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CASE REPORT

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Endoscopic treatment of trigger toe: a case report

Tratamento endoscópico do hálux em gatilho: relato de caso

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RESUMO

O hálux em gatilho é uma tenossinovite estenosante que se caracteriza pelo ressalto do tendão flexor longo do hálux. A liberação na região posterior do tornozelo é descrita por meios endoscópicos. Neste estudo, relatamos uma paciente com hálux em gatilho que foi submetida à liberação endoscópica do tendão flexor longo do hálux com obtenção de melhora significativa na escala visual analógica de dor e do questionário AOFAS. A tenoscopia é um tratamento efetivo para o dedo em gatilho do hálux, com menor morbidade operatória e de recuperação indolor e rápida. Nível de Evidência V; Estudos Terapêuticos; Opinião de Especialista.

Descritores: Dedo em gatilho; Hálux; Tendões/cirurgia; Tenossinovite; Encarceramento do tendão; Endoscopia/métodos.

ABSTRACT

Trigger toe is a stenosing tenosynovitis characterized by the prominence of the flexor hallucis longus tendon. Endoscopic release of this tendon in the posterior region of the ankle has been described. In this study, we report the case of a patient with hallux saltans who underwent endoscopic release of the flexor hallucis longus tendon with significant improvement in a visual analog scale for pain and the American Orthopedic Foot and Ankle Society score. Tendoscopy is an effective treatment for hallux saltans, with lower surgical morbidity as well as painless and rapid recovery. Level of Evidence V; Therapeutic Studies; Expert Opinion.

Keywords: Trigger finger disorder; Hallux; Tendons/surgery; Tenosynovitis; Tendon entrapment; Endoscopy/methods.

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INTRODUCTION

The flexor hallucis longus (FHL) tendon is susceptible to several conditions, such as ruptures, longitudinal injuries, stenosing tenosynovitis and vilonodular sinovites, which may occur throughout extension of the tendon[1]. The most frequently affected site is the osteofibrous tunnel, posterior to the medial malleolus, followed by the knot of Henry and intersesamoid ligament[2]. FHL tenosynovitis is common, being described mainly in dancers.

Trigger of the great toe or hallux saltans is a rare entity that mainly affects ballet dancers. This stenosing tenosynovitis can be aggravated by the en pointe position[3], in which dancers balance themselves on the tip of the feet with the ankle and hallux in maximal flexion, with the FHL tendon being extended to the extreme, predisposing it to injuries. Reports on non-dancers are less frequent[2], and symptoms may occur after running, climbing or abrupt changes in direction during exercise[4].

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Non-surgical treatment with rest and corticosteroid treatment is unsatisfactory, with surgery being the treatment of choice[5]. Traditionally, tenoplasty is performed with open release of the tunnel, an approach that is more aggressive, liable to painful scars, and has a longer recovery time, which makes endoscopy, a less invasive treatment, an alternative option.

Tendoscopy is an endoscopic treatment for tendon sheaths, previously described for various tendons of the foot and ankle and recently, thanks to Lui et al., has become feasible for the FHL[1,6].

The aim of this study was to report a case of hallux saltans in a dancer treated with the endoscopic technique.

CASE REPORT

This study was approved by the Research Ethics Committee with registration in the Brazil Platform under CAAE number: 97928518.8.0000.5625.

The patient was a 23-year-old female ballet dancer who has been dancing since the age of 4 years. Initially, she trained twice a week, and, from the age of 12, she began training 5 times a week.

The patient underwent surgical treatment in January 2012 to correct ligament instability of the ankle (repair of the anterior talofibular ligament using the Brostrom-Gould technique), evolving without complications and returning to the pre-injury level.

In September 2012, the patient noticed that the hallux locked every time she was in the en pointe position and that it unlocked after a slight click. In October 2012, this condition worsened, being accompanied by pain in the medial retromalleolar region (Figure 1). The patient reported a painful audible click on the hallux that was accompanied by "locking".

After unsuccessful physical therapy, surgical treatment was performed through endoscopy of the FHL in November 2012.

The patient was placed in ventral decubitus (Figure 2), and the FHL tendon was accessed through the posteromedial and posterolateral portals (Figure 3). First, the neurovascular bundle was indirectly protected, working laterally to the tendon. After cleaning the peritendinous tissue with a soft-tissue shaver, nodular thickening was visualized proximally to the osteofibrous tunnel. After resection of the most distal portion of the muscle belly, tenoplasty (regularization and shrinking of the fibrillary and softened lesions of the thickening) was performed using radiofrequency. We finished with the release of the affected tendon from its fibrous tunnel with endoscopic scissors, entering posteriorly to the tunnel and close to the calcaneus bone.

