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Heel Pain: Lecture 1

General

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Outline

1. Introduction to heel pain
2. Anatomy of the heel
3. Aetiology of the heel
4. Diagnosis of heel pain
5. Treatment of heel pain

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1. Introduction

Heel pain is one of the most common foot complaints

Plantar fasciitis (PF) is one of the most common causes of heel pain

Can have a significant impact of quality of life & public health resources

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Prevalence - anecdote

1 in 10 people will develop heel pain at some stage (Crawford & Thomson, 2003)

15% of all podiatric adult consultations (McCarthy & Gorecki, 1979)

15% of all orthosis prescriptions are for heel pain (Bergmann, 1990)

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2. Anatomy - tendons

From Berquist, 1989

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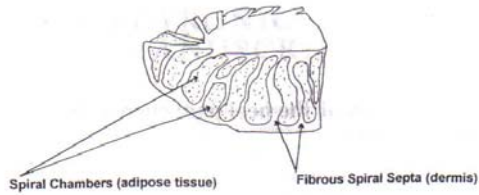
Anatomy - bursa

FIG. 8-16. Diagrammatic view of the retrocalcaneal and retro-Achilles bursae. (From Berquist et al., ref. 11a, with permission.)

From Berquist, 1989

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Heel pad - anatomy



From Rome, 1998

Heel pad under load

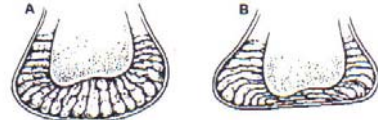
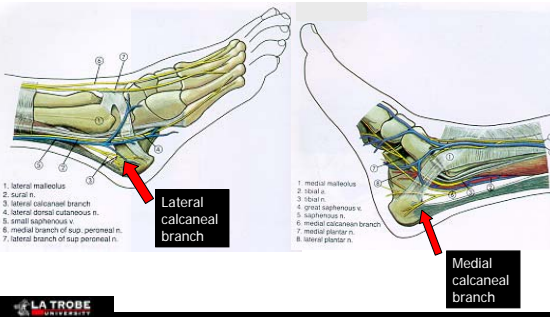


Fig. 4. Diagrammatic illustration of coronal sections of a normal heel pad. A, Nonweightbearing; B, weightbearing. See Figure 3 for biomechanical interpretation.

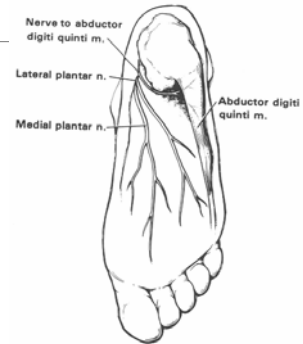
From Jahss et al, 1992

Anatomy - nerves



Lateral calcaneal branch

Medial calcaneal branch



From Baxter et al, 1989

Anatomy - plantar fascia



From Draves, 1986

3. Aetiology of heel pain

- Mechanical
- Neurological
- Rheumatological
- Traumatic
- Infection
- Metabolic (e.g. diabetes)
- Neoplastic

Over 30 different causes have been reported

Common general causes of heel pain

Mechanical

–Primarily plantar fasciitis

Neurological

–Primarily nerve entrapment

Rheumatological

–Primarily seronegative arthritides

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Mechanical

Plantar fasciitis/fasciopathy

Heel spur syndrome

Inferior calcaneal bursitis

Heel bruise

Stress fracture

Fat pad pathology

Chronic compartment syndrome

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Neurological

Entrapment (i.e. local impingement)

Radiculopathy (referred from spine, S1)

Adverse (excessive) neural tension

Painful neuropathy

Complex Regional Pain Syndrome (CRPS)

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Rheumatological

Seronegative arthritides

•Ankylosing spondylitis

•Reiters Disease

•Psoriatic arthritis

Gout

Sarcoidosis

Pagets disease

Acromegaly

Rheumatoid arthritis

Osteoporosis

DISH

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Common causes of heel pain

(i) Plantar fasciitis

(ii) Fat pad pathology

(iii) Nerve entrapment

(iv) Calcaneal stress fracture (in military and athletes)

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(i) Plantar fasciitis/fasciopathy

To be covered in the next lecture (i.e. 'Heel pain 2')

