

## **HEEL PAIN**

### **Differential diagnosis**

1. Insertional Plantar fasciitis
2. Enthesis
3. Heel pad atrophy
4. Tarsal tunnel syndrome
5. Calcaneal stress fracture
6. Haglund's syndrome
7. Posterior ankle impingement syndrome
8. Posterior subtalar or ankle arthritis
9. Os Trigonum
10. Sever's osteochondrosis
11. Insertional Achilles
  - Posterior tibial tendonitis
  - FHL tendonitis
  - Peroneal tendinopathy
12. Bursitis

## I PLANTAR FASCITIS [POLICEMAN HEEL]

### Aetiology

Unknown aetiology.

?Degeneration: in the plantar fascia

Entrapment theory: the first branch of the lateral plantar nerve to the abductor digiti minimi has been proposed.

### Relevant anatomy

Plantar fascia is attached to the antero-medial plantar aspect of the calcaneal tuberosity. It is inserted through several slips into the plantar plates of the MTPJ. This is the basis of the windlass mechanism of the plantar fascia as the toes are dorsiflexed, there is elevation of the longitudinal arch. [Hicks]

It is more common in individuals who spend the majority of their workday on their feet. It is also more common in people whose body-mass index is  $>30 \text{ kg/m}^2$

### Clinical

Most tender spot is the medial calcaneal tuberosity

Pain more first thing in the morning on barefoot weight bearing

No correlation between heel pain and calcaneal spurs [may be present in 50%]

### Non-operative

Soft cushion and insole

Stretching of Achilles tendon is very effective

Physiotherapy: ultrasound may work

NSAID; Corticosteroid injections ;Shock wave therapy not useful

Recalcitrant cases: Walking cast

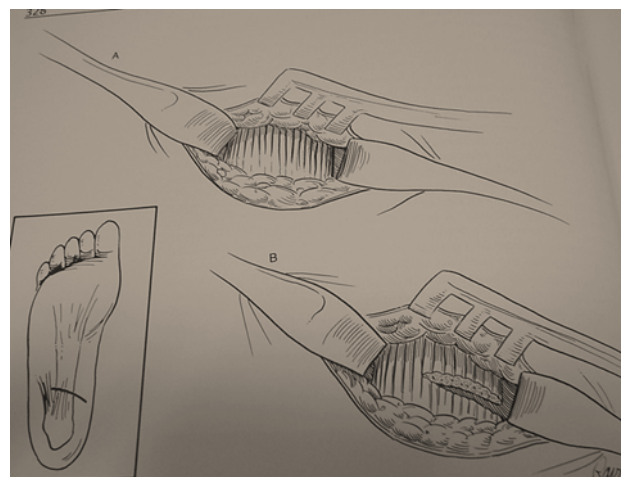
### Surgery

Reserved for patient who has failed conservative treatment for a period of one year.

Oblique incision is important to avoid transection of the medial calcaneal nerve branches.

The medial and lateral borders of the proximal plantar fascia are then identified 1-2 cm distal to its origin from the calcaneus

The medial 2/3 of the plantar fascia is then cut sharply taking care not to violate the intimately underlying intrinsic musculature. Lateral one third of the plantar fascia is left intact to prevent soft tissue flatfoot deformity.



## Complications

### II HAGLUND'S DISEASE [Winter heel ; Pump bump]

Prominent posterior superior border that compressed the Achilles tendon and causing bursitis.

## X ray

Pavlov' line

## Treatment

### Non-operative

Physio, anti-inflammatory drugs, shoe changes.

### Operation

A lateral incision 1cm anterior to Achilles tendon

Protect the sural nerve

Demonstrate posterosuperior corner of the calcaneus

Excision the bone taking care not to damage Achilles tendon

Open the tendon sheath and look for any tendinoses

In the presence of tendinoses, make multiple tendon incision

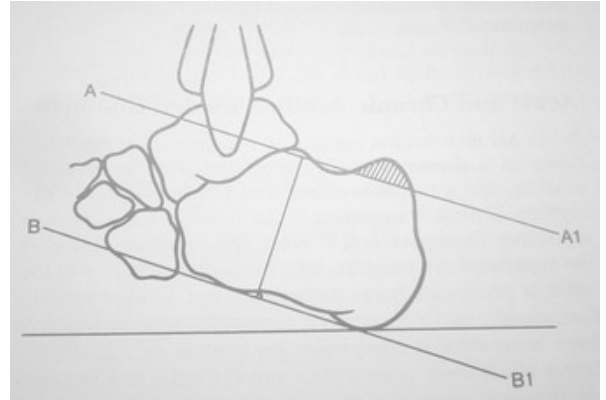
If any problem with the tendon stability: immobilize in a cast

### Outcome

65- 89% improvement.

**Disadvantages** Skin problem

Sural nerve damage.



### III INSERTIONAL TENDINITIS

May be associated with Haglund deformity

#### Diagnosis

No History or trauma; Insidious in onset

Pain on wearing shoes

#### Clinical

Tenderness just anterior to the insertion of the tendo calcaneus.

#### Treatment

Prolonged conservative treatment is necessary. Simple measures include a heel lift placed in the shoe, NSAID, comprehensive stretching exercises for the calf, ice applied to the region daily, and a protective silicone pad to allow the patient to wear closed-backed shoes.

