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Heel Spur Syndrome / Plantar Fasciitis Protocol

WHAT'S THE PROBLEM?

Most patient present with a complaint of pain that has developed at the bottom of the heel and/or arch, and is getting worse. Usually the patient was not aware of having had any injury that caused it.

HOW DOES IT FEEL?

It feels like a dull ache most of the time, but when the patient first gets out of the bed in the morning, or when getting up after sitting for a period of time during the day, the pain in the heel and/or arch is impressive. It almost feels like the heel has been bruised, from falling on a rock barefoot, but it is worse.

EXAMINATION:

During a thorough examination most patients will be experiencing some discomfort. Some times we will perform a diagnostic ultrasound or an x-ray looking for evidence of abnormal tissue or bone growth. Radiographs of the heel often reveals bone spurs on the bottom and at the back of the heel. In some instances we might need to follow-up with an MRI to better display abnormal soft tissue or bone growths. Diagnostic ultrasound shows the *thickness* of the inflamed plantar fascia (ligament).

HOW DID THIS HAPPEN?

There is a tight ligament (band of fibrous tissue) that stretches across the arch, from the ball of the foot to the heel bone, called the Plantar Fascia. When we walk, our feet have a tendency to roll inward, toward each other, in a motion that we call pronation. When feet pronate, they flatten, stretch out and the arch elongates. This causes excessive pulling on the Plantar Fascia ligament and attachment of the ligament to the heel bone begins to separate. An injury occurs where the ligament progressively tears off of the heel, fiber by fiber. Bleeding occurs next to the bone and inflammatory fluids accumulate between the ligament and the bone, forming a *Bursitis*, or fluid-filled sack. Over time, the body lays down scar tissue, in an attempt to "glue" the detached ligament fibers back on to the bottom of the heel bone. Over the course of many months to a few years, the scar tissue calcifies, and this calcium deposit eventually becomes visible on x-ray as the *Heel Spur*. This inflammation of this plantar fascia ligament is called *Plantar Fasciitis*, and in addition to the *Bursitis*, is what causes the pain. The bone spur itself has no nerve endings and doesn't hurt. It is just an associated finding that tells us that the inflammatory process, the *Bursitis* and *Plantar Fasciitis* have been present for a long time.

There are several reasons that this chronic injury can occur. Recent weight gain and increased activity level often start an episode. A person who has been mostly sedentary, who walks a lot at Disney World for 3 days is a prime candidate. A change of shoes from well supporting walking or athletic shoes to floppy sandals can do it. When the arch of the foot collapses or flattens, the Plantar Fascia is stretched, causing the injury where it attaches to the heel bone. Finally, conditions which cause generalized increased inflammation, like osteoarthritis or rheumatoid arthritis can also cause this.

There is one more, smaller category of patients, who have heel pain due solely due to a loss of the protective fat pad cushion on the bottom of the heel. We rely on the Heel Fat Pad, that marvelous structure, to cushion our heel, like the sole of a good running shoe does, from the impact that a modern human body makes when it lands on it. All tissues atrophy or thin as we get older, giving many seniors their "drawn" appearance. The thinned Heel Fat Pad permits bruising.

TREATMENT:

It is best to rest the heel as much as practical. When you are off your feet, the injury is healing and getting better. When you are standing, without any foot support, the heel is getting injured further. When you are standing when wearing orthotics (foot supports) and well supportive shoes, the injury decreases dramatically, but usually is not eliminated altogether. So, during the treatment period, if you have the choice of sitting or standing, sit! If there are no health reasons to avoid them, a week's use of an anti-inflammatory medication may eliminate the pain.

1. **Night Splint / DynaSplint** is used daily to provide low-load, prolonged duration stretch to the plantar fascia and achilles tendon (increasing flexion at the ankle joint). *Usually used while sleeping.*
2. **Stretch the tissue on the bottom of the foot.** Before getting out of bed in the AM, sit on the side of the bed and roll the foot on a can (soup or soda) for 1-2 minutes. Also during the day, sit erect with the legs extended and loop a belt, scarf or towel around the forefoot. Pull the forefoot toward the upper leg. Expect to feel a mild pulling sensation at the back of the leg and in the arch. Stretching should not be done to the point of pain. This position is held for 30 seconds, and is repeated 3 times. The 3 repetitions at 30 seconds, 3 times-a-day is easy to remember.
3. **NSAIDs (medication):** _____ (take as directed). With a good response to the medication, it is a good idea to taper off over the next several days so as to avoid an abrupt rebound of pain. *May be OTC or prescription.*
4. **Ice the heel and arch daily.** Use a one liter (or smaller) bottle, fill $\frac{3}{4}$ with water and keep in the freezer. Roll the foot on the frozen bottle for 10-15 minutes, 3-5 times per day (i.e.: before dinner, after dinner, before going to bed).
5. **Physical Therapy.** In addition to the above, we may begin an aggressive course of physical therapy. For physical therapy, the doctor (or therapist) may employ ultrasound, galvanic stimulation or any of a number of anti-inflammatory modalities at the office of a physical therapist. The most effective way for physical therapy to work is if it is applied regularly, at least three times a week.
6. **Cortisone injections** are usually done at (bi) weekly intervals, and most cases require 1-3 injections. The skin can be desensitized before the injection with a cold freezing spray designed to provide brief anesthesia. The injection is done from the inner side of the heel, not from the bottom.
7. It may be helpful to **strap (support) the arch with tape** combined with an arch pad. This serves as a temporary simulation of the support that an foot orthosis will provide on a more permanent basis.
8. **Temporary foot orthoses (plastizote, over-the-counter).** These devices will support the arch, provided shock absorption to the heel and reduce the amount of over-pronation. *Available at this office.*
9. **Custom Molded foot orthoses (custom in-shoe arch supporting device).** They come in pairs, one for each foot. The devices are heated and fabricated to support your foot in a neutral position. You may need to break-in the devices gradually. You will not need larger shoes. *Available at this office.*
10. **Proper Shoe gear.** Wearing a shoe (or sneaker) with a good "arch" is essential. Also flats are not appropriate for this condition (**Barefoot is not accepted**). Crocs are a good alternative to going barefoot at home. A 1-1 $\frac{1}{2}$ inch heel is appropriate for women.
11. **ESWT (Extracorporeal Shockwave Therapy).** Non-invasive and performed as an outpatient. Delivered from outside the body; so many of the risks associated with surgery are eliminated. Shockwaves work by causing microtrauma to the afflicted area. This in turn leads to an increased blood flow to the area that triggers the body's repair abilities to create tendon and ligament healing. The shockwaves over-stimulate the nerves to reduce the sensitivity and pain. There are very few side effects or risks involved in shockwave therapy. Many insurance companies do not cover the costs associated with ESWT at this time.

These measures will eliminate the problem in about 85-90% of patients within 3-6 weeks. Some get better quickly, others take longer. Surgery may be an option for some individuals and becomes necessary for the few who do not benefit from the above treatments. If the problem is due only to the inflamed fascia, the easiest procedure involves lengthening the fascia near the heel. The procedure is often done via a small incision (4cm) on one side of the heel. Recovery is usually 3-4 weeks and the success rate is better than 90%. If there is evidence that the nerve is being compressed, we relieve the pressure by freeing the tissue over the nerve. Heel spur removal may be performed to reduce the risk of re-attachment.

PREVENTION:

Recurrence is rare after treatment, if the patient continues to employ good mechanical foot control by continuing to wear custom foot orthoses and good supportive walking or athletic shoes. **Stretch, ice, and NSAIDs as needed.**