

Achilles Tendon Disorders

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KEYWORDS

- Achilles tendon • Retrocalcaneal bursitis • Achilles rupture • Tendinitis
- Achilles tendinosis • Haglund deformity • Paratenonitis

KEY POINTS

- Achilles tendon disorders include tendinosis, paratenonitis, insertional tendinitis, retrocalcaneal bursitis, and frank rupture.
- Patients present with pain and swelling in the posterior aspect of the ankle.
- Magnetic resonance imaging and ultrasound are helpful for confirming the diagnosis and guiding treatment.
- Nonsurgical management of Achilles tendon disorders includes nonsteroidal anti-inflammatory drugs, physical therapy, bracing, and footwear modification.
- Surgical treatment includes debridement of the diseased area of the tendon with direct repair.
- Tendon transfer may be necessary to augment the strength of the Achilles tendon.

INTRODUCTION

Disorders of the Achilles tendon can occur in adolescents and adults, and include both traumatic and nontraumatic problems, such as insertional tendinitis, intra-substance tendinopathy, and complete rupture. Paratenonitis and retrocalcaneal bursitis also cause pain around the Achilles tendon. Symptoms include swelling and pain in the posterior aspect of the ankle or heel. Diagnosis can be confirmed with imaging, including ultrasound and magnetic resonance imaging (MRI). Treatment consists of nonsurgical measures, including ice, nonsteroidal anti-inflammatory drugs (NSAIDs), heel lifts, immobilization, and physical therapy. Surgical treatment is indicated when conservative measures have not relieved symptoms, and includes tendon debridement and repair, resection of bony prominences, and tendon transfer.

ACHILLES TENDON ANATOMY

The Achilles tendon is formed by the gastrocnemius and soleus muscles at their attachment to the posterior aspect of the calcaneus. The Achilles tendon does not

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have a true synovial sheath, but rather a single layer of paratenon. This paratenon is a single layer of cells composed of fatty areolar tissue that is highly vascularized. The paratenon is responsible for a significant portion of the blood supply to the Achilles tendon. Most of the blood supply to the Achilles enters anteriorly, and studies have shown a hypovascular area 2 to 6 cm proximal to the insertion on the calcaneus.¹

Imaging

The Achilles tendon is best imaged using ultrasonography and MRI. Ultrasound is fast, safe, and inexpensive and can easily help localize diseased segments of the tendon. In acute Achilles tendinopathy, ultrasound can clearly demonstrate fluid around the tendon. Tendon swelling and thickening, discontinuity of tendon fibers, and focal hypoechoic intratendinous areas are the most common ultrasonic findings in patients with Achilles tendon abnormalities.² Ultrasound has some limitations, including the differentiation of a partial Achilles rupture from a discrete area of tendinosis. It is user-dependent and may not be able to distinguish between Achilles tendinosis and paratenonitis. MRI is an excellent technique for imaging the internal morphology of the Achilles tendon. It can easily distinguish between paratenonitis and tendinosis. MRI is not user-dependent and can provide multiplanar images of the Achilles. It is also useful in determining the extent of degeneration in the tendon, which is useful for preoperative planning.³

INSERTIONAL ACHILLES TENDINITIS

Insertional Achilles tendon problems occur at the Achilles attachment site on the posterior aspect of the calcaneus. Degeneration of the tendon and varying degrees of calcification at the insertion site are present. Insertional Achilles tendonitis is usually atraumatic in onset and occurs in older patients.

Diagnosis

Patients with insertional Achilles tendinitis complain of pain at the posterior aspect of the heel. A bony prominence or Haglund deformity is often present.⁴ Difficulty with footwear is common. Patients usually report pain and stiffness on arising after sleep or after sitting for some time. A shoe with a raised heel is often more comfortable than a flat shoe. Examination reveals tenderness at the insertion of the Achilles accompanied by swelling and a bony prominence. Thickening of the Achilles tendon may be present with more chronic inflammation. Some pain may be elicited with passive dorsiflexion of the foot. Radiographs are helpful in determining the presence of a bony Haglund deformity at the posterior aspect of the calcaneus. MRI can be helpful in determining the extent of the degeneration of the Achilles tendon.

Treatment

Treatment of insertional Achilles tendinitis includes anti-inflammatory medication and footwear modification. Heel lifts may alleviate pain by elevating the heel to reduce tension on the Achilles insertion. The heel lift may also decrease shoe irritation over the bony prominence posteriorly. Immobilization with a boot brace or cast may be necessary in patients who do not improve with other measures. Physical therapy, including Achilles tendon stretching, may also be helpful to reduce inflammation and pain. Surgery is indicated when conservative therapy is not beneficial.

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