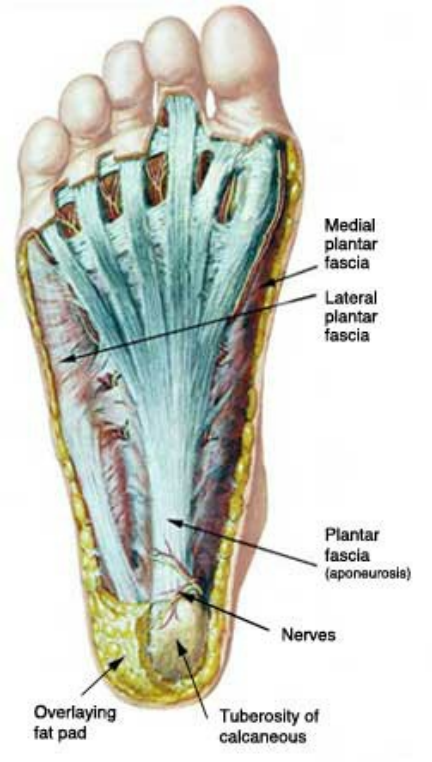
Plantar Fascia



- Deep fibrous band - stabiliser and protects neurovascular structures on the plantar aspect of the foot
- Plantar fasciitis = acute inflammation to chronic fibrotic degeneration
- Most commonly affected is the medial portion of the band - involves calcanael attachment
- From medial calcaneal tubercle to all five toes

Biomechanics

- Stabilises foot during gait - "windlass"
- Slack plantar fascia at heel strike during gait
allows foot to accomodate uneven surfaces
- Heel lifts up, forefoot dorsiflexes ready for toe off
- Plantar fascia "winds up" and around first MTP - pulls plantar fascia
- This mechanism shortens the distance between heel and forefoot so that the arch is raised thus creating stiffer lever for propulsion

Demographics

- Common in young runners and middle aged women
- Age >40yo
- Can be bilateral

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Causes

- Repetitive eccentric strain
- Pes planus (repetitive micro trauma at medial calcaneus)
- Pes cavus (immobility -joint dissipation)
- Tightness/weakness in gastroc soleus - increases tensile strain on plantar fascia by limiting dorsiflexion plantar fascia accommodates
- Tightness in hammies - prolonged forefoot loading
- Obesity/rapid weight gain
- Prolonged ambulation

Hx

- Sharp pain with first couple of steps in the morning
- Noted on push off phase
- Prolonged inactivity/activity (weight bearing)
- Walking upstairs, barefoot, sprinting, forefoot running aggravates
- Relief on lying down, taking the weight off

PE

- Tenderness at medial calcaneal tubercule
- Plantar fascia tightness
- +ve Windlass test
- Assess for other causes of foot pain (Sever's, retrocalcaneal bursitis, achilles tendinopathy, stress f#)
- Pain whilst walking on toes (stress f#/heel spurs relieves)
- ROM limited ankle dorsiflexion
- Assess for gastro soleus, hammies, posterior tibialis and FDB strength and hypertonicitiy
- Consider biomechanical stuff - LL inequality, pes cavus, hyperpronation, pes planus, shoes

DDx

- TTS
- Baxter's neuritis (compression of inferior calcaneal nerve - weakness of abductor digiti minimi, loss of fifth digit abduction, provoked by abducting and dorsiflexing forefoot))
- Bilateral PF - screen for inflammatory arthropathy
- Contusion
- Sever's disease
- Stress f#
- Periphereal neuropathy
- Fat pad syndrome
- Infection
- Neoplasm
- Inflammatory arthropathy

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DDx (cont)

- Neuropathic pain
- Paget's disease
- S1 radiculopathy
- Tendinopathy/tendinitis

Imaging

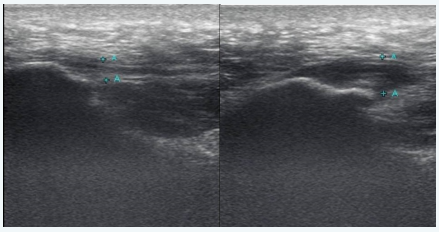

Image above shows US -
L normal PF
R thickening in PFitis
- MRI (Baxter's neuritis)
- US
- Bone scans to rule out stress f#
- Can be heel spurs (traction apophysitis - Wolf's Law) long standing tension (>6 months)

Management

- Moderate reoccurance rate after 10 years
- Manual therapy
- Stretching - gastro soleus, hammies, PF (figure 4 then fully dorsiflex great toe - hold for 10 seconds)
- Myofascial release
- Exercise - Gastro soleus, posterior tibialis, FHB (toe gripping with resistance band), Eccentric heel raises with great toe in passive dorsiflexion ,intrinsics (towel gripping)
- Orthotics (hyperpronators)
- Boot/Night splints (complete rest in lengthened state)
- Education and reassurance (limit activities that bring on pain)
- Increase pain free activity by 10% per week
- Runners - reduce stride length increasing cadence
- EMT of ankle
- STW of gastroc soleus
- CFS + IASTM at PF
- Mobilisation of PF (golf ball/frozen water bottle beneath PF)
- Shockwave therapy
- Refer for surgery/steroid if no better/risk of rupture

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