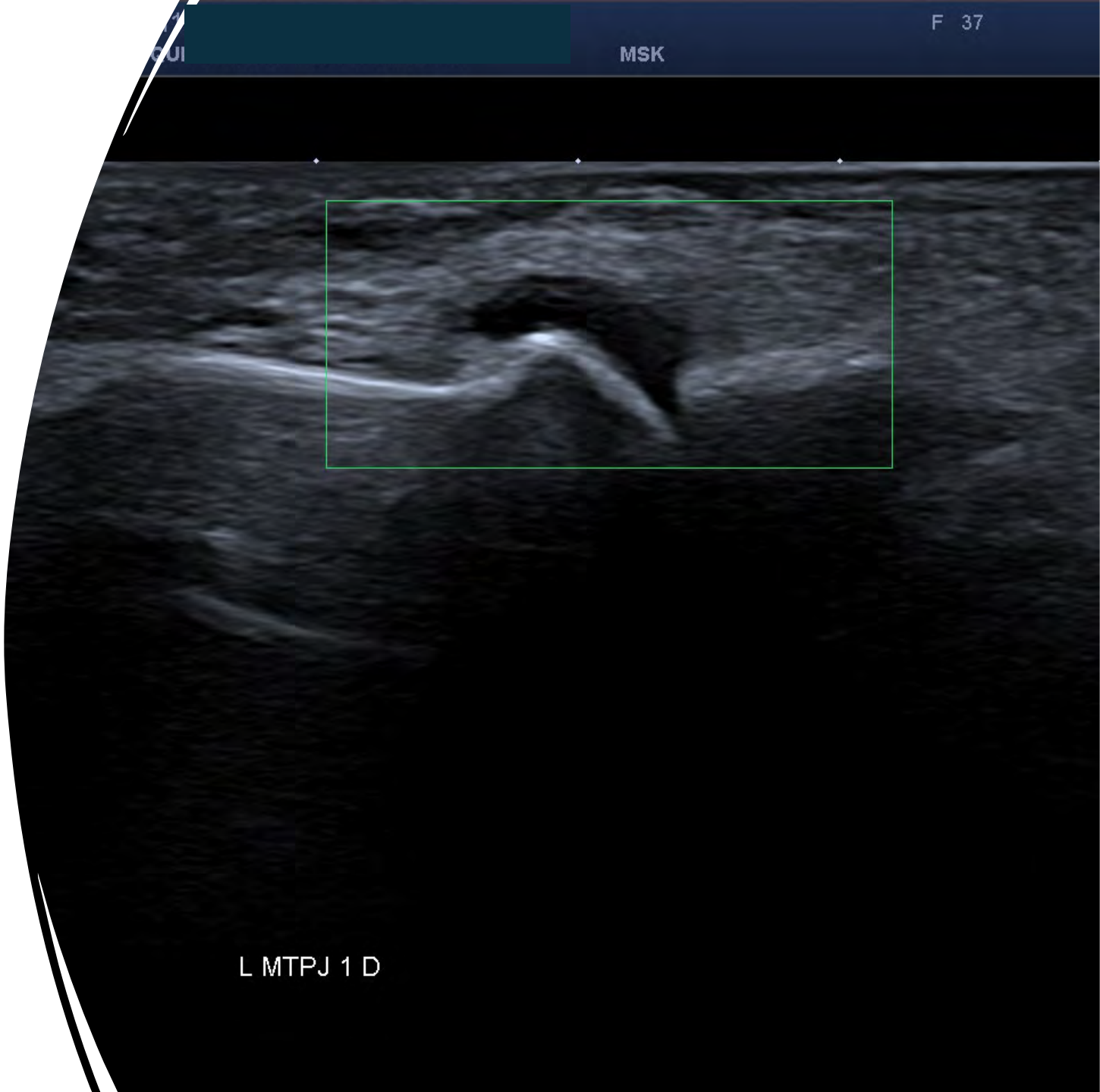
64 female

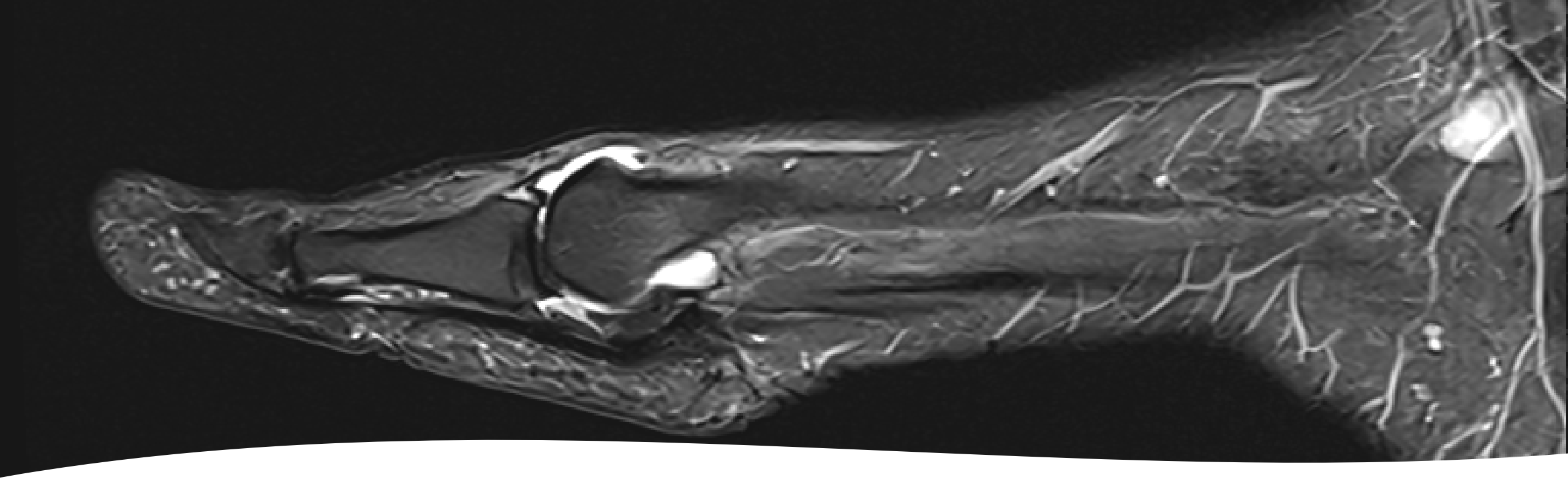
47 male

24 female

Hallux Limitus - USS

- Advantages:
  - PoCUS – Quick easy
  - Subtle features apparent
    - Small osteophytes
    - Joint effusion
    - Neo-vascularity
- Disadvantages:
  - Limited field of view





