CHAPTER **9**

ANOTHER APPROACH TO POSTERIOR HEEL SURGERY

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During the last decade at least 10 Podiatry Institute faculty members have written and or lectured on a variety of approaches to the troublesome clinical condition of retrocalcaneal spurring and insertional calcific Achilles tendonitis in the annual *Updates on Reconstructive Surgery of the Foot and Leg.* The breadth of faculty and diversity of approaches belies the complex nature of this condition and the fact that no single technique has universal acceptance nor is suited to all patients diagnosed with this condition.

What is clearly understood today is that the cause of posterior heel pain is multifactorial, that surgery is a viable option for those patients that fail to respond to conservative care, and that surgery is by no means 100% curative. The reasons for unsuccessful results or incomplete resolution of preoperative symptoms include inadequate spur resection, wound healing complications, tendon rupture, or continued enthesopathic type pain. The fact that the causative factors of retrocalcaneal pain include the negative biomechanical forces of equinus and uncompensated or partially compensated hindfoot and forefoot deformities are also reason for lack of success. The author has witnessed complications such as chronic wounds secondary to posterior heel surgical exposure, complications from retained and superficial Mitek anchors causing nonhealing ulcerations, chronic edema and scarring in the surgical zone, and continued discomfort from inadequate spur resection in combination with persistent retrocalcaneal bursitis and posterior heel prominence.

The myriad of surgical approaches all attempt to "tweak" the tendon approach and minimize disruption of its attachment, allow for adequate spur resection and removal of intratendinous calcifications if present, and address underlying biomechanical deformity such as equinus if at all possible.

SALIENT CLINICAL FEATURES

Haglund's deformity is a purely superolateral prominence of the posterior calcaneus, readily approachable through a straight lateral incision and is not the focus of this paper.

It is the author's experience that the vast majority of patients with mechanically induced posterior heel pain report not only physical and psychological discomfort of the presence of a posterior spur and its associated enthesopathy but also a posterior prominence that causes a "bulky" posterior heel. This consistently leads to difficulty and pain from the heel counter and generalized shoe irritation. Retrocalcaneal bursitis is a frequent accompanying complaint.

The role of equinus in causing posterior heel pain is difficult to quantify but it seems probable that the patient group that reports this condition, often obese and deconditioned, have triceps or gastrocnemius equinus either as a primary deforming force or as a response to guarding from posterior heel pain. A local anesthetic block around the insertion of the Achilles during the clinical exam can help clarify the true contribution of equinus to the posterior heel pain.

Those patients failing all accepted standards of conservative care are offered a surgical approach to their condition and immediately admonished that "if they are 75% better by one year after surgery it is considered an excellant result" (personal communication, Tom Smith, DPM) This is an integral component of the informed consent discussion and promptly engages the patient in realistic expectations of the surgical outcome.

STANDARD RADIOGRAPHS

The standard angle and base of gait plain radiograph films are improved upon by the modified lateral heel view as described by Gabbay and Ruch that internally rotates the foot 30 degrees to the x-ray plate. This very effectively gives a truer view of the posterior aspect of the heel by compensating for the obliquity of the posterior face of the heel and allowing more direct visualization of retrocalcaneal spurring. The standard "sunrise" view or 10 degree calcaneal axial, as well as soft tissue enhancement by decreasing KvP also enhance the preoperative appreciation of the amount of posterior or intratendinous spurring.

ANATOMIC FEATURES

An intimate knowledge and appreciation of the anatomy of the Achilles insertional zone is mandatory to effectively perform posterior heel surgery. The location of the majority of spurring is clearly on the ridge of bone that separates the central third and inferior third of the posterior calcaneus. Although the insertion of the Achilles is classically described as the central third of the heel, the author concurs with Sarrafian and Downey that it might more accurately be "the distal half of the posterior heel." This is of critical importance in allowing the author's surgical approach demonstrated below.

One must carefully appreciate the confluence of the tendon, fascial, and perisosteal tissues that surround the Achilles insertion and allow for the tendon to be maintained as a continuum of tissue about the posterior aspect of the heel and on into the plantar fascia. The integrity of these tissues and fascial elements are strong enough to resist dorsiflexion "even in the absence of an intact Achilles tendon" according to Peebles. There exists essentially an envelope of connective tissue that surrounds the Achilles insertion and merges seamlessly with the periosteum of the calcaneous.

