

# Results of a new conservative and functional treatment for the recently ruptured Achilles tendon

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## Introduction:

The treatment of the recently ruptured Achilles tendon remains controversial. There is an ongoing discussion whether a recently ruptured Achilles tendon is best treated by open or mini-invasive suture or conservatively by a casting or bracing technique. Both, surgical and conservative treatments have been reported to obtain good and excellent results in most cases. Meta-analysis have concluded, that wound problems, as well as infection or paresthesia, are significant complications from surgical treatment [1,2], even though percutaneous techniques seem to reduce the rate of complications [3]. On the other hand, conservative treatment is more often complicated by re-rupture of the Achilles tendon [1,2]. Recent surgical and conservative procedures favour a functional bracing to rigid casting [4,5,6,7,8]. To the best of our knowledge, all reports published about conservative treatment were using a rigid bracing type. Our aim was to evaluate a new functional conservative treatment of the recently ruptured Achilles tendon, using an articulated dynamic ankle brace.

## Patients and Methods:

Between March 1998 and August 2005, 12 women and 45 men with an average age of 45 (24-73), underwent a functional and conservative treatment for a recently ruptured Achilles tendon. After immobilisation with a cast in equinus for 10 days, the patients were authorised to walk with full weight-bearing, protected by a commercial orthosis (VACO<sup>®</sup>ped, OPED, see Figure 1). The equinus angle was set at 30° plantar flexion until the end of week 3, and at 15° until the end of week 4. At the 5th week the system was unlocked to allow ankle mobilisation of 30-15-0°, and at 30-0-0° at the seventh week. The orthosis was removed after 8 weeks. After removal of the orthosis, the patients wore a 10 mm heel lift for another 4 weeks (see Table 1).

All patients had follow-up examinations up to 12 months after the trauma. The first 30 patients underwent a clinical examination and muscular testing with a Cybex isokinetic dynamometer at 6 and 12 months. In June 2006 all 57 patients were

contacted and received a questionnaire. Their subjective opinions of the outcome, any change in their sport activities and eventual late complications were investigated. We were able to collect 46 questionnaires from the 57 patients (82.5%). Two patients had died due to non-related causes, 9 patients could not be located. The average follow-up time for the questionnaires was 5 years. We evaluated the questionnaire and medical records using a scoring system based on the Leppilahti Ankle Score.



## Results:

Most of the injuries were indirect trauma during sport. Soccer, tennis and squash were the most frequent sport activities. After one year there was not any difference in the motion of the ankle in comparison with the healthy side. There was no substantial calf amyotrophy and we found very little difference in muscular capacity. The average overall satisfaction with the outcome was 8.1 out of 10. The average of the modified Leppilahti Ankle Score 56.8 out of 70. Two thirds of the questioned patients returned to the same level of their previous sport activities. We observed 5 complete re-ruptures (9%) and two partial re-ruptures. All re-ruptures happened during the first five months after the accident. We observed one deep venous thrombosis complicated by pulmonary embolism and few minor skin complications.

### Conclusions:

There is a place for conservative functional treatment in the acute rupture of the Achilles tendon in most cases. The present treatment resulted in good to excellent functional results in most cases. It requires active participation and patient compliance and a systematic medical follow-up during the first 6 months. The

complication rate is acceptable. Early ankle mobilisation in a dynamic cast might promote better functional results than rigid immobilisation techniques. Prospective comparison with other conservative treatment procedures and with modern surgical techniques, like minimal invasive suture, is still required.

**Table 1: Re-education and bracing procedure using a dynamic orthosis (VACO®ped)**

	Day 1-10	Day 10 - 3weeks	4 <sup>th</sup> week	5 <sup>th</sup> -6 <sup>th</sup> week	7 <sup>th</sup> week	8 <sup>th</sup> -12 <sup>th</sup> week
<b>Immobilisation / bracing</b>	Plaster cast in equinus in 30° plantar flexion	VACO®ped static in 30° plantar flexion	VACO®ped static in 15° plantar flexion	VACO®ped dynamic in 15-30° plantar flexion	VACO®ped dynamic in 0-30° plantar flexion	Heel lift 10mm
<b>Anti-coagulation</b>	LMWH	or anti -	vitamin K	n o n e		
<b>Weight-bearing</b>	n o n e	as much as comfortable	f	u	l	l
<b>Physiotherapy</b>						
tibio-talar mobilisation	/	active -	assisted	f r e e		
proprioception, strength, endurance	/	w i t h o r t h o s i s				f r e e
walking in pool	/	w i t h o r t h o s i s				f r e e

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