



Chigot techniques for Achilles tendon rupture. Review of 20 patients

A. Benabdeslam, M. Khermaz, A. Elbardouni, M. Mahfoud, M.S. Berrada and M. Elyaacoubi
 Servie de traumatologie-orthopédie, CHU IBN SINA RABAT- Maroc.

ARTICLE INFO

Article history:

Received: 28 December 2013;

Received in revised form:

28 January 2014;

Accepted: 18 February 2014;

Keywords

Achilles tendon,
 Rupture,
 Surgery,
 Chigot technique.

ABSTRACT

Several surgical methods have been described for the treatment of fresh ruptures of the Achilles tendon. We operated 20 patients for a ruptured Achilles tendon. This study concerns 14 men and 6 women with a mean age of 32 years, all operated by the technique Chigot. We regretted having 12 minor complications advanced favorably. One patient broke a second time his tendon two months after surgery. In 75% of patients, previous sports activity was found. Several studies confirm the low complication rate of this technique particularly recurrent rupture compared to conservative treatment. The technique allows Chigot strengthening the Achilles tendon ruptured without resorting to the fascia of the triceps with a low morbidity.

© 2014 Elixir All rights reserved

Introduction

Rupture of the Achilles tendon is usually a brutal and debilitating accident that usually requires surgical treatment. It is a common disease (especially in sports).

The diagnosis is often out of the clinic. Surgical treatment of ruptures of the Achilles tendon keeps a large place, which many studies have now proven effectiveness, provided they are applied rigorously and from the very first days after the accident. [1] The goal of intervention is to restore the tendon to its normal length to ensure an optimal functional outcome, we wanted to review a series of 20 cases of ruptures of the Achilles tendon repaired using the technique of CHIGOT [2].

Materials and Methods

We surgically treated 20 patients by different operators for acute rupture of the Achilles tendon by CHIGOT technique [2].

There were 14 men and 6 women. The average age at the time of the accident was 32 years.

The right side was affected in 13 cases and the left side in 7 cases. Sixteen (80%) of our patients were amateur athletes. These are sports injuries occurred in 14 cases during football practice, during a practice court and the other case in an accident handball.

Taking fluoroquinolones deemed responsible for tendinopathy was noted in one case. The time between the accident and the surgery is an average of 4 days. The diagnosis of rupture of the Achilles tendon was made by clinical examination supplemented by an ultrasound in 5 cases (25%).

All patients underwent surgical treatment using the technique of Chigot [2].

General anesthesia with intubation and installation prone, with the usual precautions (occlusion of the eyes, no tension of brachial plexus, abdominal freedom, no compression at the inguinal regions, protection of pressure zones ...). Pneumatic tourniquet at the root of the thigh, preparation of any member.

Operator and using face to face, instrumentalist at the foot of the patient. It is useful to place a rolled under the front of the ankle, so as to position the foot at right angles to the incision trace well field. The incision is latero-achilléenne internal, 2-3cm medial to the middle of the posterior surface of the tendon,

to avoid any further conflict with shoes, The postero-lateral incision is of no benefit and may be complicated a neuroma on the branches of the sural nerve. The incision is centered on the break and is 8 cm long.

The skin should not be peeled off. Throughout the procedure, the skin will be carefully protected dissecting forceps aggressive or traumatic spacers. The fascial sheath is open on the plane of the skin incision. The peritoneum is always found in fresh fractures. It is carefully dissected from the tendon itself and, optionally, spotted on the wire. Hemostasis everything superficial level must be perfect. Tendon rupture always appears as a total tearing of the fibers. Clots are removed and tendon ends regularized a minimum. The foot is then placed in forced not equine, moving the rolled field, objectifying and the length of the tendon to be returned (Fig1). Repair is first provided by lacing or suture. He gets over slow resorption, no 0 or 1, spent in each tendon end, building about 2 cm from the rupture zone and providing lateral nodes. A single pass is enough: we must not "strangle" the tendon. The son is tied laterally, taking care not to over tighten, so they do not tear the tendon.

Then along the inner edge of the Achilles tendon, the tendon of the planters is spotted (you must know inconstant character). To collect, you practice against a shortcut to the inside of the leg, about four fingers' breadth below the joint line of the knee and one finger's breadth behind the postero-medial border of the tibia (Fig2). Rope tendon planters, is easy to identify if hangs, at the same time, the tendon is mobilized at the lower incision. The tendon is cut as high as possible, and then cooled in the lower incision by sliding. Thus, a transplant of a length of about 30 cm (Fig3).

Maintaining its lower insertion, heel, the transplant is laced in the Achilles tendon by a series of back and forth on either side of the broken area, or through a large eye needle, either through tendon speckles made with a scalpel and end slightly enlarged with tweezers, Halsted kind. The transplant is blocked by multiple points slowly absorbable sutures (Fig4). The tourniquet is deflated and hemostasis verified. A suction drain is slid along the tendon. Subcutaneous plane is made, dot inverted

thin wire slow resorption. Finally, the skin by separate end-Fi hotspots closure.

