

# Presentation, Diagnosis, and Nonsurgical Treatment Options of the Anterior Tibial Tendon, Posterior Tibial Tendon, Peroneals, and Achilles



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## KEYWORDS

• Anterior tibial tendon • Achilles • Peroneals • Posterior tibial tendon

## KEY POINTS

- Disorders of the anterior tibial tendon (ATT) are rare, and relatively few series have been described in the literature.
- Ruptures of the ATT are more common than tendinopathies of the ATT.
- For those patients with a tendinopathy, initial treatment may include activity and shoe-wear modifications.

## INTRODUCTION

Disorders of the tendons of the foot and ankle are common and frequently drive patients to seek orthopedic evaluation. Many of these disorders may be treated effectively with nonsurgical options. However, it is important that one has a thorough understanding of both the presentation and the diagnosis of these disorders as well as the nonsurgical treatment options. Please see Oliver Schipper and Bruce Cohen's article, "[The Acute Injury of the Achilles: Surgical Options \(Open Treatment, and, Minimally Invasive Surgery\)](#)," in this issue for further discussion on disorders of the anterior tibial, posterior tibial, peroneal, and Achilles tendons.

## ANTERIOR TIBIAL TENDON

Disorders of the anterior tibial tendon (ATT) are rare, and relatively few series have been described in the literature. The most common abnormalities of the ATT are

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lacerations and closed ruptures, although tendinopathies have also been described.<sup>1–9</sup> Although most surgeons who dedicate their practice to the treatment of foot and ankle disorders encounter ATT ruptures a few times a year, their documentation in the literature is scant. Anagnostakos and colleagues<sup>1</sup> performed the most extensive review of the literature and found only 110 cases of ATT rupture documented. Nonetheless, because this abnormality is relatively uncommon, recognition and diagnosis are important to prevent a missed opportunity for early treatment.

## HISTORY AND PRESENTATION

Ruptures of the ATT are more common than tendinopathies of the ATT. Ruptures can be secondary to open direct trauma, closed indirect trauma, or can be spontaneous.<sup>1</sup> Spontaneous ruptures typically occur in older patients, particularly men between the ages of 50 and 70. Although the ruptures can occur secondary to a degenerative process, there are rarely prodromal symptoms before disruption to alert the patient or physician to impending rupture. Spontaneous ruptures are known to occur in patients with gout, inflammatory arthritis, diabetes, or steroid injections.<sup>1,7,10–12</sup> Corticosteroid injections into a symptomatic tendon or at its insertion are also thought to precipitate rupture when preexisting abnormality exists.

As the ATT is the primary dorsiflexor of the ankle, as well as an inverter of the foot, the mechanism of injury is typically a forceful plantarflexion to a contracted ATT. In the acute setting, patients are more likely to present with swelling and pain associated with the rupture. In chronic ruptures, patients are less likely to recall a traumatic event and may not complain of pain, but rather difficulty with gait. Specifically, they may complain of the inability to clear their toes from the ground especially on uneven ground, which can lead to tripping and falling.<sup>1,8</sup>

Tendinopathy is a less frequent abnormality of the ATT, but has been described in the literature as well.<sup>3,4</sup> Beischer and colleagues<sup>3</sup> reviewed a series of mostly middle-aged women who complained of swelling and pain over the ATT insertion, which was more bothersome at night. Insertional tendinopathy was also described, but typically occurred as an overuse injury.

## DIAGNOSIS

### *Clinical Examination*

On walking into the examination room, the patient's gait should be observed and may exhibit a foot drop or steppage gait. However, much of the dorsiflexion is compensated by the Extensor Hallucis Longus/Extensor Digitorum Longus and may allow dorsiflexion to neutralize.<sup>1</sup> Signs of toe extensor recruitment for dorsiflexion should be observed during gait.<sup>3</sup> An attempt to heel walk may demonstrate that the patient is unable to do so on the affected side. The ATT may retract to the level of the ankle joint leading to a visible prominence at this level (PIC).

Physical examination can reveal swelling and pain anteriorly, although these findings may be absent in a chronic injury.<sup>9</sup> Inspection and palpation may reveal the lack of normal contour of the anterior ankle in dorsiflexion and the absence of a palpable tendon. In addition, the patient may have difficulty dorsiflexing and inverting the foot. Typically, the foot will evert with attempted dorsiflexion. Motor strength testing may reveal weakness in dorsiflexion when compared with the uninjured leg.

Tendinopathy of the ATT may have more subtle clinical findings. Beischer and colleagues<sup>3</sup> described that point tenderness is maximal at the insertion of the ATT, and pain can be elicited with ankle plantarflexion, hindfoot eversion, midfoot abduction, and pronation. Force is applied to the foot in an attempt to passively stretch the TA

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