Hallux Limitus - MRI LB

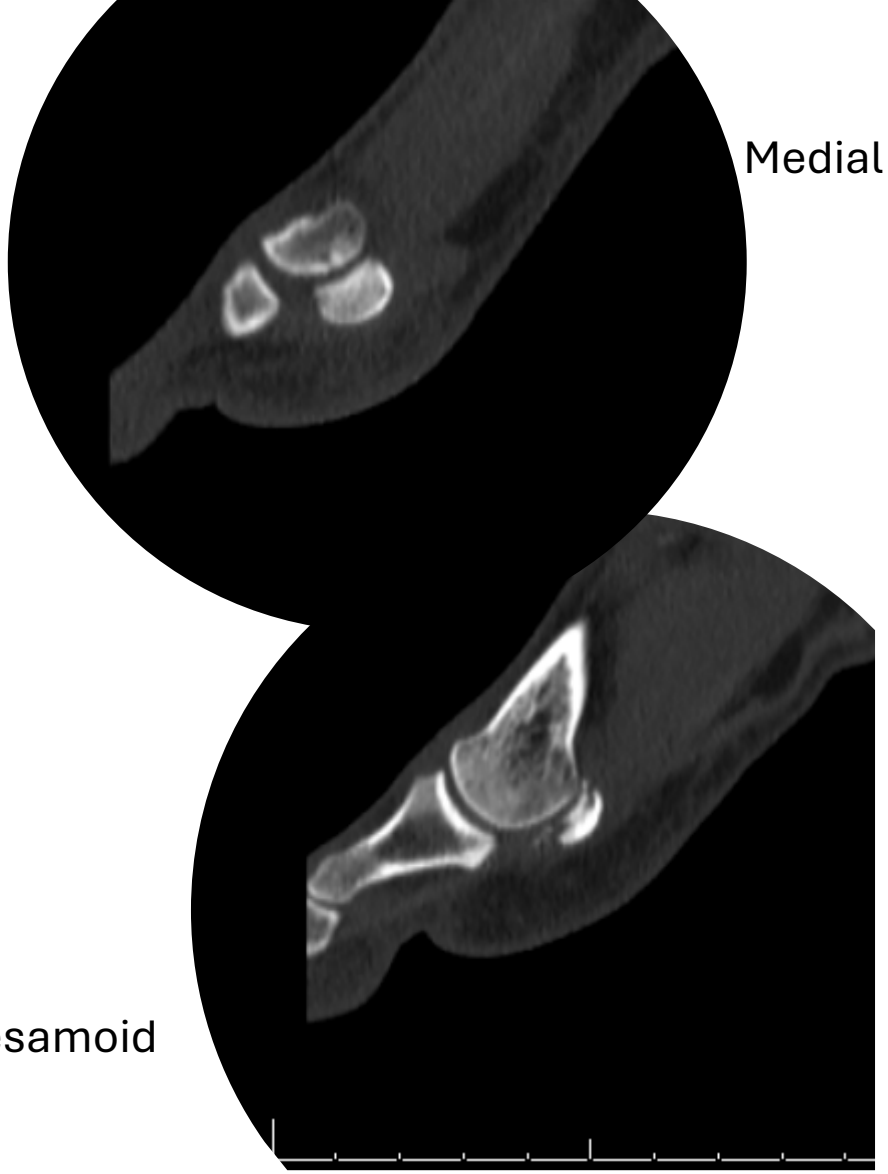
- Left foot:
  Similar changes also noted at first MTP joint of left foot. There is small to moderate volume joint effusion at MTP joint as well as along the undersurface at metatarsal head-sesamoid articulation. Also thinning, focal loss of cartilage, osteophytes noted but on this side there is no subchondral oedema or cystic changes therefore the changes are less marked imaging wise compared to right side. Also there is no much oedema within the sesamoids.

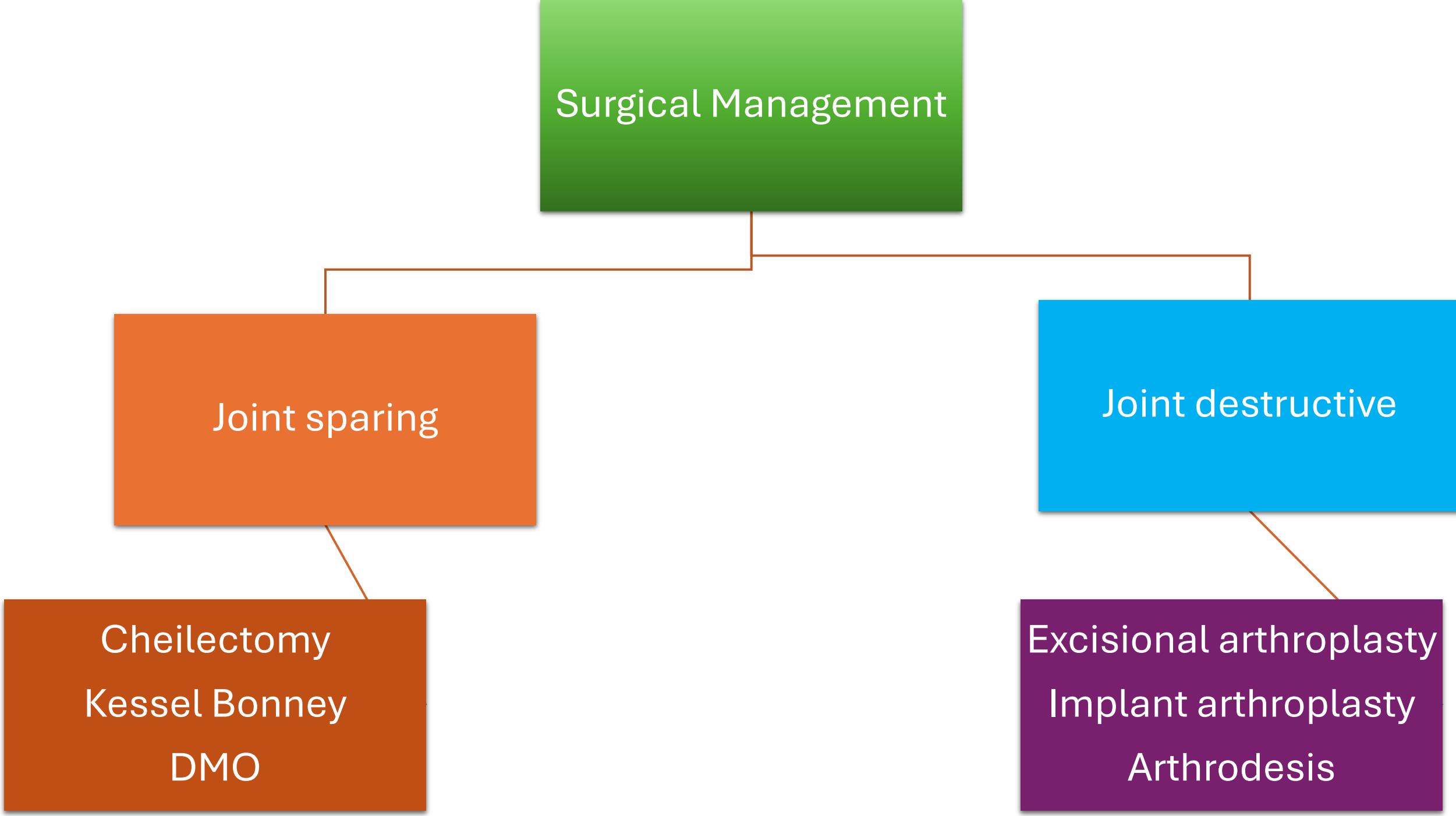
  Normal other MTP joints as well as interphalangeal joints. No tendinopathy. No other significant features

