



ISSN (P): 2521-3466
ISSN (E): 2521-3474
© Clinical Orthopaedics
www.orthoresearchjournal.com
2023; 7(4): 16-19
Received: 02-11-2023
Accepted: 04-12-2023

Tchaa Hodabalo Towoezim
Department of Traumatology
and Orthopaedics of Kara
University Hospital, University
of Kara, Togo

Kokou Kanassoua
Department of General Surgery
of Kara University Hospital,
University of Kara, Togo

Edem Yaovi James
Anatomy laboratory, University
of Lome, Togo

Pio-Faré Gnandi
Department of Traumatology
and Orthopaedics of Kara
University Hospital, University
of Kara, Togo

Gamal Ayouba
Department of Traumatology
and Orthopaedics of Lome
Municipality Regional Hospital,
University of Lome, Togo

Batarabadja Bakriga
Department of Traumatology
and Orthopaedics of Notse
prefectural Hospital, University
of Lome, Togo

Anani Abalo
Department of Traumatology
and Orthopaedics of Sylvanus
Olympio University Hospital,
University of Lome, Togo

Corresponding Author:
Tchaa Hodabalo Towoezim
Department of Traumatology
and Orthopaedics of Kara
University Hospital, University
of Kara, Togo

Clinical and therapeutic aspects of Achilles tendon ruptures at Kara University Hospital (Togo)

Tchaa Hodabalo Towoezim, Kokou Kanassoua, Edem Yaovi James, Pio-Faré Gnandi, Gamal Ayouba, Batarabadja Bakriga and Anani Abalo

DOI: <https://doi.org/10.33545/orthor.2023.v7.i4a.422>

Abstract

The Aim of this study was to evaluate the results of surgical treatment of Achilles tendon ruptures, treated in Our center.

Methods: The study was prospective. It took place from September 2018 to August 2022 at Kara University Hospital. It involved 17 patients who were at least 18 years old, and who had been operated on and followed up for rupture of the Achilles tendon. Functional assessment of the ankle after surgery was made after an average follow-up of 22 months by the Satisfaction score, and Achille Tendon Total Rupture Score (ATRS).

Results: The average age was 46 years. Men predominated with 13 cases, the sex ratio M/F=3.23. There were two etiological groups. The first group, whose age interval was [29-52 years], was composed of soldiers and young workers who were victims of sports accidents. The second group, whose age range was [58-65 years], consisted of women who presented spontaneous rupture of their Achilles tendon while walking. Surgical management was done by the Bosworth technique in 11 cases, followed by Abraham VY plasty associated or not with the Chigot technique in four cases, then simple suture by Kessler stitches in two cases. Functionally, the average ATRS score was 83.18 and 15 patients were satisfied with the treatment.

Conclusion: Despite the high risk of skin necrosis and infection, conventional surgical treatment of Achilles tendon ruptures achieves good results.

Keywords: Abraham VY plasty, achille tendon, open surgery, bosworth technique, chigot technique

Introduction

Rupture of the Achilles tendon is defined as a subcutaneous discontinuity affecting part or all of its width [1]. It is the most common tendon rupture in the body, but its incidence was long considered rare. The marked development of sports and leisure activities has led to an increase in its incidence throughout the world [1, 2]. Ruptures of the Achilles tendon mainly affect men aged between 30 and 50, as a result of sports accidents. Spontaneous ruptures are rarer; they occur in the context of systemic diseases or corticosteroid or fluoroquinolone medication, and often affect women aged between 60 and 80 [3, 4]. If left untreated, this condition can lead to major functional disability. For acute ruptures, There is no consensus on the choice of treatment, which may be functional, orthopaedic or surgical in its various forms, notably percutaneous, minimally invasive or conventional [5]. In Togo, due to delays in treatment and limited technical resources, treatment is most often by conventional surgery. The aim of this study was to evaluate the results of open surgical treatment of Achilles tendon ruptures in our centre.

