

# A rare case of tendoachilles rupture at 2 junctions

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## Abstract

We present a case of a 28-year old male patient with an alleged history of fall in the bathroom presenting with a compound wound suggestive of tendoachilles rupture at two junctions. The patient was surgically managed and tolerated the procedure well.

**Keywords:** Achilles tendon tear, vascularity, degeneration.

## Introduction

The Achilles tendon, commonly known as the heel cord or calcaneal tendon, connects the plantaris, gastrocnemius (calf) and soleus muscles to the calcaneus bone at the back of the leg. It is the largest and most powerful tendon in the human body; the fibres of this tendon rotate by 90 degrees internally allowing the tendon to store and release energy through elongation and elastic recoil. The muscles act by means of the tendon resulting in plantar flexion of the foot at the ankle and (apart from soleus) flexion at the knee[1,2]. A rupture of the Achilles tendon is a partial or complete tear of the tendon connecting the calf muscle and the heel bone. The gastrocnemius and soleus muscles are an essential component of contraction; the weakest point is the blood supply at the union of these two muscles, 2.16 cm above the insertion. The incidence of the Achilles tendon rupture, at this most common site, with a resulting loss of plantar flexion, is about 7 per 100,000 individuals[3]. Tendoachilles tear is more common in middle-aged individuals, especially males, although there have been reports in women involved in sports[4-6].

Diagnosing an acute tendoachilles rupture is hardly difficult, though the extent of the injury is overlooked by the initial evaluating physician in almost 25% patients. Missing or delaying a diagnosis can be a distressing issue with significant compromise of the clinical outcome. An individual typically narrates a feeling of a sudden snap in the calf or heel or that something struck the calf. Since the acute pain could subside fairly quickly the patient might defer an evaluation, considering the injury as minor[2]. A careful physical examination is the foundation of a successful diagnosis of a complete rupture. The three common signs, the Simmonds' triad, of weakness of ankle plantarflexion, palpable and (often) visible gap in the tendon, and a positive squeeze test are the hallmarks of an Achilles tendon rupture[7].

Treatment of a tendoachilles rupture is dependent on the extent of the tear. In case of partial thickness tears, the initial management could be conservative, with surgery being earmarked for failure of conservative management, or for high-performance athletes. Full-thickness tears are generally repaired surgically; casting of the ankle in the talipes equinus position may be an alternative when the patient is not considered suitable for surgical repair (ill, elderly, etc.). Compared to non-surgical treatment, surgical repair results in a shorter Achilles tendon and enhanced calf muscle strength, with lesser soleus atrophy[8].

Conservative management for an Achilles tendon tear often begins with a cast on the affected leg for two weeks, followed by a brace for another four weeks. After the surgery, the patient may need to wear a cast or an adjustable brace to help the tendon heal. Simultaneously, gentle exercise can be initiated and slow mobilisation increases the chances of a full recovery. On complete healing of the tendon, i.e. usually after 8-12 weeks, the patient needs to do start with progressive calf-strengthening exercises.

## Case report

This is a case of a 28-year old male patient with a post-traumatic right sided compound grade 3a tear due to an alleged history of fall in the bathroom. In the casualty, the patient presented with an open lacerated wound over the posterior aspect of the right ankle; he did not have history of playing any sports. An ultrasound was performed over the swelling on the right ankle on the same day. There was complete discontinuity of the fibres of the tendoachilles tendon, which were suggestive of complete tear. The posterior tibial artery showed normal colour flow with biphasic spectral waveform pattern, and the posterior tibial vein showed normal colour flow and compressibility. There was no evidence of any free fluid; the underlying bony cortices visualised appeared normal.

The clinical diagnosis of tendoachilles tendon rupture was confirmed on the basis of a positive Thompson's squeeze test and an ultrasound. Radiographs were taken to rule out any bony abnormality (Fig. 2), after which the patient was given a slab. The patient was then hospitalised on the same day and started on intravenous antibiotics.

After 3 days, the patient underwent surgical intervention for

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**Figure 1:** Preoperative Clinical Photo

the tendoachilles tendon tear. Once taken on the operation table, the patient was placed in the prone position, and a tourniquet was applied. The area to be operated was scrubbed, painted and draped. The tourniquet was then inflated to a pressure of 350 mmHg, and an incision was made to expose the tendoachilles

tendon.

On dissection, contamination of wound was noted, and complete rupture of tendoachilles tendon was seen at both the musculotendinous junction and insertion (Fig. 3). The peroneii muscle and plantaris muscle were found to be cut, blood clots present, margins of the wound were ill-defined, and the edges were ragged.