  CONCLUSION:
  Imaging features are consistent with moderate arthropathic changes at first MTP joints as well as at metatarsal head-sesamoid articulation on either side, with changes more on right side where there is also subchondral marrow oedema and cystic changes and also mild oedema within the sesamoids. The joint effusion also suggests some degree of synovitis.
  Clinical correlation suggested.

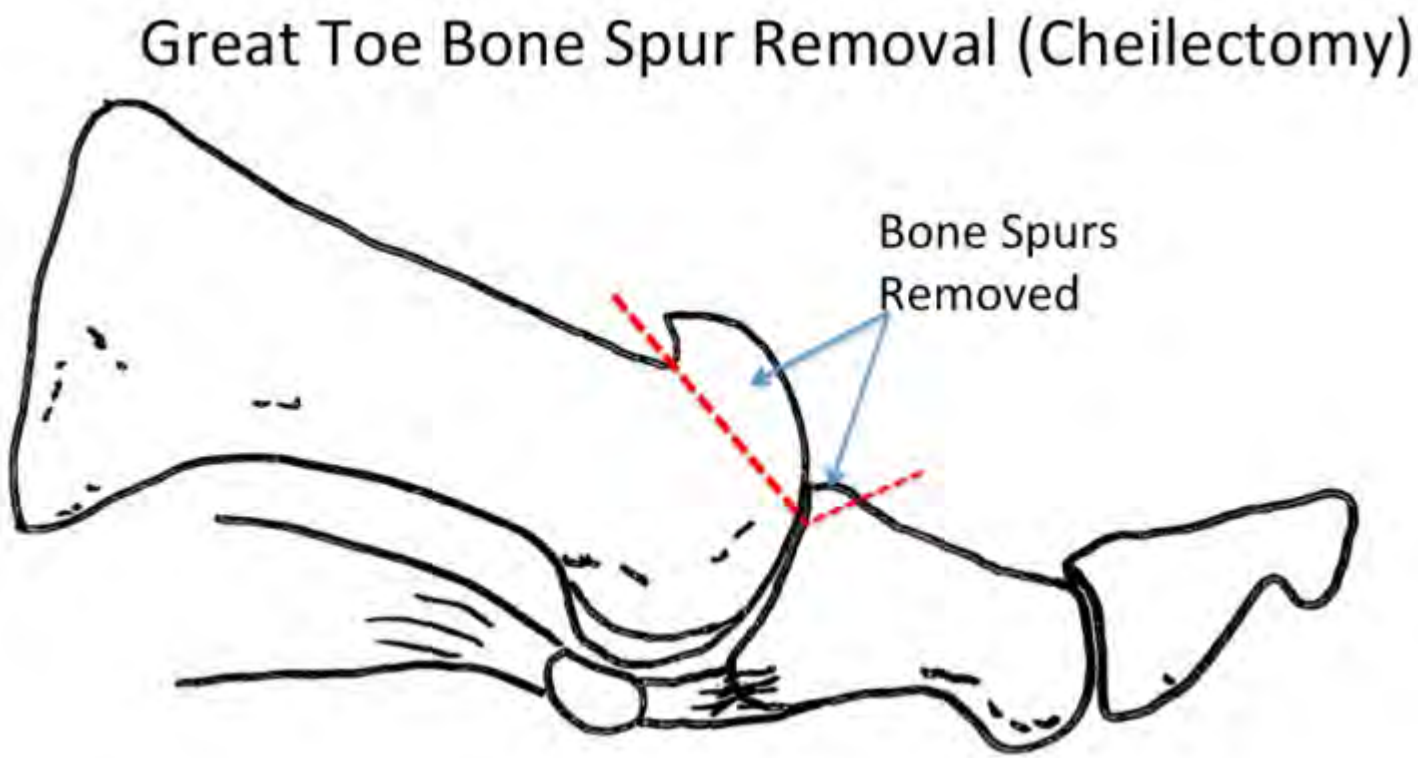
Hallux Limitus - CT

- Advantages:
  - Exceptional detail
  - 3D modelling
  - Previous injury / surgery
  - Sesamoids
- Disadvantage
  - Cost
  - Radiation dose
  - Availability / Time