Patients and Methods

The study was prospective and included patients who presented with a corporal rupture of the Achilles tendon treated openly between 1st September 2018 and 31 August 2022 in our centre. The series consisted of 17 patients aged 18 and over who had undergone surgery and follow-up for Achilles tendon rupture, regardless of the time of injury. Patients lost to follow-up and cases of open section of the Achilles tendon were excluded.

The parameters studied were age, sex, occupation, mode of rupture, surgical method, ankle function after treatment and return to initial activities.

Diagnosis was based on the history and physical examination. The history provided informations on the circumstances of onset, pain in relation to the tendon and difficulty in weight-bearing when walking. On physical examination, a deficit in plantar flexion, Brunet Guedj's signs, Thompson's signs and depression on palpation along the tendon path were sought [6]. An X-ray of the ankle was systematically performed in cases of rupture that occurred during sport. Ultrasound was requested to determine the location of the rupture and whether it was partial or total.

Surgical technique

The surgical procedure was performed under locoregional anaesthesia. The patient was positioned prone, with a tourniquet at the root of the thigh. A longitudinal posteromedial incision was made. For acute ruptures managed early on, the tendon was sutured end-to-end using Kessler stitches with Mersuture 2, reinforced by 2/0 absorbable thread. For long-standing ruptures, or ruptures that were managed after 15 days, sutures reinforced with Bosworth plasty (Figures 1, 2, 3), the Chigot technique, or Abraham's VY plasty [4] were used.



Fig 1: Ruptured Achilles tendon, filled with fibrosis



Fig 2: Turning the musculoaponeurotic flap using the Bosworth technique



Fig 3: Suture of the skin incision

Post-operatively, a plaster cast was applied. The ankle was placed in an equinus position for the first 21 days, then at 90° until the 45th day. A window over the surgical wound was not systematically made. It was carried out if the patient reported abnormal pain in the posterior side of the ankle beyond the 5th postoperative day, despite analgesics. functional rehabilitation of the ankle was started on the 45th days, as was walking with the use of a walking stick, which were gradually abandoned. Functional evaluation of the ankle after surgery was carried out after a mean follow-up of 22 months using the Satisfaction Score and the Achilles Tendon Total Rupture Score (ATRS) [7, 8].

Results

Demographic and aetiological aspects

In four years, 17 patients underwent surgery, representing an annual incidence of 4 cases. Age ranged from 29 to 65, with an average of 46. Males predominated, with 13 cases and there were 4 women, giving an sex-ratio of 3.23. There were two aetiological groups. The first group (13 cases), aged between 29 and 52, was made up of military personnel and young working people who were victims of sports accidents. The second group (4 cases), with an age range between 58 and 65, was made up of women who had suffered spontaneous rupture of their Achilles tendon while walking or climbing stairs at home.

Clinical aspects

The right side was most affected (10 cases), and the left side was affected in 7 cases. Twelve patients consulted within four weeks of the onset of the trauma. Two patients, aged 62 and 65, had

well-monitored diabetes. Chronic pain preceded spontaneous tendon rupture in the second group of patients. Corticosteroid injections were given in various doctors' surgeries to relieve the pain in 3 patients. The rupture was evident on physical examination in all cases. In two cases, x-rays of the ankle revealed torn bone fragments, corresponding to the calcaneal insertion zone of the tendon. Ultrasound confirmed a total corporal rupture of the Achilles tendon in 13 cases.

Therapeutic aspects and Results

The mean time to surgery was 50 days. The Bosworth technique was used in 11 cases, followed by the Abraham VY plasty with

or without the Chigot technique in four cases. Simple Kessler sutures were used in two patients. There were two cases of early superficial infection and one case of extensive skin necrosis. Sampling of the infected wounds isolated *Staphylococcus Aureus* in both cases, which was sensitive to amoxicillin and clavulanic acid. Antibiotic therapy combined with local care allowed the wounds to heal within two weeks. Skin necrosis led to exposure of the tendon, necessitating a lateral supramalleolar fasciocutaneous cover flap. In terms of function, sixteen patients returned to their pre-tendon rupture level of activity. The mean ATRS score was 83.13, and 15 patients were satisfied with the outcome of the treatment (Table I).

