

Extensor Hallucis Longus Delayed Tendon Repair: A Case Report

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Statement of Purpose

Extensor tendon injuries are rare injuries that represent about 1% tendon injuries¹. Literature on Extensor Halluces Longus (EHL) lacerations are limited. Various procedures have been described, such as tendon transfers, tendon autografting, primary repair with lengthening, and 1st MTPJ arthrodesis. In matters of the neglected lacerated EHL tendon secondary to retraction often such deficits call for graft placement.

The purpose of this case report was to document the outcome of a patient with a neglected lacerated EHL tendon with significant gaping and to assess the use of an allograft tendon for primary repair as an acceptable procedure.

Case Study

A 44-year-old male, with no significant medical history, presented to clinic after dropping a kitchen knife on his right midfoot three months prior. On initial evaluation, there was noted plantar flexion to the hallux with relaxation and inability to actively dorsiflex the hallux. MRI showed a complete rupture of EHL with a 4cm gap. Extending from the navicular to the proximal third of the first metatarsal.

Surgical intervention was decided with the goals of preserving motion to the first MTPJ, minimize the amount of adjunctive procedures, and recreate a plantargrade hallux with the gradual return to dorsiflexion of the hallux. A 6 cm linear incision medial to the EHL. The distal and proximal stumps were identified and tendon edges were sharply dissected to freshen margins.

A peroneal allograft tendon was used to fill EHL tendon gap. Using 2-0 Ethibond, a Krackow stitch technique was utilized on either ends of the allograft tendon to suture to stumps to suture the allograft to the stumps. A 0.062 K-wire was thrown through the first ray, which was slightly dorsiflexed into the first metatarsal to neutralize tension on the EHL tendon. Layered closure was then performed and a posterior splint was applied.

The patient was to be NWB for 6 weeks, when the K-wire was removed then WB in a CAM boot was initiated. Physical Therapy was started at 8 weeks for strength, ROM, balancing, and gait training with progression out of CAM boot to a regular shoe. At 14 weeks, the patient had 50^o of active extension to the hallux and 20^o of flexion.

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Literature Review

The current treatments described in the literature are focused more on acute tendon injuries. Acute injuries with patients presenting on the same day of injury have a higher chance of tendon re-approximation. Very little data has been published about the neglected EHL tendon repair with significant retraction. The extended duration until surgical fixation leads to degeneration at the tendon ends, making end-to-end tendon repair very difficult. The most common treatments include EDL and EHB tendon transfer of the second toe and lengthening of EHL tendon with dermal scaffold augmentation²⁻⁷. After a review of the literature, it is possible that success of these techniques was specific to each patient.

Other case studies have described the use of the Peroneus longus, Gracilis, and Semitendinosis, to avoid the use of tendon transfers and allograft reconstruction⁷⁻⁹. The success of these procedures with autograft tendons are due to selected tendons that provide the same cross-sectional as the EHL tendon to withstand the appropriate loading function of the tendon. One recent study reported the use of split peroneus longus autograft for the repair of neglected EHL laceration⁷. So et al⁷ reported an EHL tendon laceration with significant gap of 10.2 cm that was repaired 6 weeks post initial injury. To retrieve these autografts, one to two incision were additionally made, increasing donor site morbidity, time in the operating room, and potential functional deficits at the site of harvest.

From our literature review, there has only been one other reported case using an allograft tendon for chronic EHL injury. Zielaskowski et al¹⁰ reported on reconstruction of EHL laceration with a fascia lata allograft. A tendon transfer was not an option since the patient’s EDL and EHB were degenerative and atrophic. At 10-month follow-up, the hallux was anatomically position but reported weakness with ROM of 1st MTPJ. Due to fibrotic adhesions from the allograft from prolonged inflammation^{7,10}. There are many advantages and disadvantages of the use of allograft. The advantages include no graft or donor site morbidity, shorter operative & tourniquet time, less surgical incision sites, limiting the possibility of altering foot function and biomechanics and having different graft sizes and types available^{7,11-12}. The disadvantages include cost, availability, risk of inferior biomechanical properties, longer incorporation time, and risk of disease transmission^{7,11-12}.

Advances have been made with stricter donor screening and graft sterilization to minimize allograft infections¹³. In our case, the risk and complications of allograft infections were thoroughly discussed with patient, who reported understanding. Further studies are needed in the repair of chronic EHL tendons using allograft tendon with a greater number of patients and a longer follow-up period.



Analysis and Discussion

We believe that allograft reconstruction is a safe and useful alternative for the treatment of neglected EHL tendon lacerations. The unique complication was the delay of treatment from the time of injury to presentation. In order to prevent further complications, different surgical options were considered.

Surgical repair using a peroneal allograft was performed to help stabilize the 1st MTPJ with the goals of preserving and returning normal ROM. The patient underwent physical therapy and is currently showing favorable and satisfaction outcomes at 12 months. Although not as commonly reported in the literature, our hope is to contribute a unique approach to repairing the tendon to help with other lacerated injuries.

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