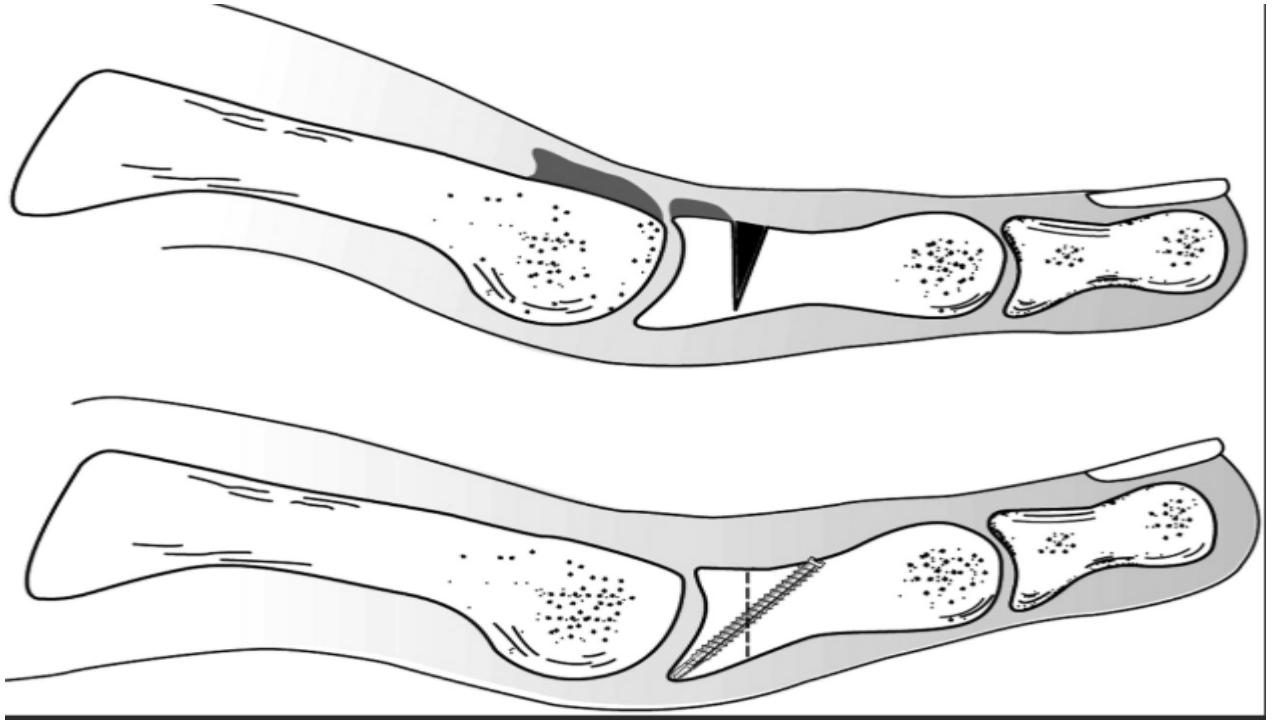

Surgical Management
Joint sparing
Joint destructive
Cheilectomy
Kessel Bonney
DMO
Excisional arthroplasty
Implant arthroplasty
Arthrodesis

1st MTPJ Cheilectomy

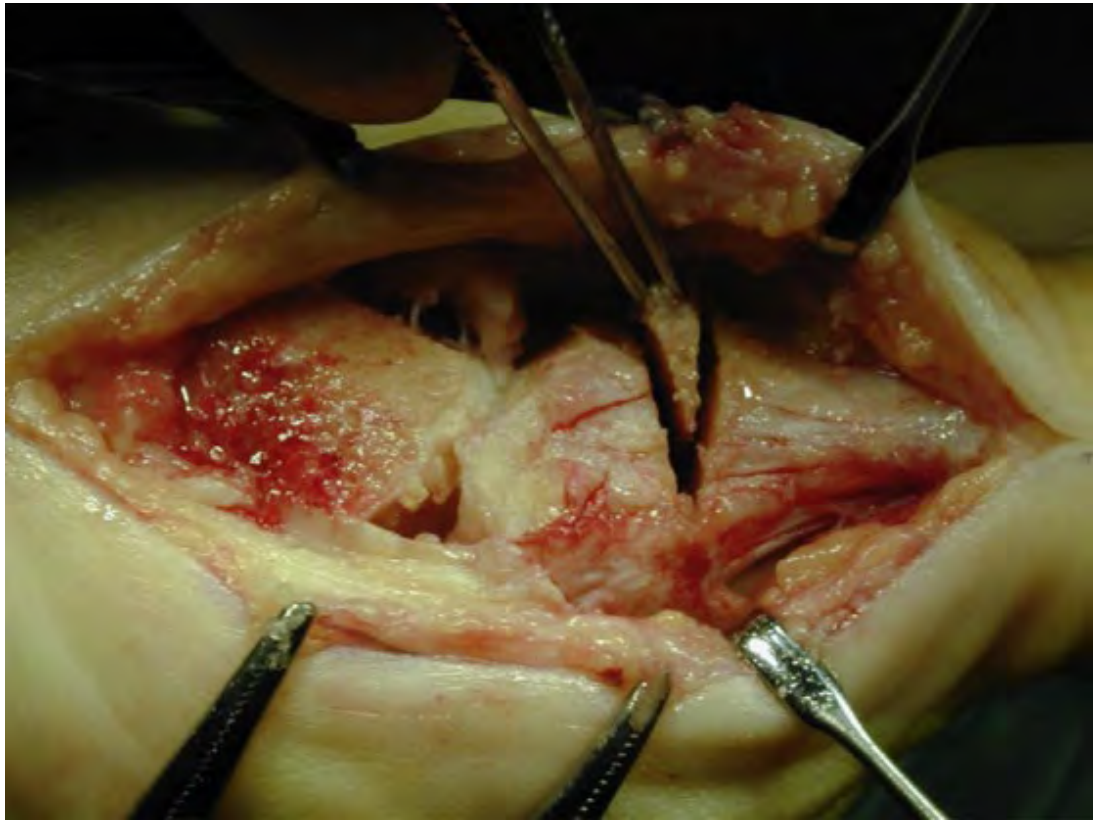


Cheilectomy

Kessel – Bonney Procedure



Intra - Operative Image of Procedure



- Dorsal cheilectomy to remove exostosis
- Incomplete dorsal wedge is taken from proximal phalanx (seen in image)
- Osteotomy is feathered and closed dorsally to elevate hallux
- Variety of fixation methods cited in literature
- K-wire, Screw, Staple

Indication for Procedure

- Indicated in the treatment of mild to moderate Osteoarthritis of the 1st MTPJ
- Dorsiflexory wedge osteotomy of the proximal phalanx often used to augment a cheilectomy of the 1st metatarsal
- Results in elevation of hallux relative to metatarsal head
- Reduces the net forces at the dorsal aspect of the joint
- Gives the hallux a mechanical advantage during propulsive phase of gait

Are some patients more at risk to early DJD..?

