

Patient Information: Posterior Tibial Tendon Dysfunction (PTTD)

What is PTTD?

The posterior tibial tendon is one of the main supports to the arch of your foot. It is also the main tendon used to turn your foot inward (Figure 1). This tendon helps to stabilise the foot so that you can push off properly when walking. PTTD means that the tendon becomes inflamed.

Patients often describe pain and swelling on their instep and often complain that their foot feels generally achy and they get tired more quickly when walking. If the tendon remains inflamed, it will tear / stretch making the patient 'flatfooted'

What causes PTTD?

The condition most commonly occurs due to 'wear and tear' changes and is more common in those with flatfeet from childhood. It can also be due to overuse type occupational and/or sporting activities or more rarely through direct injury.

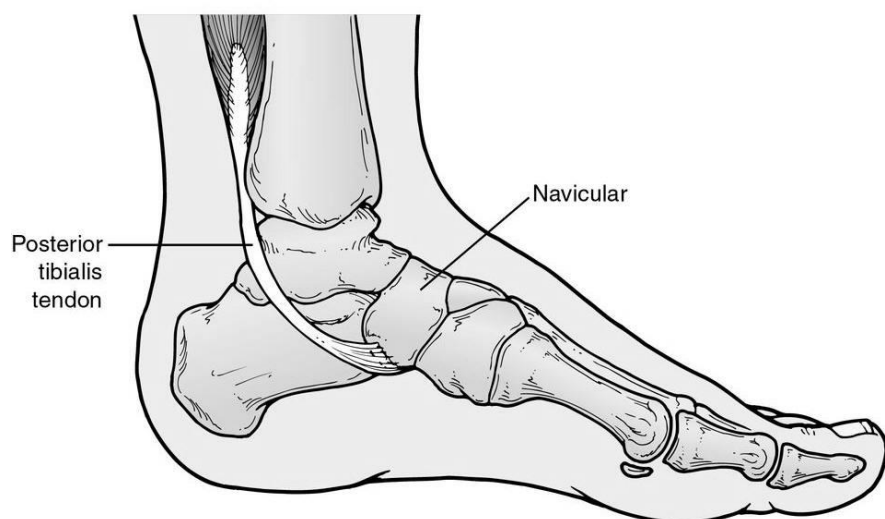


Figure 1: Diagram of the inside of the foot/ankle and the Posterior tibial tendon.

What are the symptoms?

PTTD is classified into 4 stages based upon your symptoms, an examination and x-rays. Within the first stage, pain is often the only real symptom with the foot appearing normal, apart from maybe some swelling behind the inside of the ankle. In the second stage the arch of the foot is lost and the foot and the heel start to turn out. This causes shortening of the calf muscles. Walking will become more difficult at this stage and patients can develop pain on the outside of the foot/ankle. If left untreated the condition may progress to stage 3, in which the joints of the foot become stiff due to arthritic changes. Stage 4 occurs when the ankle becomes affected by the pain and deformity.

How is PTTD diagnosed?

The diagnosis can be made by your doctor or physiotherapist from careful questioning and an examination. X-rays will be normal until a flat-foot develops. MRI and/or Ultra-sound scans may be used to investigate the tendon in some cases.

Patient Information: Posterior Tibial Tendon Dysfunction (PTTD)

How is PTTD treated?

Treatment can be conservative (without surgery) or operative, depending upon the stage of the condition and your preferences:

Stage 1: Immobilisation of the foot/ankle in plaster cast or walking boot. Arch supporting insoles. Physiotherapy. Surgical debridement (freeing-up) of the tendon.

Stage 2: Arch supporting insoles and/or a PTTD brace. Surgery to correct the flat-foot which can include moving a tendon to support the injured one, cutting the heel bone and moving it into a better position, and reconstructing a ligament in the arch of your foot (spring ligament) with a tendon taken from behind your knee (see operation description on next page).

Stage 3: Custom moulded insoles and shoes. Immobilisation of the foot/ankle with a brace. Surgery to stiffen the three major joints of the hindfoot (triple arthrodesis).

