

Chad L. Seidenstricker, DPM, AACFAS & Jeffrey E. McAlister, DPM, FACFAS

The CORE Foot and Ankle Advanced Reconstruction Fellowship

Statement of Purpose

Acute superior peroneal retinacular (SPR) injury results in dislocation of the peroneal tendons. Surgical intervention is typically warranted. In the case of avulsion fractures of the SPR off of the fibula, there may be insufficient tissue to repair after excision of the fragment. We present a technique tip using a absorbable anchors with preloaded heavy gauge non-absorbable suture to reinforce/recreate the SPR sling and help retain the peroneals in the retrofibular space.

Literature Review

Eckert and Davis first classified injuries to the SPR [1]. Grade I injury involves elevation of the SPR off of the fibula. Grade II injury is classified as elevation of the SPR off the fibrocartilaginous ridge of the fibula. Grade III injury involves cortical avulsion off the fibula.

This pathology primarily occurs in athletes. It is also often chronic in nature, and may become more symptomatic if the peroneal tendons are injured either at the time of initial injury, or from chronic subluxation. Careful examination is required for diagnosis, and concomitant pathologies need to be thoroughly ruled out (i.e. lateral ankle instability).

Conservative methods of treatment often result in failure. Various repair techniques have been reported in SPR injuries and chronic SPR insufficiency. Most techniques involve groove deepening procedures (with or without preservation of the fibrocartilaginous posterior lip of the fibula), SPR repair, or a combination of the two [2-12]. These techniques have demonstrated good success rates with high rate of return to activity.

Rationale

When injury involves avulsion of the SPR attachment off the fibula, repair with groove deepening and fibular anchor with suture reefing the cuff of SPR has left us underwhelmed. To add stability to the repair we have tried a novel technique to create a "sling" superior to the SPR to allow the peroneal tendons to rest in their retrofibular anatomic position.

The technique involves performing additional repairs including groove deepening and SPR advancement with fibular anchors. After completing these more standardized methods of repair, a sling is created utilizing a commercially available kit.

Technique

An incision is made along the posterior border of the lateral malleolus carrying it inferiorly along the course of the peroneals [Figure 1]. The peroneal sheath is incised exposing the peroneals [Figure 2]. The osseous attachment site, if avulsed, is removed. Peroneals are explored and repaired as needed (low lying peroneus brevis should be debulked). We perform groove deepening with a 3.5 - 4.0mm solid drill bit inserted from the inferior most aspect of the posterior fibula and run the drill proximally about 3 cm to soften the posterior cortex. Sequential tamping is then performed with a curved long instrument of choice. Typically two suture anchors are placed to reef the remaining inferior cuff of SPR tissue.

Anchors with pre-loaded suture are left unrepaired.



Figure 1.

Figure 2.

Figure 3.

Dissection using a blunt instrument is performed medial to the sheath of the peroneals down to the posterior lateral corner of the tibia [Figure 3]. The posterolateral corner of the tibia is drilled and tapped for insertion of a 3.5mm absorbable anchor with preloaded ultra-high strength polyethylene suture [Figure 4,5]. The native SPR is now repaired [Figure 6,7].



Figure 4.

Figure 5.

Figure 6.

Place the preloaded suture from the first anchor through the islet of the companion 4.75mm absorbable anchor. Just proximal to the natural SPR attachment (safe distance above anchors used for SPR repair), the "sling" is completed by drilling and tapping for insertion of the 4.75mm anchor [Figure 8]. Enough tension should be present on the suture to retain the peroneals, without constricting them [Figure 9]. The remainder of the peroneal sheath is repaired, followed by layered closure.



Figure 7.

Figure 8.

Figure 9.

Case Example

An active 17 year old male sustained a left ankle injury. MRI confirmed an SPR tear and laterally dislocated peroneus longus tendon. Patient underwent surgical repair, which included indirect groove deepening, SPR reefing with fibular anchors, and reinforcing the SPR with a "sling" of absorbable anchors with preloaded heavy gauge non-absorbable suture. He has had full recovery and no limitations in activity. At 8 weeks postoperative he felt he was near 100% recovered and has had no limitations or setbacks up to 15 months postoperatively.

Discussion

In most cases standard repair of subluxing peroneals is sufficient. When groove deepening and SPR repair does not produce an adequate result, the repair can be augmented with this "sling" technique. Care should be taken not to overtighten this repair and constrict the tendons and the sling should be external to the peroneal sheath.

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