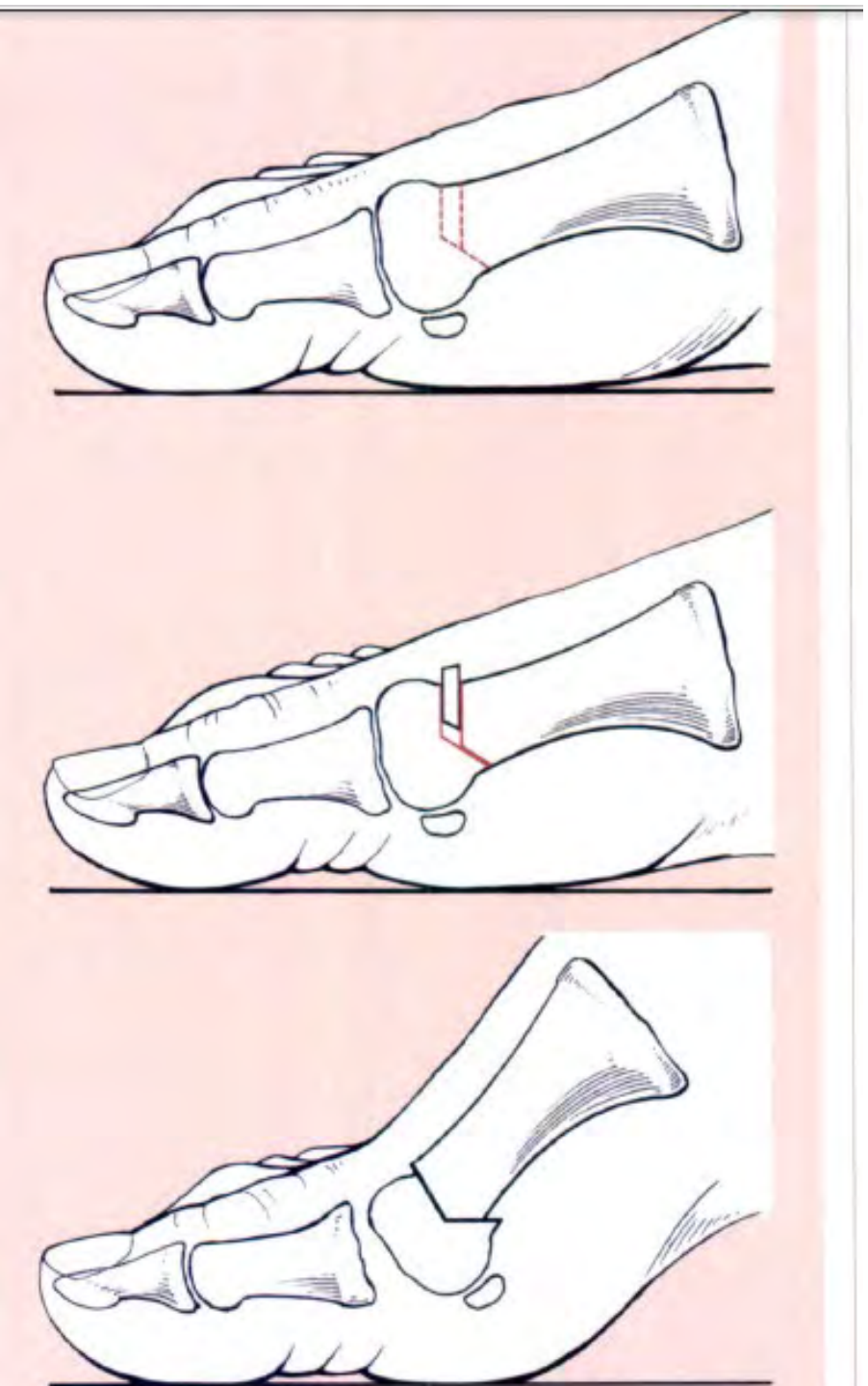
- Long 1st metatarsal

- Elevated metatarsal MPE

Metatarsal length

'The most prominent feature is....unusual length of the metatarsal bone...' *(Nilsonne 1930)*

- Disagreement since!
  - Zainab et al JAFR
    - Noted no gold standard
    - Lack of agreement
    - Compared Maestro's and Barroco's format siding with the latter.
  - Other papers:
    - Hardy & Clapham
    - Couglin
  - Couglin's method is preferred amongst many authors – quick with good reliability.



Giannini et al JBJS 2004

Watermann - Green procedure

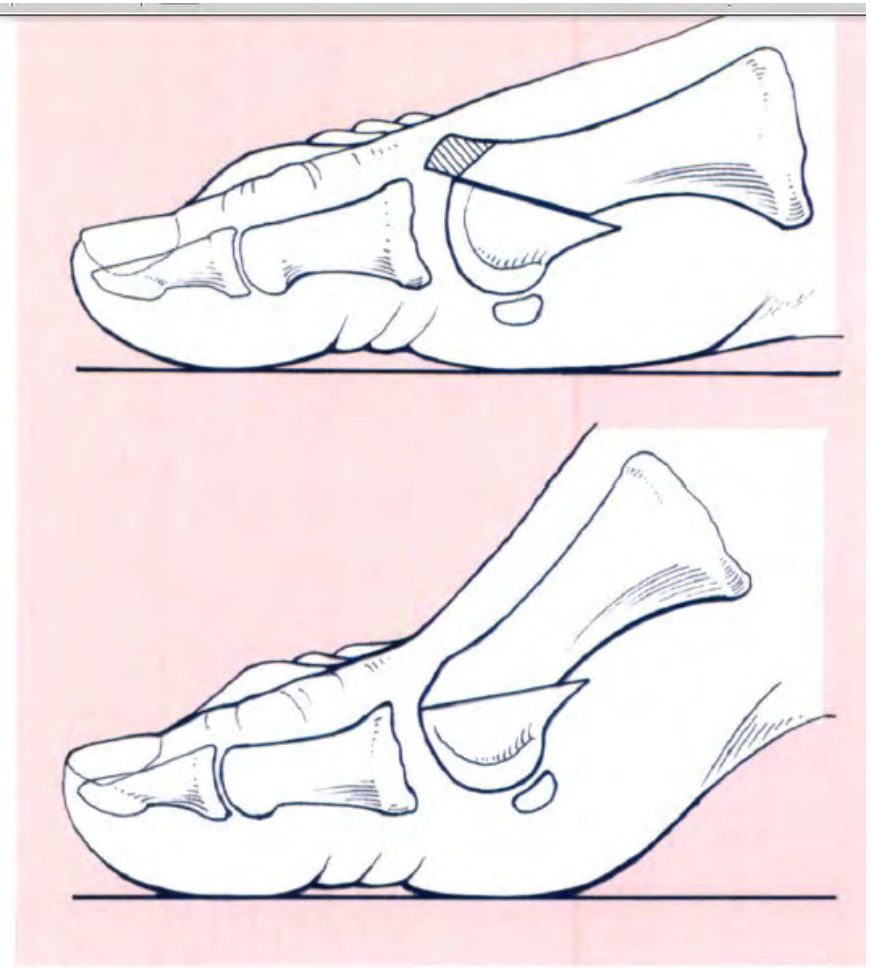
What's new in surgical options for Hallux Rigidus

