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Sport injury

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Calcaneal Spurs

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Calcaneal Spurs

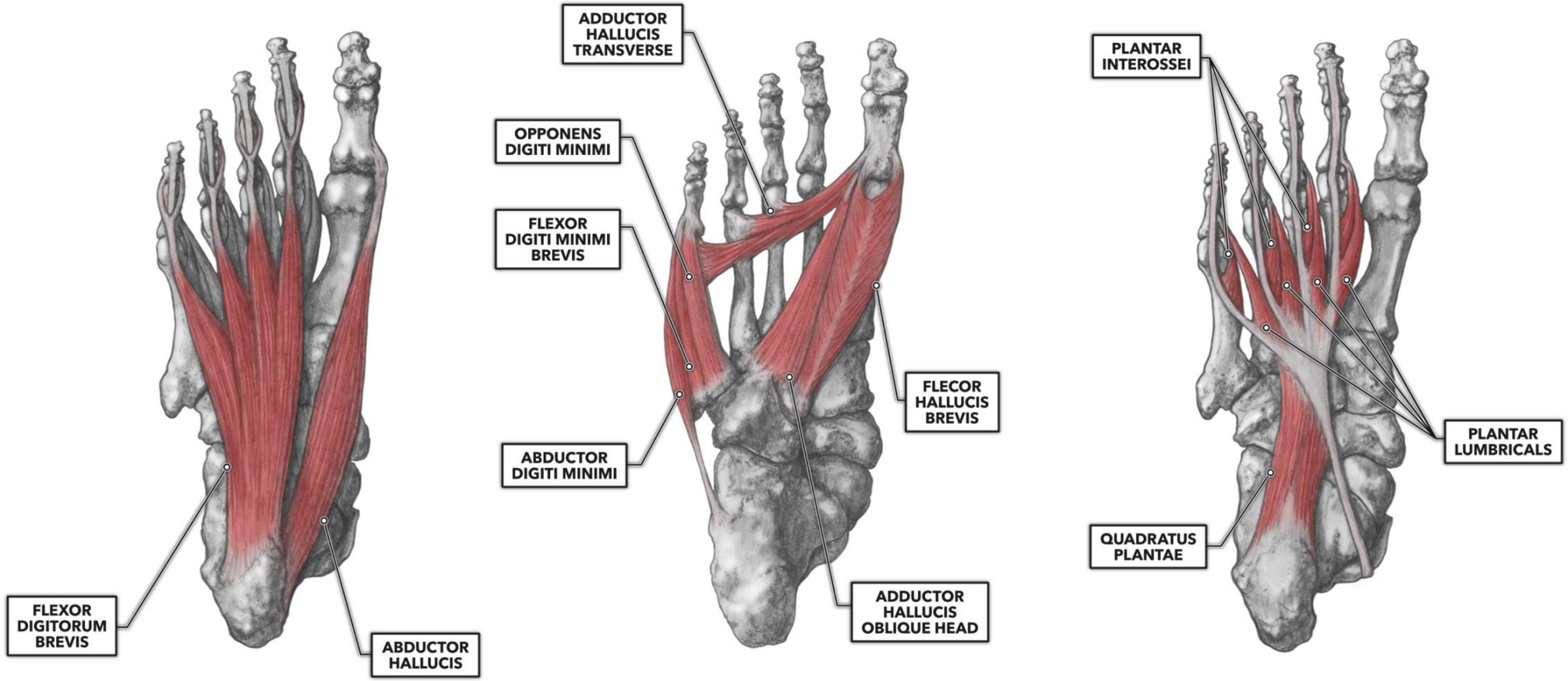
Definition:

- A calcaneal spur, or commonly known as a heel spur, occurs when a bony outgrowth forms on the heel bone.
- Calcaneal spurs can be located at the back of the heel (dorsal heel spur) or under the sole (plantar heel spur).
- The dorsal spurs are often associated with Achilles Tendinopathy, while spurs under the sole are associated with plantar fasciitis.

- The apex of the spur lies either within the origin of the planter fascia (on the medial tubercle of the calcaneus) or superior to it (in the origin of the flexor digitorum brevis muscle).
- The relationship between spur formation, the medial tubercle of the calcaneus and intrinsic heel musculature results in a constant pulling effect on the plantar fascia resulting in an inflammatory response.

Anatomy:

- There are numerous muscles (Soleus, gastrocnemius, plantaris, abductor digiti minimi, flexor digitorum brevis, extensor digitorum brevis, abductor hallucis, extensor hallucis brevis, quadratus plantae) and the plantar fascia which exert a traction force on the tuberosity and adjacent regions of the calcaneus, especially when excessive or abnormal pronation occurs.



PLANTAR VIEW

(UNDERSIDE OF FOOT)

- The origin of the spurs appears to be caused by repetitive trauma which produces micro tears in the plantar fascia near its attachment and the attempted repair leads to inflammation which is responsible for the production and the maintenance of the symptoms.

