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Case Report

Recurrent Traumatic Subluxation of Peroneal Tendons Surgically Treated with Semitendinosus Tendon Graft – Case Report

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Abstract

Subluxation of peroneal tendons is a rare pathology usually following misdiagnosed ankle sprain with a rupture of peroneal retinaculum. If not recognised in acute injury it can lead to chronic recurrent peroneal subluxation. There are conservative or surgical treatment methods used depending on various factors. In the literature five different surgical techniques are suggested for managing the peroneal tendons luxation. In this article we present a case report with a successful surgical approach for treatment of recurrent peroneal tendons subluxation using a semitendinosus tendon graft hence augmenting the previous reconstruction of peroneal retinaculum. So far there has been one medical case described in the literature using the semitendinosus tendon graft as a surgical management of that type of pathologies. It seems an interesting surgical approach that requires further research and studies with a larger population of patient to determine the effectiveness in comparison with other suggested methods.

Keywords: Semitendinosus Tendon Graft; Peroneal Subluxation; Surgical Treatment; Recurrent Peroneal Subluxation; Peroneal Retinaculum Rupture; Peroneal Retinaculum Reconstruction

Abbreviations

MRI: Magnetic Resonance Imaging; SPR: Superior Peroneal Retinaculum

Introduction

Instability of peroneal tendons is a relatively uncommon pathology of foot and ankle. It presents as a peroneal tendon complex subluxation clinically seen around the lateral malleolus. The condition can be acute or chronic and is often caused by rupture of the superior peroneal retinaculum [1]. It typically occurs in athletes with a mechanism of injury of a sudden forceful dorsiflexion and inversion of the ankle [2,3]. Patients present with snapping sensation, ankle stiffness and instability accompanying pain that is in many cases misdiagnosed acutely and eventually leads to a chronic condition [3]. Peroneal tendon subluxation is commonly associated with peroneus brevis tendon longitudinal ruptures [4].

The peroneal muscles, peroneus brevis and peroneus longus are located in lateral compartment of the shin with their tendons running in the retromalleolar fibular sulcus stabilized by the superior peroneal retinaculum. The groove's shape is formed by thick fibrocartilaginous periosteal cushion thus varies significantly in depth, length and contour [3,4]. Moreover, the superior peroneal retinaculum also anatomically vary in thickness, width and insertional patterns among individuals [4].

To aid in clinical diagnosis a plain X-ray, ultrasound and magnetic resonance imaging are useful to determine the injury and help in deciding on a treatment method [2].

In acute dislocations a conservative management may be attempted which can be successful in up to 50% of cases. In athletes there is a tendency of a surgical approach for acute peroneal subluxation treatment. Surgical management is also advised for recurrent dislocations with five basic methods described: anatomical reattachment of the retinaculum, bone-block procedures, reinforcement of the superior peroneal retinaculum with local tissue transfers, rerouting the tendons behind the calcaneofibular ligament and groove deepening procedures. There is still no specific study to determine the superiority of each of the surgical techniques [4,5].

Clinical Case

A 37-year-old Caucasian male patient, otherwise healthy, presented with a burdensome recurrent subluxation of peroneal tendons of the right ankle. He has a history of the right ankle sprain 13 years ago. At that time a clinically seen luxation of peroneal tendons

was reported while dorsiflexion of the foot but otherwise clinically normal and stable right ankle. An ultrasound at that time proved luxation of peroneal tendons and tenosynovitis and was about a year later surgically treated with a reconstruction of the peroneal retinaculum. Eleven years later the patient came back with a complaint of recurrent disturbing peroneal subluxation especially during sport activities.

Clinical examination found burdensome peroneal luxation and lateral instability of the ankle. An MRI showed suspected minor longitudinal fissure of the peroneus longus tendon and accompanying injury of peroneal retinaculum according to the clinical findings. The patient was presented at skeletal council where another surgical treatment was decided. He underwent a second surgery as a revision from 11 years ago. Surgery was done in Esmarch with preoperatively prophylactic antibiotic cefazolin application. First a semitendinosus graft was harvested from the patient and prepared with high-strength sutures.

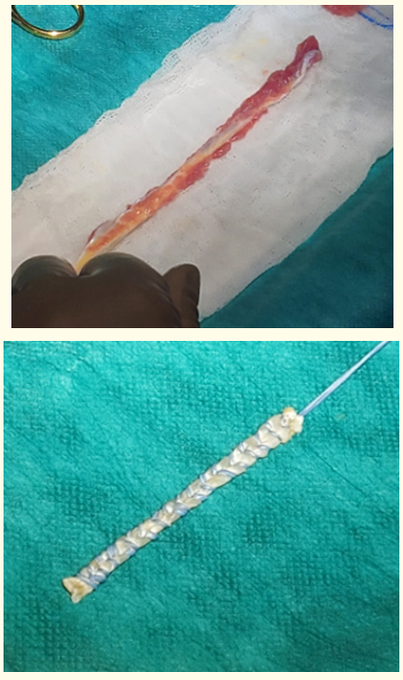

Figure 1: Harvested semitendinosus tendon before preparation and prepared semitendinosus tendon with high-strength sutures.

Second part took place in revision of the lateral ankle, where a peripheral rupture of peroneus longus was found as well as about 5cm long rupture of peroneus brevis tendon. A peroneus longus tendon rupture was resected, while peroneus brevis tendon rupture was sutured.

Additional peroneal tenosynovectomy was done. Further the prepared semitendinosus tendon graft was attached with suture anchors to the fibula and calcaneus thus making a V-shaped ligament plastics and augmentation of peroneal retinaculum.