For our part, we always use a plaster splint. A few days later, according to the state of the surgical scar, a boot equine resin is made and left until the third week. It is replaced by a resin boot foot taking a right angle for an additional three weeks, allowing the support part. Any asset is removed at 6 weeks. Free support is included, protected initially by crutches and possibly a heel. Rehabilitation has not, during the first 3 or 4 weeks as exercises to recover range of motion, with an active work and passive dorsiflexion to plantar flexion. Then, work the triceps weight gradually undertaken. The monopod pressing the tip is allowed only 3 months along, little by little, the resumption of sporting activities.



Fig 1: Aspect of the Achilles tendon ruptured



Fig 2: removal of the plantaris tendon by cons-incisions



Fig 3: Plasty with the plantaris tendon

Functional assessment performed by the same surgeon based on an objective assessment of the existence of complications, trophicity Achilles tendon and calf, range of motion, strength of the tendon and the resumption of the sport. Subjective outcome was assessed by the pain and apprehension in sport.



Fig 4: fixation of plantar tendon by multiple separated points

Results

All patients were reviewed with a mean of 2 and a half years. Early minor complications occurred in 12 cases (60%) with a favorable outcome. It is a superficial sepsis in 3 patients, delayed healing in 5 patients, 2 cases of limited cutaneous necrosis evolving favorably and 2 cases of tendinitis resolved spontaneously. We had no thrombo-embolic complications in this series.

One major complication occurred. It is a tendon rupture 2 months post-operatively during an early resumption of sporting activity. We considered a failure. Clinical evaluation remotely involved 20 ruptures.

A clinical review, we noted a case of keloid scar. In all cases, there was an Achilles tendon hypertrophy resulting 3 times (15 %) a moderate discomfort when the boot. The volume of the calf has been decreased from the opposite side.

Mobility was symmetrical to the opposite side except in two cases where there was a loss of dorsi-flexion for one, the OLB on tiptoe proved impossible in the other. In 2 times, there was minimal effort pain. The sport training was taken in 11 patients out of 16 in the same previous level. Resumption of sport was made on average 5 months.

Insufficient income associated with lameness has permanent pain to a patient. In this series, 15patients (75 %) has recovered satisfactory function.

Discussion

No consensus currently exists in the treatment of Achilles tendon ruptures. Supporters of orthopedic treatment highlight the absence of surgical complications and surgical treatment of those low rupture rate iterative. The randomized comparative studies or not are not foreseen [3], Wills et al. [4] appear, in most cases, favorable surgical treatment.

Local complications, preserve surgical treatment are assessed differently according to the authors: 13% Farison [5], 60 % in our series but favorable. This is explained in our view the precarious vascularisation of the skin area. These complications appear sharp decline in several series Wills et al. [4] due to improved surgical techniques and probably the creation of the sun has slowly absorbable sutures four stable with improved biocompatibility. The atrophy of the soul triceps reported in all series [3], surgical repair and immediate weight bearing position function seems to have a beneficial effect on muscle trophicity (Rantanen et al. [6]). Furthermore, the absence of residual equine is related to the position of the restraint 90 °. Cote et al. [7] have clearly shown that the musculotendinous postoperative stress is a factor in effective and rapid functional recovery.

The resumption of sporting activity (68%) is lower than other surgical series (78.5 % for Farison [3]), and higher than

the results obtained by Nistor [8] (33 %), which unlike many comparative series is 100% recovery for orthopedic treatment. The low rate of recurrent rupture and return the length of the tendon explains the clear superiority of surgery on this criterion.

Conclusion

Surgical treatment using the technique of Chigot seems well suited to the rupture of the Achilles tendon on the plantaris tendon exists with a low rate of rupture. This technique ensures a solid repair with a low morbidity.

No conflict of interest

References

- [1] kouvalchouk JF, Rodineau J, Watin-Augouard L. Les ruptures du tendon d'Achille. Comparaison des résultats du traitement orthopédique et non opératoire. *Rev Chir Orthop* 1984 ; 70 : 473-478
- [2] Kovalchok F. Rupture tendon d'Achille. EMC. Traite de Techniques Chirurgicales. Orthopedie Traumatologie 1993; 44-910.
- [3] Farison F., Pages A., Azoulai J.J., De Lavison R., Bousquet G. Traitement chirurgical Des ruptures du tendon d'Achille A

propos de 42 cas traites selon la technique de Bosworth. *Rev Chir Orthop* 1997; 83:65-9.

- [4] Wills CA., Washburn S., Caiozzo V., Prietto CA. Achilles tendon Rupture. A review of the literature comparing surgical versus non surgical treatment. *Clin Ortop* 1986; 207:156-63.

- [5] Kakiuchi M. A combined open and percutaneous technique for repair of tendo Achillis. Comparison with open repair. *J Bone Joint Surg* 1995; 77B:60-3.

- [6] Rantanen J., Hurme T., Paananen M. Immobilization in neutral versus equinus position after Achilles tendon repair. A review of 32 patients. *Acta Orthop Scand* 1993; 64:333-5.

- [7] Cetti R., Henriksen L.O., Jacobsen K.S. A new treatment of ruptured Achilles tendons. A prospective Randomized study. *Clin Orthop* 1994; 308:155-65.

- [8] Nistor L. Surgical and non-surgical treatment of Achilles tendon rupture. A prospective randomize d study. *J Bone Joint Surg* 1981; 63A:394-9.