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Case Report

Reconstruction of subcutaneous chronic rupture of extensor hallucis longus tendon with semitendinosus autograft

Rekonstruktion einer chronischen subkutanen Ruptur der Extensor hallucis longus-Sehne mit einem Semitendinosus-Transplantat

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KEYWORDS
Extensor hallucis longus tendon;
Subcutaneous rupture;
Chronic rupture;
Tendon autograft;
Semitendinosus

Summary

Injury to the extensor hallucis longus (EHL) tendon is uncommon — most of the reported cases result from open lacerations. Complete closed subcutaneous ruptures are very rare. Reconstructive surgery is the treatment of choice for chronic ruptures with functional restriction. The study presents a case of a subcutaneous chronic rupture of the EHL tendon reconstructed with semitendinosus tendon autograft. The patient regained nearly full force and range of motion and was able to perform martial arts at eight months after reconstruction.

Abbreviations: EHL, extensor halluces longus; IP, interphalangeal; MTP, metatarsophalangeal.

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SCHLÜSSELWÖRTER
Extensor hallucis longus;
Sehne;
Subkutane Ruptur;
Chronische Ruptur;
Sehnentransfer;
Semitendinosus

Zusammenfassung

Verletzungen der Extensor hallucis longus (EHL) Sehne sind selten. Die meisten Fallberichte beziehen sich auf offene Lazerationen durch scharfe Gegenstände. Komplette geschlossene subkutane Rupturen sind ausgesprochen selten. Die wiederherstellende Chirurgie ist die Therapie der Wahl für chronische Rupturen mit persistierendem funktionellem Defizit. In dieser Studie präsentieren wir einen Fall einer chronischen subkutanen Ruptur der EHL-Sehne welche mit einem freien Semitendinosus-Sehnentransplantat rekonstruiert wurde. Der Patient erlangte nahezu die volle Kraft und den kompletten Bewegungsumfang wieder und war in der Lage, 8 Monate nach der Rekonstruktion seinen Kampfsport wieder aufzunehmen.

Introduction

Ruptures of tendons around the foot and ankle most commonly affect the Achilles tendon, the posterior tibial tendon and, to a lesser extent, the anterior tibial tendon [1]. Injuries of the extensor hallucis longus (EHL) tendon are rare and they are typically related to direct penetrating trauma [2—5]. Chronic, subcutaneous ruptures of the EHL tendon are even less common. A thorough literature review revealed only 43 cases of open and closed lacerations and ruptures reported until 2000 [4], since then only several case reports and one series of 17 open lacerations [2] are available in the medical literature. It is postulated, that spontaneous tendon rupture is a result of repetitive local microtrauma, e. g. in a ski boot or on a prominent osteophyte [1,6]. Damage to the small peritendineous vessels impairs blood supply and creates a zone of hypovascularity making a tendon susceptible to rupture even under physiological load [7]. The EHL contributes about 15% to the foot dorsiflexion force. Inability to actively dorsiflex the hallux interphalangeal joint with the passive mobility preserved is the pathognomonic symptom of EHL rupture.

The aim of this report is to present a case of subcutaneous chronic rupture of the extensor hallucis longus tendon that was reconstructed by a semitendinosus tendon autograft. The proposed technique and postoperative protocol is described.

Case report

A healthy and active 18-year-old kickboxer presented to our department with chronic pain over the dorsum of the right foot, inability to raise the great toe with the toe catching on the floor when walking barefoot. He had observed these symptoms since ten months before referral and did not associate it with any single traumatic event. First symptoms in the dorsum of the foot had appeared two years ago, but as he was able to perform his routine training he did not seek medical assistance at that time. The patient's medical history excluded chronic diseases, substance abuse or medication. Notably, the patient reported not using the protective equipment that is available for the foot and ankle in his discipline.

The physical examination revealed inability to actively dorsiflex the hallux interphalangeal (IP) joint and weakness of the extension in the metatarsophalangeal (MTP) joint. The patient demonstrated normal hallux flexor muscle strength. Passive motion was preserved. The neurovascular status was intact. No swelling was observed.

The diagnosis of an EHL rupture was made based on clinical examination. Ultrasound examination confirmed an isolated complete rupture of the EHL tendon. The sheath was empty from the level of the ankle joint to the middle of first metatarsal shaft leaving a gap of 8 cm between the tendon stumps. Additionally, both stumps were garneted on a length of about 2—3 cm. The empty tendon sheath was filled with fluid. The intact distal segment was detected at the level of the hallux MTP joint. Complete retraction of the EHL was confirmed in MRI, which provided additional data on the location of proximal stump in relation to the anterior neurovascular bundle. While not essential for making the diagnosis, MRI helped the preoperative planning by providing data on the viability of the stumps.

Surgical technique

Surgical repair was performed via two separate approaches over the distal and proximal stumps. Care was taken to maintain the integrity of extensor retinacula in order to preserve a proper function of the extensors. First, an 8 cm straight dorsal incision starting at the distal end of the basal phalanx was made. The distal stump of the EHL tendon

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