Table 1: Summary of surgical management of Achilles tendon ruptures

Number and date of opérations	Sexe	Age	Profession	Mode of occurrence	Time to Surgery	surgical technique	Subjective Results	ATRS score
1: Nov 2018	F	62	Housewife	Spontaneous	6 months	Bosworth	Satisfied	100
2: Feb 2019	M	46	Military	Sport	45 days	Bosworth	Satisfied	92
3: June 2019	M	42	Military	Sport	18 days	VY (Abraham)	Satisfied	87
4: Oct 2019	M	30	Sports Teacher	Sport	16 days	Bosworth	Dissatisfied	42
5: Jan 2020	M	52	Engineer	Sport	28 days	Bosworth	Satisfied	78
6: June 2020	M	37	Military	Sport	8 days	Simple Suture	Satisfied	96
7: Sep 2020	M	40	Military	Sport	23 days	Bosworth	Satisfied	92
8: Oct 2020	F	58	Shopkeeper	Spontaneous	4 months	Chigot	Satisfied	100
9: Dec 2020	M	29	Military	Sport	14 days	Simple Suture	Satisfied	98
10: March 2021	M	36	Military	Sport	16 days	VY + Chigot	Satisfied	87
11: April 2021	M	50	Journalist	Sport	16 days	VY (Abraham)	Satisfied	98
12: Aug 2021	M	42	Military	Sport	30 days	Bosworth	Dissatisfied	82
13: Nov 2021	M	39	Military	Sport	32 days	Bosworth	Satisfied	96
14: Dec 2021	F	65	Pensioner	Climbing stairs	2 months	Bosworth	Satisfied	100
15: Feb 2022	M	49	Military	Sport	1 months	Bosworth	Satisfied	92
16: April 2022	M	45	Military	Sport	1 months	Bosworth	Dissatisfied	74
17: June 2022	F	60	Housewife	Spontaneous	3 months	Bosworth	Satisfied	100

ATRS: Achille tendon Total Rupture Score

Discussion

Acute ruptures of the Achilles tendon frequently occur during high-level or leisure sports activities [1, 2, 9]. These lesions may also occur in underlying pathological conditions and constitute a particular type of degenerative rupture [9, 10]. These two lesion entities are found in our series. Acute ruptures occurring during sporting activities were the most frequent and occurred mainly in young male subjects, which is consistent with the work of Hani *et al.* [1].

Spontaneous or domestic ruptures were seen in four women, two of whom had pre-existing diabetes and three of whom had received corticosteroid injections. In one patient, there was no pathological history, and no evidence of corticosteroid or fluoroquinolone use. In fact, the Achilles tendon is one of the most stressed tendons during daily activities and especially during sports. This major stress, linked to a loss of its visco-elastic properties with age, is responsible for a large proportion of its pathology, and in particular ruptures which most often occur in weakened tendons with degenerative histological lesions [11]. In addition to physiological changes in the tendon and chronic overload with microtrauma, degeneration can also result from hormonal, systemic and metabolic diseases such as diabetes mellitus, systemic lupus erythematosus, hypercholesterolaemia and obesity, rheumatism and gout [9, 10, 12]. Certain drugs such as corticosteroids and fluoroquinolones also present a risk of tendon rupture when administered over a long period [12, 13].

The diagnosis of an Achilles tendon rupture is most often clinical. In the typical case of an acute rupture, in the typical case of an acute rupture, the patient reports the appearance of a sudden release accompanied by elective pain in the posterior region of the ankle. He feels as if he has been "Hit From

Behind". The pain is immediate and sudden, and it also subsides very quickly [10, 14]. When there is an underlying pathology, mechanical pain of moderate intensity and variable duration often precedes the lameness [15]. In all cases, the physical signs are identical, namely loss of equinus of the foot in prone position, feet protruding from the examination table (Brunet Guedj's sign), depression along the tendon path and a positive Thompson's sign [6, 10, 15]. In acute ruptures, an x-ray of the ankle can be used to diagnose cases of calcaneal avulsion of the tendon insertion, and to rule out other bony lesions in the region, such as bimalleolar fractures and other calcaneal fractures. According to Assal [14], ultrasound is of little value in the diagnosis of Achilles tendon rupture and often reports false partial ruptures. In our study, the clinical diagnosis was made during the consultation. In four cases, the ultrasound findings did not correspond to the clinical findings; the rupture was total but the ultrasound had found partial ruptures.

