

## Conservative treatment of chronic bilateral spontaneous Achilles rupture

### Kronik iki taraflı spontan Aşil rüptürünün konservatif tedavisi

Ersin Kuyucu\*, Ali Murat Dülgeroğlu\*, Zeki Sertöz\*, Figen Koçyiğit\*\*, Osman Arslan Bora\*

\* Atatürk Eğitim ve Araştırma Hastanesi, Ortopedi ve Travmatoloji Kliniği, İzmir

\*\* Denizli Devlet Hastanesi, Fizik Tedavi ve Rehabilitasyon Kliniği, Denizli

#### Abstract

The incidence of Achilles tendon rupture was around 0.02% in the western population. Patients with chronic diseases and healthy individuals or athletes who are active in physical activities seem to be more prone to have Achilles tendon rupture. Less than 1% of them had bilateral simultaneous rupture.

A 65-year-old man was admitted with bilateral ankle pain and there was a decrease in ankle range of motion. Magnetic resonance imaging of bilateral ankle revealed bilateral Achilles tendon rupture. Conservative treatment was applied considering the age, sedentary life style of the patient and the time passed after the occurrence. Isokinetic dynamometric evaluation revealed an increase in bilateral isometric plantar flexor muscle strength. At the end of one year follow-up, the patient goes on his normal life without any functional restriction.

Bilateral simultaneous and spontaneous rupture of the Achilles tendon has been reported to occur as a complication of some medical treatment or seen together with some diseases. Although the preferred treatment for Achilles tendon ruptures is surgical, conservative methods can be applied depending on various cases. We present a case with bilateral spontaneous Achilles tendon rupture without corresponding risk factors or disease. Conservative treatment was applied and outcome was adequate for pain cessation and daily life activities.

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**Key words:** Achilles tendon; rupture, spontaneous

#### Özet

Batı toplumunda Aşil tendon rüptürü insidansı %0.02 dir. Kronik hastalığı olan kişiler ya da fiziksel olarak aktif sağlıklı kişiler ve sporcularda Aşil tendon rüptürü daha sık görülmektedir. Olguların %1 den azında bilateral spontan rüptür gelişmektedir.

65 yaşında, bilateral ayak bilek ağrısı ve ayak bilek eklem hareket açıklığında azalma yakınmaları ile başvuran erkek hastada manyetik rezonans görüntüleme ile bilateral Aşil tendon rüptürü saptandı. Hastanın yaşı, sedanter yaşam şekli ve başvuruya kadar geçen süre dikkate alınarak konservatif tedavi uygulandı. Dinamometrik izokinetik değerlendirme ile bilateral posterior baldır kas gücünde artış saptandı. Bir yıllık takip sonrasında hastanın fonksiyonel bir kısıtlanma olmadan yaşamını devam ettirdiği görüldü.

Bilateral simultane ve spontan Aşil tendon rüptürünün bazı medikal tedavilerin komplikasyonu ile birlikte ya da bazı hastalıkların varlığında gerçekleştiği bildirilmiştir. Aşil tendon rüptürünün tedavisinde cerrahi yöntemler tercih edilse de olgunun özelliklerine göre konservatif tedavi uygulanabilir. Burada bu risk faktörleri olmadan bilateral spontan Aşil tendon rüptürü gelişen bir olgu sunulmaktadır. Olguya uygulanan konservatif tedavi ağrı kontrolünün sağlanması ve günlük yaşam aktivitelerinin devam ettirilmesini sağlamıştır.

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**Anahtar sözcükler:** Aşil tendonu, rüptür, spontan

Figen Koçyiğit

Yazışma Adresi: Denizli Devlet Hastanesi, Fizik Tedavi ve Rehabilitasyon Kliniği, Denizli  
e-mail: figen7876@yahoo.com

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## Introduction

Achilles tendon is formed with the junction of gastrocnemius and soleus muscles. Patients with chronic diseases such as systemic lupus erythematosus and rheumatoid arthritis who are treated with corticosteroids, hyperparathyroidism, hypothyroidism, chronic renal insufficiency, peripheral arterial disease and usage of fluoroquinolone group antibiotics ; and healthy individuals or athletes who are active in physical activities seem to be more prone to have Achilles tendon rupture [1,2]. Although the most frequent tendon rupture is that of lower limb and it accounts for approximately 20% of all large tendon injuries, Habusta [3] reported that the incidence of Achilles tendon rupture was around 0.02% in the western population. Less than 1% of them had bilateral simultaneous rupture.

## Case report

A 65 -year-old man was admitted with bilateral ankle pain and stiffness. One month ago, he had experienced a sudden snap and pain as if someone hit with a stick at the back of the left ankle while he was walking on the ground at home. Three days later, he experienced a similar snap and pain in the right ankle with his attempt to walk. After waiting a month to eliminate his complaints, he was presented to orthopaedic out-patient clinic in 2009 due to a pain in the retrocalcaneal region of both ankles. He was unable to plantar flex both feet. He had neither story of using steroid or fluoroquinolone group antibiotics, nor connective tissue or peripheral arterial disease.

Clinical examination failed to reveal any sign of hematoma on either Achilles tendons; however the patient demonstrated a positive Thompson sign on both calf tendons. Physical examination also revealed palpable gap and tenderness approximately 5 cm above the insertion of both Achilles tendons.

