Overview

- **arthroereisis** = limitation of excessive joint motion
- **utility**
  - flexible pes planus non-responsive to conservative therapy
- **historical procedures**
  - **Chambers** (1st)
    - lift portion of calcaneus @ sinus tarsi → direct impact type
  - **Selakovich**
    - OBWO of sustentaculum tali w/tightening of spring ligament and TA/TP transfers
  - **Baker & Hill**
    - OBWO of posterior calcaneal facet
  - **LeLivre/Haraldsson**
    - proximal phalanx base inserted to sinus tarsi
  - **Subotnik**
    - silastic plug

Functional Classifications

- **self locking wedge**
  - **indications**
    - transverse plane (mid-tarsal joint) hypermobility
    - all ages
  - **function**
    - fills sinus tarsi → holds talus + calcaneus apart
  - **implants/procedures**
    - **Maxwell-Brancheau arthroeresis (MBA)**
      - titanium screw
      - can also be made out of orthobiologics and used as an internal “splint”
    - **LeLievre/Haraldsson**
      - proximal phalanx base bone block

- **direct impact**
  - **indications**
    - transverse plane (mid-tarsal joint) hypermobility
    - pediatric patients only (too weak to handle adult deformities)
  - **function**
    - blocks lateral process of talus from anterior motion
  - **implants/procedures**
    - **inclined subtalar arthroeresis – peg (inclined STA-peg)**
      - stem + inclined platform
    - **Sgiarto**
      - stem + mushroom
    - **Chambers**
      - allogenic bone graft block to lateral sinus tarsi

- **axis altering**
  - **indications**
    - frontal plane (calcaneus) hypermobility
    - elevate low STJ axis → reduce frontal plane motion (calcaneal eversion)
    - pediatric patients only
  - **function**
- Initially restricts motion + lifts talus
- Changes joint axis to one more vertical/perpendicular w/post. facet
- Implants
  - Subtalar arthroereisis – peg (STA-peg)
    - Stem + platform (axis altering)

**DIRECT IMPACT SUBTALAR ARTHROEREISIS**

**Biomechanics:**
- Closed chain pronation kinetics: Calcaneus everts, talus plantar flexes and addicts, tibia internally rotates and knee flexes.
- Prevents frontal plane deformity by preventing supinatory motion of the talus against the calcaneus. Thus preventing valgus angulation of the calcaneus and STJ.
- Peg/Implant applies counter force to lateral process of talus to prevent pronatory motion of the rearfoot.
- Also corrects transverse plane motion of the forefoot by maintaining locked midtarsal joint by preventing STJ pronatory motion completely.

**Indications:**
- When conservative treatment fails to correct pain and motion from flexible pes valgus deformity in both children and adults.
- Alternative to arthrodesis in adults with Stage 2 PTTD
- Transverse plane aspect to deformity

**Contraindications**
- Rigid Pes Valgus
- Congenital Vertical Talus
- Tarsal Coalition
- Neuromuscular abnormalities both spastic and flaccid
- Inability to lock midtarsal joint
- Rigid forefoot valgus/met adductus

**Hardware Utilized**
- Sgarlato Device
- Angulated STA-peg
- Angled insertion of a regular STA-peg implant (Flake Modification)

**Post-Op Course:**
- 3-4 Weeks protective weight bearing
- 4th week transition to regular shoe with custom orthotic device
- Full activity between 2-6 months (includes sports)

**Research:**
  - Significant results with correcting flexible valgus deformity in children radiologically in both frontal and transverse planes. Three pt’s with complications one not involving procedure.
- Not much in terms of literature. Complications appear to be benign but are not studied well. Only studies are this one and an unpublished article (Dickerson, et. al. Long Term Follow up of the Flake-Austin Arthroereisis (Modified Peg and Stem) submitted for publication JFAS).

**References**