Heel Pain & Plantar Fasciitis - *A physician's perspective*

As a physician and surgeon, I am constantly treating this very common entity in my practice. Plantar fasciitis and heel pain are a common condition that can be very challenging to treat. I see this condition frequently and would venture to say that it comprises about 25-30% of my practice. There are many opinions about this condition that vary from physician to physician, and treatment options are numerous. It is my intent to briefly explain the condition, and discuss treatment options as they pertain to the standard of care, which is considered the general consensus between physicians in the same community on how to treat a problem. I will also offer home / self treatment options that the patient may want to explore before seeing a physician, and finally, dispel some common myths regarding treatment of the condition.

The plantar fascia is a structure on the bottom of the heel called an “Aponeurosis” - which is very similar a ligament. It originates from the bottom of the heel, and extends forward to the forefoot area, just behind the toes. It functions to help support the load that is imposed on your foot as you place your weight on your foot. In archery terms, think of it as a “string to a bow”. If a hunter's bow is placed on the ground (bow end up) and has pressure applied to the top of it, the string on the bottom will become increasingly tighter. Much in the same fashion, as the arch of the foot has weight placed down upon it, the plantar fascia tightens up, becomes more and more tense, and helps to prevent the arch from collapsing to the ground. You do have other tendons and ligaments in your body to help support your arch, but the plantar fascia is one of the main structures that is primarily designed for this very purpose.

So where and why does the pain develop? Although pain can present suddenly, it usually sets in gradually, over a period of days to weeks. The first symptom commonly shared by patient’s is a sharp pain to the bottom of the heel that is noticed after getting out of bed or after sitting for a prolonged period of time. Often times this is accompanied by a gradual reduction in pain after several minutes of standing, only to have the pain return later in the day with prolonged standing and walking. Over the years, I have noticed that this condition often shares common characteristics among the patient pool:

- Patients who stand all day (warehouse / industrial workers, mailmen,) especially on hard, concrete floors
- Patients who are obese or have experienced a weight gain in excess of 20 pounds over the past few months / years
- Patients who have a “high arch” or “flat foot”
- Patients who commonly wear “high-healed” dress shoes
- Patients who smoke (ligaments seem more brittle and more likely to tear due to reduced oxygen which also helps the body heal itself)
- Women who recently gave birth
- Patients who have gone from a relatively sedentary life-style to one that is fairly active (such as those who are trying to lose weight)
- Patients who like to use treadmills

As excessive pressure is applied to the plantar fascia and associated musculature, the fascia pulls at its attachment to the bottom of the heel bone. The increase in tension causes the structure to “pull away” from the heel bone, creating tearing. This creates inflammation and pain. Please note, the “tearing” is most often a gradual process that occurs on the microscopic level, over a period of months. It is extremely rare to rupture the fascia, or for the fascia to “tear in two” unless a sudden injury or trauma (i.e. a fall from a height) is encountered.

The body responds to the inflammation by trying to heal itself, and does so by forming “new bone” at the site where the fascia pulls away from the heel. If this process goes on long enough, eventually a bone spur will form, which is better known as a “heel spur”. It is important to note that this the RESULT of the problem, NOT THE CAUSE. Many patients assume that the “spur” is what is causing their pain. This is incorrect. While the term “heel spur” sounds painful, and bone spurs can cause pain to other areas of the body, in the particular instance - it does not. It is merely bone, like any other bone in your body. It is the
fascia and associated tissue pulling away from the heel bone that causes the pain and inflammation, not the spur. To illustrate this point - I have seen spurs that are an inch long on the bottom of the heel on patients who have absolutely no pain to their heel. They likely did have pain at one point in the past, but it eventually resolved and were left with a residual, painless spur that is often times seen as an incidental finding on an X-ray.

**Treatment options**

Before you see your physician regarding this condition, there are several steps you can take to try and reduce your discomfort.

- **Stretching exercises:** these are very important in helping to reduce the pain. I recommend stretching the heel at least 5 or more times a day, for a minute each time. This helps to “work out the stiffness” of the plantar fascia. If it is more “elastic” then it is less likely to tear, and therefore less likely to develop inflammation and pain.