Figure 1. Painful medial retromalleolar region.
Source: Author's personal archive.

Figure 2. Positioning of the patient.
Source: Author's personal archive.

Figure 3. Arthroscopic portals.
Source: Author's personal archive.

In the immediate postoperative period, the patient performed active and passive flexion-extension movements, with partial load release. The sutures were removed at 2 weeks, and the patient reported paresthesia in the plantar region of the 2nd, 3rd, 4th and 5th toes on the operated side. She began training with ballet slippers during the first week and was allowed to perform the en pointe position only starting at the 4th week. A visual analog scale (VAS) for pain and the American Orthopedic Foot and Ankle Society (AOFAS) questionnaire were used to evaluate the results in the pre- and postoperative periods. The patient had a score of 7 on the VAS in the preoperative period and 1 in the postoperative period and a score of 77 on the AOFAS in the preoperative period and 100 in the postoperative period.

DISCUSSION

According to our survey of the medical literature (PubMed, Google Scholar), in this study, we report the first case of hallux saltans treated by endoscopic release in Brazil. In 2012, when the procedure was performed, Corte-Real et al.[2] reported 27 cases of stenosis of the FHL tendon, operated between 2008 and 2009, using the same endoscopic technique. Previously, Theodoropoulos et al. (2009)[8] reported the endoscopic release of stenosing tenosynovitis of the FHL tendon. However, in both studies, none of the patients had hallux saltans. Hallux saltans is a rare type of stenosing tenosynovitis of the FHL tendon[9], more commonly found in ballet dancers[3]. In a recent study from 2018 emphasizing ultrasound findings, a case of hallux saltans was released endoscopically using a similar technique[10].

Tendoscopy has been described for several tendons of the foot and ankle, including the posterior tibial, peroneal, flexor digitorum longus and anterior tibialis tendons. Recently, Lui et al. described an FHL endoscopy technique[1,6]. Using a different endoscopic approach for each FHL zone, the course of this tendon can be examined endoscopically from the musculotendinous junction to its insertion. In most FHL tenosynovitis located in zone 1, the posterior endoscopy described by Niek van Dijk is often the most commonly used. Based on these principles, we performed the endoscopic release of hallux saltans.

The clinical picture of FHL stenosing tenosynovitis of zone 1 is classically described as a limitation to hallux extension and may mimic a rigid hallux-that is, a "pseudo" rigid hallux. The particularity of hallux saltans is that the tendon injury is distal to the osteofibrous tunnel (zone 2). At maximal FHL flexion, the intratendinous nodule moves proximally, locking the hallux in flexion. Consequently, the endoscopic release of this retinacular structure should be more distal, as observed in the patient in question. Intraoperative care consists of avoiding proximity to the vascular-nervous bundle, releasing the tunnel close to the lateral wall of the FHL, next to the talus. The endoscopic technique was consistent with the technique described by Niek van Dijk but with a more distal release.

Endoscopic procedures have obvious advantages over open treatment because they are minimally invasive and, therefore, less aggressive, allowing faster recovery. Niek van Dijk presented the results of 63 cases of posterior ankle impingement subjected to endoscopic treatment, including debridement, os trigonum removal and proximal release of the FHL with 80% good and excellent results and quick return to work (3 weeks) and sports (9 weeks). The observed results were better than those with open treatment[7]. In another study, Corte-Real et al.[8] reported 27 cases of endoscopically treated FHL tenosynovitis, obtaining similar results.

However, due to the intimate relationship with the vascular-nervous structures, some neurological complications related to endoscopic release of the FHL tendon are mentioned in the literature. The major complication in the approach of zone 2 for posteromedial access is injury of the medial plantar nerve[1]. Liu et al.[6] also reported 2 cases of lateral plantar nerve neuropraxia after FHL endoscopy through zone 2. Possible sites of lateral plantar nerve injury include the tarsal tunnel and plantar pedis. The patient in our study presented mild dysesthesia in the territory of the lateral plantar nerve that returned to normal in 5 months, due to probable manipulation of the tarsal tunnel region.

CONCLUSION

In this case report, we demonstrated the possibility of endoscopic release of the FHL tendon to treat hallux saltans due to stenosis in the tunnel region located below the talus support stem. The endoscopic approach is a minimally invasive technique and allows good visualization of the structures involved and correction of the pathological features without needing an open approach. Despite requiring a more specific technique and being costlier than the open technique, endoscopy was found to be effective in the treatment of this case.

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