

Repair of Chronic Achilles Tendon Rupture



CASE STUDY

Surgery performed on August 24th 2006 by Jan Lidström, M.D., Ph.D., Consultant orthopedic surgeon, Department of Orthopedic Surgery, Sahlgrenska University Hospital, Mölndal, Sweden.

Introduction

There is an ongoing debate regarding which form of treatment is preferable for Achilles tendon ruptures. Non-surgical treatment normally produces a good result after an acute rupture if the patient is treated within 1-2 days of the injury. Operative treatment where the tendon is repaired using end-to-end sutures is an alternative. If the injury is chronic, neglected or undiagnosed, or if the tendon re-ruptures, other surgical techniques are often necessary. If the tendon tissue has degenerated this presents even more of a surgical challenge.

Tendon interpositioning may be used e.g. using a flap of the gastrocnemius fascia or nearby tendons. The disadvantages are an increase in the size of the incision and an increased risk of infection and/or pain from the harvest site. Another possibility is to use artificial or collagen graft material to reinforce the sutures and tendon tissue.

Tendons heal relatively slowly and needs to be under load in order to regain functionality. Any material used as a graft needs to be strong enough, but also flexible enough, to allow for the natural stretching of the tendon during the entire healing process. It should also serve as a scaffold for tissue ingrowth and remodelling of the tendon.

Case Presentation

The patient, a 70-year-old female, had experienced a number of years of heel pain and had been treated by her GP with steroid injections behind the lateral malleolus. Later she developed more distal Achilles tendon pain and was diagnosed with Haglunds disease. She had a resectional osteotomy of the deformity in June 2005 without any pain relief.

Physical Examination

An examination in January 2006 using Doppler ultrasound revealed an anterior partial rupture at the insertion of the Achilles tendon (image 1). The tendon was thickened and had a ventral rupture, 0.5 cm in diameter.

There was local swelling and tenderness of the tendon at the insertion.

The patient could not stand on her toes or raise her right heel. She could walk only limited distances because of the pain and she had difficulty finding suitable shoes.

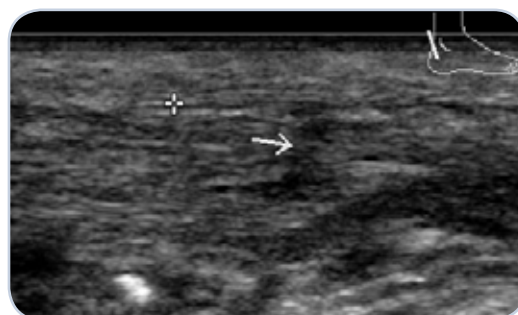


Image 1. Doppler ultrasound (pre-operative)

Surgical Procedure

A medial paratendinous incision was made, the tendon was freed from the paratenon and the rupture site was identified.

The tendon was scarified in order to enhance the healing process and the rupture was freed from scar tissue. The scarified tendon surfaces were then adapted using intra-tendinous vicryl sutures.

An Artelon® Tissue Reinforcement implant (ATR, 6 x 9 cm) was placed as distally as possible and wrapped around the tendon (image 2). The anterior distal edge of the implant was secured by two suture anchors. The ATR was then sutured to the tendon using multiple, multidirectional sutures throughout both the implant and the tendon at the same time (image 3).

A below-knee plaster was applied to protect the wound for two weeks postoperatively.

Rehabilitation

Skin sutures were removed three weeks postoperatively. The patient had a superficial wound infection four weeks postoperatively, necessitating one week of anti-biotics. It healed quickly without any residual symptoms. The infection was not connected to the implant.

After the removal of the cast an Aircast sport-orthosis was used for four weeks. Partial weight-bearing was allowed during this time.

The patient was allowed full weight-bearing six weeks postoperatively.

Postoperative Follow-Up

The patient was examined ten weeks, six months and 18 months postoperatively.

At the six-month follow-up the pain had gone and she could walk long distances without any problem.

At 18 months she was still without pain. She could stand on tiptoe using both feet, but not on her right foot alone. Ankle joint mobility was normal and the patient could walk on tiptoe with good balance. She could even walk in high-heel shoes again. A follow-up ultrasound was performed and it showed only a slight irregularity at the site of the earlier rupture and the implant bridging the area (image 4).

Conclusion

The use of Artelon® Tissue Reinforcement to unload and bridge a chronic rupture of the Achilles tendon in order to restore the function of the foot for a patient with years of Achilles tendon pain seems to be a useful method.

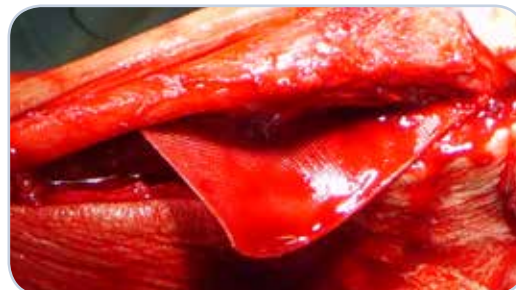


Image 2. Adaption of the Artelon® implant



Image 3. The Artelon® implant sutured in place

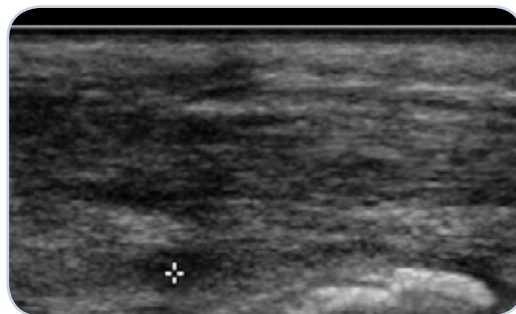


Image 4. Dopler ultrasound 18 months post-operatively