Peroneal brevis rupture in a cerebral palsy patient

Case report

Introduction

Tears of the peroneal tendons are not uncommon, but remain an underdiagnosed cause of lateral ankle pain [1–3]. Several mechanisms of injury have been involved in peroneal tendon tears, such as acute inversion ankle sprains, chronic ankle ligamentous laxity, and peroneal subluxation [1, 4, 5]. In addition several authors have documented that predisposing anatomic factors may contribute to these tendon tears. A convex or flat fibular groove, low-lying or anomalous muscle belly, superior peroneal retinaculum incompetence, posterior lateral fibular spurring, and a high-arch foot type have all been directly associated with peroneal tendon injury [1, 6, 7]. In this study we report a case of isolated rupture of peroneus brevis tendon in a 57 year old man with cerebral palsy.

Anatomy

Peroneus brevis muscle arises from the distal two-thirds of the lateral surface of the fibula, anterior to the peroneus longus, and from the anterior and posterior crural intermuscular septa. It passes vertically downwards and ends in a tendon which passes behind the lateral malleolus together with, but anterior to, that of the peroneus longus, the two tendons running deep to the superior peroneal retinaculum in a common synovial sheath. It then runs forward on the lateral side of the calcaneus above the peroneal trochlea and the tendon of peroneus longus, to insert into a tubercle on the base of the fifth metatarsal bone, on its lateral side [8].

Peroneus longus the more superficial of the two muscles, arises from the head and proximal two-thirds of the lateral surface of the fibula. Its tendon crosses the sole of the foot obliquely, and is attached...
by two slips to the lateral side of the base of the first metatarsal bone and the medial cuneiform [8].

The tendon changes direction at two points: 1) below the lateral malleolus, and 2) on the cuboid bone. At both sites it is thickened and at the second a sesamoid fibrocartilage (sometimes a bone) usually develops within it.

## Actions

The peroneus brevis is the major evertor of the foot and provides lateral stability of the ankle. The peroneus longus tendon provides stabilization of the first ray complex and provides an important supinatory component during gait [9].

### Case report

**History** A 57 year old male presented with pain and edema on the lateral side of his right ankle. Acute inversion ankle injury was reported. The patient was referred to our hospital 21 days after trauma.

**Medical history** The patient suffers from spastic cerebral palsy.

**Clinical examination** Patient had antalgic gait with tip toe walking. There was evident local swelling and tenderness posterior to the lateral malleolus. The ankle showed no lateral instability. The patient had equinocavus deformity.

**Imaging** Weight bearing foot and ankle (antero-posterior-lateral) radiograph showed increased calcaneal inclination. Soft tissue edema around lateral malleolus. No talar tilt, no os peronium. No fractures. MRI (Fig. 1) revealed a complete rupture of the peroneus brevis muscle.

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**Surgery** (Fig. 2 a, b, c)

A curved incision 10 cm long was made behind the lateral malleolus; the superior peroneal retinaculum was intact. The peroneal sheath was incised to explore both peroneal tendons, on incision hematoma came out of the sheath. The peroneus longus tendon was intact. The peroneus brevis tendon was ruptured near its insertion at the base of the 5th MTB; the proximal stump was trimmed. A fresh bleeding surface on the lateral surface of the calceneus was made. Fixation of the proximal peroneal brevis tendon stump was achieved by two bone anchors applied on the lateral surface of the calceneus. The peronal tendon sheath was repaired and the skin closed.

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**Post-operative care**

Patient was maintained in a nonweight bearing below the knee cast for 6–8 weeks.

### Discussion

Because of their unique anatomy and location, the peroneal tendons are subjected to large loads, often resulting in overuse injuries [10].

The true incidence of peroneal tendons tears is not known. These tears have been reported to occur after an acute traumatic event or without any identifiable traumatic episode [1, 4]. Sobel et al. [11, 13] described the prevalence of peroneous brevis tendon tears to be 11% to 37% in cadaveric specimens. Krause and Brodsky [1] presented a series of 20 chronic peroneous brevis tendon tears. Saxena et al. [14] reviewed 49 peroneal tendon tears in 41 patients; there were 24 peroneus brevis tears.