- **Arch supports and heel cushions:** heel cushions can help reduce the “shock” that the plantar fascia undergoes as the patient walks / runs. This in turn reduces the strain and inflammation to the fascia. They do not support the arch. Arch supports help by bringing the floor “up to your foot”, and thus, supporting the arch of the foot. By supporting the arch, your body weight is re-distributed over the length of the foot, and subsequently the weight to the bottom of the heel is now lessened, which in turn, lessens the strain and pulling that the fascia experiences, particularly with prolonged standing. The best bet is to find an arch support with a heel cushion already implemented into it.

- **Anti-inflammatory:** These help in reducing the symptoms of inflammation and pain to the heel. It is important to note that they only help to reduce the inflammation, which is the by-product of the condition - they do not help the problem itself. Patient’s should exercise caution when taking these, especially if they have or are prone to stomach problems. Also, it is important to remember that the patient has to take the medication which is digested, and circulates to all areas of the body. Very little of the actual medication reaches the area of the heel where the inflammation resides. So again, taking increasing amounts of medication to relieve pain must be met with caution, as other side effects can develop which often effect other organs such as the stomach, kidney, and liver.

**Treatment from your physician:**

If self treatment options fail, then an appointment should be made to see your physician. There are many options that can be implemented to try and reduce the symptoms. It is important to remember that through all of it, the cause of the problem needs to be addressed, not just the symptoms, else the patient will continually having to make appointments to treat their symptoms and dissatisfaction on the patients’ behalf will grow, and lead to frustration with their condition.

**Cortisone / steroid injections:** Cortisone is a medicine that is produced by your body. Many times a cortisone injection can help to reduce the inflammation of the condition. It does NOT treat the problem, but in my experience, it certainly does provide the most “bang for the buck” when it comes to pain relief. This often times allow the patient to quickly return to their previous activities that they enjoyed, and creates a “pain free” environment that permits other treatments such as stretching and use of arch supports, which otherwise would not be able to be tolerated. Unlike the use of an anti-inflammatory - where very little of it reaches the heel - a cortisone injection has all of the medication focused at the site of the inflammation, and therefore are often much more successful in alleviating pain.

**Night splint therapy:** this modality works on the premise of stretching the plantar fascia, which counteracts contracture of the fascia structure, leading to stiffness and increased tension. It is an adjunct to stretching exercises and works on the same premise. Theoretically, when the patient sleeps, their foot relaxes, and tension is relieved to the heel. Unfortunately, over the next 8 hours while the patient is asleep,
the body tries to heal the fascia in this “shortened” position. That’s why the patient often feels pain after getting out of bed, because their plantar fascia is going from a shortened position, to a sudden lengthened position as weight is applied (remember, the bow and string concept). A night splint helps to keep the fascia lengthened overnight while the patient sleeps. It now has a chance to heal in a “lengthened” position; the result is little, if any, sudden tearing or lengthening in the fascia as the patient steps out of bed thereby reducing the pain that is often experienced.

**Prescription Orthotics:** These are arch supports that are prescribed by your physician. Many times an over-the-counter arch support will not provide the patient with support they require. This is where your physician may elect to have a pair of prescription inserts made. They function much in the same was prescription eyeglasses work for your eyes. They help to support your arch, thereby reducing weight to your heel, and help to “refocus” the joints and muscles of the foot to work more efficiently. Please remember they are “prescription” which means they are specifically made to address your foot only. Your podiatrist or orthopedic physician should have an intimate knowledge of the biomechanics of the foot, and how your particular foot-type relates to human biomechanics. Prescription orthotics generally only work with certain types of shoes, and will not work with all types of shoes, especially “dress-style” or high-heeled shoes. This is often a disappointing reality to patients who prefer the aesthetic appearance of a dress shoe. Also, please note that not all insurance companies provide coverage for this often effective treatment, so you may want to check with your insurance company prior to considering such therapy.

* One of the most frustrating aspects of this treatment is the patient who has spent hundreds of dollars on ineffective "custom made" arch supports by a local shoe store, only to not have them work. When they finally come in to see me, their minds are already made up that this type of therapy "will not work for me". There is a difference in custom versus prescription inserts ! I often catch myself saying to the patient "If only you would have come in to see me first". Then, they may have avoided wasting hundreds of dollars on ineffective shoes and inserts, not to mention many weeks and months that were lost trying to solve their own pain.