Giannini et al JBJS 2004

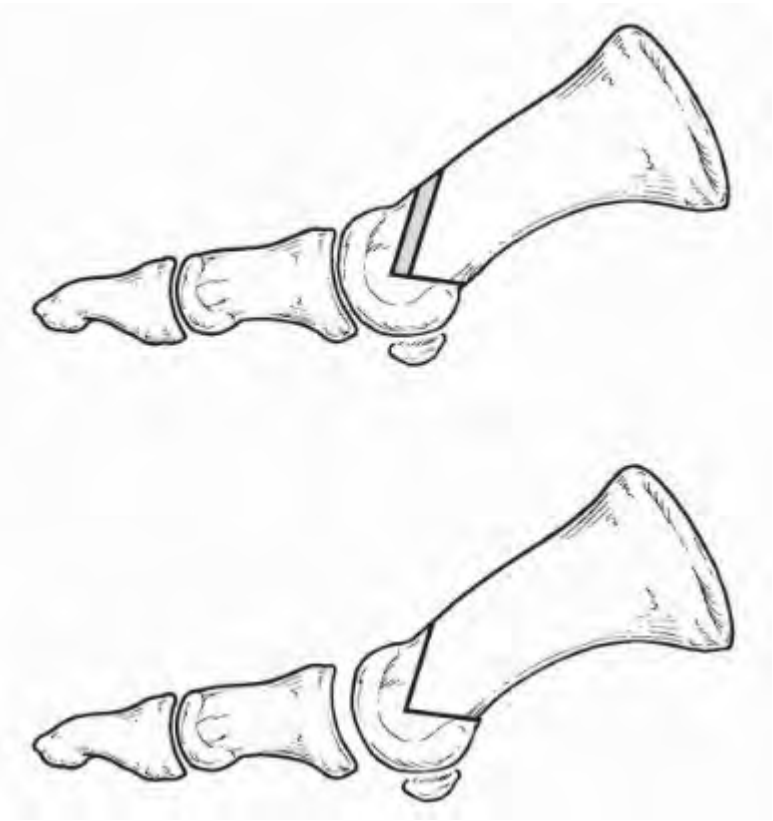
- Goal of surgery:
  - Relieve pain
  - Improve function
  - Reduce progression
  - Correct any associated deformity
- Grade 1 DMO
- Results:
  - Grade 1(DMO)
  - ROM - 30° improvement
  - AFOAS – >30 point improvement

Hallux Limitus – *Decompression Procedures*

Sliding Osteotomy
JBJS Vol 86A 2004



Youngswick Osteotomy



54

Min pix Value: -5220

Key

Zoom: 125%

XR Foot Rt

XFOOR

DMO - 50 female

Articles

Patient-reported outcomes of joint-preserving surgery for moderate hallux rigidus: a 1-year follow-up of 296 patients from Swefoot

Marcus E Cöster, Fredrik Montgomery & Maria C Cöster

Pages 109-113 | Published online: 25 Sep 2020

Acta Orthopaedica Vol 92, 2021 Issue 1

- Agreed lack of consensus for joint preserving procedures.
- Patients collated from national data base.
- Study cohort – 296
  - DMO – 115
  - Cheilectomy - 181
- PROMS
  - Self Reported Foot and Ankle Score (SEFAS) 0=severe disability – 48 normal function
  - EuroQol 5-Diminsional 3 Level Version

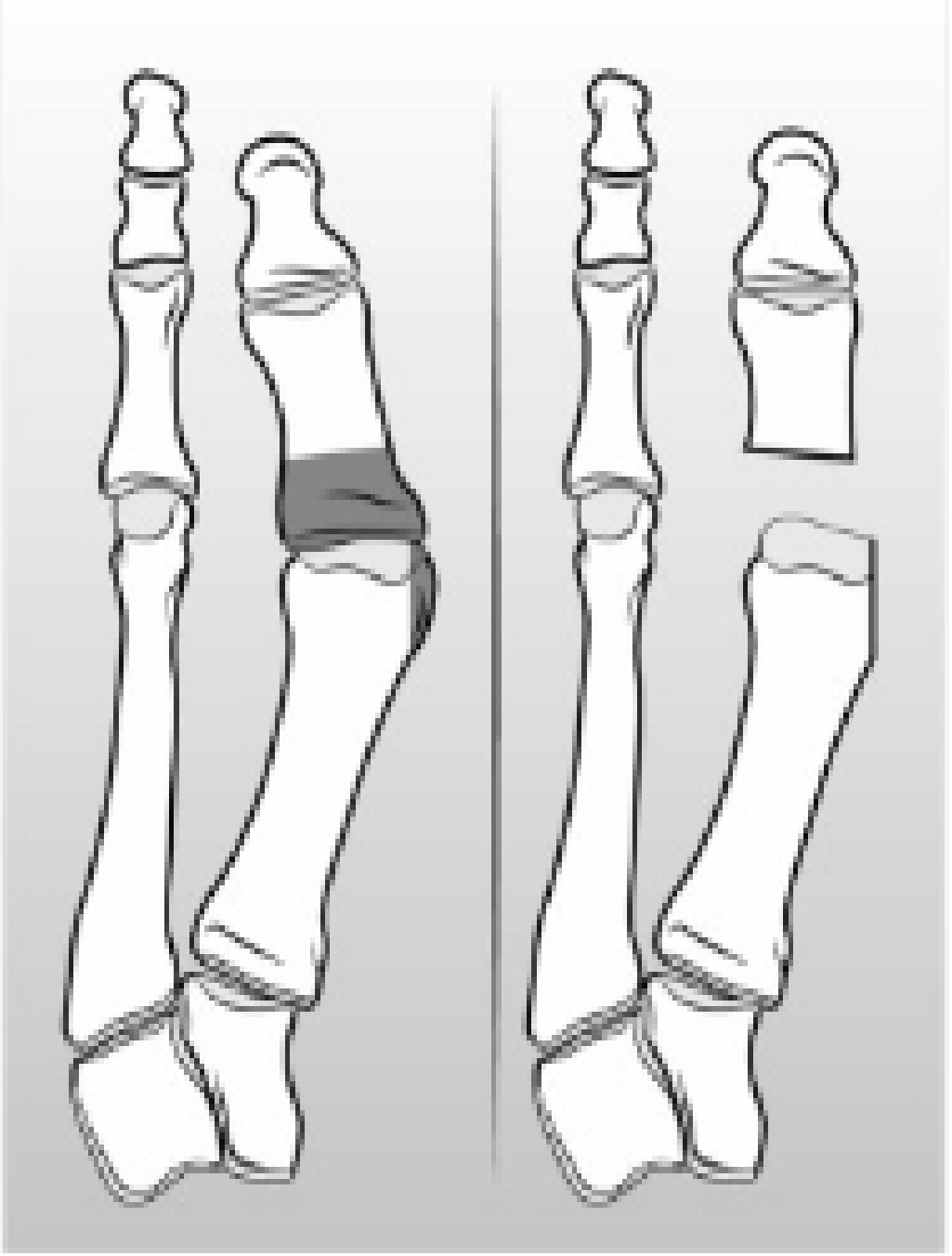
    (EQ-5D) – 0 – 1.0 (normal full health)