#### Surgical

Make a longitudinal incision 1 cm lateral to the Achilles  
4 cm proximal and 2 cm distal to superior tuberosity

Incise the paratenon in the area and plantar flex the ankle.  
Retract the tendon: expose the bursa and bone prominence.  
Remove the bursar and bony prominence with osteotome.  
Vertical incision on the tendon and excise any diseased  
segment



When MRI involvement: More than 50% of tendon, Excise tendon and transfer is required.  
FHL tendon is used.

## IV TARSAL TUNNEL SYNDROME

Tarsal tunnel syndrome involves inflammation of the tibial nerve or any of its terminal branches (medial plantar, lateral plantar, calcaneal) and

### It may result from a space-occupying lesion

Ganglion,  
Venous plexus,  
Lipoma,  
Nneurilemoma,  
Exostoses

### Clinical

It has a highly variable presentation

Provocative tests such as percussion along the course of the nerve (Tinel's sign)

X ray, MRI, EMG

### Treatment

NSAID

Steroid injection

MRI +ve: Surgical release

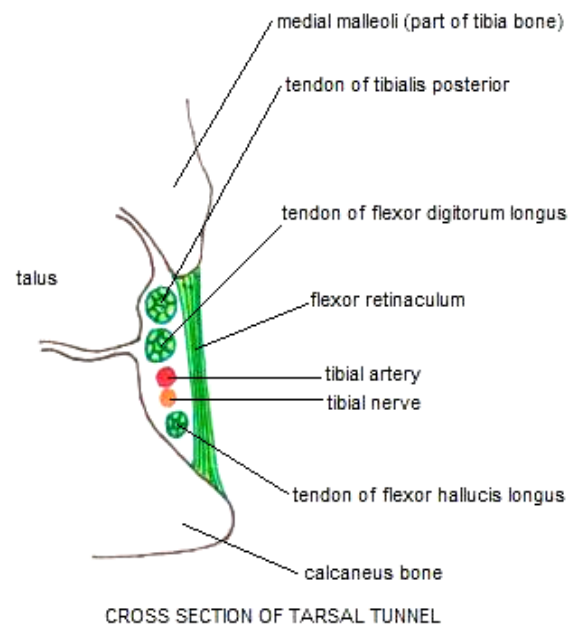
### Surgery

A curved incision starting, 10 cm proximal to the tip of the medial malleolus.

Divide the flexor retinaculum (laciniated ligament).

Open the retinaculum from proximal to distal.

Trace the medial plantar nerve distally to where it enters into a fibrous tunnel



## **V REITERS [LOVER'S HEEL]**

Is a reactive process that is initiated by a genital or Gastro-intestinal infection.

### **Classic presentation**

Urethritis

conjunctivitis

oligoarticular arthritis

Keratoderma blennorrhagica, Hyperkeratosis of the Nail, Balanitis circinata

### **Clinical**

Young man; abrupt onset; asymmetric swelling and pain in weight bearing joints

60% with chronic disease have sacroilitis

Recalcitrant pain in the heel: X rays may show enthesitis or normal

### **Investigations**

80% HLA-B27 positive

Urethral culture. Chlamydia trachomatis is often clinically silent.

### **Treatment**

Physio

NSAIDs

Rheumatology opinion

## **VI PLANTAR WART**

Painful lesion in the skin on the weight bearing area

Papillomavirus

Shaving the lesion : punctate bleeding from the base

Treatment

Soft cushion or pads

Salicylic acid [keratolytic agent]

Surgical treatment: last resort



## VII TARSAL COALITION

### Clinical

Pain is usually medial side in case of talo-calcaneal coalition [TCC] and in the sinus tarsi with Calcaneo-navicular coalition [CNC]

Classical deformity is Valgus heel. In a large series: 22% had typical valgus deformity; 70% Neutral position; 10% varus deformity.

Limitation of subtalar and midtarsal movement with pain and spasm in the peroneus is classical

There may be disuse atrophy of the calf .

Spasm of the Peroneal muscle may be apparent.

### X ray

AP, Lateral, 45° medial oblique, Harris Beath view

X ray: May demonstrate coalition

Ball socket ankle joint

Beaking: Head and neck of talus

Apparent narrowing of Talo-Calcaneal joint (Posterior)

Elongation of the anterior calcaneal Process (TNC)

[Ant eater nose sign]



**CT** Coronal CT with hips and knees in 20° flexion. Gold standard

**Bone scan:** used as screening when symptoms are equivocal

**MRI** more sensitive than CT for fibrous or cartilagenous but it's role is yet to be defined

**Natural course** untreated cases: 50% of CNC and 20% of TCC are asymptomatic



## **Treatment**

**Non-operative:** One third may respond

1. Shoe modification
2. Cast immobilizing 6 wks
3. Activity modification
4. NSAID's

## **Operative treatment**

Informed consent: May need arthrodesis later

1. 10-14 years **Calaneo-navicular bar: Excise**

### **Talo-calcaneal bar**

Excise or Triple arthrodesis

2. Over 14 year

Triple arthrodesis

## **Prognosis**

25% recurrence

Persistence of symptoms

If degenerative joint , arthrodesis is indicated.

