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## Achilles tendon ruptures: comparison between the clinical results of classical versus mini-invasive or percutaneous surgical treatment

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### ABSTRACT

The aim of the study is to evaluate the surgical treatment comparing the results obtained with different techniques. We revised 68 cases with acute Achilles tendon rupture who underwent surgical correction between 2004 and 2011, with a 40 month average follow-up. 34 of these were submitted to a classical open repair using the Kessler or Krakow technique, 25 to a mini-invasive technique (Achilon) and 9 to a percutaneous technique (Tenolig). We report a 29% rate of complications when using the classical technique: the major complications were one re-rupture, two surgical wound dehiscences, one infection and one sural nerve injury. In the mini-invasive/percutaneous techniques, two re-ruptures occurred (5.9% total, one in each technique) and one fistula at the needle insertion location. In regards to the percutaneous and mini-invasive techniques, the functional results and degree of satisfaction were higher, with fewer complications, reflecting a trend that has been expressed in the international literature.

Keywords: Achilles, tendon, rupture, mini-invasive, percutaneous, classical surgery

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### Introduction

Acute Achilles tendon ruptures occur mostly in male patients, between 30 and 50 years of age, frequently associated with sports practice. [1,2]. The aim of the study is to evaluate the surgical treatment comparing the results obtained with different techniques.

### Material and Methods

We revised 68 cases with acute Achilles tendon rupture who underwent surgical correction between 2004 and 2011, with a 40 month average follow-up. 34 of these were submitted to a classical open repair using the Kessler or Krakow technique, 25 to a mini-invasive technique (Achilon) and 9 to a percutaneous technique (Tenolig). [3,4,5] (Figure1).

In each patient, we determined the mechanism of injury, surgical and inpatient time, surgical technique, complications and re-rupture rate. The

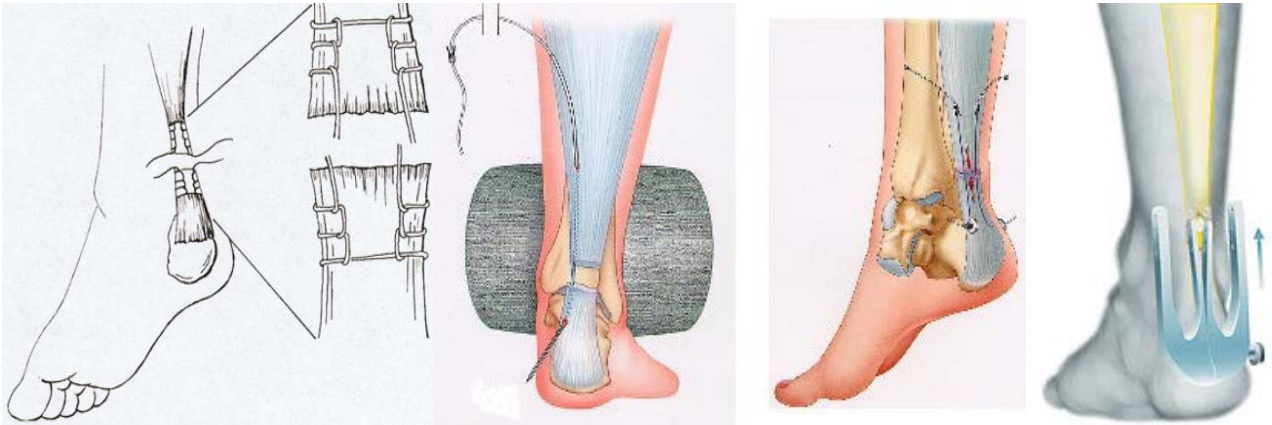


Figure 1 - Surgical techniques for Achilles tendon repair: Krakow, Tenolig, Achillon techniques

AOFAAS hindfoot score were used for clinical and functional analysis (Figure2). Limitations in daily living and sports activities and global patient satisfaction were reviewed.

mini-invasive (94) techniques.(Table I)

Nearly all patients fully resumed their activities of daily living (95.6%) and 73.5% denied limitations is sports practice.