In terms of treatment, there is no consensus in the literature as to the choice of orthopaedic or surgical treatment. For old ruptures, surgical treatment is accepted by almost all authors [16, 17]. According to Gabel *et al.* a delay of four weeks between the rupture of the tendon and the diagnosis is most often used as a criterion for the Age of the rupture [16]. Acute ruptures can be treated orthopaedically, but according to several authors, surgical treatment has the advantage of faster, more solid healing and a lower risk of recurrent ruptures [18-20]. It is for these reasons that surgical treatment is indicated in high-level sportsmen and women or adults who are very active [9, 12, 18]. In our series, and in accordance with the criteria for choice of treatment found in the literature, all patients received surgical treatment. This was open surgery. End-to-end suturing with Kessler dots was only performed in two patients because they

were operated on early. In cases where the operating time was relatively short but where muscle retraction prevented the stumps from coming together properly, an Abraham VY plasty was sufficient. Reinforcement of the suture by plasty of the small plantar tendon using the Chigot technique depended on the presence or absence of this tendon. In older cases, where it was necessary to excise the fibrosis that had filled the rupture zone, combined with regularisation of the tendon ends, Bosworth plasty was essential, as the space between the stumps became large, more than three centimetres. Our practice is in line with the literature. According to Neumayer *et al.* if the distance between the stumps does not exceed 3cm, a VY aponeurotic lengthening and end-to-end suturing of the stumps can be considered. In the case of a larger gap, a fascial reversal flap may be considered [3]. The major risk of open surgery is skin necrosis and infection [8, 12]. We have had one case of extensive skin necrosis and two cases of minor superficial infection. Erivan *et al.* Reported a 13.2% delay in healing [21]. Ahed *et al.* found a 12.5% incidence of skin dehiscence, leading to revision surgery in one patient [17]. Our overall results are satisfactory and comparable to those reported in the Literature [1, 17, 21].

Conclusion

The delay in consultation, the delay in diagnosis and the delay in management lead us to recommend surgery for the treatment of Achilles tendon ruptures. We perform open surgery. Despite the high risk of skin necrosis and infection associated with this surgical technique, our results are satisfactory.

