

RECALCITRANT PLANTAR HEEL PAIN: A VARIANT OF TARSA L TUNNEL SYNDROME

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Plantar calcaneal heel pain is a common malady affecting patients that present to the podiatrist for treatment. This often recognized clinical entity is most typically related to hyperpronation of the hindfoot and midfoot, with associated supinatus of the forefoot. This relationship can create chronic enthesitis affecting the calcaneal attachment of the plantar fascia and the origins of the intrinsic musculature of the plantar vault. This ailment, in most cases, satisfactorily responds to conservative therapy and strong consideration should be given to the possibility of concomitant plantar nerve entrapment (a variant of tarsal tunnel syndrome) in cases proving to be resistant to typical therapeutic measures.^{1,2}

Patients with heel pain related to chronic nerve compression usually describe sharp, often burning pain localized to the plantar-medial aspect of the tuberosity of the calcaneus. The primary symptom seems to most often be exquisite local tenderness localized deep to the proximal (dorsal) portion of the belly of abductor hallucis, although Tinel's sign may be elicited along the distribution of either, or both, of the plantar nerves. Less frequently, paresthesia is elicited proximally over the tarsal tunnel region. It is important to ascertain that the patient is experiencing deep pain, and not superficial symptoms correlating to the skin or immediate subcutaneous tissues. The symptoms are usually aggra-

vated by weightbearing and ambulation, and post-static dyskinesia is often present. In most cases, there are no visible signs of discoloration, edema, or local increase in skin temperature. Electro-diagnostic studies may be indicative of nerve entrapment. Radiographs may or may not display a plantar calcaneal spur.

Nonoperative treatment of this condition requires careful mechanical support and balancing and, if necessary, local infiltration of glucocorticosteroid about the plantar nerves at the level of the porta pedis and deep plantar fascia. In general, this form of therapy should be administered for about three months.

Operative intervention should only be undertaken in those cases where symptoms cause significant disability despite appropriate conservative therapy. The mainstay of surgical intervention involves accurate external neurolysis of the medial and lateral plantar nerves as they traverse the porta pedis and enter the plantar vault, in conjunction with release of the deep fascia and partial plantar fasciectomy, and remodeling of the plantar calcaneal spur.

External neurolysis requires sectioning the flexor retinaculum and opening the tarsal tunnel to allow identification of the posterior tibial nerve and its branches. The bifurcation into medial and lateral plantar nerves most commonly occurs proximal to the tip of the medial malleolus,³ and

the authors believe that division of the nerve trunk at the extreme distal region of the tarsal tunnel is a predisposing factor influencing the development of plantar nerve entrapment at this level. In this scenario, the bifurcation of the posterior tibial nerve occurs immediately adjacent to the connective tissue septum separating the medial and lateral plantar nerves, and between the muscle fascia containing the deep surface of abductor hallucis and the medial surface of the origin of flexor digitorum brevis (Fig.1). This anatomic relationship is further stressed by hyperpronation of the mid-foot and hindfoot, which effectively wedges the fibrous septum into the crux of the main nerve trunk at the bifurcation. It becomes necessary to elevate the belly of abductor hallucis off of the plantar nerves (Fig. 2) and to section the interneurial septum between the medial and lateral plantar nerves to the level of the flexor tendon sheath or underlying periosteum of the calcaneus, in order to adequately effect external neurolysis. If necessary, internal neurolysis of the plantar nerves should be performed under operative magnification.

A Jones compression dressing is applied postoperatively and immediate ankle dorsiflexion and plantarflexion range of motion should be instituted. The patient should remain non-weight-bearing for three weeks while the plantar extension of the dermal incision heals.

REFERENCES

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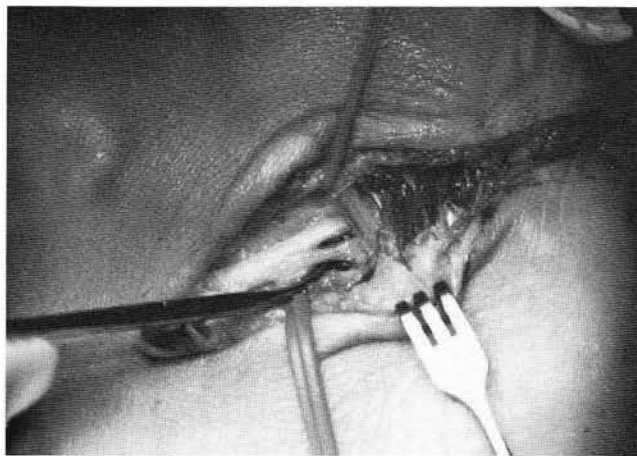


Fig. 1. Extremely distal bifurcation of the posterior tibial nerve at the proximal margin of the interneurial septum deep to abductor hallucis and medial to the origin of flexor digitorum brevis.

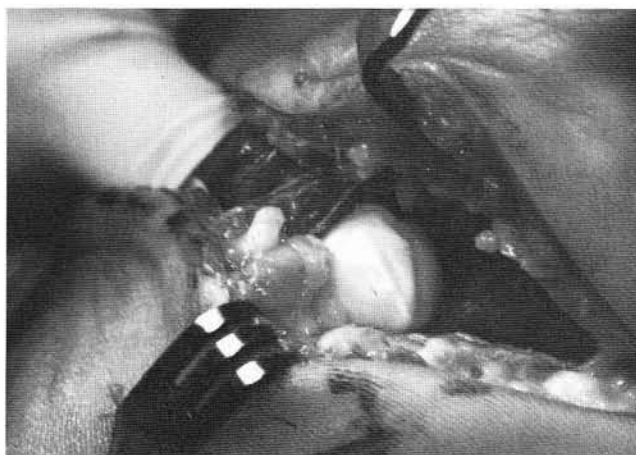


Fig. 2. Elevation of abductor hallucis belly and dilation of the abductor hiatus to allow visualization of the plantar nerves entering the plantar vault.