Reinforcement of the Peroneal Retinaculum

Artelon
Optimal Tissue Reinforcement

CASE STUDY

Reinforcement of the peroneal retinaculum by use of Artelon® Tissue Reinforcement in connection with repair of a partial tear in peroneal longus tendon. Surgery performed October 2009 by Warren Windram, MS, DPM.

Introduction

Peroneal tendons problems commonly occur from an ankle sprain or other traumatic injury. The main function of the peroneal tendons is to stabilize the lateral foot and ankle. The superior peroneal retinaculum stabilizes the tendons of the peroneus longus and brevis as they run across the lateral side of the ankle, and is a primary restraint to peroneal tendon dislocation and/or subluxation [1].

During the typical inversion ankle sprain the foot is turned in, resulting in sprains in the ligaments that support the lateral part of the ankle. When the foot rolls inward, there is also a forceful stretch on the peroneals, which can cause lengthwise tears in the peroneal tendons. These are less common than tears in the lateral ligaments and often overlooked [2]. An acute ankle injury may also be associated with a rupture or attenuation of the superior peroneal retinaculum causing peroneal tendon subluxation [3]. Therefore, one must address the retinaculum to prevent recurrent tears.

Cases that have not responded to conservative treatment generally require surgery with repair of the tendon tear and management of the retinaculum that covers and reinforces the tendon sheath around the peroneal tendons [4]. The presented surgical technique aims to reinforce an attenuated retinaculum with a synthetic patch, Artelon® Tissue Reinforcement, preserving the normal anatomy. Artelon® is a synthetic material with good strength and handling characteristics that has been used clinically for augmentation of tendon repairs, such as rotator cuff tendon [5] and achilles tendon [6].

Case Presentation

A 52-year-old healthy female presented to the clinic in September 2009 with an acute onset of lateral ankle pain. Initial physical findings indicated that she had suffered an inversion ankle injury when she twisted her ankle while walking. The physical examination revealed pain, swelling, limp, and weakness in the patient's lateral left foot and ankle. Furthermore, there were signs of tendon subluxation.

A magnetic resonance image (MRI) showed a partial intrasubstance tear in the peroneus longus tendon at the distal aspect of the lateral malleolus.

Initial treatment consisted of immobilization and physical therapy for five weeks followed by a gradual rehabilitation program. Since non-operative treatment failed, the patient was scheduled for surgical treatment.

Surgical Procedure

Surgery was performed six weeks after the injury under general anesthesia. A 6 cm curvilinear incision was made along the course of the peroneal tendons posterior to the lateral malleolus. The exposed tendon showed a longitudinal split tear of 2 cm in the peroneal longus tendon. Degenerative tissue was excised and the partial tear was repaired with Vicryl suture. Following the primary tendon repair, the peroneal groove was inspected and then deepened in the usual manner.

Surgery also revealed an associated tendon subluxation. The superior peroneal retinaculum was therefore reinforced to prevent resubluxation. This was done by augmentation of the retinaculum by an Artelon® Tissue Reinforcement (ATR) patch with the size 6 x 9 cm. The ATR patch was secured at all four apices with Maxbraid non-absorbable suture. The remaining edges were secured with 3.0 Vicryl suture in a running manner.

The ankle was moved through range of motion and no further tendon subluxation was noted. Finally, a layered closure was performed, carefully covering the ATR patch and the reinforced retinaculum.

The patient was discharged in a posterior splint with the foot placed in a slightly plantar flexed and inverted position. She received crutches to avoid weight-bearing.

Postoperative

The wound healed without complications. At the follow-up visit three months after the surgical treatment the patient had no pain, but some swelling. Mobility of the ankle was satisfactory. At the visit to the clinic after approximately six months there was no swelling or pain, and mobility was excellent. She had then returned to previous physical activities. There were no complications during the follow-up after surgery and after six months the patient could be released from further visits to the clinic.

Rehabilitation

The patient was instructed on non weight-bearing for the first three weeks and was told to keep the leg elevated as much as possible. The posterior splint and sutures were removed three weeks after surgery. She was then placed into a short leg cast for three more weeks and thereafter placed into a cam boot. After six weeks in a cam boot rehabilitation began with range of motion exercises and muscle conditioning/strengthening. After removal of the cam boot the patient was placed in a lace up ankle brace and therapy continued for two weeks. The total rehabilitation period was four weeks. The patient was allowed to return to physical activities after six months, when she had regained normal range of motion, strength and functional stability.

Conclusion

The patient had excellent treatment outcome. Using this procedure, the normal anatomy of the superior retinaculum could be preserved, and reinforcement could be performed without transferring of other local tissue, such as a different tendon. One has to conclude, that the retinaculum must be addressed at the time of primary peroneal tendon repair to prevent recurrent tears.