Unusual Case of Atraumatic Bilateral Achilles Tendon Rupture in the Chronic Setting

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Abstract
Bilateral spontaneous rupture of the Achilles tendon is a rare occurrence with few case reports in the literature. Despite being one of the strongest tendons in the lower limb, it is the most common one ruptured. Majority of Achilles tendon ruptures are unilateral. We present a case of surgically treated chronic bilateral Achilles tendon rupture in a 42-year-old patient without associated risk factors. The patient presented with atraumatic, bilateral Achilles tendon ruptures that were each treated with flexor hallucis longus transfer and V-Y gastrocnemius advancement. Our surgical repair was followed by six weeks of immobilization followed by increased strengthening in range motion with physical therapy. At six months follow-up visit, the patient had returned to his baseline function.

ABBREVIATIONS
FHL: Flexor Hallucis Longus

INTRODUCTION
The Achilles tendon, despite being one of the strongest tendons in the body is most frequently ruptured lower limb tendon and compromises roughly 20% of all large tendon injuries [1]. Achilles tendon rupture is most often unilateral in individuals in their fourth or fifth decade usually during eccentric loading with activities [2]. Atraumatic causes of Achilles tendon rupture are rare and are usually associated with risk factors such as previous corticosteroids or fluoroquinolone use [3,4]. The incidence of spontaneous Achilles tendon rupture without risk factors is roughly 0.02% and less than 1% of all ruptures are bilateral [5,6]. Bilateral spontaneous Achilles tendon rupture in patients without predisposing factors during normal physiologic load is rare, with only minimum number of case reports in the literature [7,8]. We present a case of idiopathic bilateral chronic Achilles tendon rupture.

CASE PRESENTATION
A 42 year old with a history of bilateral ankle pain, presents with increased pain and heel weakness that he noticed during normal activity nine days prior to presentation. Patient states he has had chronic heel pain over the last two years, however denies any specific trauma. He was initially seen at an outside hospital a week prior that placed bilateral lower leg splints on, made non-weight bearing, and recommended that patient obtain bilateral foot and ankle MRI imaging. On initial exam in our office one week later, the patient was neuro vascular intact in both lower extremities, had pain with palpation along his Achilles tendons bilaterally, and exhibited positive Thompson’s tests bilaterally, with a palpable defect on the right. Radiographic views of the right calcaneus demonstrated large calcific tendinitis (Figure 1A). The left calcaneus demonstrated a large Haglund process with posterior calcaneal bone spur (Figure 1B). MRI of both ankles demonstrated complete Achilles tendon rupture bilaterally with chronic degenerative changes along the distal tendon (figure 2A,B).

The patient was a laborer who desired surgical intervention for both sides. After a complete discussion of the risks and benefits, the patient consented to bilateral open Achilles tendon repair. Using a posteromedial approach, dissection was carried out on both ankles. The paratenons were divided to expose the Achilles tendon bilaterally. A Haglund process was noted bilaterally and both bony prominences were excised. The left tendon was torn at its insertion and had a large calcific portion that required excision. Following debridement of both tendons, there was significant gapping bilaterally even while held in equinus. A flexor hallucis longus (FHL) tendon transfer to the calcaneus was done bilaterally and fixed using Fiber loop and interference screws. Given the extensive gaps, gastrocnemius V-Y advancement was also performed bilaterally. Using anchor fixation with the Athrex (Naples, Florida) Speed Bridge device, a strong repair was achieved without gapping or tension. Following closure, both heels were placed into 10 degrees of equinus and splinted.

Postoperatively, the patient was seen five days later and...
converted to short leg casts, and was to continue ambulating with his wheelchair. At six weeks the patient was transitioned to cam boots and worked with physical therapy on increasing range of motion and gradual weight-bearing with a walker. At three months the patient was ambulating without walker in bilateral cam boots. His heel lifts were gradually removed from the cam boots and the patient was transitioned to his normal tennis shoes at four months. At the patient’s six month visit, he was ambulating without difficulty with excellent plantar flexion strength bilaterally. Figures (3A & 3B) demonstrate clinical photographs the patient’s surgical scars at his six month visit. Figure 3B shows a functional Achilles tendon bilaterally with simultaneous plantar flexion at the heel. His active range of motion of the right ankle was from neutral to 30 degrees of plantarflexion. The left ankle had a pain free 40-degree arc of active range of motion. The patient’s incisions were well healed and he was pleased with the results of his surgery.

DISCUSSION

Bilateral rupture of the Achilles tendon is a rare occurrence seen in less than 1% of the population [6]. Achilles tendon tears are generally associated with a traumatic injury during eccentric loading [2]. We present a case of bilateral Achilles tendon rupture in a patient with previous chronic Achilles tendinitis, without traumatic rupture or extrinsic risk factors.

There is currently no standard of care regarding fixation of bilateral Achilles tendon rupture. Meta-analyses generally agree that re-rupture rates in patients treated non-surgically are 12.6% as opposed to 3.5% in those treated surgically [9,10]. Those that have been surgically treated are at an increased risk for complications such as infection, neurovascular injuries, and wound healing [11].

Our patient had a history of chronic Achilles tendinopathy with significant degenerative changes at his tendon edges requiring a thorough debridement followed by gastrocnemius V-Y advancement. There are currently multiple treatment options for chronic Achilles tendon rupture with no current guideline for management [12]. Gastrocnemius V-Y lengthening is currently recommended for gaps of up to 6cm from the insertion site [12]. Given the chronicity appearance on MRI and patient history, the patient was aware that allograft was a possible necessity. Postoperative protocols for fixation of Achilles tendon rupture have varied throughout the literature as well, usually consisting of bracing for 6-8 weeks [13-15]. Given the lengthy recovery and the additional time out of work, the patient elected to fix both simultaneously. Our protocol involved six weeks of...
immobilization followed by progressive weight-bearing with removable boots with heel inserts. We monitored his healing clinically through physical exam; however ultrasound imaging can be used to confirm physiological progression of healing [16]. Gitto et al., demonstrated in their study that Achilles tendon repair following complete rupture normal healing will show hypervascularization within 3 months postoperatively and then regression of vasculature on ultrasound after 6 months of repair [16].

The Achilles tendon is generally at increased risk of rupture after the third decade of life due to a decrease in blood supply that makes it more susceptible to rupture [17]. The point of rupture generally occurs 3-5 cm proximal to its insertion and corresponds to a watershed area in the blood supply [17]. Achilles tendon rupture can often be a difficult diagnosis to make and can be missed up to 25% of cases by the initial physician [12], especially in the atraumatic setting. Management of bilateral tendon rupture has only been reported in few case reports, and we believe we present the first case of surgical management of chronic, atraumatic bilateral Achilles tendon rupture requiring FPL transfer and V-Y lengthening in a patient who is back to normal function at six months.

REFERENCES