

The Missed Achilles Tear

Now what?

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KEYWORDS

- Achilles
- Chronic Achilles tendon ruptures
- Neglected Achilles tendon ruptures
- Tendon transfer for Achilles ruptures
- V-Y advancement

KEY POINTS

- Chronic Achilles tendon ruptures are debilitating injuries and are often associated with large tendon gaps that can be challenging for the foot and ankle surgeon to treat.
- Preoperative evaluation must include the patient's functional goals, medical comorbidities, MRI assessment of gastrocnemius-soleus muscle viability, condition of adjacent flexor tendons, and size of the tendon defect to formulate an individualized treatment plan.
- Several techniques have been described for the surgical management of chronic Achilles tendon ruptures, including V-Y advancement, gastrocnemius turndown flaps, tendon transfers, autograft and allograft, and synthetic material augmentation.
- The authors believe flexor hallucis longus transfer to the calcaneus, performed through a single-incision technique, is critical to restore push-off power. We no longer perform isolated V-Y advancement because of the cosmetically unacceptable scar and need to restore plantar flexion strength.

INTRODUCTION

The treatment of chronic Achilles tendon ruptures presents a unique challenge for foot and ankle surgeons. Often, these present as a missed or neglected injury, adding to the complexity of treating an already debilitating tendon rupture. Several surgical techniques have been described in the treatment of chronic Achilles tendon ruptures. Although the length of the tendon defect is often used to guide surgical decision-making, the authors believe that a comprehensive evaluation and awareness of the various treatment options are also critical to successful patient outcomes. Appropriate preoperative evaluation should include the patient's

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functional goals and medical comorbidities, MRI assessment of gastrocnemius-soleus muscle viability, viability of adjacent flexor tendons, and size of tendon defect to formulate an individualized treatment plan for the patient. Surgical management carries the risks of wound complications and potential difficulties in re-establishing a functional musculotendinous unit. This article reviews the principles of diagnosis, treatment options, and clinical outcomes, and outlines the authors' preferred techniques.

DEFINITIONS OF CHRONIC AND NEGLECTED ACHILLES TENDON RUPTURE

Missed, chronic, and neglected are terms that have been used interchangeably to describe Achilles tendon ruptures that have either not been appropriately diagnosed or treated after rupture.¹ It is estimated that 25% of acute Achilles tendon ruptures are missed at the initial office visit.² Chronic ruptures are most frequently the product of an unrecognized injury, misdiagnosis, or late patient presentation.³ Although there are slight discrepancies, many investigators recognize 4 to 6 weeks from the time of injury as a chronic rupture.^{3,4} When there is a delay in treatment, the term neglected rupture is often used to describe the injury.^{1,4} Synonymous use of these terms results in an overlap of definitions in the literature.

EVALUATION AND DIAGNOSIS

The classic signs and symptoms of an acute Achilles tendon rupture are not always present in the patient with a neglected injury. The pain and swelling associated with an acute rupture, although present to some degree, often dissipate with time. Individuals may report fatigability and loss of strength in the affected calf, particularly involving activities that demand repetitive plantar flexion. The ability to ascend and descend stairs, hike, and run may be severely compromised. The muscles of the deep posterior compartment of the leg preserve the ability to perform some active plantar flexion, potentially concealing a complete Achilles tendon rupture. It is not uncommon for a limp to be present.³

The physician should inquire about functional demands and medical comorbidities. Surgical intervention may not be appropriate for low-demand individuals or patients with a history of peripheral vascular disease, diabetes, smoking, or noncompliance.

Observing the patient in the prone position, the contralateral extremity should be used for side-by-side comparison. Visual inspection and circumferential girth measurements may reveal significant muscle atrophy of the leg. Dynamic examination of plantar flexion strength can be evaluated by having the patient walk on their tiptoes and perform a single-heel rise. Fatigue and weakness is more evident with repetitive heel-rise.¹ Gait should be observed for the presence of an antalgic limp or altered kinematics. Fibrous scar may bridge the tendon stumps and a palpable defect may be absent.

Several clinical tests have been described for acute Achilles tendon ruptures but are less sensitive for neglected injuries.⁴ The Thompson test is performed by squeezing the calf with the patient in the prone position and observing the plantar flexion of the foot.⁵ If there is complete discontinuity in the Achilles tendon, plantar flexion of the foot will be absent. Cuttica and colleagues⁶ performed a cadaveric study to determine the sensitivity of the Thompson test after progressive sectioning of the Achilles tendon and deep flexor tendons. The Thompson sign was absent in all specimens after complete sectioning of the Achilles tendon. However, the Thompson sign remained intact after sectioning up to 75% of the Achilles tendon and all the deep flexor tendons. The Thompson test may be falsely intact in a neglected Achilles tendon

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