Repair of Neglected Achilles Rupture

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KEYWORDS

• Achilles tendon • Neglected Achilles • Repair • FHL

KEY POINTS

- Neglected Achilles tendon ruptures lead to functional deficit and often require surgical repair.
- Advanced surgical techniques beyond end-to-end repair are required to regain power and function.
- Fascial advancements may be combined with local tendon transfer through a single incision.
- Allograft tendon and acellular dermal matrix can be used as augmented or as an isolated repair.
- Patients can expect a functional return to preinjury levels.

INTRODUCTION

The Achilles tendon is made up of a conjoined tendon from the gastrocnemius and the soleus muscle and is the largest tendon in the body. An Achilles tendon rupture typically occurs following an explosive contracture of this triceps surae muscle group. The rupture typically occurs in the watershed area located 5 to 7 cm from the calcaneal insertion site. Less commonly, ruptures occur at the myotendinous junction proximally as well as near the calcaneal osseous junction.

An acutely ruptured Achilles tendon is frequently described as a sensation of getting hit in the area of the Achilles tendon, and often an audible pop is described. Severe pain is usually not present at the time of injury. Inability to push off with vigor on the affected limb may be the most notable acute finding. As a result of these relatively subtle findings, patients may not seek immediate medical care. When patients do seek medical care, the Achilles tendon acute rupture remains one of the most frequently missed injuries in an urgent care or emergency room setting.[1] Patients often lack ongoing pain, and many cannot recall a specific injury. Delayed diagnosis is a primary cause of delayed treatment.

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The neglected Achilles tendon is difficult to define. Some have described ruptures beyond 4 weeks to be neglected.[2] Others have determined a length greater than 6 weeks.[3] Regardless of the length of time that has passed after rupture, if the end-to-end repair is not possible by simply plantarflexing the foot, then the treating surgeon must use additional techniques.

Once diagnosed, acute management, including acute surgical repair or protection and immobilization, leads to an optimized functional return to activities. The goal of treatment is to restore anatomic physiologic tension and strength.[4] If left untreated, the triceps surae continues to contract, leading to potential gapping at the rupture site. The resultant relatively lengthened gap healing allows poor energy translation from the muscle complex to the calcaneus.

The ruptured tendon has been shown to have degenerative histologic changes, including fibrous changes, vascular and cellular alterations, and cell proliferation.[5] The muscle subsequently atrophies and further weakens propulsive strength.[6,7] Ongoing difficulty with push-off strength often first alerts the patient to present for care. Inability to adequately plantarflex, and a reduced stability of the ankle joint occurs if the triceps surae is overlengthened.[8]

Patients typically report a history of difficulty with stairs, unsteady or uneven gait, and a limp during ambulation and during athletics requiring propulsion. Pain at the chronic rupture site is often absent.

Clinical findings of the neglected Achilles rupture include a palpable dell or conversely a palpable bulbous mass at the chronic rupture site. A comparison of the contralateral limb will show increased dorsiflexion and weakness on the rupture side. Similar to an acute rupture, side-by-side comparison while the patient is in the prone position shows the rupture side to be more dorsiflexed at resting tension. In addition, while the patient is prone and the knee flexed to 90°, the rupture side is more dorsiflexed.[9]

It has been shown that operative treatment is superior to conservative care for the symptomatic neglected Achilles tendon rupture.[10] A gap of greater than 2 cm typically exists after debridement, which necessitates a technique beyond direct end-to-end repair. Historically, the size of the gap indicated the repair option.[11,12] A modified version can be found in **Table 1**.

INDICATIONS/CONTRAINDICATIONS

Indications for surgery include symptoms despite failure of conservative efforts, including bracing and physical therapy. Contraindications for surgery include low-functioning individuals, diabetics requiring insulin with peripheral vascular disease, and individuals with extensive soft tissue compromise.

Table 1
Size of defect gap and the recommended repair technique

Tendon Gap	Procedure Recommendation
<2 cm	Direct repair with GSR ± FHL transfer
2–6 cm	V-Y lengthening ± FHL transfer
>6 cm	Turn-down flap ± FHL transfer ± Allograft