

Composite Flexor Hallucis Longus and Free Gracillis Flap for Infected Achilles Tendon

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ABSTRACT

Primary infection of tendo-achilles (TA) is quite uncommon. Here, we are presenting an interesting case of a 42-year-old farmer who developed TA infection following thorn prick injury (3-month-old injury). He presented to us with discharging sinus on posterior aspect of heel. On subsequent debridement, he had 17 cm tendon defect, which was treated with flexor hallucis longus (FHL) tendon and reinforced with free gracillis flap from opposite thigh. However, to the best of our knowledge, combined use of FHL and gracillis tendon has so far not reported.

Keywords: Flexor hallucis longus, Free gracillis flap, Infected tendo-achilles injuries, Open tendo-achilles injuries, Reconstruction of Achilles tendon.

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INTRODUCTION

Achilles tendon is a superficial and strong tendon that plays an important role in human gait. Combined Achilles tendon loss and covering soft tissue compromise or loss is mostly seen in road traffic accidents and postinfections. Infected tendo-achilles (TA) injuries with tendon loss and inadequate soft tissue cover will require multimodal staged approach. The aim of treatment in such injuries is to bridge TA defect and achieve adequate soft tissue cover as well as give good functional outcome.

Different reconstruction techniques are explained in literature.¹⁻¹² Flexor hallucis longus (FHL) remains the “workhorse” for tendon transfers in patients with chronic Achilles tendon ruptures and tendonitis^{13,14}. Free gracillis flap¹¹ can also be used for tendon reconstruction as well as soft tissue cover.

CASE REPORT

A 42-year-old male farmer presented to the outpatient department initially with complaints of non-healing ulcer over the (L) ankle of 6 weeks duration. He gave history of thorn prick injury 3 months back which was treated by simple dressings at local hospital. Wound had healed initially but again developed wound breakdown with discharge after 6 weeks. He presented to us after 12 weeks from index injury with purulent discharge from the wound. Clinical examination revealed an exposed necrosed Achilles tendon with purulent discharge from the posterior aspect of (L) ankle (Fig. 1). He was taken for wound debridement and on exploration, TA was found to have gross injection and had got necrosed. The necrosed TA was excised. The wound was found to have heavy growth of *Staphylococcus Aureus* which was managed with IV antibiotics and vacuum assisted closure (VAC) dressings. Once the wound became clean, a defect of 17 cm of TA length was found (Fig. 2). Plan for reconstruction was made for both soft tissue coverage and functional rehabilitation in view of his job as manual laborer. He was taken for the reconstruction of TA with FHL tendon transfer harvested from the base of the big toe after splitting the knot of Henry (Fig. 3). The tendon was looped into the calcaneum from medial to posterior by making an L shaped tunnel with the help of loop and sutured on to itself (Fig. 4). The FHL itself was found inadequate and was further reinforced and covered with free gracillis muscle flap harvested from the opposite thigh and vascular anastomosis was performed to posterior tibial artery.



Fig. 1: Completely infected TA

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Fig. 2: Tendo-achilles defect of 17 cm after debridement



Fig. 3: Flexor hallucis longus harvest



Fig. 4: Soft tissue defect after FHL reconstruction



Fig. 5: Soft tissue defect covered with free gracillis flap

Once the graft survival was confirmed, a split thickness skin graft to the muscle flap was done (Fig. 5). Postoperatively, he was advised to continue nonweight bearing with short leg splint immobilization for 6 weeks. Range of movement was started at 6 weeks, but protected in air cast boot until 16 weeks. At 4 months period, he recovered completely and became able to walk on toes. Thompsons test was negative. At 3 years of follow-up, tendon function and strength was found to be adequate (Fig. 6).



Fig. 6: Complete recovery at 3 months.

DISCUSSION

The Achilles tendon is the largest tendon in the body which comprises of the tendinous portions of the gastrocnemius and soleus muscle that inserts into the calcaneus. Distally, the tendon becomes progressively rounded and at about 4 cm proximal to insertion becomes flatter. The tendon has true synovial sheath. Paratenon with visceral and parietal layers allows for approximately 1.5 cm of tendon glide. Blood supply¹ is from musculotendinous junction, periosteal arterial branches, and mesotenal vessels. The most important points that are to be noted are, it is sparse 4 to 6 cm proximal to insertion with further decrease with progression of age. The thorn prick injuries from the farm, at this crucial hypovascular junction, can lead to dangerous consequence of massive necrosis and infection of the TA.

Management of infected TA tendon requires meticulous reconstruction of tendon and to acquire good soft tissue cover.⁶ Road traffic accidents (cycle spoke injury), closet injuries, and farmyard injuries as well as patient immunity status are important causes of infected TA injury. While managing such injuries, priority is always to eradicate infection by adequate debridement of tendon,

VAC dressing if required, and adequate IV antibiotics based on the culture reports. Once infection is controlled, tendon is reconstructed on the basis of defect size¹ with various methodologies. The issue here was gap of 17 cm with gross soft tissue loss and his demand to go back as manual laborer in the agricultural field. We planned to reconstruct his TA with combination of FHL with gracilis considering his defect and work demand.

CONCLUSION

Infected TA with large tendon as well as soft tissue defect requires meticulous debridement and tendon reconstruction can be adequately done with combination of FHL and free gracilis flap to achieve good motor functions as well as adequate soft tissue cover.

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