

ACHILLES TENDON RE-RUPTURE FOLLOWING AN OPEN REPAIR WITH PRIMARY REPAIR AND GRAFT

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INTRODUCTION

We present an unusual case of an Achilles tendon re-rupture. The patient underwent a primary repair and re-ruptured the same tendon in an accident 6 weeks after surgery.

Achilles tendon ruptures have been treated in various surgical and nonsurgical methods with a wide range of outcomes. The acute surgical treatment has the advantage of fresh, vascular edges, but with frayed, weak tendon surfaces. A delayed treatment has the advantage of some collagen buildup at the edges, but usually a larger defect is present as the tendon retracts and the two surfaces seal themselves with rounded blunt edges. Tendon graft materials are commonly used in both primary and delayed repair of Achilles tendon ruptures. Numerous tendon lengthening and autografts have also been described. Re-rupture of a tendon is rare.

Several interesting articles show the variety of complications and controversies encountered with Achilles tendon ruptures. Dhillon, in India, reported a case of idiopathic bilateral tendo-Achilles rupture, which was initially neglected, and subsequently reconstructed with LARS polyester ligament. The patient developed bilateral wound dehiscence that needed debridement and local flap coverage (1).

Rajaseki, in England, compared 14 conservative and 21 open surgical repair patients for two years. The significant results showed no difference in overall outcome and physiotherapy increased activity levels for both groups (2). Haji, in England, followed 108 patients over 14 years. The 70 patients with open repair had 6% rerupture, 5% infection and 3% palpable suture knots. The 38 percutaneous patients had 3% rerupture, 10% transient sural nerve entrapment, and 13% palpable knots (3). The method of repair includes V-to-Y gastrocnemius recession or advancement, excision of the fibroadipose defect, end-to-end anastomosis, plantaris tendon weaving to reinforce the anastomosis, and use of a pullout-wire suture (4). Rouvillain, in France, reported on 60 patients using a percutaneous single or double

absorbable suture technique with excellent results (5). The GraftJacket Regenerative Tissue Matrix (Wright Medical Technology) is processed from donated human skin to remove epidermal and dermal cells (acellular) and retains the collagen for strength (6). The surgical repair following a re-rupture can be complicated with tendon structural loss and gapping (7, 8).

CASE REPORT

A 55-year-old man sustained an acute Achilles tendon rupture during athletic activity. The defect was moderate and did not require tendon lengthening or gastrocnemius recession. The patient underwent a primary repair with an allograft tissue graft augmentation (GraftJacket). The patient's postoperative course was uneventful. The surgical compression cast was changed to a fiberglass below-knee cast. He was maintained nonweight bearing.

At 6 weeks after the surgery, the patient was involved in a serious automobile accident. He described the floorboard contacting the cast as his body weight moved forward. He felt his tendon tear, much like his original injury. The tendon was diagnosed as re-ruptured. He was treated conservative for 2 months of nonweight bearing in a plantarflexed position below-knee cast and 2 months of protected weight bearing in a walking boot. At 4 months, the magnetic resonance image confirmed a 5 cm gap.

SURGICAL TECHNIQUE

The same surgical incision was used as the primary repair and was extended farther proximal to the gastrocnemius muscle belly. The nonabsorbable suture had been pulled through the superficial side of the tendon repair. The GraftJacket tissue had healed along the deep side of the tendon repair and was continuous from the calcaneus to the soleus muscle belly. Previous articles in the literature describe this same scenario, where the primary repair holds intact while a different section of the tendon re-ruptures.

In this case the gastrocnemius aponeurosis and superficial tendon contributions to the Achille tore away from the soleus aponeurosis and deep tendon. This split the tendon

longitudinally into an anterior distal and posterior proximal halves.



Figure 1. Although the distal tendon was very thin, the distal GraftJacket repair site was intact, healed solid and well incorporated.

