Introduction
Most patients with a flat foot deformity have
1. A valgus heel
2. Forefoot varus on the hindfoot
3. Abduction or external rotation of the forefoot
Patients may have a combination of these deformities

Goals of Surgery
Resolve pain
Most pain associated with adult flat foot is secondary to lateral impingement overlord of the tibialis posterior tendon

Mechanical goals
To centralize force transfer in the ankle in the transverse plane to resolve lateral impingement and medial overload.

This requires correction of all three deformities
Heel valgus
Forefoot abduction
Forefoot varus

Anatomy
The medial column consists of:
First, second and third metatarsals
Medial, intermediate and lateral cuniforms
Navicular
Supporting plantar structures of the intervening joints
The navicular cuniform joint is a common area of collapse

Rationale
Current hindfoot procedures address heel valgus and forefoot abduction, but may accentuate the forefoot varus.

Residual forefoot varus will result in lateral loading of the foot potentially causing
Recurrence of deformity
Callus formation or overload on the lateral border of the foot / 5th ray
Failure of the foot as a lever arm

Indications for a medical column fusion
Forefoot varus on the hindfoot
Examination
Hold the heel in neutral and look at the ankle of the forefoot with respect to the tibia
If the forefoot varus is greater than 20 degrees then a medial cuniform osteotomy, a first TMT fusion or a navicular cuniform fusion can correct the deformity after the hindfoot has been addressed.

Navicular cuniform fusion vs. Cotton osteotomy or first TMT fusion

A Navicular cuniform fusion allows correction of the forefoot through the site of deformity
    Corrects all three medial metatarsals
    Has a higher risk of nonunion and is technically harder to do

A cotton osteotomy or first TMT fusion
    Corrects only the first metatarsal head
    Is technically easier to do
    Increases the chance of first metatarsal head overload

Procedure
Correct the hindfoot first by:
    Medializing calcaneal osteotomy, or
    Subtalar fusion, or
    Triple arthrodesis, or
    Lateral column lengthening
    And heel cord lengthening.

Navicular cuniform fusion
Dorsal approach
    Avoid the deep branch of the peroneal nerve and superficial branch of the peroneal nerve
    Identify the joint
    Debride cartilage of all three navicular cuniform joints
    Prepare for fusion

Hold forefoot in the corrected position and obtain temporary fixation using K wires
Bone graft the dorsal gap if necessary

Transfix with a dorsal plate or cross screws
Lag Screw fixation includes
    Navicular tuberosity to plantar medial cunform
    Navicula dorsally to the medial, intermediate and lateral cuniform
    The medial, intermediate and lateral cuniforms to the navicula
    The medial to intermediate cuniform

First or first second and third TMT fusions (if arthritis is present in all three) can be added to the above procedure if indicated.

Outcomes
Level IV: radiographic parameters improve after isolated medial column fusions. 15% of surgeons would consider this as part of their reconstruction. Medial column stabilization plus lateral column lengthening leads to more predictable results than either procedure in isolation.
References


10:31 – 10:36 am

Arthroereisis? How do you spell that and did you mean arthrodesis?

Flexible Asymmetric Adult Flatfoot: Role of the Arthroereisis Subtalar Implant

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I. What is happening to the subtalar joint in flatfoot?
   A. Lateral subluxation of calcaneus on talus
   B. Disassociation between talus and calcaneus

II. Definition: arthroereisis --> arthrorisis
   A. An operation for limiting motion in a joint in cases of undue mobility from paralysis, usually by means of a bone block.
   B. Synonym: arthroereisis.
   C. Origin: arthro-+ G. Ereisis, a propping up

III. Control subtalar joint alignment
   A. By fusion
      1. Grice
         a. Extra-articular subtalar fusion
      2. Haraldsson
         a. Extra-articular allograft wedges to restrict subtalar eversion