## Results

On the 68 cases, 93% were male, with an average age of 38.7 years (18, 55). The average time to surgery was 1.53 days and average inpatient time was 2.9 days. The most frequent cause of injury was sports practice (47%). The AOFAS average score was 89.8 points (89, 100) for the classical technique, and 93.9 points (80, 100) for the percutaneous (93.5) and

## Discussions

We report a 29% rate of complications when using the classical technique: the major complications were one re-rupture, two surgical wound dehiscences, one infection and one sural nerve injury. In the mini-invasive/percutaneous techniques two re-ruptures occurred (5.9% total, one in each technique) and one fistula at the needle insertion location (Figure 3).

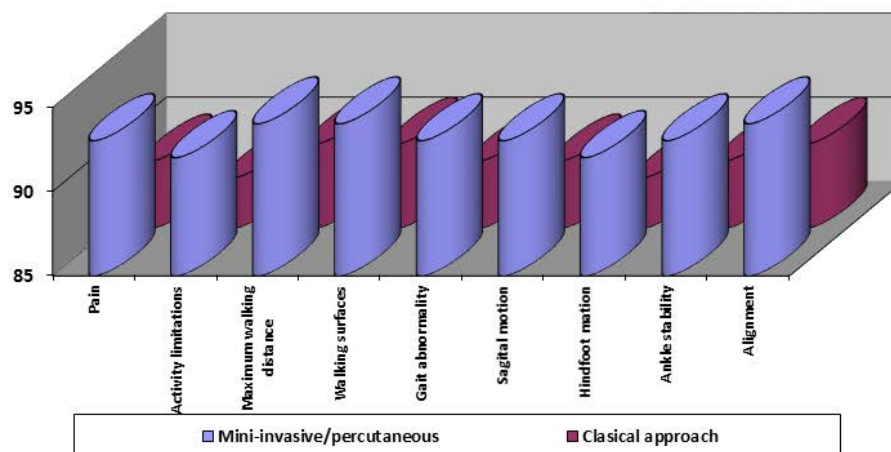


Figure 2



Figure 3 - Clinical aspects

After casting, rehabilitation is important to increase the functionality of the ankle and to return the patient to his social life. There is a tendency for a higher rate of return to sports activities at the same level to be achieved after classical treatment or mini-invasive or percutaneous treatment of an Achilles tendon rupture [6,7]. Patients who return to sports activities are 78.93% from the patients with mini-invasive or percutaneous treatment and 82.75% from those with classical surgical treatment and we believe that our indications and approaches of Achille tendons rupture are as good as we see in literature.

## Conclusions

The non-classical techniques were associated with a lower rate of complication when compared to the classical technique, whilst having, on the other

hand, a slightly higher re-rupture rate. We were not able to obtain, however, a statistically significant correlation between the functional scores regarding the percutaneous when compared separately with the mini-invasive or classical techniques (explainable by the reduced sample of the percutaneous technique). Similarly, there was no statistically significant correlation between age, gender, side of intervention, mechanism of injury, pre-operative time or return to previous activities and the rate of complications.

In regards to the percutaneous and mini-invasive techniques, the functional results and degree of satisfaction were higher, with fewer complications, reflecting a trend that has been expressed in the international literature.

Presently, in our department, most acute Achilles tendon ruptures are treated using a percutaneous or mini-invasive technique, as these techniques seem to be associated with a lower complication rate and better functional results.

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Table I

	Classical approach	Mini-invasive technique (Achillon)	Percutaneous technique (Tenolig)
Number of patients	34	25	9
		34	
Average AOFAS Score	89.8 (80, 100)	94 (80, 100)	93.5 (88, 100)
		93.9 (80, 100)	
AOFAS Score – 4.1 points difference between techniques			

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