Dynamic Chiropractic

CHRONIC / ACUTE CONDITIONS

Treatment Checklist for Plantar Fasciitis, Part 2

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Editor's note: Part 1 of this article appeared in the Feb. 12, 2012 issue.

Michael is a 70-year-old male who came to me with a diagnosis of plantar fasciitis (PF). Like most cases of PF, his symptoms developed insidiously and are worse in the morning with his first steps out of bed. (It is also typical for most cases to be aggravated with prolonged weight-bearing and activity, and with the first several steps after prolonged sitting or non-weight-bearing movement.)

Years ago, Michael had been a distance runner, and this may have led to the insidious onset, almost like a degenerative process. He is a tall man at 6" 1"and although not heavy set, he is a big guy. His right foot is the involved foot and upon palpation there is a lack of inflammatory cells; this condition is more properly described as a fasciosis.

Most cases of PF recover with the use of conservative care within six to nine months, and approximately 90 percent recover without residual disability. By the time Michael came to me, he was already eight weeks into this episode and was planning on going on a cruise in four weeks. He told me that his wife planned on doing a lot of walking and he did not want to disappoint her.

A Plantar Fasciitis Case Study: Evaluation and Management

I watched Michael walk up and down the hallway. His symptoms are most notable during the propulsion phase of gait. I put him supine on the exam table and found dorsiflexion of the toes, coupled with ankle dorsiflexion, exacerbates his symptoms. He pointed to the distal foot as the most painful area. Often patients point to the PF and have tenderness in the midfoot region of the fascia. If the patient has a proximal PF, frequently they are asymptomatic with dorsiflexion of the toes. Proximal plantar fasciitis is more common than distal PF.

Sometimes I see patients with acute conditions of PF. This usually occurs as a result of a sudden increase in activity, such as when a walker decides to become a runner. This also happens when a person increases their usual running mileage.

I always check dorsiflexion range of motion in clients. Depending on whom you read, dorsiflexion should be about 10-20 degrees. Michael was under 10 degrees. It is no surprise that the risk of plantar fasciitis significantly goes up with restriction of ankle dorsiflexion. The plantar fascia helps assist in the propulsive toe-off phase of gait, which is critical in this stage because of the windlass effect. When the windlass effect is increased, it creates greater stress within the plantar fascia.

Michael has pronation issues as well. Overpronation is a common precipitating factor, as is overuse. When a foot posturally pronates or supinates, sometimes the calcaneus stays in place, but in more severe cases it will "follow" the foot, tilting medially or laterally depending.

In Michael's case, I went through the PF treatment checklist (see part 1 of this article) and asked him what treatments he had already had. He was taking OTC anti-inflammatories and had been

provided with a cortisone injection by his podiatrist. He had made several visits to an acupuncturist, receiving little relief.

The first several treatments with me included use of warm laser, deep-muscle stimulation and transverse friction massage. I concentrated on areas where I felt scar tissue within the fascia. The warmth of the laser and the vibration/percussion from the DMS softened the tissue and prepared the fascia to allow me to go in deep and hard using an instrument to stimulate fibroblast proliferation.

I understand that the number of fibroblasts produced is related to the magnitude of the pressure applied. The greater the pressure, the larger the number of fibroblasts produced. This increase of fibroblasts results in synthesis of collagen fibers. Michael was fortunate in that during the time we started treatment, he was improving. He will be the first one to tell you that the deep transverse friction technique to the plantar fascia was very painful and for the first two treatments, he was in more pain afterward. This is common in my practice.

Make sure you perform fascial therapy into the calcaneus; lateral band on the plantar surface; fascia surrounding the metatarsal heads; calcaneus; plantar flexors; Achilles tendon proximally to include the gastrocnemius heads all the way to its insertion above the popliteal fossa; hamstrings; glutes; paraspinals; and on up to the posterior neck.

As Michael continued to improve over the first two weeks and it was looking like he would not cancel the cruise, I had talks with him about proper footwear. His shoes could not allow excessive pronation or underpronation. Excessive pronation elongates the plantar fascia during the midstance phase. This is why taping and functional orthotics are important to control forefoot and rearfoot deviations, as well as any other mechanical deviations causing pronation.