Stage 4: Surgery to fuse the foot joints and additional surgery to the ankle joint. This will usually be fusion surgery although joint-sparing reconstructive surgery is sometimes possible.

Non-surgical management of PTTD

Your physiotherapist will guide your treatment based upon the stage of PTTD and will be able to provide manual therapy (hands-on) treatment, exercise advice and education regarding your diagnosis.

In order to reduce the strain on the tendon and lessen pain it is important to wear an insole to maintain the arch of your foot (the Activ8 insole is commonly used). Usually a boot is necessary for a few weeks. This should be worn for all weight-bearing activity. It may also be necessary to reduce the amount of time you spend on your feet.

Exercises to strengthen the posterior tibial tendon can then begin. These exercises should be pain free, or uncomfortable at most. If they increase pain and/or swelling then they should be discontinued or performed with less intensity.

In addition to gradually strengthening the tendon it is important to stretch the calf muscle too. A tight calf muscle and Achilles tendon places more pressure onto the arch of your foot. When stretching your calf you should have your insole in place and maintain the arch of your foot throughout.

Patient Information: Posterior Tibial Tendon Dysfunction (PTTD)

How is the operation performed?

This operation is done under a general anaesthetic with local anaesthetic put in during the operation. This means that there will be an increase in pain when the local anaesthetic wears off up to 12 hours after the operation. The operation takes approximately 1 ½ - 2 hours.

There are several parts to the operation. The first is to lengthen the lining of part of the calf muscle (medial head of gastrocnemius recession). There is a small cut at the top inside of the calf for this.

The second stage is to shift the heel bone into a normal position. This involves a 5cm incision on the outside of the heel. The heel bone is divided, shifted across and fixed in a very stable way with a large screw.

The next stage is to reconstruct the posterior tibial tendon. This is done by taking the tendon that bends down your 2nd – 5th toes (FDL tendon). This is either done by using a special stitch into a bone or by actually tunneling it through a bone. You will still be able to bend the toes afterwards.

Occasionally some additional procedures are required and your surgeon will go through these with you if necessary

Figure 2: Post-operative X-ray pictures

What can I expect after the operation?

Following your operation you will remain in hospital overnight. When you arrive back on the ward from theatre your leg will be in a back slab (half plaster cast) from toe to knee and elevated to reduce swelling. Your foot should be numb due to the local anaesthetic block, which is given to reduce pain. This will gradually wear off over around 12 hours. It is therefore important to start taking painkillers before it completely wears off (usually before going to bed)

Patient Information: Posterior Tibial Tendon Dysfunction (PTTD)

A Physiotherapist will teach you how to walk with crutches without putting the leg to the ground (non-weight bearing). You will be non-weight bearing for 2 weeks in this back-slab. At 2 weeks you will have your stitches removed and be put into a full plaster or walking boot. You will continue to need your crutches for the first 6 weeks but can put your foot to the ground to steady yourself. At 6 weeks you will be able to go into a boot (with insole inside) and to start physiotherapy. At this point you will be able to begin massaging the scars.

You will be able to come out of the boot as your physiotherapist tells you. You will need to wear your insole for at least 3 months

What activities can I do?

You can wiggle your toes as soon as able (which can help prevent blood clots). We will tell you when you can put weight through the foot.

You can sometimes return to office work after 8 weeks. Those patients who cannot get into work /do more standing or manual work may need 3-5 months off.

You can drive as long as the ankle is comfortable and you are out of the walking boot. It is imperative that you are safe making an emergency stop, and therefore practicing before embarking on a drive is wise.

Return to driving may be possible earlier if the car is automatic and the left ankle has been operated on. More information available at www.dvla.gov.uk

According to the Department of Health flying should be avoided for 8 weeks after surgery. For further information see below: www.nhs.uk/chg/Pages/2615.aspx?CategoryID69

What about the longer term?

Your foot will be in a much improved position as compared to before the operation, although the arch may not be completely reformed. The tendon that has been used to reconstruct the posterior tibial tendon is only about half of its strength. It will therefore require a lot of hard work from the patient to build it up. Some patients do get back to normal function. Around 75% can go on tiptoes on one leg. Up to 15% of patients will require an orthotic long term.