The spur location is between the central and inferior third of the posterior heel. Boberg points out that the Achilles therefore inserts proximal to the spur and the spur is not intratendinous but rather subperisoteal. He then advocates a direct transverse approach and states that tendon disruption is minimal and the dissection may be extended superiorly as needed to remove intratendinous calcifications. The author has tried this approach and encountered an occasional resistant edema and induration on the posterior heel that becomes painful in shoe gear. Interestingly, this "excessive subcutaneous scarring" was described as a drawback of the classic Fowler-Philip surgical approach as noted by Sundberg and Johnson in the second edition of Jahss Disorders of the Foot and Ankle. The remainder of surgical approaches discussed over the last several years all include some direct violation of the Achilles tendon from a direct posterior approach with the need for reattachment or reinforcement dictated by the individual cases.

AUTHOR'S SURGICAL APPROACH

This approach makes no statement of originality yet adds another technique to the multitude described by other Podiatry Institute faculty members in recent years. This approach was decided on in an effort to ensure complete bone spur removal, allow for reduction of the posterior prominence of the heel, allow for removal of an inflammed retrocalcaneal bursa, avoid any potential wound compromise by avoiding the posterior aspect of the heel and avoiding any disruption of the above described tendinous, fascial and periosteal elements as they envelope the Achillesí insertion.

Incision placement is via a direct lateral approach, located slightly anterior to a conventional Haglund's approach. The most prominent portion of the posterior heel is marked with a skin scribe prior to infiltration of local anesthetic to avoid losing reference after inflation of the soft tissues. This allows a more perpendicular encounter with the lateral wall of the calcaneous that facilitates the posterior heel and spur removal (Figure 1). Periosteal dissection is carried out anteriorly on the lateral wall of the heel and then the spur is immediately identified posteriorly. Dissection is carried out meticulously subperiosteally from the spur both in a superior direction and then inferiorly (Figure 2, 3).

Essentially this approach attacks the spur and Achilles insertional zone from "inside out" thereby never violating the confluence of connective tissue that envelopes the Achilles insertion. This dissection is carried out completely inferiorly to the most inferior aspect of the heel. Because the tendon starts its insertion in the central third of the posterior heel, some initial deep fibers are detached, but no tendon weakening is noted because the superficial connective tissue and fascial elements remain undisturbed. All other techniques violate this connective tissue envelope by coming at the tendon from a "superficial to deep" or "posterior to anterior" approach via posterior incisions which by design must affect the integrity of tendinous fibers and could potentially weaken them.

A sagittal saw and osteotome are then used to effect a complete through and through resection of the posterior heel and the entire posterior spur with it (Figure 4). An osteotome may be required to completely detach the most medial aspect of the calcaneous and an ancillary medial incision could be made, although the author has not found it necessary

to date. This posterior resection is then removed en toto leaving a bleeding cancellous bed for tenodesis (Figure 5). No reattachment or anchors are needed because no superficial tendinous fibers have been detached. This also affects some relaxation of the Achilles to offset the assumed equinus deformity. Any retrocalcaneal bursa is excised at the same time, and this completes the excision of the posterior spurring and posterior prominence at the same time. Palpation of the intact Achilles under forceful dorsiflexion confirms the absence of any tendon compromise (Figure 6) Routine closure is performed with careful attention to periosteal closure laterally to preserve the lateral expansions of the deep fascia and tendinous fibers.

Patients are managed in a non-weightbearing cast for 6 weeks, then protective weightbearing for 2-3 weeks, followed by physical therapy as necessary. This limited series of four patients had no adverse sequellae from the surgery or wound complications. A larger series is ongoing, but these four case illustrate that equal or better posterior spur resection can be performed adequately through a lateral approach with no tendon disruption and no need for tendon reattachment or retained implants.