Magnetic resonance imaging (MRI) and arterial doppler ultrasonography of both ankles were performed. MRI analysis of both ankles revealed a serious condition of tendinosis, rich in myxoid degeneration, with complete bilateral full-thickness rupture and normal vascular tissue (Figure 1). Sonography assessments confirmed the clinical examinations and MRI results.

Conservative treatment was chosen regarding the age, sedentary life style of the patient and the time passed from the occurrence. Following 6 weeks of immobilization in the



**Figure 1.** Bilateral coronal MR image documenting Achilles tendon rupture (arrows)

above knee plaster-cast at equine position and 20° of knee flexion, gradual weight bearing was started. Isometric hamstring quadriceps strengthening and four side straight leg raises were started for increasing lower extremity muscle strength. Stretching exercises for ankle were applied to achieve full passive range of motion at ankles. Therabands were used for ankle strengthening as the patient could not perform toe walk. Proprioceptive exercises were also started to increase balance.

Posterior cruris muscles had been examined by dynamometer twice with 9 month interval. At the end of the 9th month there is no swelling and pain at both ankles. He is able to go on his normal life but not able to perform toe walk.

Isokinetic muscle testing of posterior cruris muscles revealed decrease of isokinetic muscle strength for dorsiflexors which may be due to casting in equine position. Isokinetic muscle strength of left side plantar flexors decreased but right side plantar flexors stayed unchanged. However isometric peak torque was increased for both plantarflexors at the end of nine months (Table1,2).

**Table 1.** Muscle strength dynamometer results on admission

	Concentric Dorsiflexor Isokinetic (right)		Concentric Dorsiflexor Isokinetic (left)		Concentric Plantarflexor Isometric (right)
Velocity(°/sec)	180	240	180	240	---
Peak torque (FtLbs)	5	5	5	3	30
	Concentric Plantarflexor Isokinetic (right)		Concentric Plantarflexor Isokinetic (left)		Concentric Plantarflexor Isometric (left)
Velocity(°/sec)	180	240	180	240	---
Peak torque (FtLbs)	11	8	12	10	31

**Table 2.** Muscle strength dynamometer results at 9th month follow up

	Concentric Dorsiflexor Isokinetic (right)		Concentric Dorsiflexor Isokinetic (left)		Concentric Plantarflexor Isometric (right)
Velocity(°/sec)	180	240	180	240	---
Peak torque (FtLbs)	3	3	4	3	37
	Concentric Plantarflexor Isokinetic (right)		Concentric Plantarflexor Isokinetic (left)		Concentric Plantarflexor Isometric (left)
Velocity(°/sec)	180	240	180	240	---
Peak torque (FtLbs)	11	8	10	7	37

**Discussion**

Achilles tendon rupture can be due to mechanical failure or degeneration [4,5]. The vascularity of Achilles tendon may be disrupted by recurrent microtrauma or systemic diseases mentioned above. This can result in structural changes in collagen and cellular matrix of the tendon [6,7]. Microtrauma increases collagen type III content of tendons. The decreased resistance of collagen type III to tensile forces predisposes tendon ruptures [8].

Bilateral simultaneous and spontaneous rupture of the Achilles tendon has been reported to occur mainly as a complication of corticosteroid treatment [9]. Cases of such secondary diseases as hypothyroidism, poor peripheral arterial circulation, diabetes mellitus and lupus erythematosus are also reported [10-13]. Garneti and Hayes reported cases with bilateral spontaneous Achilles tendon rupture. These two cases also had no predisposing factors for tendon rupture. However both of the cases were smokers and authors commented that smoking may have had an influence on tendon vascularity easing rupture [9,14]. In the present case, we presented no known etiological factors as in the effect of smoking. This makes the case more peculiar regarding etiology.

In our case sudden dorsiflexion of a plantar flexed foot during walk may increase eccentric loading on the tendon causing its rupture. Habusta proposed a similar mechanism to explain spontaneous Achilles tendon rupture in gymnasts. He suggested that exercises that require both feet push off the ground concurrently may increase risk of tendon rupture [3].

A recent randomized trial compared the functional outcomes of surgical and non-surgical treatment of Achille tendon ruptures. The primary outcome measure for evaluating functionality was isokinetic muscle testing. Peak torque at 120 degree per second was used for analysis. The difference according to noninjured side for plantar flexion was 25 %, for dorsiflexion was less than 10 % for the nonsurgical treatment group in this study at 52 week [15]. Isokinetic muscle testing documented an increase in isometric plantar flexor peak torque and a decrease in dorsiflexor peak torque in our case. As the case was bilaterally injured, a comparison to the healthy side could not be made.

Although current treatment for Achilles tendon ruptures is by surgical methods, either conservative or surgical treatment can be preferred depending on each case. Those

supporting the surgical approach feel that the correct tension can be achieved only by direct visualization and further suggest that surgical repair results in a lower rate of rerupture [1]. It has also been said that open repair will allow earlier ankle mobilization. However, surgery is not without disadvantages, including hospital admission anesthesia, wound healing problems, and increased cost. A recent Cochrane review evaluated the relative effects of surgical versus non-surgical treatment for acute Achilles tendon ruptures in adults. Authors concluded that open surgical treatment significantly reduces rerupture risk but produces higher risks of complications such as wound infection. [16].

We can prefer conservative treatment for chronic achilles tendon rupture at elderly and sedentary patients, patients that have diseases such as diabetes mellitus, peripheral arterial disease and patients that are undergoing chemotherapy or radiotherapy. In the case presented, at the end of the first, year the patient continues his normal life except performing toe walk.

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