Your surgeon will go through what a reasonable expectation of function would be for each patient after the operation. Normally we would hope that recreational walking and non-impact sports (eg swimming, cycling, golf) would be possible.

Patient Information: Posterior Tibial Tendon Dysfunction (PTTD)

The foot and ankle will normally be swollen for around 6 months after the operation. Some patients can have permanent swelling. In this case whatever swelling present after 1 year will usually be permanent.

What are the more common risks of surgery?

Infection – About 1-2% of patients will have a wound that is slow to heal. The rate of superficial infection within our department is 1%, the majority of which will respond to oral antibiotics. The risk of deep infection is around 1 in 200.

Metal work problems – Metal work rarely fails, however some screws can become prominent as the swelling resolves and can require their removal if they are troublesome.

Thrombosis – The risk of getting a clot in your leg following ankle ligament surgery is small. Some patients may be at an increased risk. Your surgeon will advise on clot prevention therapy to yourself based on any noted risks. We advise that you drink plenty of water and move around as much as is sensible to reduce the chances of a clot.

Please be aware of symptoms of thrombosis, including:

- Significant swelling – you will have some swelling due to the nature of the surgery.
- Increasing calf tenderness.
- Heat and redness compared to the other leg.
- Shortness of breath or chest pain when breathing in.

If any concerns regarding these, please seek medical attention urgently

Ongoing pain

Some patients will have permanent pain after any operation. Usually this as at a low level, especially compared to before the operation. Sometimes it can be more severe. Usually a cause (eg further tendon inflammation) and treatment can be given for it but this is not always the case

Nonunion (bone does not heal) – It is extremely rare for the heel bone not heal. We have not had a case where this happened

Patient Information: Posterior Tibial Tendon Dysfunction (PTTD)

Failure to fully correct / recurrence –

Especially if these are longstanding problems, the ligaments around many of the joints in the instep may be stretched or weak or the pre-operative deformity can be large. This can mean that the arch is not fully corrected by the operation or it starts to come back. The chances of that happening so that further surgery is necessary is very unlikely (<3%)

Arthritis – Because the foot has been in an incorrect position, the cartilage may have worn away. This can lead to ongoing pain after the operation although it is normally mild. However, in spite of having the operation, the arthritis can progress requiring fusion surgery. This is very uncommon (<2%)

Complex regional pain syndrome - Some patients develop nerve pain due to the nerves working in a not normal way after the operation. This can happen after any injury /operation. Usually this settles with simple treatment but can occasionally be long-term (probably less than 1 in 100). Some research has shown this can be reduced by taking normal over the counter Vitamin C a few days before the operation

Further Information

The figures for complications given in this leaflet have been taken from the most up to date publications on this subject (as of October 2014).

Other reading:

- The British Orthopaedic Foot Surgery Society web site is available at: <http://www.bofas.org.uk/PatientInformation.aspx> (accessed May 2014).
- Mirmiran, R et.al. Retrospective analysis of the rate and interval to union for joint arthrodesis for foot and ankle. J Foot Ankle Surg 2014;53:420-425.
- The foot and ankle hyperbook: www.foothyperbook.com (accessed May 2014).
- Mann, R. Coughlin, M. and Saltzman, C. Surgery of the Foot and Ankle 8th edition, Elsevier, Philadelphia. 2008
- Myerson, M. Foot and Ankle Disorders. Saunders, Philadelphia. 2000

Patient Information: Posterior Tibial Tendon Dysfunction (PTTD)

What if I need to contact someone?

Fracture Clinic –

Tel: 0151 529 2554 (Monday – Friday)
Please leave a message on the answer machine stating your name and contact number and a member of staff will return your call.

Ward 17a – (always open for advice)

Tel: 0151 529 3511



If you require a special edition of this leaflet

This leaflet is available in large print, Braille, on audio tape or disk and in other languages on request. Please contact:

Tel No: 0151 529 2906

Email: interpretationandtranslation@aintree.nhs.uk