Dynamic Chiropractic

ORTHOTICS & ORTHOPEADICS

Heel Spur Management Protocols

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A heel spur is a degenerative outgrowth of bone (a type of osteophyte) on the calcaneus. A lateral x-ray view of the foot will commonly confirm the existence of a spur. However, the bony spur may not be the cause of heel or foot pain. Plantar spurs occur in 20 percent of normal subjects without heel pain, and in nearly half of patients with painful plantar fasciitis.[1]

Once other causes of heel pain have been considered, biomechanical support for the arches and fascia will often provide relief of symptoms. Surgical removal of a heel spur is seldom necessary, and is best avoided, since recovery sometimes requires 3-6 months (and occasionally even longer) to return to normal weight-bearing activities.[2] Recent studies have shown that the biomechanics of the foot are never the same after surgical release of the plantar fascia,[3] and that the loss of arch stability is particularly problematic for patients with flat feet.[1]

Spur Formation

When there is an increase in tensile stress on the fascia under the longitudinal arch, a low-grade inflammation develops at the point of attachment on the calcaneus (a periostitis).[2] If the increased stress and inflammation continues, calcium is deposited, and a bony outcropping builds up. This osteophyte (or "enthesophyte") forms at the insertion and extends along the line of pull of the plantar aponeurosis.

Abnormal Biomechanics

The plantar aponeurosis plays a fundamental role in foot biomechanics during standing and walking. The shape of the longitudinal arch is maintained primarily by the plantar fascia and its inherent mechanical properties.[3] This vital connective tissue can come under strain from either excessive pronation and impending arch collapse, or from a high and rigid arch that can't absorb shock sufficiently. Being overweight and participating in strenuous sports will also place higher loads on arches and the supporting fascia.

Patient Presentation

The patient reports a sharp pain at the heel, which may radiate to the bottom of the foot. The pain may interfere significantly with normal walking, particularly when first getting out of bed each morning. Palpation of the foot will find pain and tenderness with direct pressure over the medial tubercle of the calcaneus (the fascial insertion).[4] A provocative test, which is often positive, is to passively stretch the plantar fascia by dorsiflexion of the first toe. The stretch can be increased by dorsiflexing the ankle at the same time. Radiographs are not usually needed, since the presence or absence of a bone spur does

not alter the treatment, nor the prognosis.[5]

Other Causes of Heel Pain

If there is radiographic evidence of a heel spur, it's tempting to focus on that as an indicator that plantar fasciitis is the source of pain. However, several conditions must be ruled out. Otherwise, treatment will not produce the expected reduction of symptoms. The following is a list of less common causes of heel pain, with differential characteristics:

- calcaneal stress fracture - Especially in athletes, but also with osteoporosis, recurrent microtrauma can result in exquisite, pin-point pain upon direct compression of the calcaneus.
- fat pad atrophy - As we age, the fat pad under the calcaneus thins and loses its cushioning. This causes a chronic, generalized heel pain that is worse with sustained standing and walking.
- tarsal tunnel syndrome - Entrapment of the lateral plantar nerve behind the medial malleolus can produce a constant burning pain at night around and under the heel.[6] Tinel's sign (tapping over the nerve) under or behind the malleolus will be positive.
- radicular neuropathy - Inflammation of the sciatic nerve can cause pain that radiates to the bottom of the heel. Evidence of low back involvement will be present.
- inflammatory arthritis - Bilateral heel pain, and especially a history of chronic back pain or a rheumatic condition (such as Reiter syndrome), should suggest arthritis.
- local infection - A penetrating wound may close, leaving little evidence except local redness and heat. A careful search should find signs of infection.

Management

Symptoms due to irritation of the plantar fascia at the calcaneal insertion will respond to conservative measures in at least 90% of patients.[7] Foot adjustments for an inferior navicular, a fixated cuboid, a posterior-plantar flexed calcaneus, and "dropped" 2-4 metatarsal heads are frequently needed. Transverse friction across the inflamed fibers at the fascial insertion will be painful, but it seems to speed the healing response. Ultrasound may be beneficial to stimulate blood flow and healing, but is not necessary for most patients. In acute cases, temporary support of the medial arch using strapping (the low-dye procedure)[8] or figure-8 taping will be helpful.

At Home

Instruct the patient to perform frequent stretching of the foot and calf. The stretch position should be held for at least five minutes and be performed at least twice, but preferably 4-5 times each day. Each stretch session should be preceded and followed by 10 minutes of cold application to the inflamed area. Strenuous activities should be restricted to allow the body to catch up with healing the overstressed tissues. As the pain subsides, deep massage of the plantar fascia can be accomplished by rolling the foot on a golf or tennis ball for five minutes. This exercise will also help smooth the patient's adaptation to orthotics.

Other important recommendations for some patients include weight loss; a more graduated athletic training schedule; or better shoes for long-term standing. Patients whose plantar fasciitis is resistant to these procedures may need to be fitted with a splint designed to hold the foot in a dorsiflexed position throughout the night. These splints are uncomfortable and awkward, but they have become more popular.

Orthotics

Customized biomechanical support for the foot and ankle is the most important long-term treatment. Since heel spurs and plantar fascitis are associated with excessive pronation occasional with fixed supination, poor handling of weightbearing stress, and the shock of heel strike, a well-designed orthotic is the most effective means of preventing chronic, unresolving pain.

A custom orthotic designed for this type of heel pain should provide:

- specific support for each of the three arches of the foot, particularly the medial longitudinal arch;
- shock-absorbing material under the heel to reduce force upon heel strike;
- corrective support under the calcaneus (a "varus," or medial wedge), since calcaneal eversion is very commonly found as an underlying biomechanical fault;
- a special region cutout (a "divot") at the site of the insertion of the plantar fascia, to reduce the pressure at this point, whether there is radiographic evidence of a heel spur or not.

Conclusion

A heel spur demonstrates that there has been chronic tension on the plantar fascia at the calcaneal insertion. Whether it is currently symptomatic must be closely investigated, since some heel spurs are not associated with pain. However, like disc herniations found on MRI which are not symptomatic, we must recognize a heel spur as an indicator of abnormal biomechanical function. Successful management will take the alignment and movement patterns of the foot and ankle into account. Custom-designed orthotics can improve symptoms and help prevent future difficulties. Lower extremity problems may need to be addressed. Specific foot adjustments, along with home stretching and weight loss, are often also very helpful.

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