SUBTALAR ARTHROEREISIS IS A USEFUL ADJUNCT IN SURGICAL RECONSTRUCTION OF ADULT FLEXIBLE FLAT FEET

A SINGAPOREAN EXPERIENCE

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Subtalar Arthroereisis is a useful adjunct in Surgical Reconstruction of the Adult Flexible Flat Foot

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My disclosure is in the Final AOFAS Program Book. I have no potential conflicts with this presentation.
Arthroereisis

Arthro – ‘joint’  e-reisis – ‘prop up’

• Commonly described and utilised in the paediatric population

• Only infrequently used in the adult population

• Inserted into the sinus tarsi and is postulated to limit excessive subtalar eversion with associated hindfoot valgus, talar ptosis and peritalar subluxation

• Reversible procedure
  – removal of implant not associated with reversal of foot structure
Objective

- To analyze functional and radiographic outcomes of adult patients who have had surgical reconstruction for a flexible flatfoot where a subtalar arthroereisis implant was used as an adjunct

- 14 patients underwent subtalar arthroereisis implant insertion. All 14 patients had an endoscopic gastrocnemius recession procedure, a medializing calcaneal osteotomy and a tibialis posterior advancement procedure performed. None of the patients underwent a joint-sacrificing medial column stabilization procedure

- Mean age - 53.5 years  Average follow up - 9 months

- Pre and post op clinical scores
  - American Orthopaedic Foot and Ankle Society Hindfoot score (AOFAS)
  - Short Form (SF) -36 scores

- Radiological parameters
  1. Talar declination angle
  2. Talus-first metatarsal angle
  3. First metatarsal declination
  4. Abductovalgus
Radiographic evaluation

Talar declination

PRE OP: 41.1°
POST OP: 27.8°

First metatarsal declination

PRE OP: 13.0°
POST OP: 19.2°
Radiographic evaluation

Talus first metatarsal angle

Abductovalgus

PRE OP

POST OP
Adult acquired flat foot deformity

- Flat foot characterized by\textsuperscript{3,4}
  - Plantarflexion and medial rotation of talus
  - Calcaneal valgus
  - Medial longitudinal arch collapse
  - Posterior tendon dysfunction
    - Johnson and Strom (1989)
  - Abduction of forefoot on hindfoot

- Sinus tarsi devices aim to\textsuperscript{5}
  - Restricts progression of hindfoot valgus
  - Limits calcaneal eversion
  - Causes dorsiflexion and lateral rotation of talus
  - Improves peritalar subluxation
  - Improves forefoot abduction

### Stage 1 Surgical Options
- Synovectomy

### Stage 2A - Early Surgical Options
- Synovectomy
- Tendon Transfer
- Osteotomies
- Arthroereisis
- Adjunctive Procedures:
  - TAL
  - Gastroc recession

### Stage 2B - Late Surgical Options
- Same as Stage 2A
- Isolated Rearfoot Fusions
- Medial Column Fusion

### Stage 3 Surgical Options
- Same as Stage 2B
- Triple Arthrodesis

### Stage 4 Surgical Options
- Same as Stage 3
- Pantalar Arthrodesis
- Deltoid Repair
- Total Ankle Replacement
- Supramalleolar Osteotomy
## Results

- The mean preoperative AOFAS score
  - Pre-op 52.8
  - Post op 58.8 (p<0.01)

- Correction after surgery
  - Significant in 2 out of 4 SF-36 functional scores
    - Physical functioning (p <0.01)
    - Pain (p <0.001)
  - Significant in 3 out of the 4 radiographic parameters
    - Talar declination (p <0.05)
    - Abductovalgus (p <0.05)
    - Talus-first metatarsal (p <0.05)

- 1 subtalar arthroereisis implant had to be removed at the time of final follow up.

## Complications

- General
  - Sinus tarsi pain – most common
    - Needleman - 39%
    - Schon 30-40%
  - Malposition
  - Over/under correction (extent of implant insertion)
  - Wrong implant size

- Implant specific
  - Foreign body reaction
  - Implant loosening/loss of position
  - Implant fracture
Conclusion

• Compares favorably with other alternative procedures for flexible adult flat foot deformity correction due to
  – ease of technical execution
  – low complication profile

• Subtalar arthroereisis implant
  – Useful adjunct in adult flexible flat foot reconstruction
  – Favorable clinical and radiographic outcomes

Limitations of study

• Retrospective study
• Small sample size ( n= 14 )
• No comparison with other correction techniques has been made
References