* Feet are like snowflakes - no two are exactly the same. The prescription insert is often times needs to be modified to accommodate the patient's foot-type. This is often aided with X-rays of the patient's foot while they are standing. I prefer to take mold impressions of the feet, as opposed to the new “computer aided” scanners often seen at many shoe stores and pharmacies which only “guess” what the patient's foot type is. Mold impressions are more accurate, and which leads to a better fit, and less “guess work” when it comes to adjusting and modification of the orthotic.

**Physical therapy:** Having appointments scheduled with a physical therapist can also be very beneficial in reducing the symptoms of plantar fasciitis. The therapist can implement a multitude of modalities aimed at reducing the inflammation to the heel. One such modality is known as iontophoresis, which uses ultrasound-guided waves to drive topical cortisone into the skin. This is painless, and has shown to significantly help reduce the pain from inflammation. Similar modalities also include infrared light therapy, ultrasound, soft-tissue mobilization and massage. The therapist also educates the patient on how to properly perform stretching exercises.

**Extracorporeal shock wave therapy:** This is the newest technology used to treat this condition. This therapy has been utilized over the last 10-15 years, and involves the use of a machine that emits shockwaves which are used to break up scar tissue and stimulate blood flow to the heel, thereby reducing the inflammation and pain. This therapy is similar to the one used in patient's with gall bladder stones. Studies with this treatment have shown to be quite good, ranging from 57% to 80% good or excellent results. This treatment can be performed at your doctors office or in the operating room, and no incision is performed. Unfortunately, many insurance companies classify this as “experimental” and will not cover this effective treatment. I personally find their labeling of the treatment “experimental” somewhat ironic, because many of the machines used to implement the therapy are actually FDA approved.
Platelet Derived Growth Factor injections. This is also a new technology that involves the use of growth factors, which are naturally occurring biologic factors in your blood that your body uses to heal itself. Blood is taken from your body and those healing factors are extracted, and then re-injected back into your heel to help resolve the inflammation and promote healing where the fascia has undergone trauma from pulling away from the heel bone. This also, at this time, is considered an “experimental treatment” by many health insurance companies, and as such, I have yet to find any insurance plans that provide coverage for this therapy. While they have shown to be effective, both shock wave therapy and Platelet Derived Growth Factor injections can be costly and are almost always an “out-of-pocket” expense to the patient due to insurance companies that often deny coverage for this therapy, so you will have to take this into consideration prior to proceeding with treatment.

Surgery: Fortunately surgery is seldom performed for plantar fasciitis, as the condition is considered a “self-limiting condition”. This means that if nothing is done, it will get better over time. Unfortunately, the time required to experience a reduction in pain may take months to years. Many patients cannot afford to be disabled for that period of time. Conservative care (i.e. outside the operating room) options generally provide between 90% - 95% percent relief, and therefore surgery often times unnecessary. In my opinion, surgery should only be considered when all forms of conservative care have been exhausted.

There are physicians who advocate NEVER having surgery for this condition. They maintain that heel surgery has the highest dissatisfaction rate of all foot surgeries - and they would be right, as this is a true statement. Many who subscribe to this school of thought on treating this condition with only conservative care state that eventually, it always results in eventual relief. Unfortunately, the “how long till I get better with conservative care” question cannot be answered accurately. This is unfortunate, as the patient who is disabled with this condition can stand to lose employment, experiences a reduced quality of life and activity, and can even undergo depression because of the condition. However, despite a physicians best efforts, there always seems to be a small percentage of patients that will fail all conservative measures, and surgery is usually considered at that point. I typically never recommend surgery unless at least 6 months of conservative care has been attempted.

There are typically two approaches to surgery. The first involves the traditional surgery involving an open plantar fascia release. This is where the surgeon makes an incision to the heel to cut the plantar fascia. By cutting and releasing the fascia, there is no longer the “pulling away and tearing” of the structure, and therefore, the patient will hopefully experience a reduction in pain as they heal.