Biomechanical Correction Exercises

Always think in terms of correcting the abnormal biomechanics. This is where exercise therapy comes in. The most remedial exercises to prescribe are stretches and simple routines that prepare the foot for movement:

Rotational hamstring stretch: Stand with your weight on your left foot and place your right heel on a table or bench at or near waist height. Face straight forward with your upper body and keep both legs nearly straight. As you stand with your right heel on the table and your left foot on the ground, rotate your left foot outward (to the left) approximately 45 degrees, keeping your body weight on the full surface of your left foot (both heel and toes are in contact with the ground). You are now ready to begin the stretch.

Lean forward with your navel and shoulders until you feel a steady tension (stretch) in the hamstring of your right leg. Don't increase the stretch to the point of pain or severe discomfort, but do maintain an extensive stretch in your right hamstring while simultaneously rotating your right knee in a clockwise and then counterclockwise direction for 20 repetitions. As you move the right leg in the clockwise and counterclockwise directions, stay relaxed and keep your movements slow and under control.

After the 20 reps, remove your right leg from the table and rest for a moment. Then lift your right leg up on the table and repeat this clockwise and counterclockwise stretch of the right hamstring, but this time keep the left (support) foot rotated inward (to the right) approximately 10 degrees as you carry out the appropriate movements. Perform 20 repetitions (clockwise and counterclockwise) before resting.

Finally, repeat this entire sequence of stretches, but this time have the right foot in support and the left foot on the table for the repetitions [do 20 clockwise and counterclockwise reps with the left foot on the table and the right (support) foot turned out 45 degrees, and 20 more reps with the right foot turned in]. The rotational hamstring stretch ensures that hamstring flexibility is developed in the transverse (rotatory) plane as well as the sagittal plane.

Rotational plantar fascia stretch: Stand barefoot with your feet hip-width apart and your left foot in a slightly forward position 2-3 inches ahead of your right foot. The bottom of the toes of your left foot should be in contact with a wall in front of you (the wall should be creating a forced dorsiflexion of the toes, so that the sole of the left foot is on the ground, but the toes are on the wall), and your left knee should be bent slightly. Keep your weight evenly distributed between your right and left foot to start the exercise.

Slowly rotate your left foot to the inside (pronation) so that most of the weight is supported by the "big-toe side" of the foot. Then, slowly rotate your left foot to the outside (supination), shifting the weight to the "little-toe side" of your foot. Repeat this overall movement for a total of 15 repetitions. Then repeat the above sequence with your right foot. This plantar fascia stretch utilizes both rotational and sagittal stretching in order to develop flexibility in both the transverse and sagittal planes

Good old-fashioned concentric towel crunches or isometric toe curls whereby the patient holds the contraction for 10 seconds and repeats 10 times. This provides repetitive motion to the intrinsic muscles. Stabilize your toes by placing your foot on a towel and crunching it up with your toes. Do 10 times and then rest for 30 seconds; do three sets.

Heel and toe walking: Barefoot, stand as tall as you can on your toes and then your heels. Balance for a moment and then begin walking forward. Walk a distance of a hallway for a total of three sets, with a short break between sets. Do three sets.

Inside foot / outside foot walking: Follow the pattern of heel walking. Roll feet inward toward the arches until you're balanced and walk to strengthen medial muscles (posterior tibial muscle and abductor hallucis). Then roll your feet toward the outside edge and do the same to strengthen lateral muscles (peroneals).

Deep forefoot squats: Roll up and onto your forefoot and then squat down as far as you can or until your thighs are parallel to ground and your butt is hovering over heels. Hold pose for 30 seconds and then stand up for 10 seconds of rest; repeat 5-10 times. Eventually, you want to do this with the heels flat.

Balance training: Balance on one leg with the other leg bent for 30 seconds. Switch legs; repeat five times.

Final-stage rehabilitation exercises must include proprioceptive exercises such as single-leg stands with the eyes closed for 30-60 seconds. These can be introduced with limited pain upon weight-bearing.

Multiplanar movements, stepping up and down, split squats, one-leg reaching and lunges will strengthen the muscles as well as stretch the opposing muscles. It takes stretching the calf muscle to make plantar fasciitis go away, but with the foam roll, performing self-myofascial release prior to stretching and warming up is very important. Do this by using a foam roll or stick work to the calve muscle. Additionally, plyometric exercises will ensure optimal strength of the plantar fascia. Such exercises may consist of jumping rope or other hopping exercises in the final stages of

rehabilitation. The key to effective treatment of plantar fasciitis is aggressive conservative therapy and dedicated patient compliance.

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