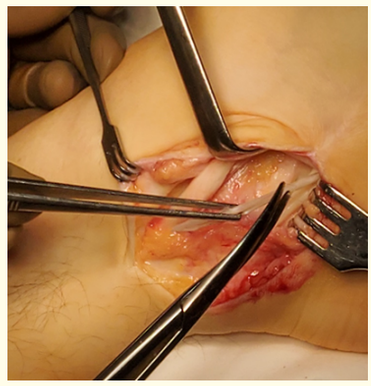

Figure 2: Resection of peroneus longus tendon rupture.

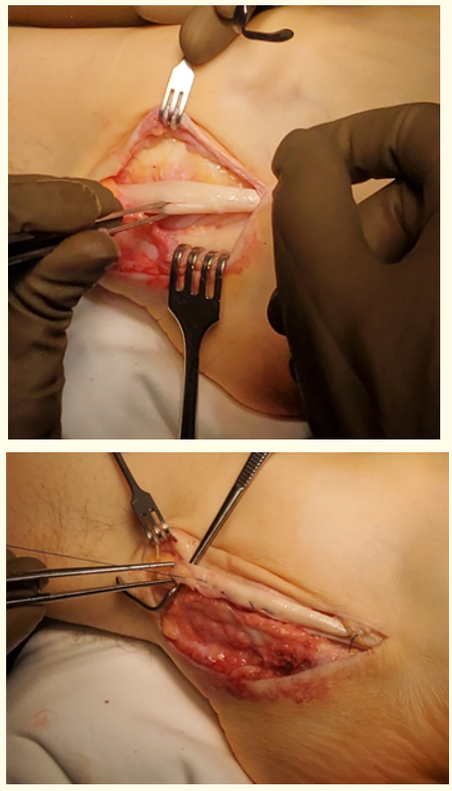

Figure 3: Longitudinal peroneus brevis tendon rupture and suturing the rupture.

Postoperatively nonbearing ankle cast was applied for six weeks. After 2 months follow up there was clinically no luxation of peroneal tendons seen with a completely healed wounds. The patient was involved in physiotherapy and hydrotherapy.

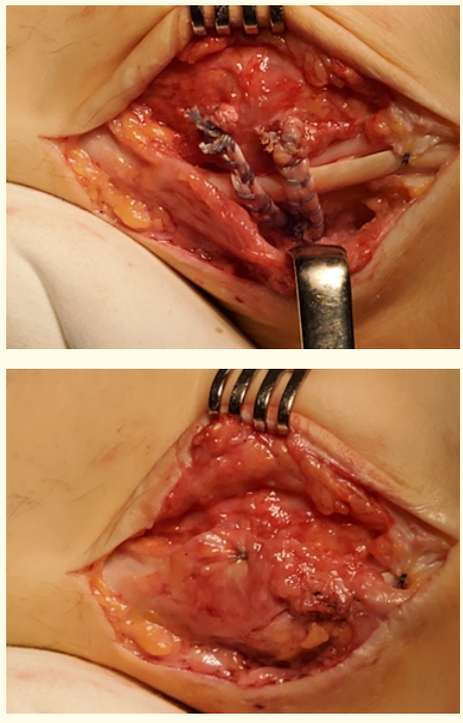

Figure 4: A new technique, V-shaped tenoplasty with semitendinosus tendon graft and fixation with suture anchors both ends to fibula and peak to the calcaneal bone. Augmentation and reparation of peroneal retinaculum is seen.

Discussion

Injury of peroneal tendon should be always considered as the differential diagnosis after inversion ankle trauma such as ankle sprain. Peroneal tendon injuries include peroneal tendinosis, peroneal tendinitis, peroneal tendon tear following PT subluxation or inversion injuries and dislocation of PT caused by tear of peroneal retinaculum [6]. In our case report a newly discovered tear in peroneus brevis tendon was caused by chronic subluxation of peroneal tendons. Hence early diagnosis is important to help prevent additional complex injuries of the tendons and immediate treatment of peroneal tendon sheath disorders may be taken into account.

According to the chronicity of the injury there are different treatment managements described. Many types of acute peroneal dislocation may be treated conservatively with a reported success rate between 26% to 57% [7].

In case of unsuccessful conservative treatment usually there is surgical treatment required. Surgical techniques in the literature suggest several different approaches such as SPR repair, tenoplasty, bone block procedures, groove deepening and endoscopic approaches [8]. There is still no consensus among foot and ankle surgeons following no randomized study reported to determine which surgical approach is supreme.

In our case the first surgical treatment of SPR injury repaired with sutured SPR has reoccurred causing subluxation problems and additional tendon injuries. In the literature there are described tendon graft reconstruction techniques to reinforce the SPR with the use of the Achilles tendon, peroneus brevis or plantaris tendon [6]. The use of semitendinosus tendon for managing the peroneal retinaculum pathology has been only introduced in the literature by Frangež., *et al*. in a 2017 case report and has shown favourable results [9]. In our case report we used a semitendinosus tendon graft to strengthen the previously treated insufficient SPR and prevent further peroneal subluxations. So far the semitendinosus tendon graft technique applied at our clinical department proved successful results with no recurrent peroneal subluxation and no patients complaints, but there are further studies required with a larger sample of patients for evaluation of the performance and long term treatment outcome.

Conclusion

In conclusion, early diagnostics and optimal choice of treatment of acute tendon injuries as well as injuries of peroneal retinaculum for prevention of later chronic injuries are needed. Surgical treatment of peroneal tendon subluxation encompass a wide variety of surgical techniques amongst which the semitendinosus tendon technique has been previously only outlined once in the literature in a case report by our clinical department. A semitendinosus tendon graft method could prove as a promising and successful method but further investigations and clinical studies are required to better define indications as well as the long-term functional outcomes and effects.

Conflict of Interest

The authors declare no conflict of interest.

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