



Achilles tendon allograft with its bony attachment to repair rupture and extensive degeneration of the heel cord

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An Achilles tendon allograft with its bony calcaneal attachment was successfully used to repair a spontaneous rupture of a severely degenerative and irreparable Achilles tendon. After 18 months of follow-up, the patient is satisfied and the Achilles tendon power has returned to a normal level.

Keywords: Achilles tendon ; rupture ; degeneration ; allograft.

INTRODUCTION

Achilles tendon is the thickest and strongest tendon in the body, arising from the confluence of the gastrocnemius and soleus tendon.

CASE REPORT

A 68-year-old highly active man with chronic insertional Achilles tendonitis and gout, had received repetitive steroid injections ; he was seen at the emergency unit of our hospital for a sudden spontaneous pain in his left heel while walking. Thompson squeezing test was negative. Radiographs showed a calcaneal spur at the Achilles tendon insertion. The patient was diagnosed with partial rupture at the insertion site of an ossified Achilles tendon. A long leg splint was applied, but was subsequently removed by the patient. A few days later he felt a sudden snapping sensation while walking and revisited our emergency unit. The

Thompson squeezing test was positive and he had a dimpling sign. Mild swelling, tenderness and bruising were noted near the Achilles tendon insertion site. Simple radiographs showed proximal displacement of the calcaneal spur. During surgery the next day, a complete rupture of Achilles tendon was found at the insertion site and an ossified mass was attached to the ruptured end of the proximal stump. It was irreparable owing to marked degenerative changes at the end of the ruptured stump. Although the ruptured end could be approximated to the calcaneal insertion, it was decided to use an Achilles tendon allograft with its bony insertion. The distal tendon was not expected to heal due to considerable and extensive degenerative changes.

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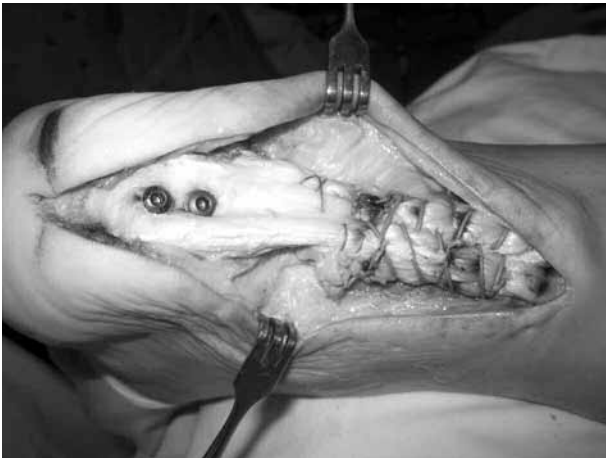


Fig. 1. — After the calcaneal bone block was fixed with 3.5 mm cancellous screws and washers, and the degenerated terminal tendon was debrided, the healthy proximal tendon was whip stitched to the allogeneic tendon.



Fig. 2. — Postoperative lateral radiograph showing reconstruction.

Surgical technique and postoperative regime

A conventional midline longitudinal approach was used.

To make room for the allogeneic bone block, a cortical bone block similar to the donor block was removed from the calcaneal tuberosity and the transplant was secured in position with two 4.0 mm cancellous screws and washers. The distal 4-cms of the degenerated tendon were debrided. Host tendon and graft were overlapped approximately 4 cm and they were whip stitched together using No. 5 and No. 2 Ethibond (Fig. 1).

A long leg cast was applied and weight bearing was not allowed. One month after surgery, change to a short leg cast was done. Two months after surgery, the cast was changed to a detachable short leg splint, and partial weight bearing and active assisted range-of-motion exercise was allowed. Full weight bearing was allowed three months after surgery. At one and a half year follow-up, the patient had no symptoms and no limitation of motion of the ankle. He was able to tiptoe on the affected foot. The bone block was solidly united to the host bone (Fig. 2). However, a new bony spur and ossified mass had developed at the insertion of the allogeneic Achilles tendon.

DISCUSSION

Various reconstructive methods have been introduced to repair ruptures of a severe and extensively degenerative Achilles tendon. V-Y lengthening, turn down flaps, tendon transfers using flexor digitorum longus, flexor hallucis longus or augmentation with fascia lata, and gastrocnemius turn down have been advocated (1-4). However, these techniques involve donor site morbidity and are not applicable in cases of extensive degenerative changes.

These common repair techniques were considered. However, the patient did not want any additional compromise on his motor power or donor site morbidity after such reconstructive procedure. At one year after surgery, the patient was very satisfied with the results. He had no symptoms and the transplant was strong. He returned to the same level of physical activity as prior to the beginning of the Achilles tendon problem. A new bony spur and ossified mass had developed at the insertion into the calcaneus.

We suggest reconstruction with Achilles tendon allograft can be a good option to reconstruct a ruptured ossified Achilles tendon, that cannot be repaired by direct suture.

Acknowledgements

The authors thank Wonjoo Jung for editorial assistance.

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