# Flexor Hallucis Longus Tendon Reconstruction with Autologous Plantaris Tendon Graft: A Case Report

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## Statement of Purpose:

Flexor hallucis longus (FHL) tendon ruptures most commonly occur in one of two avascular zones that are prone to injury from repetitive microtrauma. Although various surgical treatments have been described, the literature is limited in describing the use of autologous tendon graft for repair of the FHL. This case report documents the use of a plantaris tendon autograft in the reconstruction of the FHL tendon.

Fig 1

Fig 2

## Literature Review:

FHL ruptures are injuries commonly seen in ballet dancers and long-distance runners. Ruptures most commonly occur 1) posterior to the talus or 2) at the level of the 1st metatarsal head and sesamoids. Peterson et al., found that these are areas of avascularity due to the change in direction of the pull of the tendon with the area at the 1st metatarsal head measuring on average 23.5 mm (range 18-29)[1]. These areas of avascularity and pulleys have increased amount of fibrocartilage which predisposes it to degeneration[2]. A common surgical treatment for these ruptures include tendon transplantation with one case in the literature utilizing a free plantaris tendon graft[3,4].

## Case Study:

A 23 year old healthy male patient presented with subacute pain to the right great toe after an extensive hiking trip. MRI revealed a rupture of the FHL tendon at the level of the first metatarsophalangeal joint (MPJ).

The patient underwent open repair of the FHL tendon augmented with plantaris tendon autograft. The FHL tendon was scarred down and ruptured at the level of the base of the proximal phalanx, extending proximally through the sesamoid apparatus. After debridement of nonviable tendon, there was a 4 cm defect remaining (**fig 1**). The plantaris tendon graft was harvested through a longitudinal incision along the medial aspect of the Achilles tendon (**fig 2**). #2 nonabsorbable braided suture was used to secure the plantaris tendon graft within the distal and proximal stumps of the FHL tendon, reconstructing the tendon at physiologic tension. A 1.2 mm suture anchor was placed in the base of the distal phalanx and the suture limbs were used to augment the repair utilizing a modified Krakow technique (**figs 3 and 4**).

At 12 months follow-up, AOFAS score was 72 points, VAS pain score was 0, and the patient returned to normal activity with active plantarflexion of the 1st MPJ. On the patient satisfaction survey, he reported he was satisfied with the surgery and would undergo the procedure again.

Fig 3

Fig 4

## Analysis & Discussion:

FHL tendon ruptures are typically repaired surgically, especially in active patients whose activity demands require forefoot propulsion. Direct repair may cause over-tightening that could lead to contractures, or a re-rupture. An allograft provides increased durability and the ability to debride degenerated tissue without sacrificing length. Autograft provides the inherent benefits of innate tissue to promote better healing potential. While use of free tendon grafts from the Achilles tendon and fascia lata have been described by some investigators, both are associated with donor site morbidity and increased risk of injuries to these areas[5]. Additionally the plantaris tendon has been shown to have the highest tensile strength when compared to other tendons in the lower extremity[7]. Anastasopoulos et al., was the first to report on repair of distal FHL ruptures with a free plantaris tendon graft as it has shown to have low functional donor site morbidity and easy accessibility[3,6]. This case report demonstrates that plantaris tendon autograft can successfully be used to repair a distal FHL tendon rupture with encouraging results from both a functional and patient satisfaction standpoint.

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