The region was thoroughly washed with normal saline and betadine. A suture anchor of diameter 5 mm was inserted in the calcaneum and confirmed using a c-arm, after which the tendoachilles tendon repair was done. The muscle was then repaired with the suture anchor (Fig. 4). A thorough wash with normal saline and betadine were repeated. Vacuum-assisted closure, applied to a pressure of 40 mmHg, was performed using 3-0 Ethlilon. After suturing, the Thompsons test was found to be negative. The patient tolerated the procedure well and was shifted to recovery.

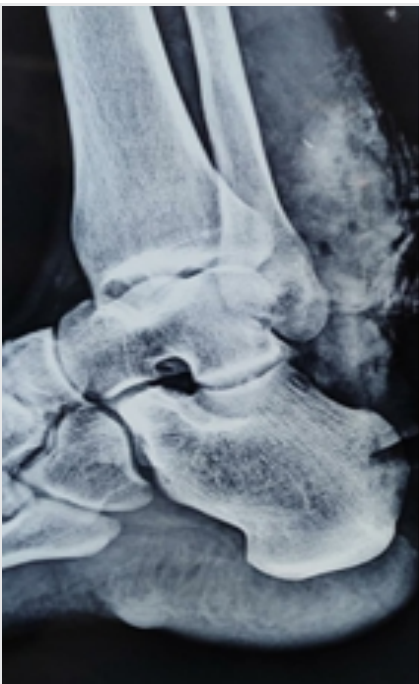
Post-operatively a repeat radiograph was repeated to ensure the position of the suture anchor, and was found to be

satisfactory (Fig. 5). The patient was given a dorsal slab and strict limb elevation, and was continued on the intravenous antibiotics. The wound dressings were changed on the 2nd and 5th post-operative days and the patient was subsequently discharged.

### Discussion

We have presented a rare case of a tendoachilles tear at two junctions - the musculotendinous junction and insertion. Very few cases of tendoachilles rupture at multiple joints have been documented. Saxena A and Hofer D presented a case report with one-year follow-up data of a 57-year-old male soccer referee with an acute triple Achilles tendon rupture injury at the proximal watershed region, the main body (mid-watershed area), and an avulsion-type rupture of insertional calcific tendinosis. The patient underwent surgical intervention with primary repair of the tendon, including tenodesis with anchors. He was postoperatively treated with non-weightbearing for 4 weeks and protected weightbearing until 10 weeks, which was followed by formal physical therapy that included an "anti-gravity" treadmill. The patient returned to full activity after a period of 26 weeks, including running and refereeing, without limitations[9]. Garneti N et al presented a case of bilateral Achilles tendon rupture in a 59-year old male who sustained the tendon rupture under normal physiological load. The patient was treated operatively with V-Y plasty on the left side and a fascial turn down to re-enforce the repair on the right side, with post-operative plaster immobilisation for 12 weeks[10].

Most evidence available in literature report patients with an achilles rupture at a single junction. Hagen M and Pandya NK reported a case series of three young female basketball players over a duration of nine months with complete achilles tendon ruptures that underwent surgery. All the patients presented to the clinic with a common complaint of calf pain in the posterior aspect of their lower leg while playing basketball. Intraoperatively, all three had degenerative tissue and scar formation suggestive of a chronic nature to their pathology. Six months after surgery, all three athletes were able to return to play and played collegiate basketball[6].



**Figure 2:** Preoperative radiograph of the affected ankle



**Figure 3:** Intraoperative tendoachilles tear seen at 2 junctions



**Figure 4:** Closure of wound done



**Figure 5:** Post-operative radiograph of the operated ankle

The primary goal of treatment for a tendoachilles tear is to reinstate continuity, and normal length and tension of the Achilles tendon. [11] After complete wound healing, rehabilitative care should be ideally initiated with a gradual increase in mobilization based on individual capability [1,12].

Postoperatively, early weight bearing along with early ankle motion exercises have been found to be associated with a lower minor complication

rate, achieving superior and more rapid functional recovery after surgical tendoachilles repair compared to conventional immobilization [13]. Prognosis is generally good with prompt treatment, with normal walking and stair climbing possible by around 12-13 weeks after treatment [11]. Concentric and eccentric prescriptions must include stretching and strengthening exercises [1].

Non-surgical management is generally best for older, less active patients or those with comorbidities [14]. Conservative therapy of tendoachilles ruptures using weight-bearing casts may offer outcomes similar to those of

non-weightbearing casts. The overall low re-rupture rate supports the continued use of initial non-operative management for the treatment of acute tendoachilles ruptures [15,16]. Surgical management is usually recommended for young people, athletes and people with high levels of activity, and those in whom non-surgical therapy has been unsuccessful. All patients, whether treated surgically or non-surgically, should have supervised physiotherapy for several months [14].