References

- Hani R, Kharmaz M, Berrada MS. Faut-il préférer une technique chirurgicale dans le traitement des ruptures du tendon d'Achille? Pan African Medical Journal, 2015, 20(285). DOI: 10.11604/pamj.2015.20.285.5700.
- Jozsa L, Kvist M, Balint BJ, Reffy A, Järvinen M, Lehto M, *et al.* The role of recreational sport activity in Achilles tendon rupture. A clinical, pathoanatomical, and sociological study of 292 cases. Am J Sport Med. 1989;17(3):338-43.
- Neumayer F, Assal M, Crevoisier X. Diagnostic et traitement de la rupture du tendon d'Achille. Rev Med Suisse. 2012;8:1490-5.
- Charissoux JL, Vernois J, brulefert K, Coste C, Rouvillain JL, Rousseau B, *et al.* Le traitement des ruptures du tendon d'Achille. Travaux de la Société d'orthopédie et de Traumatologie de l'ouest. Réunion de Nantes, Juin 2012. Mise au Point. Revue de chirurgie orthopédique et traumatologique. 2013;99:S134-S142. <http://dx.doi.org/10.1016/j.rcot.2013.03.019>.
- Sheth U, Wasserstein D, Jenkinson R, Moineddin R, Kreder H, Jaglal SB, *et al.* The epidemiology and trends in management of acute Achilles tendon ruptures in Ontario, Canada: A population based study of 27,607 patients. Bone Joint J. 2017;99-B(1):18-86.
- Buttet M. Les ruptures anciennes du tendon d'Achille, à propos de 14 cas opérés. Maitrise orthopédique; 2001. p. N°106.
- Nilsson-Helander K, Thomeé R, Silbernagel GK, Thomeé P, Faxen E. The Achilles tendon Total Rupture Score (ATRS): Development and validation. The American Journal of Sports Medicine. 2007;35(3):421-426. DOI: 10.1177/0363546506294856.
- Charissoux JL, Vernois J, brulefert K, Coste C, Rouvillain JL, Rousseau B, *et al.* Le traitement des ruptures du tendon d'Achille. Revue de chirurgie Orthopédique et traumatologique. 2013;99:S134-S142. <http://dx.doi.org/10.1016/j.rcot.2013.03.019>.
- Maffulli N, Via AG, Oliva F. Chronic Achilles Tendon Disorders: Tendinopathy and Chronic rupture. Clin Sports Med. 2015;34(4):607-24. DOI: 10.1016/j.csm.2015.06.010.
- Adakal O, Koini M, Mohamed A, Kassoumou SA, Adamou H, Magagi IM, *et al.* Rupture spontanée du tendon d'Achille sur terrain diabétique: A propos du cas. European Scientific Journal. 2018;14(6):295-302.
- Puddu G, Ippolito E, Postacchini F. A classification of Achilles tendon disease. The American Journal of Sports Medicine. 1976;4(4):45-150.
- Longo UG, Ronga M, Maffulli N. Acute ruptures of the Achilles tendon. Sports Med Arthrosc Rev. 2009;17(2):127-138.
- Maffulli N, Longo UG, Maffulli GD, Khanna A, Denaro V. Achilles tendon ruptures in diabetic patients. Arch Orthop Trauma Surg. 2011;131(1):33-38.
- Assal M. Rupture aiguë du tendon d'Achille. Actualité diagnostique et thérapeutique. Schweizerische Zeitschrift für Sportmedizin und Sport traumatologie. 2007;55(1):5-10.
- Benjlali L, Benhima H, Zahlane M, Essaadouni L. Rupture spontanée du tendon d'Achille à la phase précoce d'un lupus érythémateux systémique. La revue de médecine interne. 2012;33:e47-e48.
- Gabel S, Manoli A. Neglected rupture of the Achilles tendon. Foot & Ankle International. 1994;15(9):512-517.
- Ahed K, Belmoubarik A, Mouha A, Omari N, Magoumou A. Les ruptures anciennes du tendon d'Achille. A propos de 20 cas. Revue Marocaine de Chirurgie Orthopédique et Traumatologique. 2017;66:35-42.
- Aktas S, Kocaoglu B, Nalbantoglu U, Seyhan M, Guven O. End to End versus Augmented repair in the treatment of acute Achilles tendon ruptures. The Journal of Foot and Ankle Surgery. 2007;46(5):336-340. DOI: 10.1053/j.jfas.2007.06.006.
- Assal M, Jung M, Stern R. Limited open repair of Achilles tendon ruptures: A technique with a new instrument and findings of a prospective multicenter study. J Bone Joint Surg Am. 2002;84:161-70.
- Henriquez H, Munoz R, Carcuro G. Is percutaneous repair better than open repair in acute Achilles tendon rupture? Clin orthop Relat Res. 2012;470:998-1003.
- Erivan R, Riouach H, Villatte G, Descamps S, Boisgard S. Sutures à ciel ouvert du tendon d'Achille: Récupération fonctionnelle au long cours. Sci Sports; c2018. <https://doi.org/10.1016/j.scipo.2018.01.01.005>.

How to Cite This Article

Towoezim TH, Kanassoua K, James EY, Gnandi PF, Ayouba G, Bakriga B, *et al.* Clinical and therapeutic aspects of Achilles tendon ruptures at Kara University Hospital (Togo). National Journal of Clinical Orthopaedics 2023;7(4):16-19.

Creative Commons (CC) License

This is an open-access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.