Epidemiology

- Heredity,
- metabolic disorders,
- tuberculosis,
- systemic inflammatory diseases and
- many other disorders have also been implicated.
- Current reasoning is that abnormal biomechanics (excessive or abnormal pronation) is the prime etiological factor for a painful plantar heel and inferior calcaneal spur.

- The spur is thought to be a result of the biomechanical fault and an incidental finding when associated with a painful plantar heel.
- The most common etiology is thought to be abnormal pronation which results in increased tension forces within the structures that attach in the region of the calcaneal tuberosity.

Clinical Presentation

- The painful heel is a relatively common foot problem, but calcaneal spurs are not considered as a primary cause of heel pain.
- A calcaneal spur is caused by long-term stress on the plantar fascia and foot muscles and may develop as a reaction to plantar fasciitis.
- The pain, mostly localised in the area of the medial process of the calcaneal tuberosity, is caused by pressure in the region of the plantar aponeurosis attachment to the calcaneal bone.

- The condition may exist without producing symptoms, or it may become very painful, even disabling.
- Most heel pain patients are middle-aged adults.
- Obesity may be considered a risk factor.
- Not all heel spurs cause symptoms and are often painless, but when they do cause symptoms people often experience more pain during weight-bearing activities, in the morning or after a period of rest.
- The pain, however, is not as a result of mechanical pressure on the spur, but from the inflammatory response.

- There are 2 types of calcaneal spurs;
- Type A spurs are superior to the plantar fascia insertion
- Type B spurs extend forward from the plantar fascia insertion distally within the plantar fascia.

The mean spur length for type A is significantly longer statistically than the mean spur length for type B, although patients with type B spurs reported more severe clinical pain.

Spurs can be classified into 3 distinct types:

- • There are those which are large in size, but which are asymptomatic,
- • The 2nd type are large, but painful on weight-bearing,
- • This 3rd type has only a tiny amount of proliferation and its outline is irregular and jagged,

Musculoskeletal Causes

- Peroneal tendonitis: (inflammation of one or both peroneal tendons)
  - MRI scan or ultrasound investigation
- Haglund's deformity (with or without bursitis): symptomatic osseous posterior-superior prominence of the calcaneus
  - Radiographs or Sonography of foot in maximal dorsiflexion
- Sever's disease (calcaneal apophysitis): inflammation of the calcaneal apophysis due to overloading
  - Clinical , Ultrasound investigations

Diagnostic Procedures

- A diagnosis is based on the patient's history and on the results of the physical examination.
- Diagnosis is usually confirmed by X-ray, but other diagnostic adjuncts are also used.
- Radiology may show calcaneal spur formation or calcification at either the insertion of the Achilles tendon or the origin of the plantar fascia.
- Rarely is an MRI required.

Examination

- There are different aspects that need to be taken into consideration when performing the clinical examination.
- Is range of motion limited in the ankle and foot, especially passive dorsiflexion of the toes?
- Palpation of the proximal plantar fascia attachment at the heel. The presence of a calcaneal spur, any tenderness (site/severity) or deformities can be felt (in combination with the dorsiflexion)
- Is there any atrophy of the heel pad in comparison with the other foot in combination with reduced muscle strength?
- Is there any swelling?
- Sensation
- Presence of hypesthesias/dysthesias of the tibial nerve? Tinel's sign
- Are there any skin tears on the foot?
- Any difference in foot alignment in comparison with the other foot?
- Aggravation on weight-bearing?
- Evaluation of gait

Management

- If a certain tier reduces symptoms, treatment should continue.
- If no improvement is reported, then treatment moves to a higher tier.
- Recommended treatment timeline before moving up a tier if no improvement in symptoms:
- • Tier 1: 6 weeks
- • Tier 2: 6 months
- • Tier 3: 6 months

Medical Management

Tier I

- •Non steroidal anti inflammatory drugs (NSAID)

❖ Grade I recommendation

- Cortisone injections

❖ Grade B recommendation

Tier II

•Repeat cortisone injections

❖ Grade B recommendation

❖ Botulinum toxin

❖ Grade I

❖ recommendation

Tier III

•Endoscopic plantar fasciotomy

•In-step fasciotomy

•Minimal invasive surgical technique

- All grade B recommendations

Conservative Management

Tier I

- Padding and strapping of the foot
- Therapeutic orthodic insoles for short-term pain relief
  - Achilles and plantar fascia stretching
  - Grade B recommendation
- Night splints
  - Grade B recommendation
- Cast or boot immobilization
  - Grade C recommendation

Tier III

- ESWT (Extracorporal Shock Wave Therapy)
  - Grade B recommendation
- Bipolar radiofrequency (microtenotomy) Grade C recommendation

Orthotics:

1. Night Splints
2. Heel Inserts
3. Footwear Modification :

- Footlogics
- Insoles