CLINICAL CASES

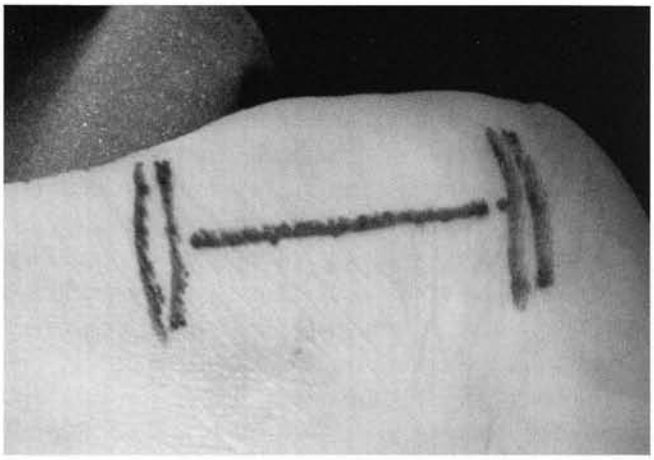

Figure 1. The prominent portion of the posterior heel is marked.

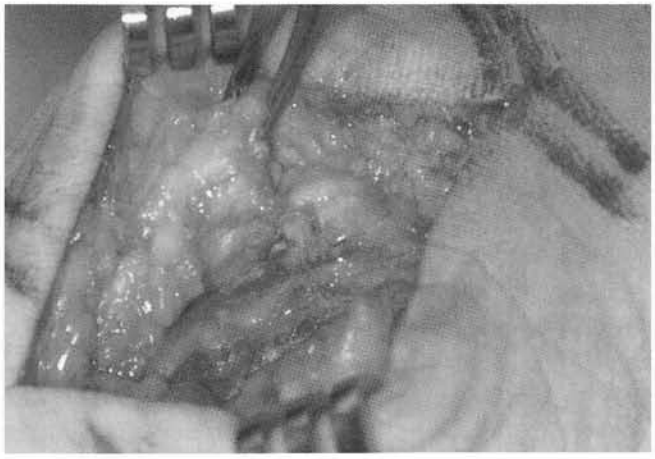

Figure 2. Initial dissection.

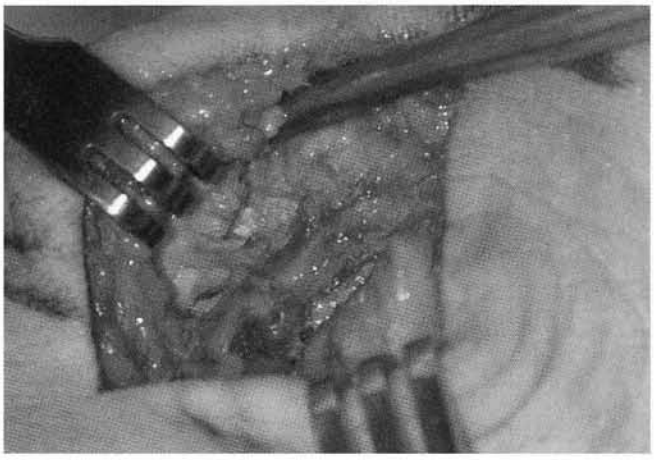

Figure 3. Dissection.

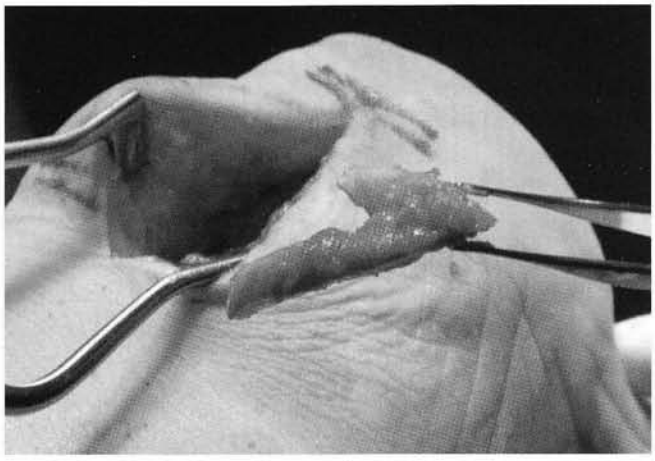

Figure 4. Resection of the posterior heel and the entire posterior spur.