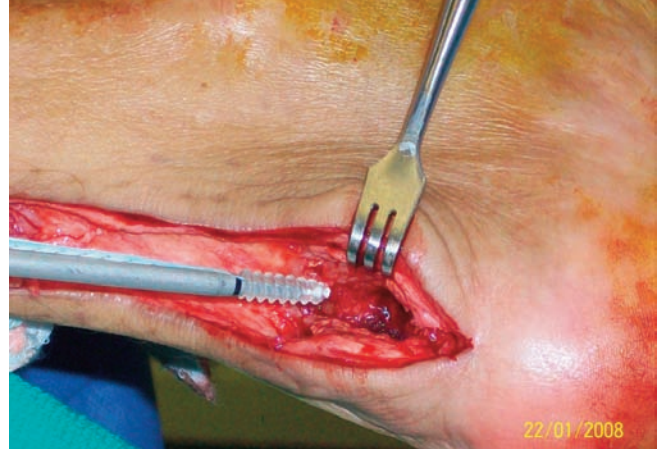


Figure 2. An Arthrex absorbable anchor was placed in the superior surface of the calcaneus.



Figure 3. The tendon anchor was tested and secure.

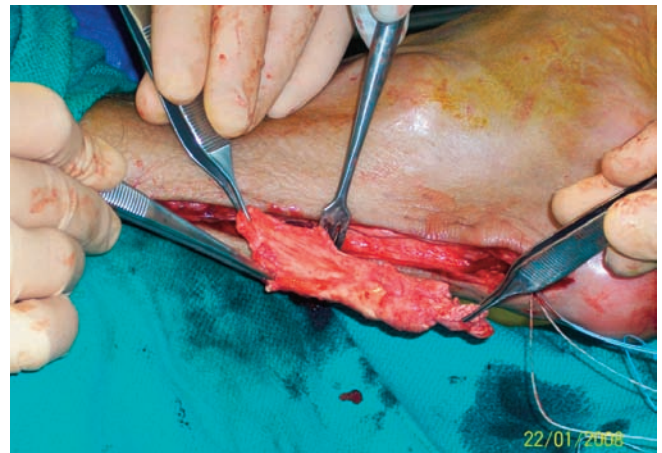


Figure 4. The gastrocnemius aponeurosis was cut 7 cm proximal and transferred distal as an autogenous tendon graft.



Figure 5. The autogenous tendon graft gastrocnemius aponeurosis and superficial tendon was attached into the calcaneus with the tendon anchor. The graft was also attached to the previous GraftJacket and deep tendon structures.

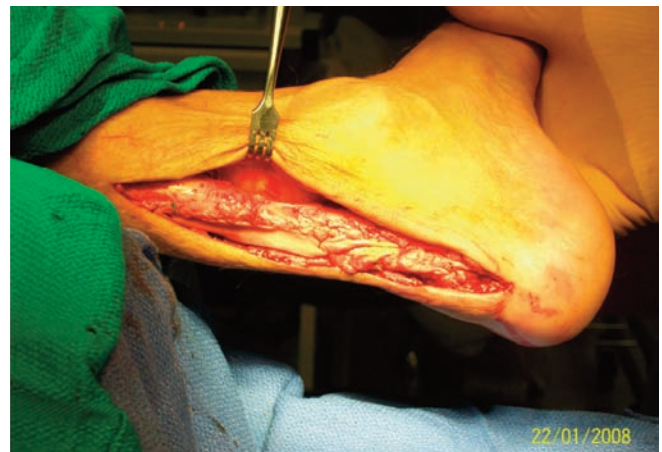


Figure 6. A new piece of GraftJacket was used to augment the proximal defect between the autogenous graft and the gastrocnemius muscle belly. This configuration transplanted healthy autogenous graft distal into the calcaneus with tendon anchors and used the allogeneous GraftJacket more proximal in an area with more circulation and better healing.



Figure 7. Three months after surgery the patient has good active plantarflexion strength and is starting weight bearing and aggressive physical therapy.



Figure 8. The complication of re-rupture after a primary repair can produce challenges of tendon defect and muscle weakness due to long term immobilization.

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