- **Results**
  - Both groups displayed improvement.
  - DMO – 84% satisfied
  - Cheilectomy - 70% Satisfied
  - Lower % DMO reported dissatisfaction vs Cheilectomy
  - Plantar problems: 3% DMO

    8% Cheilectomy

Joint destructive procedures

- Excisional Arthroplasty
- Implant arthroplasty
- Fusion / Arthrodesis

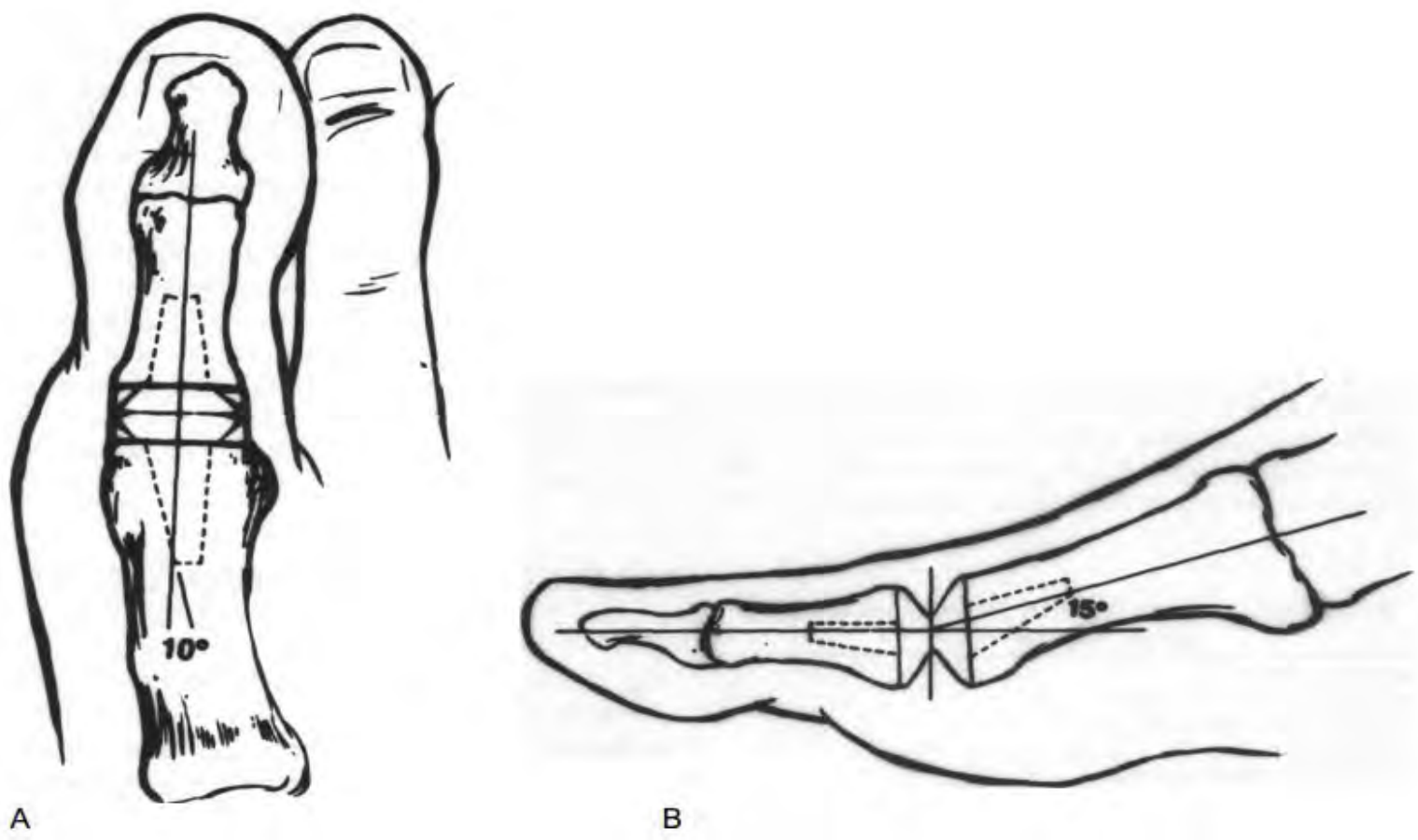


Excisional arthroplasty - Kellers

- Procedure quick
- Limited trauma
- Early recovery
- Elderly/low activity levels