Open operative intervention of acute tendoachilles tears significantly decreases the risk of re-rupture compared to non-operative management; however, it is associated with a considerably higher risk of other complications [17,18]. Wound healing complications are the most frequently noted complications of Achilles tendon surgery and include deep and superficial infections, scar irritation, adhesions, and incisional dehiscence; the risk of these complications can be moderated by abiding to a number of fundamental techniques. Moreover, comorbidities and an individual's quality of tissue have a considerable impact on the rate of healing and risk for complications [19]. The overall complication rate can be reduced with postoperative splinting with a functional brace [17].

A recent systematic review of randomised controlled trials reported significantly lower rates of re-rupture with open surgical repair of acute Achilles tendon ruptures versus non-operative management, but with substantially higher rates of non-cosmetic scar complaints, deep infections, and sural nerve dysfunctions [20].

## References

- Verjee MA. Acute achilles tendon rupture sustained during exertional squash play. *Imaging in Medicine*. 2017;9(2):29-30.
- Chiodo CP, Wilson MG. Current concepts review: acute ruptures of the Achilles tendon. *Foot Ankle Int*. 2006 Apr;27(4):305-15.
- Čretnik A, Frank A. Incidence and outcome of rupture of the Achilles tendon. *Wiener Klinische Wochenschrift*. 2004 Jun 2;116.
- Gwynne-Jones DP, Sims M. Epidemiology and outcomes of acute Achilles tendon rupture with operative or nonoperative treatment using an identical functional bracing protocol. *Foot Ankle Int*. 2011 Apr;32(4):337-43.
- Raikin SM, Garras DN, Krapchev PV. Achilles tendon injuries in a United States population. *Foot & ankle international*. 2013 Apr;34(4):475-80.
- Hagen M, Pandya NK. Achilles Tendon Ruptures in Young Female Basketball Players: A Case Series. *J Am Acad Orthop Surg Glob Res Rev*. 2019 Jun;3(6).
- Maffulli N, Ajis A, Longo UG, Denaro V. Chronic rupture of tendo Achillis. *Foot Ankle Clin*. 2007 Dec 1;12(4):583-96.
- Radiopaedia [Website]. Achilles tendon tear. Accessed on: 1st May 2020. Available from: <https://radiopaedia.org/articles/achilles-tendon-tear>.
- Saxena A, Hofer D. Triple Achilles Tendon Rupture: Case Report. *J Foot Ankle Surg*. 2018 Mar 1;57(2):404-8.
- Garneti N, Holton C, Shenolikar A. Bilateral Achilles tendon rupture: a case report. *Accid Emerg Nurs*. 2005 Oct 1;13(4):220-3.
- Costa ML, MacMillan K, Halliday D, Chester R, Shepstone L, Robinson AH, et al. Randomised controlled trials of immediate weight-bearing mobilisation for rupture of the tendo Achillis. *J Bone Joint Surg Br*. 2006 Jan;88(1):69-77.
- Willits K, Amendola A, Bryant D, Mohtadi NG, Giffin JR, Fowler P, et al. Operative versus nonoperative treatment of acute Achilles tendon ruptures: a multicenter randomized trial using accelerated functional rehabilitation. *J Bone Joint Surg*. 2010 Dec 1;92(17):2767-75.
- Huang J, Wang C, Ma X, Wang X, Zhang C, Chen L. Rehabilitation regimen after surgical treatment of acute Achilles tendon ruptures: a systematic review with meta-analysis. *Am J Sports Med*. 2015 Apr;43(4):1008-16.
- Singh D. Acute Achilles tendon rupture. *Br Med J*. 2015 Oct 22;351:h4722.
- Young SW, Patel A, Zhu M, van Dijk S, McNair P, Bevan WP, et al. Weight-bearing in the nonoperative treatment of acute Achilles tendon ruptures: a randomized controlled trial. *J Bone Joint Surg*. 2014 Jul 2;96(13):1073-9.
- Soroceanu A, Sidhwa F, Aarabi S, Kaufman A, Glazebrook M. Surgical versus nonsurgical treatment of acute Achilles tendon rupture: a meta-analysis of randomized trials. *J Bone Joint Surg Am*. 2012 Dec 5;94(23):2136.
- Khan RJ, Fick D, Keogh A, Crawford J, Brammar T, Parker M. Treatment of acute Achilles tendon ruptures: a meta-analysis of

randomized, controlled trials. *J Bone Joint Surg.* 2005;87(10):2202-10.

18. Bhandari M, Guyatt GH, Siddiqui F, Morrow F, Busse J, Leighton RK, et al. Treatment of acute Achilles tendon ruptures a systematic overview and metaanalysis. *Clin Orthop Relat Res.* 2002;400:190-200.

19. Barp EA, Erickson JG. Complications of tendon surgery in the foot and ankle. *Clin Podiatr Med Surg.* 2016 Jan 1;33(1):163-75.

20. Wilkins R, Bisson LJ. Operative versus nonoperative management of acute Achilles tendon ruptures: a quantitative systematic review of randomized controlled trials. *Am J Sports Med* 2012;40(9):2154-60.

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