The clinical approach to the cavovarus foot

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The clinical approach to the cavovarus foot

Etiology

- neurological 2/3 (Charcot-Marie-Tooth)
- traumatic
- congenital
- idiopathic
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> forefoot-driven cavovarus deformity (CMT)

Abnormality of myelination

Intrinsics, TA, PB weakened, EHL, PL spared

Strong PL on the medial midfoot initializes deformity

Plantarflexion medial forefoot

Imbalance plantar-/dorsiflexion

TP induces a forefoot-driven hindfoot varus

Achilles tendon contributes to hindfoot varus

Hindfoot varus contractures set in later on

Claw toes (lumbricals not stabilizing MP, unopposed EDL)

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> Biomechanics (forefoot-driven cavovarus deformity)
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> Biomechanics (hindfoot-driven cavovarus deformity)

> 3D-CT models:

- varus and curved posterior calcaneal facet and internal rotation of subtalar joint
- motor imbalance before skeletal maturation may lead to substantial change in healthy bone morphology
- calcaneal inversion leads to inversion of lateral column and 1st ray elevation
- adaptive morphology: plantarflexion of the 1st ray, adduction of TN-joint (forefoot)

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Anatomy

- Inversion of calcaneus, talo-calcaneal angle narrowed
- Navicular superior to the cuboid
- Chopart joint remains locked during gait
- Hindfoot inversion and forefoot varus
- Less stress dissipation
- Metatarsalgia, stress fracture V, hindfoot instability

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Biomechanics (ankle joint pressure in pes cavovarus)

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> Presentation (anteromedial ankle arthritis)
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Presentation
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- **Radiographs**
  - narrow, almost parallel talo-calcaneal angle
  - medially concave talo-1st metatarsal angle
  - fractures of the fifth metatarsal
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> **Radiographs**
  - posterior position of fibula
  - increased navicular height
  - calcaneal pitch $> 30^\circ$
  - Hibbs angle $> 45^\circ$
  - increased Meary angle
  - “flat-topped” talus
  - open sinus tarsi
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- **Deformity**: pes cavovarus
- **Ankle arthritis**
  - yes
  - no
- **Reconstruction**
  - early
  - late
  - not mandatory
- **Outcome**
  - good
  - bad
  - ?
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Biochemical T2* MR quantification of ankle arthritis in pes cavovarus.

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**Conclusion**

- Association of pes cavovarus and ankle arthritis with or without hindfoot instability
- For good postoperative outcome early detection of cartilage wear crucial
- Understanding anatomy and biomechanics is the key to successful treatment
Thank you!

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