

Case Report

Spontaneous open rupture of the Achilles tendon

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Abstract

This case report describes a spontaneous open rupture of the Achilles tendon. This type of injury is rare and has few descriptions in the literature. What draws attention in this case report is the extent of the open injury and tendon pullout without associated trauma. This pattern may be related to the patient's overweight profile and previous history of retrocalcaneal bursitis. The treatment received for the spontaneous open rupture led the patient to a satisfactory result without sequelae.

Level of Evidence V; Case Report; Expert Opinion.

Keywords: Achilles tendon; Rupture, spontaneous; Treatment outcome.

Introduction

The Achilles tendon is the strongest in the human body. During gait, it undergoes approximately 5 to 7 times of body weight; therefore, it is the most commonly ruptured tendon structure of the lower limb, corresponding to approximately 20% of all injuries of large tendons^(1,2). Its total rupture occurs in an incidence between 18 and 31 cases per 100,000 inhabitants. It affects more male patients, with two stand-out characteristic groups, non-professional athletes between 25 and 40 years old and older patients over 60. In open injuries, the trauma mechanism usually involves lacerations caused by motorcycle accidents or injury with sharp objects^(1,3-5). Spontaneous injuries are even more rare and scarce in the literature, and the main group is the people prescribed drugs such as corticosteroids and fluoroquinolones, in addition to comorbidities such as diabetes, chronic renal failure, chronic tendinopathies, and bursitis^(1,2,6). The surgical treatment of open ruptures involves initial care, such as wound cleaning and debridement, in addition to early intravenous antibiotic therapy. In closed injuries, conservative or surgical treatment is possible, and the patient's functional demand, age, and comorbidities must be evaluated to indicate the best treatment for the individual^(2,4,5,7).

The aim of this study is to report the case of a patient who suffered a spontaneous open rupture of the Achilles tendon, an extensive open injury and tendon pullout without associated trauma. The patient reported having suffered a previous injury to the same tendon 25 years ago but in a different anatomical area, which required surgical repair. The treatment received for the spontaneous open rupture led the patient to a satisfactory result without sequelae.

Case description

In December 2019, a 58-year-old male patient noticed an open rupture of the right Achilles tendon while riding on a horse doing plantar flexion force on foot supported by the ground.

Immediately, the patient contacted a medical team and presented to the hospital for an orthopedic evaluation and initial care that the injury required.

On physical examination in the emergency room, the tendon pullout from its insertion was identified through the cutaneous wound exposing the injury (Figure 1). In addition, the patient informed a history of parenchymal rupture of the same tendon approximately 6 cm from the insertion in

Study performed at the Hospital Municipal Universitário de Taubaté, Taubaté, São Paulo, Brazil.

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1993 when the end-to-end tenorrhaphy was performed. The patient reported being overweight at that time. In this new injury, the patient was operated on urgently, and all the classic recommendations for open tendon injuries were followed. The complete tendon deinsertion was confirmed during the procedure. After regularization of the distal end of the tendon stump, it was reinserted into the posterior tuberosity of the calcaneus using two metallic anchors. The wound was closed conventionally, and the postoperative dressing consisted of a cast in 30° plantar flexion (Figure 2).



Figure 1. A) Site of skin injury by spontaneous rupture. B) Proximal stump of the Achilles tendon.

The postoperative period was four weeks without load using crutches. Then, from four to eight weeks, the patient was allowed a full load protected by rigid orthosis. After eight weeks, immobilization was removed, and a physiotherapy program began to recover the ankle's range of motion and improve the gait pattern, balance, and muscle strengthening.

The patient progressed well, without complications. At the six months postoperative return, the patient showed a complete, painless ankle movement arch, managing to stand on tiptoes (Figure 3).

Discussion

Spontaneous open rupture of the Achilles tendon described in this case report is rare. Few studies have been found in the literature involving re-rupture of the Achilles tendon, corresponding to 2%-12% of the reports found^(1,4). The first authors to describe an open injury of the Achilles tendon were Garcia-German et al.⁽⁸⁾.

However, the cases cited by these authors were injuries that occurred within a short period after the initial approach, between 9 and 12 weeks after primary tenorrhaphy, which also involved the associated trauma mechanism. Cesar Netto et al.⁽⁴⁾ recently described a case of open rupture after surgical repair without associated trauma.

Therefore, the uniqueness of this case is worth mentioning since this case does not involve re-rupture; the current injury occurred in a location different from the previous and no



Figure 2. Immediate postoperative radiography, showing fixation of the tendon using a metallic anchor.




Figure 3. Patient with six months postoperative. A) Scar in good condition. B) Patient staying on tiptoes without difficulty.

type of associated trauma was reported. There are some differences between an open and closed injury. A hypothesis suggested by the authors would indicate that an open injury could be related to a previous adhesion between the repaired tendon and the subcutaneous tissue, causing retraction on the skin. It is important to highlight that this report is uncommon

and rare. It is an open rupture of the Achilles tendon, at its insertion, with good clinical evolution.

Close rupture of the Achilles tendon occurs most often, keeping the skin intact. However, paying attention to the possibility of tendon injury with associated skin continuity solution is important, requiring an urgent approach.

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References

1. Park SH, Lee HS, Young KW, Seo SG. Treatment of acute Achilles tendon rupture. *Clin Orthop Surg.* 2020;12(1):1-8.
2. 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.
3. Doany ME, Paulus MC. Open Achilles tendon rerupture: A case report and review of the literature. *Case Rep Orthop.* 2020;2020:6694968.
4. de Cesar Netto C, Bernasconi A, Roberts L, Saito GH, Hamilton WG, O'Malley MJ. Open re-rupture of the Achilles tendon following minimally invasive repair: A case report. *J Foot Ankle Surg.* 2018;57(6):1272- 7.
5. Mansur NSB, Fonseca L, Matsunaga FT, Baumfeld DS, Nery CAS, Tamaoki MJS. Achilles Tendon Lesions - Part 2: Ruptures. *Rev Bras Ortop (Sao Paulo).* 2020;55(6):665- 72.
6. Chiodo CP, Glazebrook M, Bluman EM, Cohen BE, Femino JE, Giza E, et al. Diagnosis and treatment of acute Achilles tendon rupture. *J Am Acad Orthop Surg.* 2010;18(8):503- 10.
7. Hasan T, Latif A. Achilles tendon injuries: tendinopathy and rupture - A mini review. *Res Sports Med.* 2018;2(3):1- 4.
8. García-Germán D, Rubio-Quevedo R, Lopez-Goenaga J, Martín-Guinea J. Achilles tendon recurrent rupture following surgical repair: report on two cases. *Foot Ankle Surg.* 2009;15(3):152-4.