Hallux Rigidus & Silastic Total Implants

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Definitions

- Hallux Limitus – 1st MTPJ range of motion less than 65 degrees in the sagittal plane.
- Hallux Rigidus - Absent motion of the 1st MTPJ

*Normal gait requires 65-75 degrees of dorsiflexion.*
Definitions

- Functional: Decreased 1st MTPJ motion when foot loaded or in functioning position.
  - Responds well to orthosis
- Structural: Decreased hallux motion while foot is loaded or unloaded.
Etiology

- Long 1st ray
- 1st Ray elevatus
- Hypermobile 1st ray
- DJD
- Septic arthritis

- Systemic arthridities
- Weak or absent peroneus longus
- Iatrogenic
- Trauma
- Neoplasms
Presentation

- Pain to joint with palpation & ROM
- Palpable exostosis
- 1\textsuperscript{st} ray elevatus
- Callus plantar IPJ
- Metatarsalgia
- Bursitis to 1\textsuperscript{st} MTPJ
Radiographic findings

- Flattening of 1st met head
- Dorsal exostosis
- Loose bodies
- Joint space narrowing
- 1st metatarsal elevatus
Conservative treatments

- NSAIDS
- Injections
- Physical therapy modalities
- Orthosis – Morton’s extension, 1st ray cut out
Surgical considerations

- Joint salvage
  - Reserved for limitus
  - Excision of ossicles/exostosis
- Joint destructive
Implants

- Interpositional implant
  - Resection arthroplasty with placement of spacer
- Total joint replacement
  - Total resurfacing and joint replacement
- Benefits
  - Immediate weight bearing usually allowed
  - Maintain some function
  - Typically less healing time
  - Room for other procedures in the future
Implant Indications/Goals

- **Indications**
  - Hallux Rigidus
  - Crepitus & pain with ROM
  - Revisional Surgery
  - Systemic arthridities
  - DJD
  - Osteochondral fractures

- **Goals**
  - Reduce pain
  - Gain/Restore motion
  - Correct deformity
  - Long term results
  - Maintain stability
Total Implants

- Hinged silastic
  - Maintains position, stability and motion
  - >30 years of successful clinical outcomes
  - May use grommets to prevent implant breakdown and erosion
Pre Op Considerations

- Patient awareness!!
  - May break down and need replaced or require fusion
  - May have a dull pain
  - May not gain much motion
- Does the patient have adequate bone stock?
- Normal alignment of 1st ray (sagittal and frontal planes)
- Length of lesser metatarsals
Complications

- Infection
- Lack of hallux purchase
- Painful/limited ROM
- Fracture of metatarsal &/or phalanx
- Loosening of prosthesis
- Metatarsalgia
- Stress fractures lesser metatarsals
- Interference of sesamoid position and gliding
Complications

- Foreign body reaction
- Osteolysis
- Implant destruction
- Ectopic bone formation
- Chronic edema
- Subchondral cysts
- Telescoping of bone
Complications

- Infection
  - Normally $10^5$ whereas with an implant it is $10^2$
  - Reported infection rates from 1-2%
  - Do not let pain and inflammation fool you.

- Implant destruction
  - Fatigue fracturing – implant fractures due to fatigue
  - Breakdown caused by cutting or modifying implant.

- Subchondral cyst formation
  - 75% of all patients
  - Only problematic if fracture or collapse
Complications

- Reactive synovitis and metallosis
  - **Dendritic synovitis!!!**
  - Giant cell & inflammatory reaction to silicone.
  - Microfragments formed through abrasion of bone on implant
  - Often require implant removal

- Ectopic bone formation
  - Bony proliferation around implant
  - Cause limited & painful ROM
Pearls

- Minimal incision for reduced adhesions and scarring dorsally
- Use of rotary burr to prepare medullary canal
- Remove a small plantar wedge from metatarsal head
- Do not touch the implant with your hands
- Do not cut or compromise the implant
- Begin immediate weight bearing and ROM exercises
- Resect as little bone as possible
References


