CHAPTER **26**

PLANTAR FASCIITIS AND CALCANEAL SPUR SYNDROME AGGRAVATED BY PROMINENT PLANTAR PROTRUSION

D. Scot Malay, D.P.M.

The podiatric physician regularly evaluates and treats patients with plantar fasciitis and calcaneal heel spur syndrome. It is generally understood that the majority of these patients respond satisfactorily to conservative management using a combination of biomechanical support, anti-inflammatory medication, and physical therapy. Cases that fail to satisfactorily respond to appropriate therapy can be very disturbing to both the patient and the practitioner. Recalcitrant cases may involve persistent fasciitis, a protruding osseous spur, subcalcaneal bursitis, entrapment of the posterior tibial nerve or its branches, painful piezogenic plantar papules, or even disruption of the chambered architecture of the plantar fat pad.

In certain patients, surgery may offer a useful therapeutic modality when non-surgical measures have failed to produce a satisfactory result. There is currently a great deal of discussion in the surgical literature regarding the advantages and disadvantages of traditional open surgical techniques for the treatment of resistant plantar fasciitis and heel spur syndrome. The results have been compared to those obtained after minimal incision techniques with and without fluoroscopic guidance, and endoscopic methods of plantar fasciotomy.[1-3] The purpose of this discussion is to review two cases of recalcitrant plantar heel pain, first treated with conservative therapy, and ultimately successfully treated with surgical resection of a prominent plantarly protruding calcaneal spur in each case.

CASE #1

R.L. was a 42-year-old female, 5 feet 4 inches tall and weighing 220 pounds, who had a four year history of left plantar heel pain. She displayed signs and symptoms of plantar heel pain consistent with plantar fasciitis and plantar calcaneal spur syndrome. Other findings suggested concomitant subcalcaneal bursitis and intermittent medial calcaneal neuritis aggravated by weight bearing and ambulation. She rated her heel pain as 4-5 on a scale of 5, with 0 being no pain and 5 being excruciating pain.

Radiographic evaluation revealed a large, plantarly protruding calcaneal spur (Fig. 1).

Figure 1. Lateral radiograph showing plantarly protruding calcaneal spur.

Conservative measures were attempted, and included: low-dye strapping; foot orthoses (with the addition of a cushioned heel cup to augment the heel's natural fat pad); physical therapy in the form of ultrasound and flexibility exercises for the plantar fascia and gastrosoleal complex; regular use of a gentle dorsiflexion night splint; two episodes of local infiltration of corticosteroid; alteration of the patient's work duties to diminish weight-bearing requirements; cast immobilization on two occasions for two weeks duration; and nonsteroidal anti-inflammatory drugs. These measures resulted in resolution of the plantar fasciitis, subcalcaneal bursitis, and medial plantar neuritis. However, the patient continued to report weight-bearing pain. This was due to the osseous prominence of the plantarly-protruding calcaneal spur.

The patient elected to undergo surgery after conservative measures failed to offer complete relief. A plantar calcaneal exostectomy was performed via

a longitudinal incision centered over the prominent plantar protrusion of the calcaneal spur. This approach allowed reflection of the plantar calcaneal periosteum and fibers of the plantar fascia. Resection of the prominent plantar spur was followed by remodeling of the plantar surface of the calcaneus. Surgical inspection revealed the plantar spur to consist of a cartilaginous capped bone. The procedure was performed under local anesthesia in conjunction with intravenous sedation. Neither a tourniquet, nor a closed-suction drain were used. The wound was closed in layers, and a sterile bandage was applied.

Surgical inspection revealed no evidence of residual subcalcaneal bursa, and pathological evaluation of the resected spur demonstrated fragments of benign cartilage and bone with degenerative changes. The patient was required to remain non-weight bearing for the first three postoperative weeks, after which the skin sutures were removed, and weight bearing was then resumed in a gradual fashion. During the period of non-weight bearing, the patient was not immobilized, in order to allow the patient to perform ankle and metatarsophalangeal joint ranges of motion on a daily basis. The postoperative course was uneventful, and the patient reported complete resolution of the plantar heel pain. She was able to resume normal activities, and wear regular shoes. The plantar incision healed with a fine scar, and additional heel padding was not required (Fig. 2).

