# PLANTAR FASCIITIS

## Introduction

**Plantar Fasciitis** – heel pain arising from the chronic tearing of the plantar fascia from the heel bone due to a drop in the arch or trauma.

## What is Planter Fasciitis caused by?

The function of the heel in walking is to absorb the shock of your foot striking the ground as it is put down and to start springing you forward on the next step. It contains a strong heel bone (os calcis). Under the heel bone are a number of pockets of fat in inelastic elastic linings much like a pocket sprung mattress. These are part of the shock absorbing capacity of the foot during walking. The heel pad absorbs shock during the heel strike phase of walking.

As you role onto the mid and then forefoot during walking further shock absorbing mechanisms are required. This is where the arch of the foot and its supports come into play. The heel bone is attached to the front of the foot by a fibrous inelastic sheet of tissue (plantar fascia). The plantar fascia attaches the heel bone to the toes and assists in the maintenance of the long arch of the foot. The many bones in the foot above the plantar fascia act like the keystones in the arch of a bridge. As we age and gain in weight the cartilage between these keystones weakens and thins allowing the arch of the foot to flatten with time. The process of flattening the arch also lengthens the foot. As the plantar fascia is of a fixed length it cannot lengthen as required by the changes in the arch so it gradually tears off the heel bone. The attempts by your body at repair of this chronic tear of the tissue from the bone produces the inflammation signalled by the pain and the heel spur that fills the gap behind the tissue that is lifted off the heel bone above the attachment of the plantar fascia.

**Figure 1. The plantar fascia maintains the long arch of the foot.**


**Figure 2. Red arrow pointing to the heel spur**

Causes of the tearing of the plantar fascia from the heel bone arise with a single injury like jumping from a ladder or from increased stress of cyclic loading include increased weight. Increased load can come from stiffness of the ankle or tightness of the Achilles tendon which indirectly increase the stresses on the heel. People who were born with a high-arched ("cavus") foot are more prone to plantar fasciitis as there is a greater tendency for the arch to drop with age. Other predisposing factors include:

- Running sports

- Overweight †
- Change in activity
- Achilles injury
- Change in footwear (over pronation)
- Increasing age

Patients with a rheumatic disease such as rheumatoid arthritis or ankylosing spondylitis may get inflammation anywhere a ligament is attached to bone (enthesopathy) so that plantar fasciitis is common in these patients.

It is a common condition approximately 1% of the population seek treatment from GP's annually. Doctors report that 2% to 10% of their patients have it for more than a year.

## How is it Diagnosed?

There is not usually a clear history of when the heel pain started. It is commonest in women (2 out of 3 sufferers are female). It is more common in middle age (90% are older than 30 years old) and it is more common in the left heel than the right heel (15% to 35% in both)[1]. It is often not very painful at first. It is often worse in the morning and settles during the day.

**Figure 3. Red spot indicating commonest site of the tear of the**

The Consultant Orthopaedic Surgeon who examines you will ask you to remove both shoes and roll up your trousers to your knees even though the condition may present in only one foot. This is to compare the affected with the normal foot. The diagnostic test is tenderness on pressing over the inside of the long arch of your foot at the heel. Other clinical signs will be looked for in the feet by your surgeon to exclude more complex conditions presenting with the same symptoms. Depending on the symptoms and signs you may be referred for an x-ray or a scan.

## How is it Treated?

Mild cases of plantar fasciitis eventually gets better itself, but this can take months or even years. If you have it once you are more likely to get it again. You can try to avoid the things that cause heel pain to recur like loosing weight. Depending on your occupation you can reduce the shock to your feet from walking by changing your foot wear to shoes with shock absorbing properties in the sole (http://www.drmartens.com).

If you have high-arched feet a moulded insole in your shoe is likely to reduce the stresses on your feet.

The three things that are important in a good shoe are:

1. A good heel cup
2. A medial arch support
3. the sole bends at the ball joint of you big toe not in the middle

**Figure 4. Prothotics semiflex insole from http://www.algeos.com**

If you have suffered persistent pain for more than 3 months then you should see a Consultant in Trauma and Orthopaedic surgery who will have been trained to manage this condition.

