PES CAVUS

Etiology of Pes Cavus

1/ Two – thirds of patients with pes cavus have an underlying neuromuscular disorder. Of these approximately ½ or more have Charcot – Marie – Tooth (CMT) Disease (Hereditary Peripheral Motor-Sensory Neuropathy Types 1-7)

Neuromuscular Disorders Causing Pes Cavus

1. Neuropathies
   • Charcot - Marie - Tooth Disease
   • Other inherited neuropathies

2. Spinocerebellar degenerations

3. Congenital spinal cord lesions
   • Paralysis at birth
     Spinabifida - myelomeningocele
   • Growth related disorders
     Diastematomyelia
     Tethered cord

2/ The Non-neuromuscular Flexible Pes Cavus (NnFPC) is becoming a more frequently recognized clinical entity
Peek-a-boo heel in the case of a 32-year-old with a history of recurrent ankle sprains of the left ankle, pain under the first metatarsal head, and lateral overload symptoms exacerbated by physical activity. The peek-a-boo heel is notable on the AP of the left foot (A); the subtle asymmetry of the left heel alignment is also notable posteriorly (B).
Coleman block test is essential in assessing the flexibility of the hindfoot and determining the role that the forefoot deformity plays in creating the NnFPC deformity. (A) Viewing both hindfeet from behind, the hindfoot is in Varus and is visible, with the left side in more varus than the right. (B) When a block is placed along the lateral border of the left foot, it removes the influence of the plantarflexed first ray and allows the heel to assume a neutral or slight valgus position. Note the persistent varus of the uncorrected right hindfoot and how the medial malleolus on the left side becomes more visible as the hindfoot position is corrected.
The examiner is holding the hindfoot in a neutral position. Note the plantar flexion of the first ray, creating a valgus orientation of the forefoot. When the foot is placed on the floor, the plantar flexed ray forces the hindfoot into a varus position (Forefoot Driven Hindfoot Varus).
Non-neuromuscular Flexible Pes Cavus

**History**
- Timing of onset
- Chronicity and presentation (pain, instability, lateral over-load, weakness)
- Functional expectations
- Treatment history

**Heel Varus** ("peek-a-boo" sign)
- Assess for 1st Ray Plantarflexion

**Coleman Block Test**
- Clinical evaluation of subtalar motion

**Forefoot deformity**
- NnFRC

**Decreased Subtalar range of motion**

- 1st MT osteotomy
- PL → PB transfer
- Lateral ankle ligament reconstruction

**Assess arc of inversion and eversion**

- LCO
  - +/- PL → PB tendon transfer
  - +/- lateral ligament reconstruction

**Eversion**

- Consider other causes

- Subtalar arthritis
- Congenital
- Scarring from previous surgery
- Neurologic
- Ankle / subtalar arthritis
- Tarsal Coalition (fibrous talocalcaneal coalitions often missed)

**Manage 2nd conditions appropriately**
- Ankle impingement/osteoarthritis
- Ankle instability
- Talar OCD
- Metatarsal stress # / lateral column overload
- Peroneal tendonopathy
- Achilles/ gastrocnemius contracture
Traditionally surgical options have focused on extra-articular procedures such as calcaneal and metatarsal osteotomies +/- tendon transfers. Additional considerations of releasing tight medial structures such as the Talonavicular capsule, spring ligament and posterior tibial tendon +/- posterior tibial tendon to peroneus Brevis transfers will be discussed.