The second approach is known as Endoscopic plantar fascial release. This is a variation of the traditional surgery that is considered by some to be a safer approach due to the minimally invasive nature of the surgery. It involves the use of a small hallow tube that is inserted into the heel just below the plantar fascia. The surgeon then uses special instrumentation that is inserted into the tube to cut and release the fascia. Visualization of the fascia by the surgeon is somewhat limited which leads to some controversy, but the recovery is generally faster than the traditional approach.

It should be noted that neither surgery is considered a “simple surgery” as there is extensive postoperative care involved, including use of crutches for weeks, casting of - and avoiding weight to the foot, and implementation of physical therapy after healing of the incision, with a gradual return to weight to the heel over a course of 4-6 weeks. Surgery is not without risk, and one should consider this very carefully due to the potential for infection, excessive scarring, nerve damage, prolonged swelling, among other complications too numerous to discuss in detail for this writing.

Common myths / misconceptions with treatment of plantar fasciitis:

1. The type of shoe I use makes a difference. I typically find that this is most often untrue. Today, shoes are mass produced with little consideration for your foot type. Most of all athletic shoes that I have seen have a very flat insole, which fails to provide necessary support. If you can take out the insole of the shoe,
try pushing down on it to see how much support it offers. If it gives freely with your hand applying pressure, just think how much more it will give with your full body weight on it. Much like the frames to eyeglasses, it is the lens that helps you see better, not the frame. Similarly, it is the insert or orthotic that helps support your foot, and the shoe is merely the frame which houses it. There are now shoes with springs and air cushions placed at the heel. These are usually very expensive, and can offer some relief to the patient; the relief however typically varies considerably. Ultimately, these shoes fail at treating the cause of the problem (that is, the strain to the plantar fascia itself), so please take this into consideration before investing on such expensive shoe gear.

2. Arch supports make the condition worse: Again, I find this untrue. Patient’s feet do flatten over time, especially with weight gain, post-pregnancy, or prolonged activities on hard surfaces like many employees in today’s work force experience. This leads to a gradual tearing of not only the plantar fascia, but to the tendons and musculature of the foot, resulting in added pain and disability. This process will continue to spiral out of control unless something is put in place to stop the continued tearing and strain. It will also cause premature arthritis to set in as the joints slowly deform from the arch collapsing. Arch supports will help to reduce further tearing to structures experienced to the foot as the arch collapses by “bringing the floor up to the foot”, thus helping to stop the joints and remaining foot structure from collapsing as well, otherwise resulting in premature arthritis.

3. Cortisone / steroid injections are bad for my body: I again find this generally untrue. Your body naturally produces cortisone. The injection is typically a more concentrated form of what your body already produces. HOWEVER, too many cortisone injections over a short period of time can cause problems, and the injections themselves are not without risk. I never administer an injection unless I feel the benefits outweigh the risks. Also, if the patient has not responded after two or three injections, I will typically discontinue the therapy, rendering the risk of “too many injections” a non-issue. Discuss with your physician what risks are involved, as the risk factor will vary from patient to patient.

4. Cortisone injections hurt more than the pain that is already present at the heel: True and False. Many patients express an deep fear of injections, particularly to the foot. Pain is a part of the injection. Nobody can get around this. However, there are things that your physician can do to help lessen the discomfort of the injection so the experience is not that unpleasant. I always administer a local anesthetic into my cortisone injection so the pain afterwards is immediately reduced. Also, I spray a freezing agent over the skin can help to reduce the discomfort before I administer an injection.

Final thoughts: There are other problems that can mimic the condition of plantar fasciitis. Sometimes when conservative care has failed, the physician has to consider and rule out the possibility of other conditions that can mimic the symptoms of plantar fasciitis. These can include patients with low back pain and nerve damage, tarsal tunnel syndrome (much like carpal tunnel syndrome except it involves the ankle), infection, cysts, tumors, and stress fractures to the heel. It is common place for your physician to order studies and test that are necessary to rule out such possible problems before moving forward in your care.

Hopefully the discussion of this common condition and the treatments options involved will help provide you with a better understanding of what to expect and the options you and your physician have with your treatment.

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