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(ii) Fat pad pathology

Atrophy or herniation/distortion

- Leads to reduced shock absorption

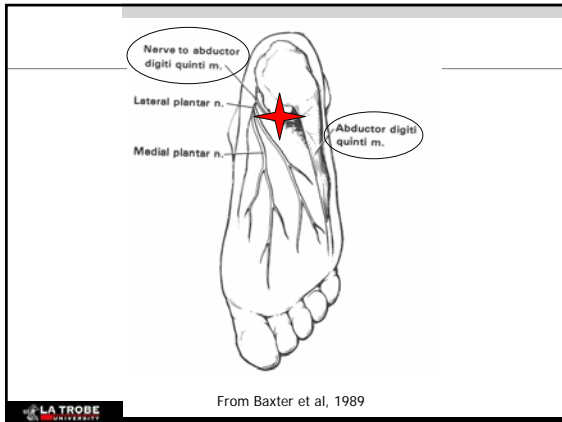
Pain generally directly under plantar calcaneus

- Patient c/o symptoms associated with periostitis, bone bruise

(iii) Nerve entrapments

2 main nerves

- Medial calcaneal nerve
- Nerve to abductor digiti quinti muscle*



(iv) Calcaneal stress fracture

Prevalent amongst the military, runners and jumpers

History of insidious pain aggravated by weight-bearing

Pain on side-to-side compression of the calcaneus

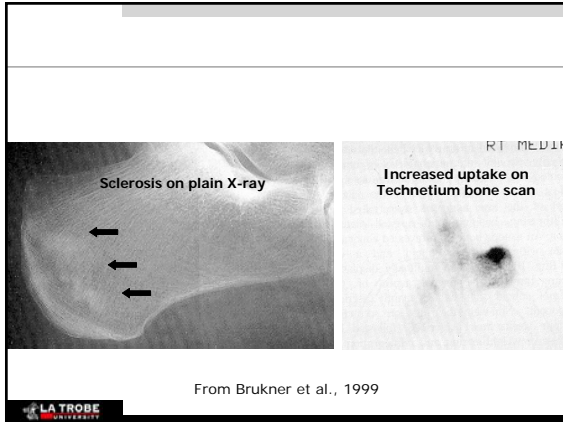
Squeeze test - heel



Calcaneal Stress Fracture

Diagnosed clinically by:

- History, squeeze test, possibly therapeutic ultrasound/tuning fork
- X-ray, bone scan



4. Diagnosis of heel pain

History*

Physical*

Imaging*

Blood tests

- For inflammatory arthritis

Nerve conduction studies

- For nerve pathology

History

Location of pain?

Nature of pain?

Duration of pain?

When does the pain occur?

Patient's age, physical make-up and activities?

History cont.

Correlate the location with what structures are in the area

Is the pain sharp or dull or burning?

Is the pain acute or chronic?

Does it occur after activity?

Could it relate to a person's weight or activity?

Physical examination

Palpation

Range of motion

Functional testing



Imaging

Plain film X-rays

- Generally the starting point

Bone scans

- demonstrates increased bone turnover

Ultrasonography

- For soft tissue problems

Computed Tomography (CT)

- For bone, advantage of slices through bone

Magnetic Resonance Imaging (MRI)

- Both soft tissue and bone

5. Treatment

Treat the underlying cause

- If mechanical, use the 'Tissue stress model'
- If systemic disease, treat the disease
- If neurological, reduce impingement

'Tissue stress model'

Reduce pain and inflammation

Reduce tissue stress

Restore muscle strength and flexibility

Cornwall & McPoil, 1999

Physical Therapy

Rest (relative rest)

Ice

Stretching and strengthening

Massage

Ultrasound

Low level laser

Pharmacotherapy

NSAIDs

- Gel or oral

LA injection

LA + corticosteroid injection



Mechanical treatment

Shoes

Taping

Foot orthoses

Night stretch splints

Immobilisation

- Cam-walker

Surgery

Generally a last resort

Depends on the pathology, e.g.:

- Decompression or neurolysis for nerve entrapment
- Removal of degenerated plantar fascia of heel spur for chronic plantar fasciopathy

Summary

Heel pain very common

Many different causes

- Most commonly plantar fasciitis/fasciopathy

Need to know your anatomy

Treatment depends on the condition