The Consultant will organise that you are weighed and your height measured to calculate your body mass index. You will be advised about weight loss and appropriate footwear. Around the house and garden the support should be worn as soon as you get up. Birkenstock shoes are particularly comfortable supports for some patients in these circumstances (http://www.birkenstock.co.uk).

If you have had an injury to your ankle or foot, exercise as soon as possible to regain the flexibility as soon as possible to reduce the stresses on your foot and your heel in particular. If you have a stiff ankle after injury or tight Achilles tendon you will be referred to a physiotherapist who can advise on exercises for to reduce the tightness. Stretching the Achilles tendon and plantar fascia is very effective general treatment for many patients. If the pain continues the physiotherapist may prescribe a splint to wear on your ankle at night to prevent your Achilles tendon tightening up while you are asleep. It is surprisingly effective at improving the pain first thing in the morning.

If you have a very high-arched foot the surgeon might send you to an orthotist for a custom made insole with medial arch support.

The surgeon should advise that simple pain-killers such as paracetamol or non-seroidal anti-inflammatory drugs will help reduce the pain. Ask advice from your doctor or pharmacist before taking anti-inflammatory medicines as they can cause side-effects or interact with other prescriptions.

Plantar fasciitis that is resistant to the simple measures may require the injection of local anaesthetics and cortisone into the inflamed tissue. This is very effective but will not be offered if you are a professional athlete active in sport as it removes the pain and therefore the body's protective response. Complete tearing of the fascia has been known to happen in athletes after cortisone.

Only if all non-surgical treatments fail would an operation be considered.

## Operative Treatment

Surgical treatment is reserved for those who have severe pain, persistent symptoms after medical treatment, or who are at risk of job loss. The aim is to release the plantar fascia at the base of the heel. It is a successful operation as judged by the fact that 93.6% of patients would recommend it to others[2].

## Before Surgery

Please make arrangements to be accompanied home by a responsible adult after surgery. Do not eat or drink anything after midnight the night before the procedure unless you are instructed otherwise. Wash your feet the night before surgery and do not apply hand creams.

## Your Operation

Your operation will take place in the most modern facility by a trained Consultant in Orthopaedics and Trauma who will explain each step of the procedure to you as it takes place. This sort of surgery can be done through a cut about 3cm long on the inner side of your heel. There has been a lot of interest in doing the operation by keyhole surgery, but this has not yet been proven to be either safe or effective. It can take months to get the benefit of the operation. The wound can take a while to heal especially in smokers.

## Benefits and Risks of Surgery

The benefit is to halt the progress of tearing and inflammation of the plantar fascia. There may be bleeding. This often settles with elevation. Infection occurs in an average 6% of patients because we all have bacteria on our skin and if these bacteria get into the cut they can multiply to produce infection.

Infection can be surmised if you develop more severe pain, swelling redness or heat after the first 24 hours. In these circumstances please contact your GP immediately. Scar pain is less common. Very rarely, nerve damage occurs it is usually superficial and results in some skin numbness or tingling.

## After Surgery

Immediately after surgery your foot will be plastered and will be kept elevated to keep the swelling down. You should maintain the elevation after you are taken home fro at least 72 hours getting up with crutches for toileting and to eat.

You may be given pain relief medications. It is important to keep the plaster dry so cover it with a plastic bag when bathing or showering. You will be told about exercising your toes.

Your plaster will be removed after two to three weeks and you will be sent to physiotherapy.

## Contact your General Practitioner

If your develop a pale blue or white toes, increasing pain for more than a day not relieved by medication, loss of sensation, throbbing, excessive swelling in the toes, or fever over 100 º F.

## References


[1] **Plantar fasciitis/calcaneal spur among security forces personnel.**
**Sadat-Ali M**. *Mil Med* 1998 Jan;163(1):56-7.

[2] **The instep plantar fasciotomy for chronic plantar fasciitis. A retrospective review. Fishco WD, Goecker RM, Schwartz RI** *J Am Podiatr Med Assoc* 2000 Feb;90(2):66-9
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