

OUR EXPERIENCE WITH MINIMALLY INVASIVE TREATMENT OF RUPTURES OF THE ACHILLES TENDON

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ABSTRACT:

Traumatic ruptures of Achilles tendon become more frequent in the last few decades because of the increased sport activities. This fact urges the orthopedics to search for more effective methods with lower patient morbidity and shorter period for recovery. The conclusions of the study prove very low complication rate, short period for recovery and patient satisfaction after any of the presented minimally invasive techniques. It makes percutaneous minimally invasive Achilles tendon suture preferable method in the daily traumatology practice.

Key words: Achilles tendon, minimally invasive techniques

INTRODUCTION

Ruptures of the Achilles tendon are a serious and an unsolved from therapeutic point of view problem. There is not a general agreement on the best method of treatment and the best rehabilitation program. Undisputedly, it is only the surgical treatment, which restores the anatomic integrity of the tendon, but this is associated with a high rate of complications such as infections, skin necrosis, and surgical cicatrix. Non-surgical treatment does not have these disadvantages, but it carries a high rate of re-ruptures and changes in the tendon length. Minimally invasive techniques, with their advantages, combine surgical and non-surgical methods and thus determine the modern therapeutic approach to the treatment of the Achilles pathology.

PURPOSE

To apply the modified percutaneous suture with traumatic ruptures of the Achilles tendon.

MATERIAL AND METHODS

Percutaneous fixation was applied to 32 patients with a rupture of the Achilles tendon. With five of them, there was tendon lesion, with wound size – 5-10 cm, and with three of them, the rupture was at the tendon's insertion level. The study was conducted from June 2008 to June 2009 in MBAL St. Anna, Varna and in MBAL Eurohospital, Varna.

All patients were male, mean age, 33.5 years, operated within 48 hours after the rupture with different minimally invasive techniques, and modified percutaneous fixation under local anesthesia.

Modified Percutaneous Suture Technique

In two levels, using metal probes (drivers), which, crossing each other, pass through the stab incisions from medial to lateral, in proximal and distal directions, 3 above and 3 beneath the traumatic line. DEXON (1) or Assucryl (1) are used, two for the proximal and two for the distal tendon fragment. The consecutive phases of MPS are presented in the graphs below (fig. 1a, b, and c)

Phase 1

- The probes are introduced, under extended knee and ankle dorsiflexion, in the middle of the traumatic groove. They are crossed and the threads are passed through them.

Phase 2

- Under flexed knee and plantar flexion of the foot, the probes are again introduced through the initial incision stabs and crisscrossed. The threads are passed through them, this time in a proximal direction (at the same level in the frontal plane and different in the sagittal plane)

MPS of Achilles tendon lesions

We applied MPS with 5 patients with Achilles tendon lesions. Under local anesthesia and pre-operative preparation of the operative field, we maintained primary surgical treatment of the wound and applied MPS. Cast immobilization in neutral position.

Case 1. 35-year-old male, 2 day after a rupture of the left Achilles tendon. Percutaneous Achilography was applied (fig. 2a, b, c, d).

MPS with ruptures of the insertion of the tendon

Case 2. A 30-year-old male, 72 hours after a rupture of the left Achilles tendon at the level of tendon's insertion.

Percutaneous Achilloraphy was applied. The technique of MPS is the same but a bone canal is made with the cannula, respective to the tendon's insertion. The threads are crisscrossed through it on a distal level. The remaining phases are similar to those of close tendon ruptures. (fig. 3a, b)

Postoperatively, the patients remain in bed from 24 to 48 hours. Cast immobilization in neutral position of the foot for 30 days and 20 min. of ergometer cycling daily after 20 day of the surgery (fig. 4a, b). Plaster brace from 30-35 day with physiotherapy and medical PE. At 40-60 day – partial weight bearing with a heel lift. At 60 day – independent walking. Control sonographies on 15 and 30 days.

Case 3: 37-year-old male with a rupture of the left Achilles tendon. The patient was treated with open surgery for a rupture of the right Achilles tendon 3 years ago. There

is a full clinical recovery after the Achilloraphy (fig.5a, b)

DISCUSSION

The surgical treatment offers reduced time for immobilization – up to 30 days, and a low rate of re-ruptures – 2-3%. Minimal invasion is an advantage determining the patient's preference to the other conventional surgical techniques. The methodology is applicable to both open lesions and to ruptures close to the insertion of the tendon. Its main priorities involve intact paratenon and the skin integrity, absence of postoperative scars, short operative time, and local anesthesia. The following-up of the postoperative results is maintained with a sonographic scan.

CONCLUSIONS

Percutaneous fixation is a reasonable option for the treatment of Achilles tendon ruptures. We did not observe any re-ruptures and sural nerve injury. The methodology is reliable and preferred in the modern trauma practice.

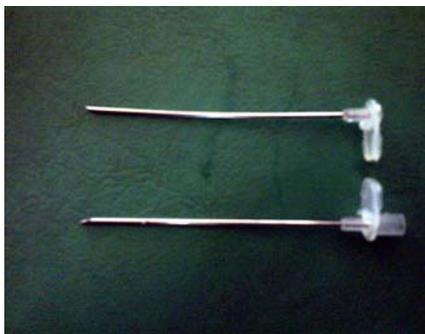


Fig. 1a.



Fig. 1b.



Fig. 1c.



Fig. 2a.



Fig. 2c.



Fig. 2b.



Fig. 2d.



Fig. 3a.



Fig. 4a.



Fig. 5a.



Fig. 3b.



Fig. 4b.



Fig. 5b.

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