Adult acquired flat foot

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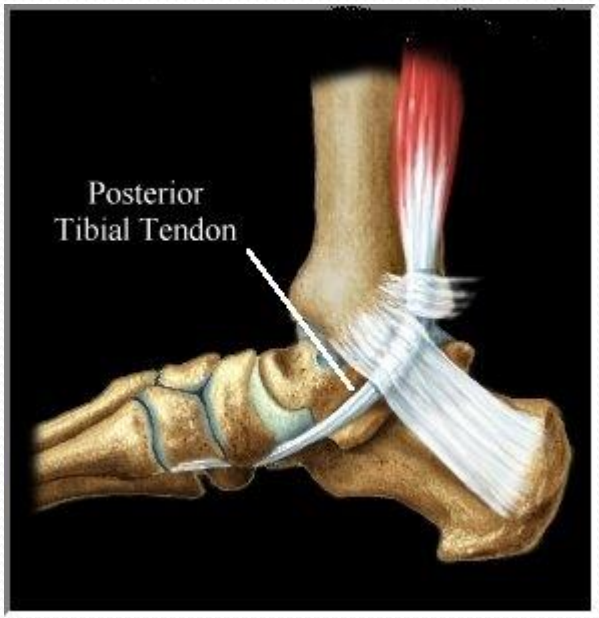
Introduction

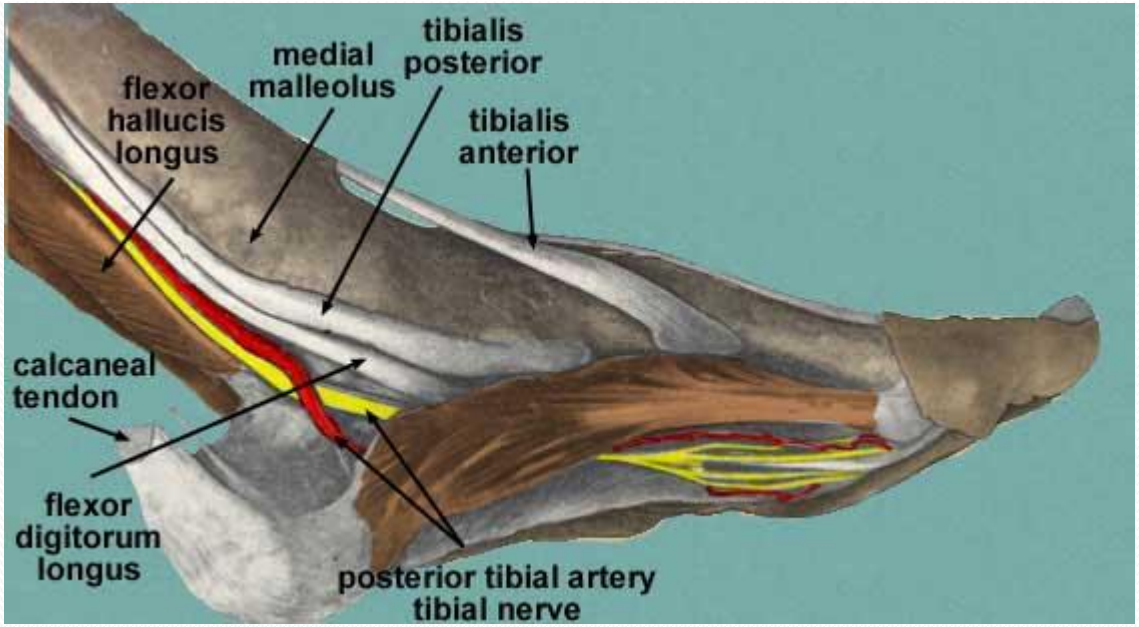
- Common condition which can get missed
- Initial reports of treatment published in 1953
- Since then no major advances were seen until 1979
- Since the advent of imaging, better understanding

Anatomy

- Extensive origin and insertion
- Runs at a sharp angle behind medial malleolus
- Encased within a sheath
- Relative hypo-vascularity distal to medial malleolus
- Functions as plantar flexor of ankle and invertor of the foot
- Elevates the medial arch and locks the midfoot

Anatomy


Posterior
Tibial Tendon


tibialis
posterior
medial
malleolus
flexor
hallucis
longus
tibialis
anterior
calcaneal
tendon
flexor
digitorum
longus
posterior tibial artery
tibial nerve

Pathology

- Poor area of vascularity leads to degenerartion
- Inflammation
- Poor excursion and hence thickening and stretching by 1 cm leads to severe malfunction

Aetiology

- Inflammatory causes
- Degenerative- over 55
- Traumatic- between 30-40

- Associated conditions- DM, HT, RA, patients on steroids, local injections etc..

