

Evaluation of Surgical Treatment of Recent Traumatic Achilles Tendon Ruptures Using the Bosworth Technique: A Report of 12 Cases

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Abstract

Introduction: Rupture of the Achilles tendon is a frequent pathology in sports traumatology. Several surgical methods have been described for the treatment of this injury. **Materials and Method:** Over 36 months, 24 patients underwent surgery for Achilles tendon rupture, including 12 cases repaired using the Bosworth technique. The patients were 10 men and 2 women. The mean age was 36 years (18 to 58 years). **Results:** We noted 5 cases of minor complications which progressed favourably, 2 cases of superficial infection, delayed healing, limited skin necrosis and one case of tendonitis. One case of tendonitis pain. Overall, 75% of patients recovered satisfactory function. **Discussion:** Treatment was surgical in our series. There is currently no consensus on the treatment of Achilles tendon ruptures. Those in favour of orthopaedic treatment emphasise the absence of surgical complications and those in favour of surgical treatment the low rate of recurrent rupture. **Conclusion:** Surgical treatment using the Bosworth technique is innovative, and appears to be well suited to Achilles tendon rupture, with a low rate of re-rupture.

Keywords

Achilles Tendon, Rupture, Surgery, Bosworth Technique

1. Introduction

Rupture of the Achilles tendon is a frequent pathology in traumatology. It generally occurs after a sports accident and constitutes a handicap that most often re-

quires surgical treatment. Diagnosis of the rupture is often clinical, despite the diversity of ways of treating Achilles tendon ruptures, and the choice of surgical treatment is the tendency of the majority of surgeons. This surgical treatment varies from simple sutures to various immediate grafts using inert or living material. The method of repairing Achilles tendon ruptures using this technique is innovative and gives good results. We report our experience in the management of 12 patients operated on for Achilles tendon ruptures repaired using Bosworth's technique [1].

2. Materials and Method

This was a 36-month retrospective study (January 2022 to December 2024) in the orthopaedic-traumatology department of the Gabriel Touré University Hospital in Bamako. During this period, we treated 24 patients for Achilles tendon rupture, including 12 cases repaired using the Bosworth technique [1]. These included 10 men and 2 women. The average age was 36 (18 to 58). The right side was affected in 9 cases and the left side in 3. Eight (67%) of our patients were amateur sportsmen and women. These sports accidents occurred in 6 cases during football and 2 cases during basketball. No fluoroquinolone was found to be responsible for tendinopathy. The delay between the treatment and the trauma was 10 days. Diagnosis of Achilles tendon rupture was based on clinical examination, supplemented by ultrasound in all 12 cases. All our patients were operated on using the Bosworth technique [1]. Under locoregional anaesthesia, the patient was placed in the prone position with the tourniquet at the root of the thigh, and the entire limb was prepared with the log under the anterior aspect of the ankle so as to position the foot at a right angle (**Figure 1**) in order to mark out the skin incision.



Figure 1. Patient positioning.

The approach was medial lateroachnoid, with the incision centred on the rupture and approximately 10 cm long. The skin must be carefully protected from traumatic instruments. The aponeurotic sheath is opened in the plane of the skin incision. The incision is extended upwards for 5 to 6 cm, exposing the aponeurosis of the triceps (**Figure 2**). A flap 1.5 to 2 cm wide is drawn over the defect (**Figure 3**).

The flap is then turned over and folded over the distal fragment, to which it is sutured with multiple stitches of slow-absorbing suture (**Figure 4(a)** and **Figure 4(b)**, **Figure 5**).



Figure 2. State of rupture in a patient.



Figure 3. Flap raising.



(a)



(b)

Figure 4. Flap turning Flap overlap and suture.



Figure 5. Final positioning of the flap.

Closure is then achieved using a suction drain. A dressing and immobilisation with a circular plaster cast and an equinus ankle was performed post-operatively in all patients for an average of 45 days, followed by an ankle straight ankle boot to protect walking. Functional evaluation was based on objective assessment of the existence of complications, Achilles tendon and calf trophicity, joint amplitude, tendon strength and return to sporting activities. The subjective result was assessed by pain and apprehension during sport.

A satisfactory outcome was considered to be patients presenting with: a good scar, a tendon with good trophicity, a calf of moderate volume compared to the opposite side, symmetrical mobility with the contralateral ankle, and good single-leg support. A poor outcome was determined by the presence of pain with limping.

3. Results

We reviewed the 12 patients with a mean follow-up of 14 months (8 months to 2 years). Minor early complications occurred in 5 cases (41.66%) with a favourable outcome. These included superficial infection in 02 patients, delayed healing in 1 patient, and a case of limited skin necrosis which progressed favourably. In 1 case, tendonitis-type pain resolved spontaneously. There were no thromboembolic complications in this series. 12 ruptures were clinically assessed at a distance. We noted 3 cases of keloid scarring. In all cases, there was hypertrophy of the Achilles tendon, leading in 3 cases (25%) to moderate discomfort when putting on footwear. Calf volume and triceps muscle strength were reduced compared with the opposite side. Mobility was symmetrical with respect to the opposite side. Monopodal support on the balls of the feet was possible in all our patients. In 02 patients there was minimal pain on exertion. Sports training was resumed in 6 patients. Sport was resumed after an average of 5 months. An unsatisfactory result with limping associated with permanent pain in one patient. In this series, 9 patients (75%) recovered satisfactory function overall.

4. Discussion

Traumatic rupture of the Achilles tendon is a frequent pathology in daily sports traumatology practice [2], with a wide range of management options. In our series, the treatment was surgical. There is currently no consensus on the treatment of Achilles tendon ruptures. Those in favour of orthopaedic treatment point to the absence of surgical complications and those in favour of surgical treatment to the low rate of recurrent rupture. Although randomised or non-randomised comparative studies, Farison [3] and Wills [3] seem to favour surgical treatment in most cases. Local complications, a prerogative of surgical treatment, are assessed differently by different authors: 13% by Farison [4] and 41.66% in our series, but with a favourable outcome. In our opinion, this is explained by the precarious vascularisation of this area of the skin. These complications appear to be significantly reduced in several series by Wills *et al.* [4] due to improved surgical tech-

niques and probably to the creation of slow resorption sutures allowing stable sutures with better biological tolerance. The amyotrophy as well as the decrease in muscle strength of the sural triceps in all series [2] [3] [5] [6], surgical repair and immediate weight-bearing in a functional position seems to have a beneficial effect on muscle trophicity, Rantanen *et al.* [7]. Furthermore, the absence of residual equinus is linked to the position of the 90° brace. Cetti *et al.* [8] have clearly shown that postoperative musculotendinous training is a factor in effective and rapid functional recovery. The resumption of sporting activity (50%), although lower than in other surgical series (78%) for Farison [3], is higher than the results obtained by Nistor [9] (33%) who, contrary to several comparative series, found 100% resumption for orthopaedic treatment. Our results are consistent with the literature, with lower recurrence rates for surgical repair.

5. Conclusion

Surgical treatment using the Bosworth technique is effective and reliable, and appears to be well suited to Achilles tendon ruptures, with a low rate of re-rupture. This technique ensures a very solid repair with low morbidity.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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