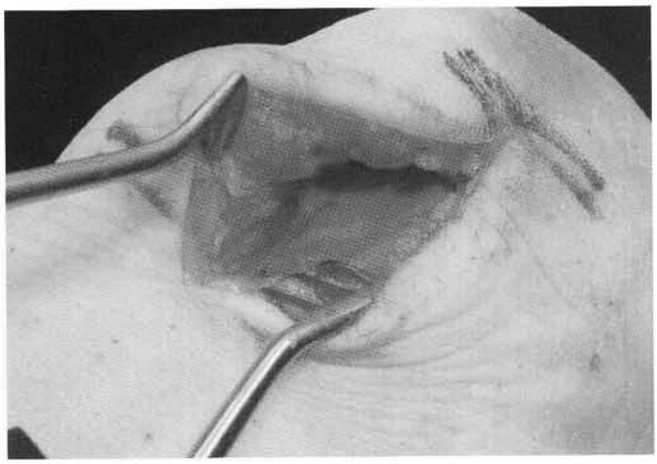

Figure 5. The posterior resection is removed.

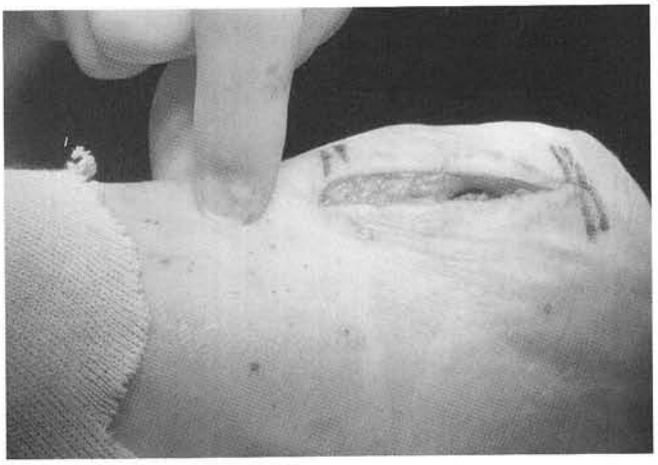

Figure 6. Palpation of intact Achilles.

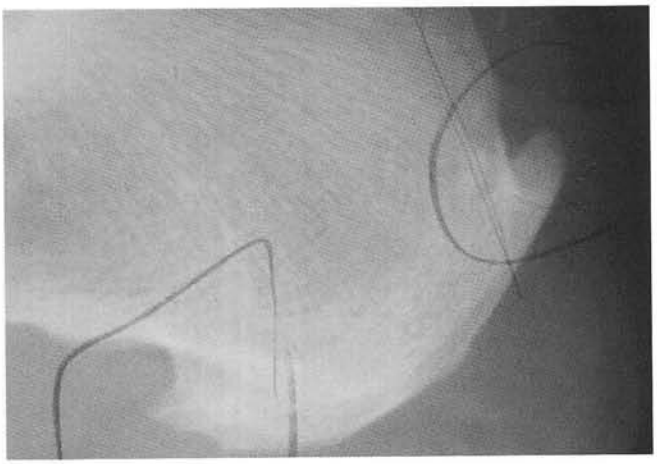

Figure 7. A large posterior spur with posterior and superior prominence of heel.

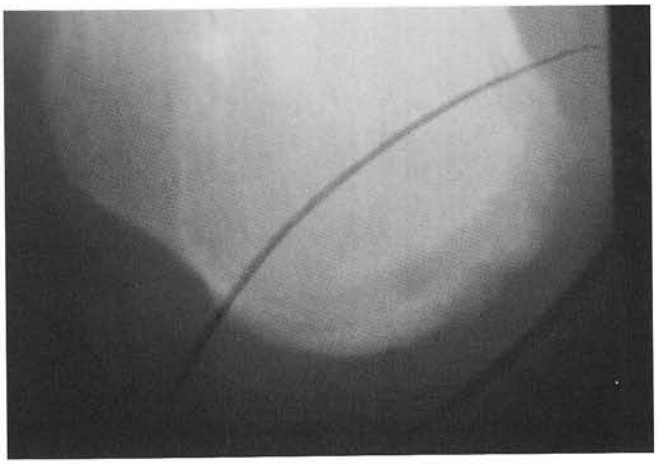

Figure 8. "Sunrise" view demonstrating the complete medial to lateral extension of the calcifications.

