CASE STUDY

PATIENT HISTORY

The patient is a healthy, 56-year-old female who presented with a 5-month history of posterior heel pain of the right foot. She reported the pain was worsening and becoming severe in nature. At that point, the patient had difficulty finding any comfortable shoe to wear and was severely limited in activities at or away from work. Physical examination revealed a pes cavus with gastrocnemius equinus. Pain was present on palpation to the Achilles tendon from the insertion to 1 cm proximal. The patient had a negative Thompson sign, indicating the Achilles was intact. Edema was present to the posterior heel with an intact neurovascular status. X-rays revealed a 3 mm posterior calcaneal spur.

ACHILLES TENDINOSIS PATHOLOGY

Tendinosis refers to degeneration of a tendon resulting from chronic overuse or overloading condition. Tendinitis, in the acute phase, is demonstrated by swelling and pain that often responds to traditional conservative treatments. As tendinitis progresses into a chronic state, it becomes a noninflammatory, degenerative condition of collagen that is often recalcitrant to conservative intervention. Histologically, tendinosis is characterized by an absence of inflammatory cells, disorganized neovascularization, collagen degeneration and disorganization, and focal necrosis. The lack of vascularity to the tendon compromises the ability to repair the tissue. Improving vascularity to the tissue improves the odds of tissue repair and good patient outcomes. Vascular endothelial growth factor (VEGF) has been shown to induce and regulate angiogenesis.1

TREATMENT PLAN

Conservative treatment for this patient extended for 5 months. Edema reduction was attempted through the use of NSAIDs orally and topically, along with application of ice. The patient moderated weightbearing by combining shoewear modifications with the use of heel lifts, soft bracing, and custom rigid bracing. The patient performed her own home therapy with daily stretching and night splints until regimented physical therapy became necessary. The patient was recalcitrant to all attempts for conservative care, so surgical intervention was discussed. Prior to surgery, an MRI was ordered to determine the degree of the pathology and the choice of surgical procedure. MRI revealed thickening of the distal Achilles tendon consistent with Achilles tendinosis with intrasubstance degeneration without tear. The patient had less than 25% degeneration of the cross-sectional diameter of her Achilles tendon, thus Radiofrequency Coblation (RF) with VIAFLOW™ injection was planned.

SURGICAL TECHNIQUE

Preoperatively, the patient’s area of pain was palpated and marked in a grid pattern (Figure 1). The patient was placed in the prone position with the feet distal to the end of the bed to allow the ankle to be held at neutral to facilitate the use of the Coblation probe. A local anesthetic block was used proximal to the surgical site. Standard sterile prep of the surgical site was completed. The site was draped, and a tourniquet was applied and inflated. The procedure was performed percutaneously with an 18-gauge needle to create each hole (Figure 2). The probe was advanced into each hole at varying depths. Dermal glue was used to seal the holes (Figure 3). Once the glue was dry, VIAFLOW™ could be applied. It was first injected with a 23-gauge needle into the paratenon, which could be observed to inflate (Figure 4). VIAFLOW™ was then “peppered” into the tendon areas in question. The area was then dressed with a light, dry, sterile compressive dressing.

PATIENT OUTCOME

Immediately postoperative the patient was placed in a tall pneumatic walking boot and allowed to weight-bear as tolerated. The patient was instructed to refrain from NSAIDs or ice for 2 months, as that could potentially inhibit the necessary inflammatory response generated by the surgery. The patient was allowed to bathe the following day. At the one week postoperative visit, the patient reported mild discomfort and had tapered off pain medications. Clinically, she had minimal to no pain or edema. Range of motion exercises were instituted. At one month postop, the patient had no pain during ambulation. Home strengthening exercises consisting of resistance bands, towel curls, and seated calf raises progressing to standing calf raises were prescribed. The patient was allowed to transition to sneakers and increase her ambulatory status as well. At 2 months, the patient had no pain or disability. She was able to fully perform eccentric and concentric exercises and had no limitations of ambulation.
SURGEON’S NOTES

• Percutaneous use of combined RF and VIAFLOW™ provided an effective treatment with lower complications and quicker recovery based on this anecdotal experience.

• In this case, the immediate postoperative benefits included a marked decrease in pain minimizing the need for pain medication. This may be due to the combined effect of both treatment modalities – RF and placental connective tissue matrix.

• A 2 cc vial of VIAFLOW™ was used.

• Placement of the VIAFLOW™ injection was guided by the location of the pathology. The location was determined by combining clinical palpation of pain and the MRI findings.

• Distension of the paratenon was visualized and there was no leakage of the graft material.