

Another Source Of Chronic Heel Pain

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With the advent of new technology, procedures may be devised which augment the performance of surgery and offer distinct advantages over traditional techniques. Certainly at this time, endoscopic surgery for chronic recalcitrant heel pain appears to be superior to the traditional DuVries approach. In fact, the endoscopic technique appears to be so successful that practitioners may be led into a false sense of security: that all heel pain is due to plantar fasciitis. Most surgeons are familiar with the adage "If all you have is a hammer, then every problem you encounter must be a nail." Surgeons should guard against complacency lest the endoscopic equipment become their "hammer."

There is a growing sentiment among some clinicians that factors other than plantar fasciitis may be the source of heel pain in select individuals. In particular, a number of papers have been published which propose that an entrapment of the first branch of the lateral plantar nerve may be another distinct entity which can reproduce similar pain. Obviously in these patients, unless the surgeon addresses the nerve entrapment, the results of the procedure, regardless of technical improvements, may prove less than satisfactory.

The purpose of this presentation is to heighten awareness of another source of chronic heel pain, to attempt to provide a means of distinguishing which patients may suffer from this nerve entrapment, and demonstrate a surgical approach which addresses this specific problem.

ANATOMY

The first branch of the lateral plantar nerve is a motor-sensory nerve which ultimately supplies the abductor digiti quinti and the skin at the plantar-lateral aspect of the foot. This branch originates proximal to the abductor hallucis muscle and then dives through the fascia under the superior margin of the abductor. It then courses distally between

the abductor hallucis and the quadratus plantae until it reaches the inferior margin of the abductor fascia. There it turns laterally and lies adjacent to the calcaneus about 0.5 to 1.0 cm distal to the medial tuber.

This nerve branch should not be confused with the medial calcaneal nerve, a purely sensory nerve which lies in the superficial fascia of the heel.

PATHOLOGY

Authors have proposed that the first branch of the lateral plantar nerve may become pinched or entrapped at two distinct locations within the heel. The first is where the nerve exits the deep fascia of the abductor muscle and turns laterally under the calcaneus. Pronation, muscle hypertrophy, or other sources of irritation have been cited as instigating events which may irritate the nerve as it passes through the fascial port of the abductor hallucis. Another potential site of entrapment is where the nerve lies between the plantar fascia and the calcaneus, just distal to the tuber. Any spur or hypertrophy of tissue may impinge upon this nerve.

One should note the proximity of the nerve to the plantar calcaneal spur and fascia. Surgical failures following traditional heel spur surgery may be due to damage or subsequent entrapment of the nerve.

CLINICAL SIGNS AND SYMPTOMS

From a symptomatic standpoint, patients with heel pain secondary to nerve entrapment generally describe pain similar to that associated with fasciitis. In most instances it is difficult to make a distinction based on history alone. Clinically, one will typically note greater pain when compressing medially on the heel as opposed to plantarly. It is felt that this pinches the nerve at the exit site of the fascia between the abductor and flexor brevis. In

some instances the patient may complain of pain radiating across to the lateral heel. Furthermore, in the author's experience, those patients who have this syndrome exhibit limited response with NSAIDs, injections, ultrasound, and supportive measures, whereas those with fasciitis seem to respond to some degree, even if only temporarily.

A more definitive means by which one may determine if fasciitis is a component of the heel pain is through a technetium scan. The author employs this modality when all conservative measures have failed, and when surgery is becoming a more viable consideration. Should the bone scan be negative, then with some degree of certainty one may presume that the heel pain is not inflammatory in nature. Therefore, simple release of the fascia may have limited effects upon symptoms. It is in these cases that a different surgical approach, one which deals with potential nerve entrapment, will be employed.

SURGICAL APPROACH

An oblique incision is made over the medial aspect of the heel overlying the course of the first branch of the lateral plantar nerve. The distal extent of the incision ends just beyond the junction of the calcaneal tuber and the plantar fascia. By orienting the incision in this manner one remains parallel to the branches of the medial calcaneal nerve which creates less of a potential for postoperative entrapment of these structures. The author has seen a number of patients who have sustained entrapment neuropathies with the standard DuVries medial incision.

Dissection is carried through the fat until the muscle belly of the abductor hallucis can be identified. A carefully controlled vertical incision is then made into the deep fascia overlying the abductor hallucis.

With the use of a Senn retractor, the abductor muscle is then retracted dorsally and the fascia which separates the abductor and flexor digitorum brevis will be evident. A vertical incision is then made in this fascial layer, and a segment of tissue is removed. This should alleviate any constriction upon the first branch of the lateral plantar nerve. A hemostat is then passed through the area and the tissues gently separated. A small amount of dexamethasone may also be infiltrated directly into this area.

Next a linear incision is made at the inferior margin of the abductor hallucis fascia. A small portion of the medial band of the plantar fascia is excised to eliminate any potential entrapment at this level. If an inferior calcaneal spur is noted then this is gently removed with hand instruments. A Freer elevator is usually placed over the spur to prevent damage to the soft tissues and nerve at this level.

Following surgery, the author maintains the patients non-weight bearing for 3 weeks. A cast or posterior splint seems to have worked well, as opposed to a soft bandage alone, albeit in a limited number of cases. Orthotic support is reinstated following surgery as well. In the author's limited series, patients generally have some residual pain for up to 4 months postoperatively.

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