Figure 9. Immediate postoperative view after spur and posterior heel removal.

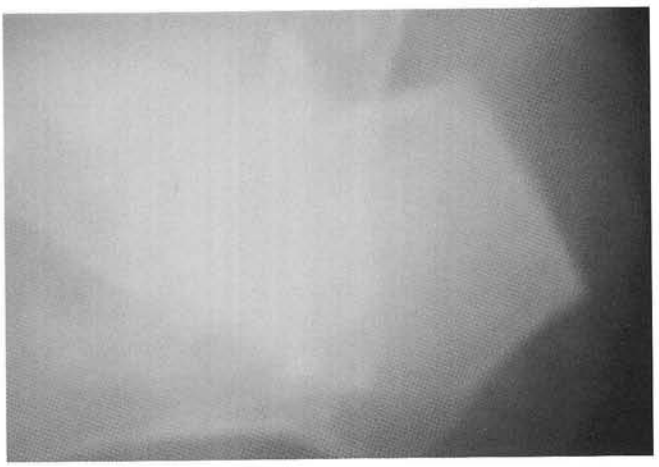

Figure 10. Postoperative view of the oblique heel showing complete planar resection of posterior heel.

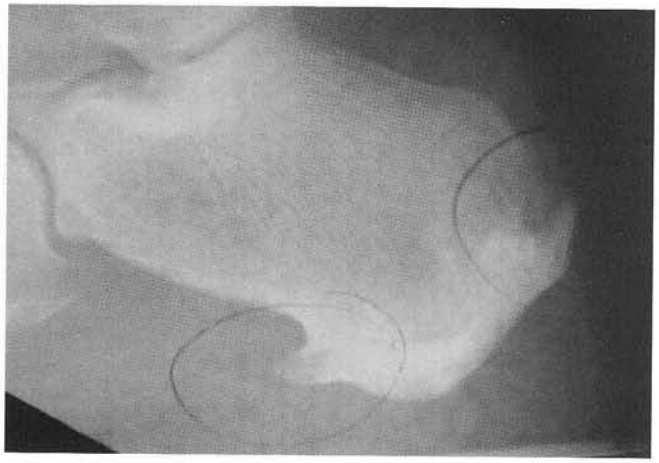

Figure 11. Large posterior spur and dorsal and posterior prominence of heel

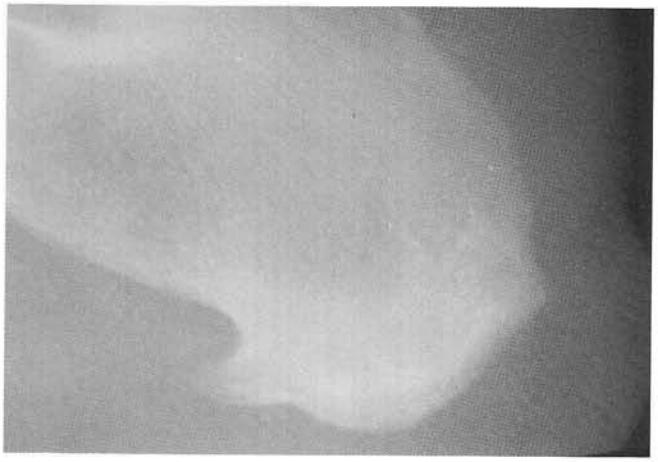

Figure 12. Post resection and remodeling of posterior and superior heel

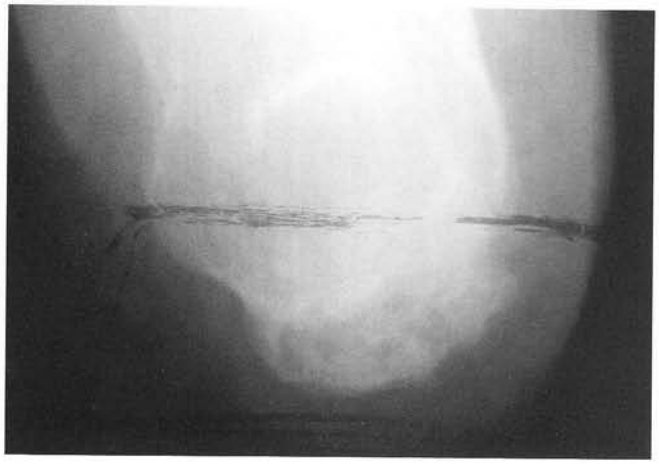

Figure 13. "Sunrise" view preoperatively showing substantial medial to lateral spurring