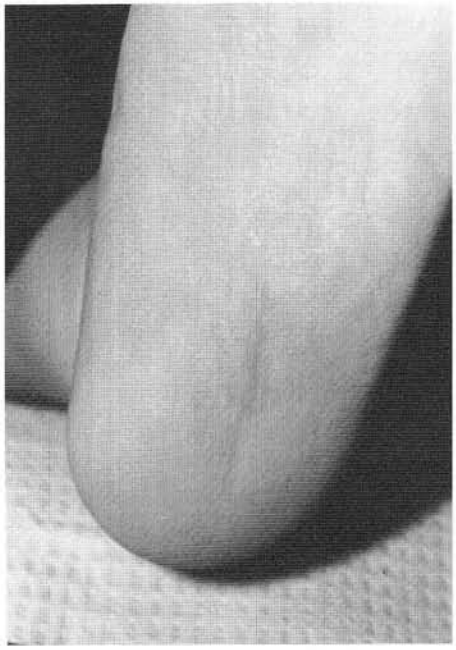

Figure 2. Well-healed postsurgical scar oriented longitudinally along plantar heel, at approximately 3 months postoperative.

CASE #2

K.M., a 26-year-old white female, 5 feet 6 inches tall and weighing 180 pounds, presented with a one-year history of right plantar heel pain due to chronic plantar fasciitis and heel spur syndrome. Her symptoms were aggravated by weight bearing and ambulation. Plain view radiographs demonstrated evidence of a plantarly protruding calcaneal spur (Fig. 3). She rated her pain as 4-5 on a scale of 0-5, with 5 being excruciating pain. Conservative measures included the use of foot orthoses modified with a cushioned heel cup, NSAIDs, local corticosteroid infiltration, a dorsiflexion night splint (Fig. 4), and three weeks duration wearing a below-the-knee removable immobilizing brace with crutches. These measures failed to relieve the symptoms, and ultimately the patient underwent resection of the plantar spur in essentially the same fashion as described in Case #1.

The only significant variation involved orientation of the skin incision in an oblique fashion, in an effort to take advantage of relaxed skin tension lines without sacrificing exposure of the underlying prominence. Pathological evaluation of the resected bony prominence identified detached fragments of cortical bone, hyaline cartilage and fibrocartilage, and fragments of dense connective tissue with mild chronic inflammation. The postoperative course was also carried out in the same fashion as described in Case #1. She too has enjoyed satisfactory pain relief, despite rare mild discomfort in regular shoes that responds well to the use of a viscoelastic silicone polymer heel cup.

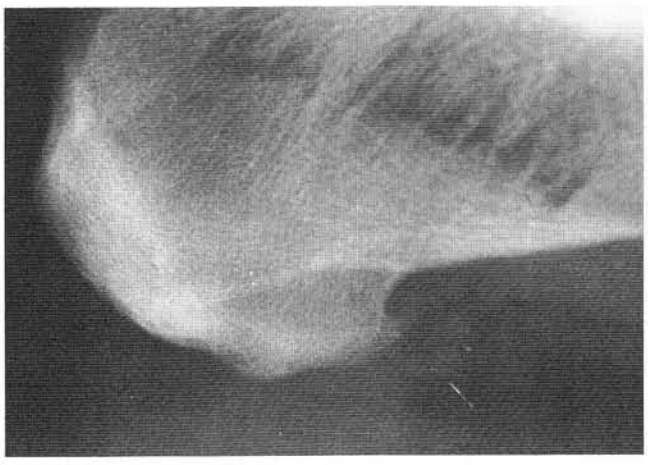

Figure 3. Lateral heel radiograph showing plantarly protruding calcaneal spur.