History and Diagnosis

- Medial arch and ankle pain

- Swelling
- Loss of medial arch
- Pain on lateral side due to impingement
- Rapid shoe wear

Clinical findings

- Standing and sitting examination
- Flat foot
- Valgus position of the heel
- ‘too many toes’ sign
- Standing on tip toe sign- Johnson
- Strength of the tendon
- Stiffness of ankle, sub-talar joints
- Fixed deformities

Tip toe sign

- Ask patient to stand on tip toes
- Watch the heel varus in normal foot..

Imaging

- Plain standing x-rays- ankles with both feet
- Ultrasound- user dependent, cheap and quick
- MRI scan- very efficient in diagnosis and Conti developed a classification

Classification

- According to Johnson and Stromm

- Stage 1- tenosynovitis- normal length
- Stage 2- elongation, weak tendon and tearing leading to flatfoot however the deformity is flexible
- Stage 3- severe deformity, lateral pain and stiff hindfoot
- Stage 4- Pan talar and ankle fixed deformity

Treatment

- Depends on the stage
- Associated conditions to be addressed

- Always non- operative to start with..

Non- operative treatment

- Rest, NSAIDS, immobilisation
- Air cast boot
- Orthotics and medial arch supports

- Physiotherapy- deep soft tissue massage, cryotherapy

Surgical treatment

- Depends on the stage of the condition
- Stage 1- synovectomy, debridement of the tendon and repair
- Stage 2- calcaneal medial sliding osteotomy, FDL tendon transfer, lateral column lenghtening

Calcaneal osteotomy

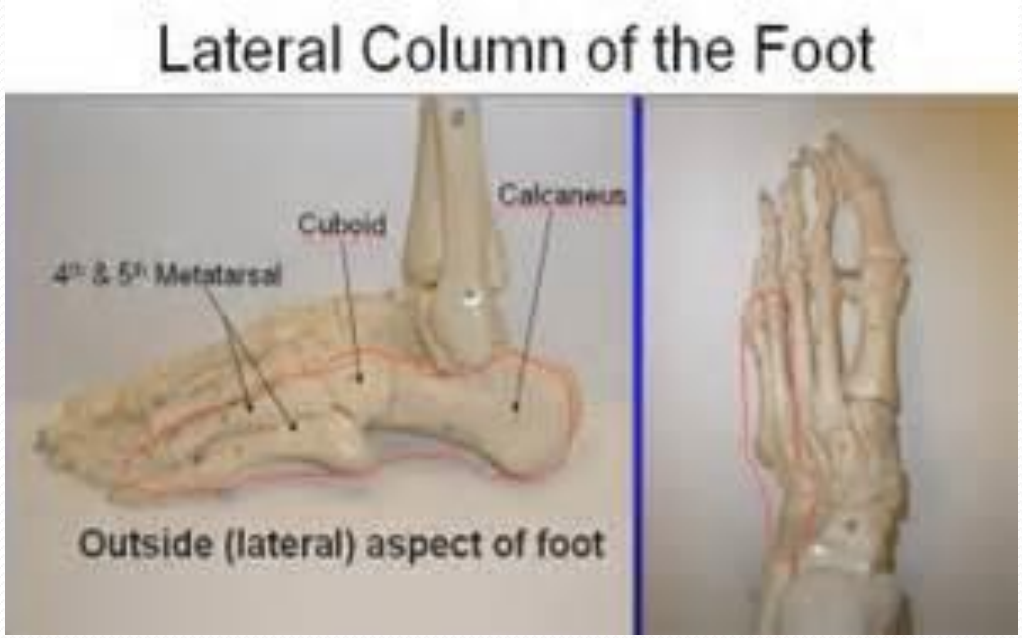
- Lateral incision
- Medial slide
- Redirection of forces
- TA pull becomes realigned in the direction of the hindfoot

Tendon transfers

- FDL- commonly used
- Split Tibialis anterior
- FHL

Lateral column lengthening

- In advanced deformity, lateral column is short
- Anterior calcaneal lenthening is done
- Distraction calcaneao-cuboid arthrodesis technique is advocated



Stage 3/4

- Sub-talar fusion
- Triple arthrodesis
- Ankle and sub-talar fusion

Outcome measures

- Generally the outcomes are better in early stages, particularly in stage 2
- The recovery time can be upto one year
- Any method of treatment usually has unto 80% success rates
- If left alone , arthritis is inevitable

Summary

- Common condition
- Easy diagnosis if you know the condition
- Early surgical intervention is much better than late surgery

- Post op gait analysis and functional outcome is much better

- Thank you for your attention…

Rajiv Limaye

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