

Plantar Fasciitis

CLINICAL FEATURES:

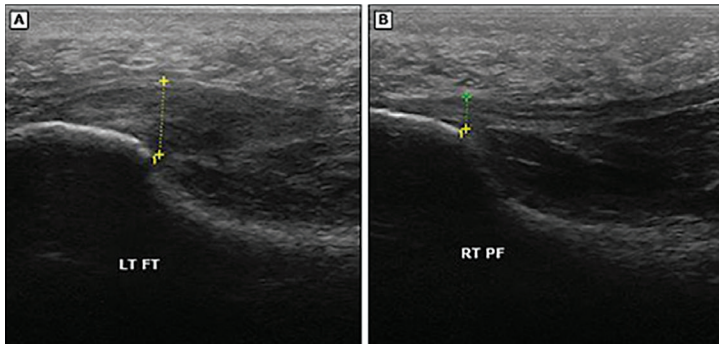
- Involves the origin of the plantar fascia at the medial tuberosity of the calcaneus
- Pain is most pronounced with the first steps, especially when barefoot or on hard surfaces
- Repeated microtrauma promotes angiogenesis—formation of abnormal, excessive small blood vessels
- This results in chronically increased blood flow, perpetuating local inflammation
- Chronic inflammation forms a web of fragile scar tissue that breaks down with each step
- Most common between 40-60 years affecting up to 10% of adults over 50

RISK FACTORS:

- Sudden increase in running distance or intensity
- Prolonged walking, standing, or running on hard surfaces
- Flat feet, high arches, or ankle pronation
- Tight Achilles tendon
- Tight hamstrings limiting knee extension, increasing forefoot load and plantar fascia stress

POSSIBLE IMAGING FINDINGS:

- **X-ray:** Heel spurs may be present, especially in chronic cases.
- **Ultrasound:** Thickened plantar fascia



Courtesy of Karl B. Fields, M.D.

Ultrasound shows the left plantar fascia (A, affected side) is twice as thick as the right (B, normal side)

DDx:

- Achilles tendinopathy or rupture
- Running-related injuries (e.g., calcaneal stress fracture, bone contusion)
- Diabetic foot/osteomyelitis
- L5 or S1 radiculopathy
- Peripheral neuropathy

NATURAL HX:

- ~50% of patients improve every 3 months, regardless of treatment
- ~80% experience complete pain resolution within 1 year

TREATMENT OPTIONS:

- **Activity modification:** Avoid running, jumping, dancing
- **Footwear:** Cushioned shoes or silicone inserts
- **Stretching:** Plantar/calf stretches, foot circles, toe curls, towel scrunches, heel raises with dorsiflexion
- **Taping:** Low-Dye taping—limited benefit, especially in chronic cases
- **Medications:** NSAIDs often ineffective; consider glucocorticoid injections for severe pain
- **Injections:** Botulinum toxin (low-certainty evidence)
- **Minimal or no benefit:** Night splints, casting, topical steroids
- **Adjuncts:** Electric dry needling, laser therapy, radiofrequency microtenotomy
- **Surgery:** ~2% undergo surgery; ~75% have a favorable outcome
- **Plantar Fasciitis Embolization:** Targets abnormal neovascularization by reducing excessive blood flow to normal levels

PLANTAR FASCIITIS EMBOLIZATION (PFE)

PFE is a minimally invasive procedure in which a microcatheter is advanced into the arterial supply of the plantar fascia. Embolic particles are then delivered to occlude abnormal neovessels, thereby reducing pathologic hyperemia and associated inflammation. The goal is to restore physiologic perfusion levels and alleviate chronic pain. In select cases, a repeat embolization may be necessary to achieve optimal symptom resolution.



Angiogram shows abnormal hyperemic blush ("puff of smoke") at the plantar fascia insertion



Post-embolization, hyperemia resolved; normal distal perfusion preserved



NORTH STAR
VASCULAR & INTERVENTIONAL

NorthStarIR.com
P: (952) 960-9399
F: (833) 450-5825



8401 Golden Valley Rd, Suite 340
Golden Valley, MN 55427