E Artioli, A Mazzotti et al June 2022 Foot and Ankle Surgery

Hallux Limitus – 1st MTPJ implant arthroplasty



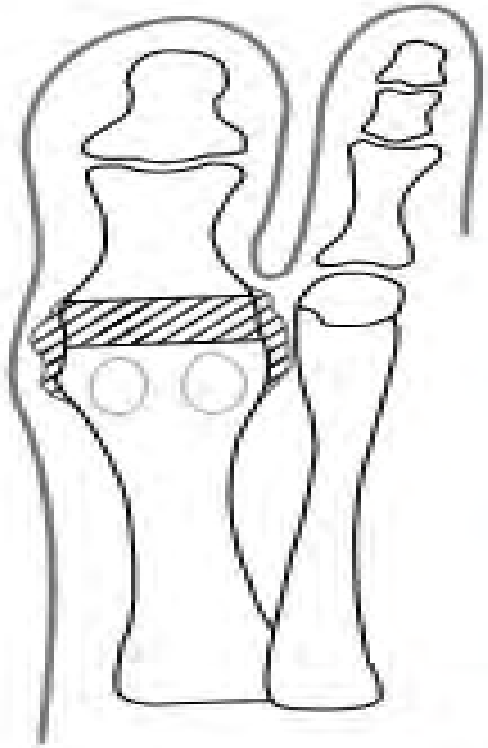
Silastic implant

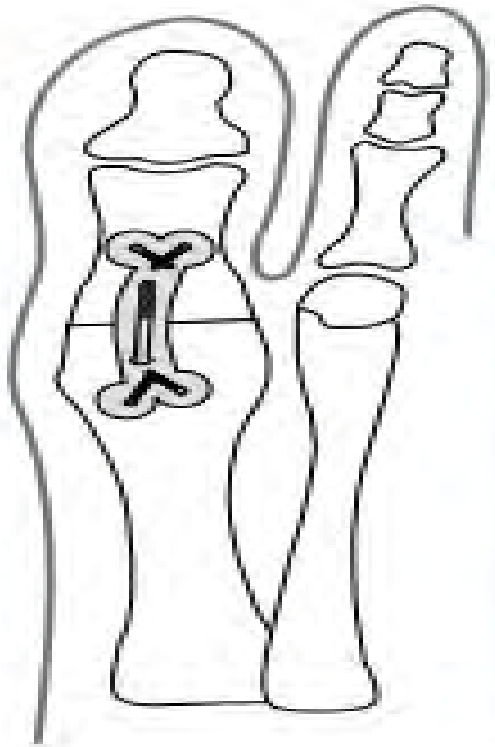
- 78 female
- **C/O -** Bones in big toes not very flexible and swollen both L>R
- History of falls due to pain and instability
- Mx - Hoka, orthotics, CSI
- Surgical plan: Regional ankle block – 1st MTPJ silastic implant.
- 10 weeks post op: Pt reports "surgery has been a miracle" - all joint pain resolved

Implant

- Hallux Limitus Stage 1 – 2
  - Synthetic cartilage implant
  - Ream out central area of met head
  - Acts as buffer
  - Principal proximal phalanx can glide on this buffer
  - Depression of implant not uncommon.

Hallux Limitus - Arthrodesis
1st MTPJ fusion



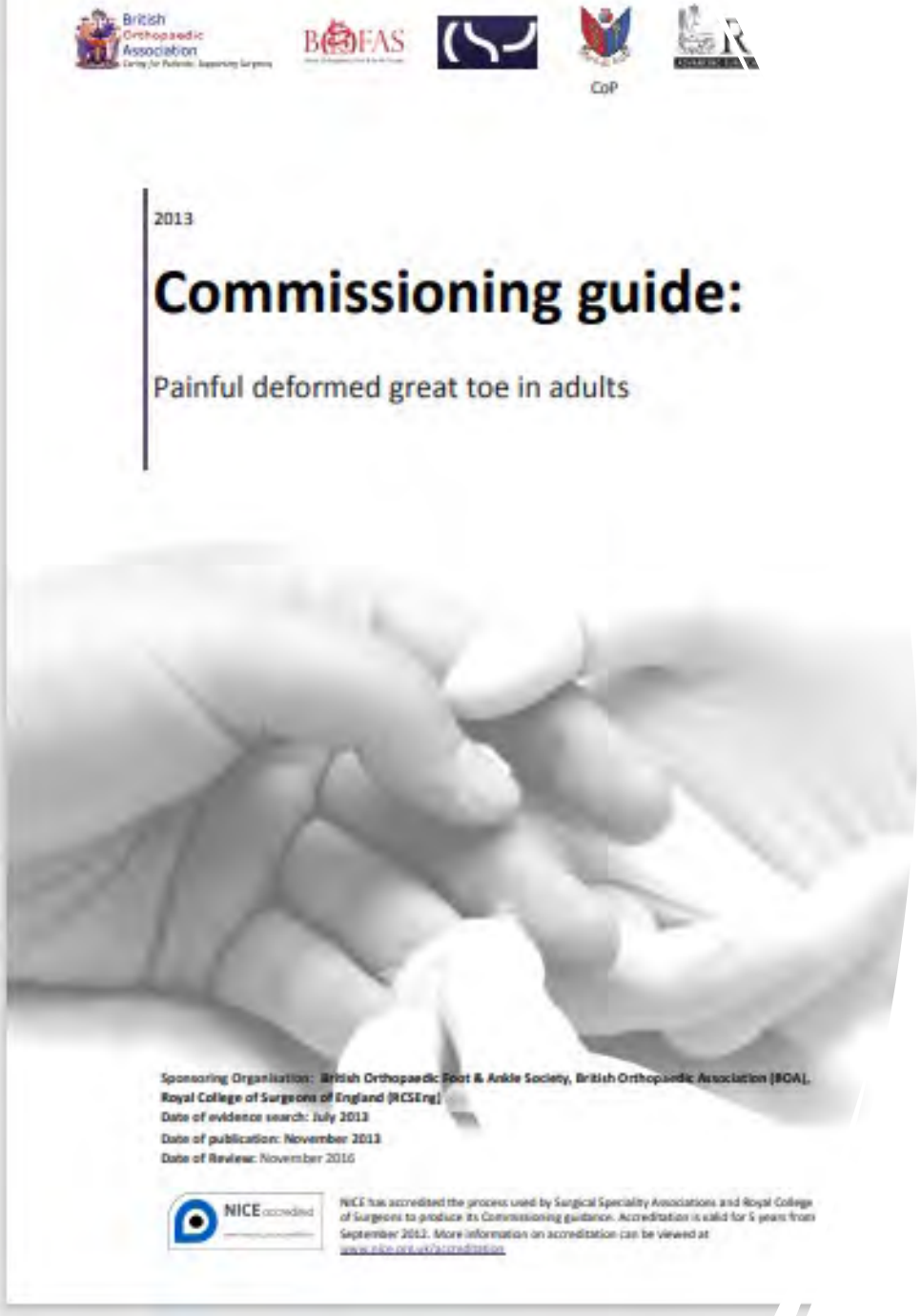


Hallux limitus -
Stage 2 57 female

Fusion

- Fixation to form stable construct
- Many formats utilized
- Bone healing across fusion site
- Off weight foot ~ 6 weeks

Male 37



Commissioning guide

- Be familiar with this document
- Use to help local services development
- Link in with any local Podiatric Surgeons NHS or private sector.
- More informed and stronger together.

Take home.....

- Recurrent pain
- Failed conservative management
- Imaging options
- Refer for 2nd opinion
- Thank you ☺
- Any questions
- Email – ian.beech@nhs.net