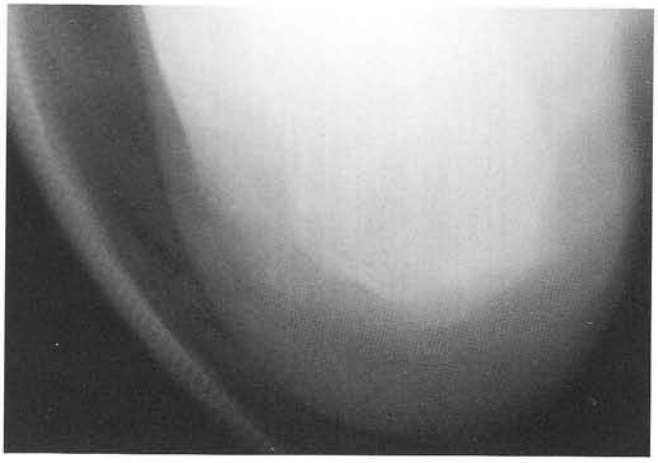

Figure 14. Postoperative "sunrise" view, note clean posterior resection of spur

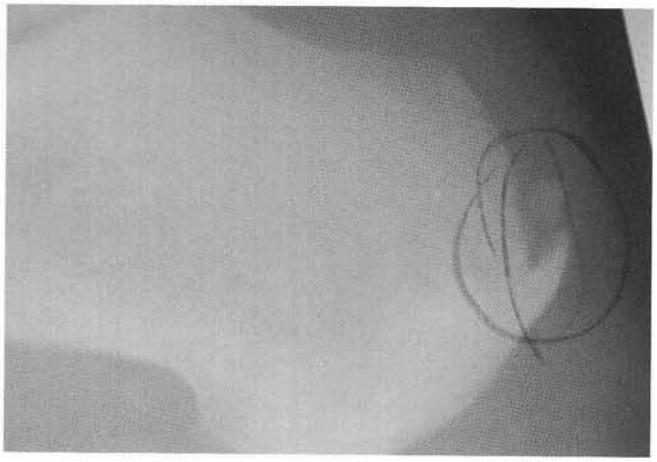

Figure 15. Large posterior calcneal spur with some loose calcific detached portions as well

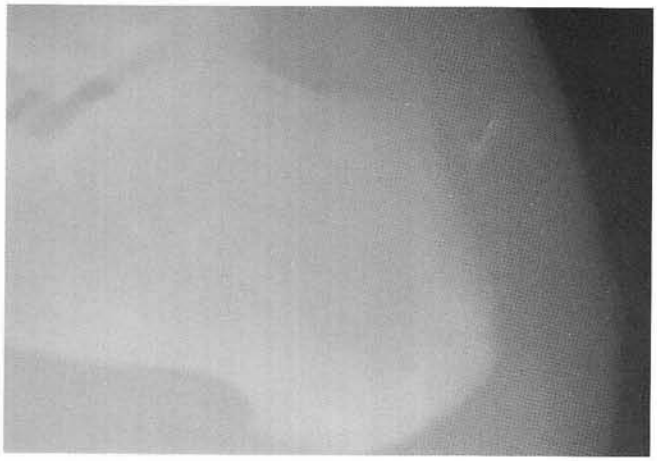

Figure 16. Immediate postoperative showing adequate spur removal and heel remodeling. Some loose calcific bodies persist.

