Peroneal Retinaculoplasty with Anchors for Peroneal Tendon Subluxation

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Abstract

Recurrent subluxation of the peroneal tendons is rare but can produce marked functional impairment in athletes. We describe a technique for the reconstruction of the superior peroneal retinaculum using anchors. This procedure is safe and effective in managing instability.

The peroneal tendons share a common tendon sheath proximal to the distal tip of the fibula with the peroneus brevis medial and anterior to the peroneus longus. More distally, each tendon lies in its own sheath. The common sheath is contained within a sulcus, the fibular groove, on the posterolateral aspect of the fibula, preventing subluxation. The groove is 5 to 10 mm wide and up to 3 mm deep.¹ The primary restraint to tendon subluxation is the superior peroneal retinaculum. This fibrous band originates on the posterolateral aspect of the fibula and inserts onto the lateral surface of the calcaneus. It is 10 to 20 mm wide, is reinforced superficially by transverse fibers, and courses in a posteroinferior direction, although variants in width, thickness, and insertional patterns are not uncommon.¹ The inferior peroneal retinaculum is attached to the peroneal trochlea and calcaneus above and below the peroneal tendons.

Acute traumatic subluxation of the peroneal tendons is uncommon.² Acute injuries to the superior peroneal retinaculum can be initially managed conservatively with immobilization in a non-weightbearing cast,² which has a reported success rate of approximately 50%.²,³

In chronic subluxation, patients often reveal a history of previous ankle injury that, in some cases, may have been misdiagnosed as a sprain. An unstable ankle that gives way or that is associated with a popping or snapping sensation is another common complaint. Chronic subluxation of the peroneal tendons may be traumatic or habitual and voluntary. In the latter case, congenital deficiency of the superior peroneal retinaculum and a shallow fibular groove may play a role.⁴ In traumatic chronic subluxation, there is little to be gained with conservative management, and surgical management is generally advocated.⁴-¹⁰

Many surgical techniques have been described. Primary repair of the superior peroneal retinaculum⁴-⁶,¹¹ is feasible if the remaining retinaculum available to cover the tendons is sufficient. When the superior peroneal retinaculum is deficient, reconstructive procedures include groove deepening,⁸,¹⁰,¹² bone block procedures,¹³ reinforcement of the superior peroneal retinaculum with a tendon graft,⁷,⁸,¹⁴-¹⁶ peroneal tendons rerouting,¹⁷,¹⁸ or a combination of these techniques. Recently, reconstruction of the superior peroneal retinaculum using anchors has been described.¹⁹ We report our own technique for such a procedure.

Preoperative Planning

Instability is assessed clinically. A comprehensive examination of the ankle and foot is required to exclude other pathology, such as a lesion of the anterior talofibular ligament. Recurrent or chronic dislocation of the peroneal tendons presents with instability and clicking of the lateral aspect of the ankle, with the tendons subluxing
anteriorly.

**Surgical Procedure**

The procedure is performed under general or spinal anaesthetic. The patient is placed supine on the operating table with a sandbag under the buttock of the operative side to internally rotate the affected leg. A tourniquet is applied to the thigh, the leg exsanguinated, and the cuff inflated to 250 mmHg.

A 5 cm longitudinal incision along the course of the peroneal tendons is made starting posterior to the tip of the lateral malleolus and progressing proximally, staying well anterior to the sural nerve. The incision is deepened to the peroneal tendon sheath, which is incised longitudinally 3 mm posterior to the posterior border of the fibula (Fig. 1). The superior peroneal retinaculum is normally thin and deficient, especially anteriorly. The peroneal tendons are identified by blunt dissection, and protected. The lateral aspect of the lateral malleolus is exposed (Fig. 2), and the “pouch” formed between the bony surface of the lateral malleolus and the superior peroneal retinaculum, where the tendons sublux, becomes visible.

The bony surface of the lateral malleolus is roughened up with a periosteal elevator to produce a bleeding surface (Fig. 3), and three or four anchors are inserted along the posterior border of the lower fibula (Fig. 4). After manually testing that the anchors cannot be dislodged, the superior peroneal retinaculum is reconstructed (Fig. 5), making sure that the pouch between the bony surface of the lateral malleolus and the superior peroneal retinaculum is totally obliterated (Fig. 6). The ankle is kept in eversion and slight dorsiflexion to assure that the peroneal tendons are in the “worst possible position.” The

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**Figure 1** Exposure and sectioning of the common peroneal tendon sheath.

**Figure 2** The lateral aspect of the lateral malleolus with the deficient superior peroneal retinaculum exposed by anterior retraction.

**Figure 3** The lateral malleolus is roughened up with a periosteal elevator.

**Figure 4** The anchors in situ.
strength of the repair is tested moving the ankle through the whole range of motion.

The wounds is closed in layers with 2-0 vicryl (Ethicon, Edinburgh, UK) for the subcutaneous fat, subcuticular undyed 3-0 vicryl (Ethicon, Edinburgh, UK), and steristrips (3M, Loughborough, UK). Dressing swabs, dressing, and crepe bandage are applied. A below knee walking synthetic cast is applied with the ankle in neutral and slight eversion. Weightbearing is allowed from the day after the operation, and the plaster is removed four weeks after the procedure, after which rehabilitation is started. Gradual return to activities and to sport is allowed over the course of three to four months postoperatively.

Discussion

Acute dislocation of the peroneal tendons is often misdiagnosed as an ankle sprain and treated by early mobilization, which may increase the risk of chronic dislocation. Surgical reconstruction for recurrent subluxation of the peroneal tendons poses a challenge. Many procedures have been described, but some are non-physiological and have marked postoperative morbidity. For example, bone block procedures may lead to fracture of the graft or of the lateral malleolus, intra-articular placement of the screws, and recurrence of the subluxation.20

Intraoperative problems may include damage to the sural nerve, which is usually between 7 and 14 mm posterior to the tip of the fibula. This risk can be minimized by formal identification and protection of the nerve, which can be retracted posteriorly with the short saphenous vein at the beginning of the procedure.21 However, the approach that we describe is safely anterior to the nerve and it is not necessary to formally identify and protect it.

Early postoperative problems may include hematoma and wound infection. Inflammatory foreign-body reaction related to the use of biodegradable anchors has been described, but in most instances this runs subclinically and passes unnoticed.22,23 We have not experienced any clinical complications related to the anchors, whether metallic or bioabsorbable, using this technique.

Though seldom indicated given the rarity of patients presenting with such pathology, this procedure is technically easy, with minimal disturbance of the local anatomy, is safe and restores the normal relationship of the peroneal tendons in their groove.

References

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