Tendodermodesis for Extensor Hallucis Longus Repair following Laceration with Circular Saw

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Statement of Purpose

Tendon injuries can occur in conjunction with lacerations sustained to the dorsum of the foot. If not sufficiently treated, these injuries can lead to digital dysfunction and instability. Some traumatic injuries also involve underlying bone injury that can lead to subsequent adhesions to soft tissue. This case study describes a surgical technique utilizing tendodermodesis to repair a lacerated extensor hallucis longus tendon with underlying bone injury.

Literature Review

Most literature reports on lacerated tendon repair include primary end-to-end repair, tendon transfer, tendon lengthening, or use of allograft. Al-Qattan reviewed 17 cases of open EHL tendon laceration using primary end-to-end repair. Wong et al. reviewed 20 cases of EHL tendon repair, 16 of which were repaired primarily. The remaining 4 involved EDL transfer from the 2nd toe.

Tendodermodesis is a surgical technique utilized to reapproximate tendon and skin within the same plane (Figure 1). It has been reported for repair of chronic mallet finger deformity, however it has not been previously reported in the literature with regards to tendon laceration.

The following day, the patient was taken to the operating room for a left foot wound débridement and repair of EHL tendon with primary closure. The wound was initially débrided of any small bone fragments and debris. Due to the traumatic nature of the injury, the tendon ends would not allow for standard end-to-end repair techniques. They were also in direct contact with the exposed cancellous bone, causing concern for possible adhesion. A decision was made at this time to throw a horizontal mattress type suture that included healthy, more proximal portions of the tendon ends, as well as the overlying skin in an attempt to lift the tendon off of the exposed bone and reduce tension across the tendon ends. Before tying the knot, the hallux was held in a slightly dorsiflexed manner, and the tendon ends were reapproximated with absorbable suture. The wound was subsequently irrigated and closed. The foot was dressed with an Aspen, maintaining the hallux in a slightly dorsiflexed manner.

Analysis & Discussion

The purpose of this poster is to present a novel surgical technique to repair a lacerated extensor hallucis longus tendon with underlying bone defect. Pre-operative workup and intra-operative findings were imperative with regards to our decision to use a tendodermodesis technique. The main goal is to anatomically reconstruct the tendon, maintain hallux strength and alignment, and to prevent soft tissue adherence.

Case Study

A 28 y/o Spanish speaking male presented to St. Elizabeth’s Medical Center emergency department for a traumatic injury to the left foot that occurred four hours prior (Figure 2). Patient stated that he was attempting to stabilize a plank of wood with his foot while cutting it with a circular saw when the saw slipped and lacerated his foot. He was wearing work boots at the time. No irrigation was performed at home. Bleeding was controlled with direct pressure, and he was brought directly to the emergency department for evaluation. His past medical history was unremarkable. He related no known drug allergies, and his setumus status was up to date. Upon review of systems, patient related moderate pain to the left foot and an inability to dorsiflex his hallux.

Physical examination showed a laceration to the dorsum of the base of the left hallux. The wound was noted to go deep to bone, with a palpable deler at the base of the proximal phalanges. Debrid was present within the wound. The patient could minimally dorsiflex the hallux at the MPJ, but not extend at the IPJ. The EHL was completely severed, and the tendon ends were found to be shred. Neurovascular status was grossly intact. X-rays obtained at that time showed a cortical break at the base of the proximal phalanges with multiple small bony fragments identified within the skin laceration (Figure 3). The wound was subsequently irrigated with normal saline and a sterile dressing was applied. The patient received 2g of Cefadroxil, and he was discharged with instructions to stay NIBW to left foot and return the next day for surgical repair of the EHL tendon.

The patient was first seen 1 week post-operatively where a spica splint was reapplied (Figure 4). He maintained NIBW to left forefoot until week 3 where the tendodermodesis suture was removed and he started range of motion exercises. At 8 weeks post-op, patient was able to return to regular activities without restriction (Figure 5). He was later contacted via phone interview 18 months s/o injury, and he reported full return to activities without setbacks.

References


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