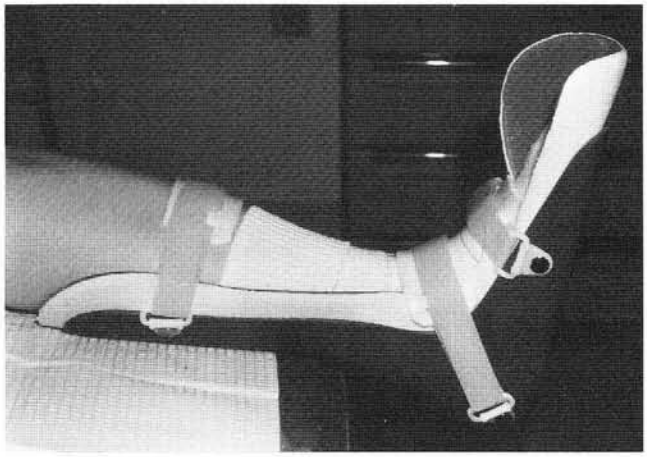

Figure 4. Lightweight dorsiflexion night splint.

DISCUSSION

Plantar calcaneal heel pain may persist even after successful resolution of plantar fasciitis. Other associated conditions, such as subcalcaneal bursitis and plantar neuritis, may also continue when a large plantarly protruding calcaneal spur is present. Such patients have generally suffered from heel pain for many months, and may have undergone previous therapy by another physician. Moreover, in both of the cases presented in this report, the presence of a symptomatic subcalcaneal bursa was initially associated with the plantarly protruding spur. In cases such as these, after failing to satisfactorily alleviate the patient's pain using appropriate non-surgical measures, it may be beneficial to perform surgical resection of the prominent plantar spur in an effort to alleviate chronic heel pain.

In both of the patients presented in this report, symptomatic resolution of plantar fasciitis and subcalcaneal bursitis was noted, although the plantarly prominent spur persisted to be symptomatic. The use of an oblique plantar incision provides adequate exposure of the prominent spur, and easy access to the attachment of the plantar fascia to the calcaneus, while avoiding the larger segments of the ever-present medial calcaneal nerve branches situated along the medial aspect of the heel. Use of the plantar incision does, however, require up to three weeks of non-weight bearing in the initial postoperative period.

If it is the surgeon's preference, a minimal incision technique, perhaps enhanced with fluoroscopic guidance, can also be used to effectively remodel the plantar calcaneal prominence and also release the plantar fascia if indicated. Pathological inspection of the resected tissue should display fragments of bone and cartilage, both hyaline and fibrocartilage, as much of the plantar prominence is attributed to cartilaginous proliferation rather than bone alone. Postoperative immobilization is not recommended, as it has been associated with incarceration of the plantar nerves, and scaring of the plantar fascia in a shortened position. This shortening of the plantar fascia increases the likelihood of tethering and recurrence of fasciitis once weight bearing is resumed. Care should also be taken to avoid over-aggressive disruption of the plantar calcaneal cortex, in an effort to avoid creating a stress riser capable of fracturing once weight bearing is resumed. In some cases, it may be necessary to further augment the heel's natural fat pad with the use of a cushioned heel cup, even in the postoperative phase.

SUMMARY

Recalcitrant plantar heel pain following resolution of plantar fasciitis may be due to a number of factors, including the presence of a plantarly protruding calcaneal spur. Much of the plantar prominence can be attributed to cartilaginous proliferation, rather than radiographically identifiable bone. In such cases, a cushioned heel cup should be used in conjunction with a foot orthosis.

Should the patient's symptoms persist despite exhaustive non-surgical measures, surgical remodeling of the plantarly protruding spur should be considered. Surgical resection of the symptomatic spur can effectively be performed via an oblique plantar incision in an open fashion. This discussion reviewed two cases of recalcitrant plantar heel spur pain that were successfully treated with surgical resection of the plantar spur. Appropriate non-weight bearing management, in conjunction with range of motion exercises, were a useful adjunct in the postoperative phase.

REFERENCES

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