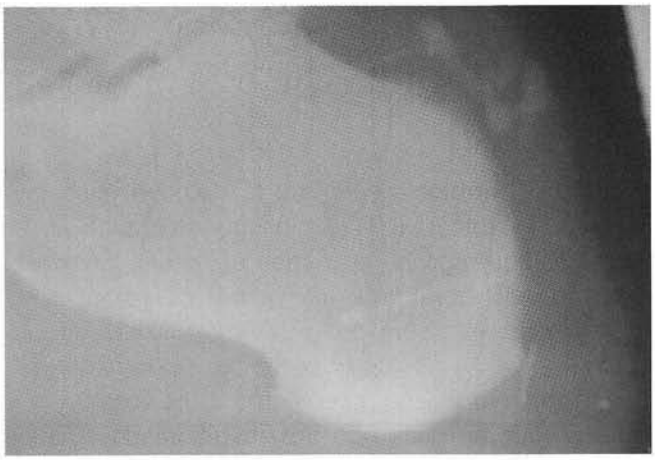

Figure 17. One year follow up revealing some increase in dystrophic calcific deposits, indicating persistant tendinopathy and unaltered compromising biomechanical forces. Patient was much improved and satisfied with the surgical result.

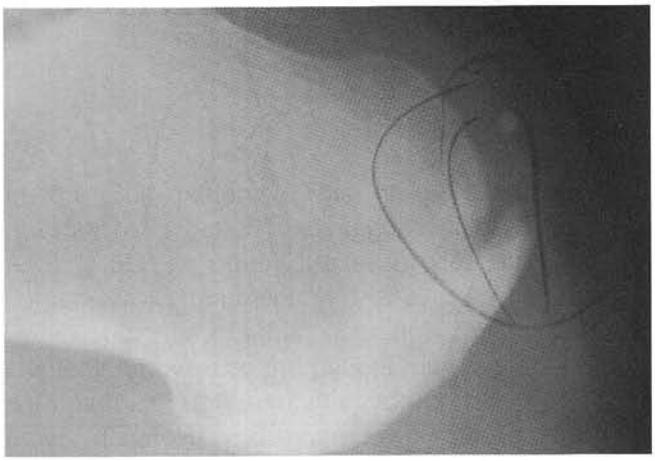

Figure 18. The other heel of the patient seen in figures 15-17. Preoperative view of large posterior heel spur

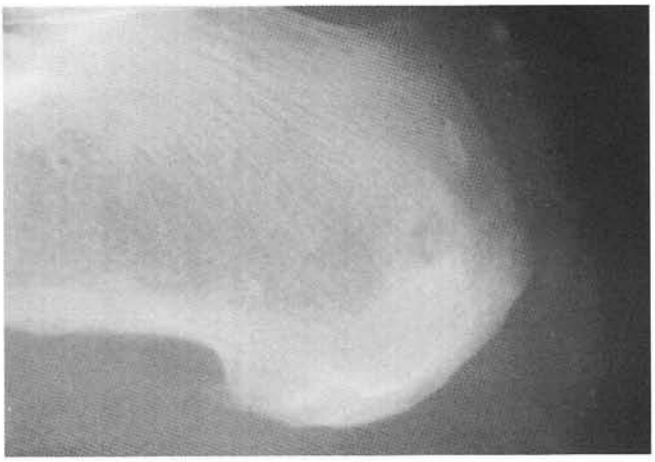

Figure 19. Postoperative resection, good planar resection of spur and posterior heel

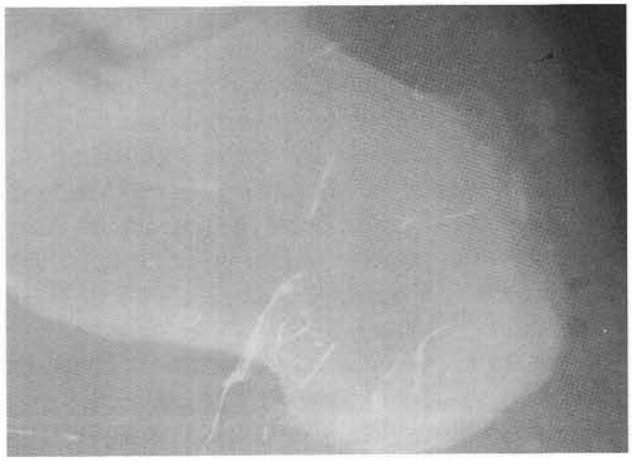

Figure 20. One year follow up also showing some dystrophic calcific deposits, similar to the contralateral foot. Exogenous obesity contributed to calcific deposits. The patient was satisfied with the result, (approximately 80% improved), and would have had the surgery again although with some reluctance due to recuperation time.