

Peroneal tendon subluxation in a case of anomalous peroneus brevis muscle

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We report a case of peroneal tendon subluxation as a result of an anomalous extension of the peroneus brevis muscle into the fibular groove, causing an encroachment phenomenon, stretching-out of the superior peroneal retinaculum, longitudinal splitting

of the peroneus brevis tendon, subluxation of the peroneal tendons, and peroneal tenosynovitis. We describe a simple surgical technique for tendon stabilization, after decompression of the fibular groove.

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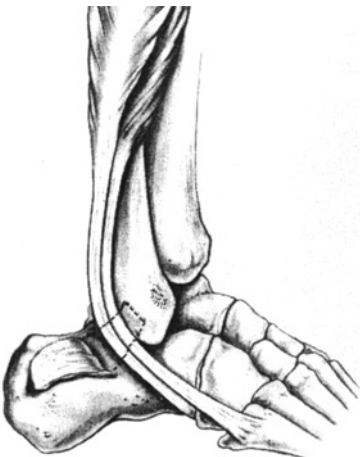
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Case report and surgical technique

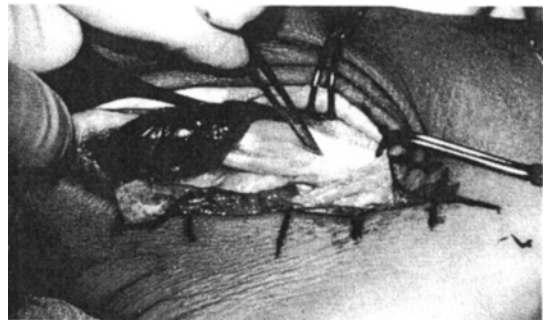
A 30-year-old woman, competitive soccer and tennis player since childhood, presented with a 4-year history of chronic pain in the lateral aspect of the right ankle and instability excluding her from sports. She recalled an initial twisting injury to the ankle while playing tennis. On active dorsiflexion and eversion of the ankle, the peroneal tendons subluxated out from behind the lateral malleolus, and this motion was painful through the entire distal course of the tendons in their sheath. A boggy swelling was noted in the peroneal sheath at the fibular groove.

Routine radiographs were normal. Upon exploration of the peroneal tendons, a posteriorly-based osteoperiosteal flap was raised from the lateral aspect of the fibula (Figure 1). An abnormally low peroneus brevis muscle belly was noted to fill the fibular groove creat-

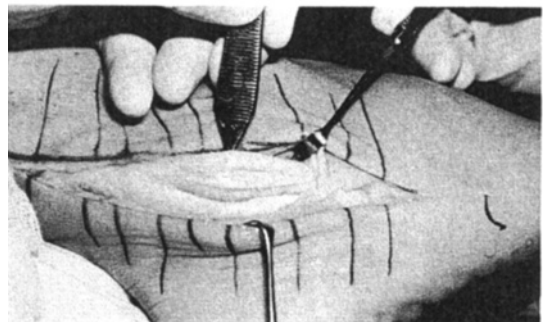
Figure 1.



A fibular osteoperiosteal flap raised to expose the peroneal tendons.



Anomalous low-lying peroneus brevis muscle belly extending into the fibular groove.



Longitudinal split in the peroneus brevis tendon.

ing an overpacking phenomenon within the groove. There was a partial thickness 1 cm longitudinal split in the peroneus brevis tendon, centered on the posterior ridge of the fibula. The tenosynovium around the peroneal tendons at the fibular groove was inflamed and thick.

After a synovectomy of the peroneal tendons and excision of peroneus brevis muscle approximately 3 centimeters proximal to the fibular groove, the peroneal tendons fell into their anatomic position. The attenuated superior peroneal retinaculum was then advanced anteriorly on the fibula and attached to a newly-freshened bony surface with a pants-over-vest suture. The peroneal tendons no longer subluxated on dorsiflexion of the ankle, and with the decompression and debulking, there was ample room for gliding of both peroneal tendons in their groove.

After the operation, the leg was immobilized in a short leg cast for 4 weeks with the ankle in slight plantar flexion and eversion. 2 months after removal of the cast the patient returned to full activity. At the 1-year follow-up the patient had no symptoms of pain or instability in the ankle and no evidence of dislocation of the peroneal tendons.

Discussion

Lateral ankle pain secondary to encroachment within the peroneal groove under the fibular malleolus has been reported by Regan and Hughston (1977) and Hammerschlag and Goldner (1982), in association with an anomalous peroneus brevis tendon, and by White et al. (1974) who reported an accessory peroneal tendon in addition to a peroneus brevis and peroneus longus. Webster (1968) reported two cases of peroneal tenosynovitis with pseudotumors of the peroneus brevis tendon within the fibular groove; one case had a longitudinal split in the peroneus brevis tendon.

Sobel et al. (1990), in 124 ankle dissections, noted one quarter of ankles with an anomalous peroneus quartus tendon; other anomalies included the peroneus digiti minimi and the peroneus accessorius. Sammarco and Brainard (1991) recently reported a case in which an accessory muscle arose from the peroneus brevis muscle and the posterior interosseous membrane and formed its own tendon which inserted into the lateral process of the calcaneus.

In our case, the low lying muscle of the peroneus brevis did not form a separate tendon, but instead inserted into the peroneus brevis tendon extremely low in the fibular groove. The only previous report to describe subluxing peroneal tendons secondary to an anomalous peroneal tendon was by Hammerschlag and

Goldner (1982). Their case, however, had an extra tendon with the extra muscle belly off the peroneus brevis, similar to that seen in the report by Sobel et al. (1990) and Sammarco and DiRaimondo (1989). To the authors' knowledge, the presence of a low-lying muscle belly of the peroneus brevis has not been reported as a cause of subluxing peroneal tendons.

In an anatomic study of the posterior peroneal sulcus (fibular groove), Edwards (1928) found substantial variations in the contour, depth, and length of the fibular groove. He found a definite sulcus on the posterior surface of the lateral malleolus in 146 of 178 fibulae, and a transverse flat surface in nineteen specimens. In the remaining 13, the groove actually had a convex surface providing no support by the bone or by the cartilage in retaining the tendons within the sulcus. The average width of the sulcus was 6 millimeters. The groove usually was shallow, but occasionally reached a depth of 3 millimeters. The lateral ridge of the distal end of the fibula, when present and augmented by cartilage, was usually not sufficient to retain the tendons in the groove.

Cadaveric dissections have recently demonstrated that peroneus brevis splits can be recreated with forceful eversion of the foot and compression of the peroneus brevis tendon over the sharp posterior ridge of the distal fibula. Concomitant laxity of the superior peroneal retinaculum is necessary to allow the peroneus brevis tendon to subluxate over the posterior ridge of the fibula (Sobel et al. 1990, 1992). If, indeed, the etiology of peroneus brevis splits is mechanical and if the tendon possesses the potential for vascular invasion and healing, treatment should be directed at repair of the split peroneus brevis tendon and reconstitution of the normal mechanical restraints of the peroneal tendons.

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