

# Repair of Achilles Tendon Re-Rupture



## CASE STUDY

Surgery performed on March 20th, 2007 by Jan Lidström, M.D. Ph.D., Consultant orthopedic surgeon, Department of Orthopedic Surgery, Sahlgrenska University Hospital Mölndal, Sweden.

### Introduction

If an Achilles tendon rupture is neglected or undiagnosed, or if the tendon re-ruptures, surgical intervention is often necessary. If the tendon tissue has degenerated this presents an additional challenge.

Tendon interpositioning may be used but it increases the size of the incision and the risk of infection and/or pain from the harvest site. Using artificial or collagen graft material is a possible option.

In order to regain its functionality the tendon needs to be under load during the healing process. The material used as a graft must be strong enough to act as support during the entire healing process but at the same time offer flexibility to allow for natural stretching of the tendon. It should also serve as a scaffold for tissue ingrowth and remodelling of the tendon.

### Case Presentation

The patient is a 57-years-old male with an insulin-dependent diabetes type I. He had surgery, using a Bosworth reinforcing technique, in October 2006 for a two-month-old neglected total Achilles tendon rupture of his left foot. Despite surgery the patient continued to experience pain and he had a pronounced weakening in plantar flexion. An ultrasound at his local hospital showed a total rupture of the Achilles tendon with a 2 cm diastasis.

### Physical Examination

The patient walked with a squelching stride. He was unable to walk on tiptoe and every step was painful. The Achilles tendon was widened and painful at palpation with a maximum 6 cm proximal to the insertion. Thomson's test was negative.

### Surgical Procedure

A medial paratendinous incision was made, the tendon was carefully freed from surrounding scar tissue and the rupture site was identified.

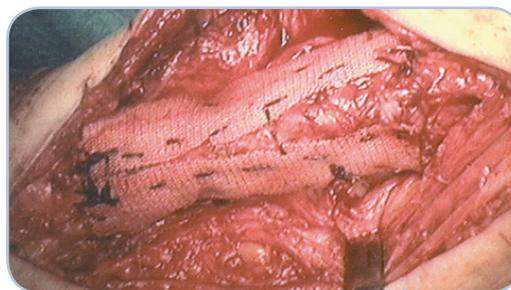
The tendon was elongated and had a 2 cm long hourglass-shaped part with only a very thin connection between the more normal parts of the tendon. The elongated part had the opaque appearance of degenerated tissue. This part of the tendon was resected and the ends were adapted using a PDS suture.



*Image 1. The Artelon® Tissue Reinforcement was wrapped around the repaired tendon.*

The Artelon® Tissue Reinforcement implant (ATR, 6 cm × 9 cm) was wrapped around the repaired tendon and was attached both distally and proximally to achieve correct tension of the tendon. The ATR was then fixed tightly to the tendon tissue using multiple, multidirectional sutures, (2-0 Vicryl) throughout both the implant and tendon (image 2).

Postoperatively the patient was given a bandage and a plaster. The foot was immobilized in a plaster for two weeks to protect the wound.



*Image 2. The Artelon® Tissue Reinforcement was fixated to the tendon with sutures.*

## Rehabilitation

The combination of the tendon suture and Artelon® Tissue Reinforcement was considered strong enough to use the rehabilitation program adopted for fresh ruptures.

After two weeks the plaster was removed and an orthosis locked in decreasing plantar flexion angles was used for another 6 weeks. Full weight-bearing was allowed in the orthosis.

## Postoperative Follow-Up

The patient had follow-ups at ten weeks, seven months and 14 months.

At the ten-week-check the patient had no pain but was still weak in his left foot and the tendon was wide.

At the 14-months-check the patient could stand on tiptoe on both feet at the same time, but was weaker in his left foot when standing on one foot alone. The range of motion was normal on both sides and the walking was normal. The tendon was still wide.

An ultrasound at 14-months-check showed minor cystic changes but the tendon structure is continuous and moves normally.

## Conclusion

Artelon® Tissue Reinforcement is well suited for secondary repair of a neglected rupture or rerupture of the Achilles tendon. The procedure also makes an extended incision and problems at the harvest site for the usual gastrocnemius graft unnecessary. This also reduces the risk of postoperative infection.