

RETROCALCANEAL PATHOLOGY

Steven Carter, DPM, FACFAS

FUNCTIONAL ANATOMY

The attachment of the Achilles tendon is a complex insertional enthesis. The tendon is a continuation of gastrocnemius and soleus muscle bellies and inserts into the middle one third of the posterior aspect of the calcaneus. The tendon is surrounded by paratenon, which is able to stretch up to 3 centimeters, and allows smooth tendon gliding. The tendon is vascularized proximally by muscular branches, and distally by periosteal vessels. The portion of the tendon 4-6 centimeters proximal to the insertion is well known to be relatively hypo-vascular. Important associated structures in the retrocalcaneal area include the retrocalcaneal spur, the posterior superior body of the calcaneus, the pre-Achilles bursa, and retrocalcaneal bursa.

INSERTIONAL TENDINITIS

Physical examination will typically show pain at the bone-tendon junction. The condition may initially be intermittent in nature, but often becomes constant. Often, symptoms are exacerbated following exercise, but also may be seen after long periods of standing. A careful inspection for predisposing biomechanical abnormalities should be undertaken. If the foot hyper-pronates, a semi-rigid functional orthosis should be considered.

While thought of as primarily a mechanical ailment, there are several miscellaneous conditions that should be considered. These include seronegative spondyloarthropthies, gout, use of fluoroquinilones, familial hyperlipidemia, sarcoidosis, and diffuse idiopathic skeletal hyperostosis. If one of these conditions is suspected, further medical work-up should coincide with the on-going mechanical treatment of the local symptoms. Over time degeneration of the tendon may ensue, to the extent that a palpable defect may be noted. Secondly, the triceps surae may contract resulting in limitation of ankle joint dorsiflexion.

First-line conservative treatment consists of anti-inflammatories, application of ice, and padding around the posterior aspect of the heel to reduce pressure against the distal aspect of the Achilles insertion. Furthermore, to help reduce traction from the Achilles, felt heel lifts can be

inserted inside the shoe or applied to the bottom of the shoe sole. Activity modification, especially with regards to athletics, is an important aspect of treatment. If the above forms of treatment are unsuccessful, physical therapy measures are instituted. These may consist of stretching exercises, ultrasound, contrast baths and the use of a night-splint to maintain the foot in slight dorsiflexion. Finally, if the patient remains symptomatic, the foot and ankle can be immobilized in a below-knee walking cast or boot.

The use of injectable steroids has become an extremely controversial subject. Many physicians have used this form of treatment for years with few complications. However, the majority of the medical literature recommends against the use of injectable corticosteroids in this area. To some degree this has become as much of a legal issue as medical. It is appreciated that some of the statements and recommendations regarding the use of steroids are opinions particular authors and many times are not well substantiated by clinical study. Nevertheless, if a problem arises, and injectable steroids have been used, it becomes difficult, if not impossible to defend legally. If a physician still chooses to use this as a treatment modality, he/she should probably consider having the patient sign a consent explaining the benefits, risks, and post-procedure instructions.

If conservative treatment fails, surgical intervention can be considered. MRI is a helpful pre-operative tool in planning the tissues to be addressed. At the point when surgery is being entertained, the condition has almost always progressed past the point of tendinitis and commonly shows degeneration of the distal Achilles tendon. This advanced condition is termed tendonopathy. This finding is clearly demonstrated on MRI, and can easily be differentiated from less severe tendinitis. A typical surgical approach is the central heel-splitting incision. The patient, however is counseled as to the possibility of future shoe wear irritation against the scar. The degenerative portion of the Achilles tendon is then debrided. Most commonly, the central portion of the tendon shows the greatest amount of degeneration and an elliptical section is resected. Generally, up to one third of the tendon can be removed without significantly increasing the risk for tendon rupture. If the tendon has been debrided to the

extent that the surgeon is concerned with possible rupture, then *soft-tissue reattachment anchoring* is undertaken.

Post-operatively the patient should remain completely non-weight bearing until the incision is completely healed. Partial weight bearing can then be allowed with the use of a walking-boot. Generally, protected weight bearing continues until 8-10 weeks post-op, depending on the amount of tendon debridement performed.

RETROCALCANEAL BURSITIS

An extremely common additional component of insertional tendonopathy is the presence of an inflamed retrocalcaneal bursa and prominent posterior/superior body of the calcaneus. Studies have demonstrated that in this circumstance the walls of the retrocalcaneal bursa are changed to fibrocartilage, and ultimately replace the calcaneal periosteum.

If the retrocalcaneal bursa is inflamed, it is assumed that some conversion of the bursal walls into fibrocartilage has taken place, and should most often be excised. Furthermore, the posterior superior body of the calcaneus, should also be reduced so as to reduce the compressive pressure against the anterior aspect of the bursa. This bony prominence is not to be confused with the "Haglund's deformity" which involves the more lateral portion of the posterior superior calcaneal body. This condition is primarily bony in nature, and rarely involves the Achilles tendon.

In certain instances patients may experience retrocalcaneal bursitis without the insertional tendinitis component. These patients tend to be older and more sedentary than those experiencing insertional tendinitis. Deep pain and edema anterior to the Achilles tendon are noted. Initially, anti-inflammatories, heel lifts, and open backed shoes are recommended. Some authors indicate that a communication exists between the anterior Achilles tendon and the retrocalcaneal bursa. Therefore, they do not recommend the injection of corticosteroids into the retro-calcaneal bursa for fear of causing adverse effects to the distal portion of the Achilles tendon. After failed attempts at conservative treatment, surgery may be considered. However, the incisional approach is different than described above. In this case it is preferable to perform a linear incision, either medial or lateral, and slightly anterior to the Achilles tendon. The bursa is then approached from the side, and can be removed without damaging the Achilles tendon. The posterior calcaneal body can also be resected from this approach. If a lateral incision is made, care is taken to avoid inadvertent damage to the sural nerve.

RETROCALCANEAL SPUR

The presence of a retrocalcaneal spur is commonly seen as an associated finding in patients with insertional tendinitis and posterior heel pain. If a large retrocalcaneal spur is present in association with distal Achilles tendonopathy, the spur should be removed and the tendon debrided/reattached as necessary. Both the spur and the distal tendon can be addressed through the central incision. However, there are cases where patients have significant posterior heel pain due to large spur formation, in the absence of a degenerative Achilles tendon insertion. Again, an MRI can easily differentiate between the two. If no tendon pathology is noted, then a different incisional approach should be considered. The retrocalcaneal spur is positioned posterior (superficial) to the Achilles tendon. From a surgical standpoint it is unnecessary to detach a non-diseased Achilles tendon in order to resect the retrocalcaneal spur. In this instance, a transverse incision (following the relaxed skin tension lines) across the posterior body of the calcaneus is preferable. The entire spur can be easily removed, without violation of the Achilles insertion. Likewise, it is not advisable to only address the posterior spur if tendon pathology is also present. Therefore, careful pre-operative assessment is paramount before surgical intervention is undertaken.

SUMMARY

The careful assessment of the involved pathologic structures, and implementation of a well thought out treatment plan are critical to a successful result. However, an often overlooked aspect of the management of this complex condition is the thorough counseling of the patient that must be performed. It often takes 9-12 months for a patient to reach maximum medical improvement, especially when surgery is performed. If the patient understands this fact prior to consenting to surgery, satisfaction level seems to increase. Also, success is many times measured in terms of improvement, as opposed to complete cure.

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