



Plantar Fasciitis : A Clinical Review

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ABSTRACT

One challenge in the treatment of plantar fasciitis is that very few high-quality studies exist comparing different treatment modalities to guide evidence-based management. Current literature suggests a change to the way that plantar fasciitis is managed. This article reviews the most current literature on plantar fasciitis and showcases recommended treatment guidelines. This serves to assist physicians in diagnosing and treating heel pain with plantar fasciitis.

Keywords: Plantar fasciitis, high quality studies, Physicians.

INTRODUCTION

Plantar fasciitis is a disorder that results in pain in the heel and bottom of the foot.¹ The pain is usually most severe with the first steps of the day or following a period of rest. Pain is also frequently brought on by bending the foot and toes up towards the shin and may be worsened by a tight Achilles tendon.² The condition typically comes on slowly. In about a third of people both legs are affected.³ Plantar fasciitis is common in middle-aged people. It also occurs in younger people who are on their feet a lot, like athletes or soldiers. It can happen in one foot or both feet.

Causes

The causes of plantar fasciitis are not entirely clear. Risk factors include overuse such as from long periods of standing, an increase in exercise, and obesity. It is also associated with inward rolling of the foot and a lifestyle that involves little exercise.⁴ Normally when you walk, your plantar fascia stretches as your foot strikes the ground. If the plantar fascia is strained by the way you walk or by repeated stress, it can become weak, swollen, and irritated (inflamed), and it can hurt when you stand or walk.

Under normal circumstances, your plantar fascia acts like a shock-absorbing bowstring, supporting the arch in your foot. If tension and stress on that bowstring become too great, small tears can arise in the fascia. Repetitive stretching and tearing can cause the fascia to become irritated or inflamed.

Symptoms

When plantar fasciitis occurs, the pain is typically sharp⁵ and usually unilateral (70% of cases).⁷ Heel pain is worsened by bearing weight on the heel after long periods of rest.¹⁰ Individuals with plantar fasciitis often report their symptoms are most intense during their first steps after getting out of bed or after prolonged periods of sitting.⁶ Improvement of symptoms is usually seen with

continued walking.⁷ Rare, but reported symptoms include numbness, tingling, swelling, or radiating pain.⁸ Typically there are no fevers or night sweats. Plantar fasciitis may be mistaken for other conditions with similar symptoms, such as arthritis or a nerve problem such as tarsal tunnel syndrome.

Diagnosis

Diagnosis of plantar fasciitis is based on the patient's history and on results of the physical examination. Plantar fasciitis is usually diagnosed by a health care provider after consideration of a person's presenting history, risk factors, and clinical examination.⁹ Tenderness to palpation along the inner aspect of the heel bone on the sole of the foot may be elicited during the physical examination.¹⁰ The foot may have limited dorsiflexion due to tightness of the calf muscles or the Achilles tendon.¹¹ Dorsiflexion of the foot may elicit the pain due to stretching of the plantar fascia with this motion.¹² Diagnostic imaging studies are not usually needed to diagnose plantar fasciitis.¹³ However, in certain cases a physician may decide imaging studies (such as X-rays, diagnostic ultrasound or MRI) are warranted to rule out serious causes of foot pain.

What Increases Your Risk

You have a greater chance of developing plantar fasciitis if you:

- Are middle-aged or older.
- Walk with an inward twist or roll of the foot (pronation) or have high arches or flat feet.¹⁴
- Are overweight or suddenly gain a lot of weight.
- Have tight Achilles tendons (which attach the calf muscles to the heel bones) or tight calf muscles.



- Have habits or do activities that increase the stress on your feet, such as:
 - Wearing shoes with poor cushioning.
 - Walking or running without being conditioned for these activities.
 - Changing your walking or running surface (for example, from grass to concrete).
 - Having a job that involves prolonged standing on hard surfaces.
- Are an athlete or a member of the military. Some athletes, especially runners, are more likely to get plantar fasciitis because of:
 - Things that affect the way their feet strike the ground, such as not having enough flexibility in the foot and ankle or having stronger muscles in one leg than in the other.
 - The repetitive nature of sports activities.
 - Improper training.¹⁵
- Put on your shoes as soon as you get out of bed. Going barefoot or wearing slippers may make your pain worse.
- Do simple exercises such as toe stretches, calf stretches, and towel stretches several times a day, especially when you first get up in the morning. These can help your ligament become more flexible and strengthen the muscles that support your arch. (For towel stretches, you pull on both ends of a rolled towel that you place under the ball of your foot.⁷

If you are a runner, you increase your chance of developing plantar fasciitis if you:

- Abruptly change how hard or how long you run.
- Run on steep hills.
- Wear running shoes that do not have a cushioned sole, lack good arch support, or are worn out.¹⁶

Treatment

There are many methods you can try to relieve the heel pain of plantar fasciitis. Even though their effectiveness has not been proved in scientific studies, these methods, used alone or in combination, work for most people.¹⁷

- Rest your feet. Limit or, if possible, stop daily activities that are causing your heel pain. Try to avoid running or walking on hard surfaces, such as concrete.¹⁸
- To reduce inflammation and relieve pain, put ice on your heel. You can also try a non-steroidal anti-inflammatory drug (NSAI) such as ibuprofen (Advil or Motrin, for example) or naproxen (Aleve, for example). NSAIDs come in pills and in a cream that you rub over the sore area.
- Wear shoes with good shock absorption and the right arch support for your foot. Athletic shoes or shoes with a well-cushioned sole are usually good choices.¹⁹
- Try heel cups or shoe inserts (orthotics) to help cushion your heel. You can buy these at many athletic shoe stores and drugstores. Use them in both shoes, even if only one foot hurts.

Corticosteroid injections are sometimes used for cases of plantar fasciitis refractory to more conservative measures. The injections may be an effective modality for short-term pain relief up to one month, but studies failed to show effective pain relief after three months.²⁰ Notable risks of corticosteroid injections for plantar fasciitis include plantar fascia rupture,²¹ skin infection, nerve or muscle injury, or atrophy of the plantar fat pad.²² Custom orthotic devices have been demonstrated as an effective method to reduce plantar fasciitis pain for up to 12 weeks.²³ The long-term effectiveness of custom orthotics for plantar fasciitis pain reduction requires additional study.²⁴ Orthotic devices and certain taping techniques are proposed to reduce pronation of the foot and therefore reduce load on the plantar fascia resulting in pain improvement.

Surgery

Plantar fasciotomy is often considered after conservative treatment has failed to resolve the issue after six months and is viewed as a last resort. Minimally invasive and endoscopic approaches to plantar fasciotomy exist but require a specialist who is familiar with certain equipment. The availability of these surgical techniques is currently limited. A 2012 study found 76% of patients who underwent endoscopic plantar fasciotomy had complete relief of their symptoms and had few complications (level IV evidence). Removal during plantar fasciotomy has not been found to improve the surgical outcome. Plantar heel pain may occur for multiple reasons and release of the lateral plantar nerve branch may be performed alongside the plantar fasciotomy in select cases.

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