

# Bilateral Peroneus Longus Tendon Rupture Through a Bipartite Os Peroneum

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*Peroneus longus rupture with associated involvement of the os peroneum is an uncommon injury, and a small number of cases have been reported. Several mechanisms of injury have been suggested, but the most accepted theory is due to an inversion force placed on a cavovarus foot type. The sesamoid often becomes the focal point of the mechanical stresses and may fracture. Although the purpose of the sesamoid is to protect the tendon from rupture, the os peroneum may actually encourage fatigue (tear/rupture) under certain circumstances. Because this injury occurs at the cuboid notch, primary repair is complicated because of the inability to access the tendon as it courses deep within the midfoot. We present a bilateral case of peroneus longus rupture with involvement of the os peroneum in a patient with a cavovarus foot type. The injuries were sustained from an identical mechanism and occurred almost 1 year apart. In both situations, a peroneus longus to peroneus brevis tendon transfer was performed above the ankle joint in conjunction with partial excision of the fractured os peroneum. To the authors' knowledge, this is the only reported case of peroneus longus rupture associated with fracture of the os peroneum to occur bilaterally. (The Journal of Foot & Ankle Surgery 46(4):270–277, 2007)*

Key words: peroneus longus, os peroneum, tendon rupture, fracture, bipartite

**F**racture of an os peroneum or fracture through a partite os peroneum both result in discontinuity of the peroneus longus tendon and are uncommon injuries. Inversion of the ankle with forced plantarflexion of the first ray in the cavovarus foot type places the peroneus longus at risk for rupture. (1–17). The peroneus longus tendon is most susceptible to injury at the cuboid notch because of the sharp change in direction of the tendon as it courses toward its insertion on the first ray. As a result, an intratendinous, fibrocartilaginous thickening or sesamoid (os peroneum) forms at the cuboid notch to shield the peroneus longus from the increased force at this location.

When an os peroneum is present, the tendon may be more susceptible to injury and rupture through the sesamoid because the bone is less forgiving than fibrocartilaginous thickening of the tendon. A bipartite or multipartite os peroneum may fracture through the fibrocartilaginous interval (sychondrosis) between the fragments and result in similar discontinuity of the peroneus longus tendon.

The literature regarding peroneal tendon ruptures with involvement of the os peroneum is limited. In 1942, Hadley reported the first case of a fractured os peroneum with 5 mm of displacement of the fracture fragments (1). Mains and Sullivan reported on a patient with an os peroneum fracture and concomitant rupture of the peroneus longus tendon due to trauma (2). Peacock et al reported a case of peroneus longus rupture with os peroneum fracture due to a supination injury (3). Cachia et al described a single case of spontaneous rupture with fracture (4). Saxena and Cassidy reported on 4 patients with peroneus longus tears and os peroneum fracture, but did not define these as longitudinal tears or transverse ruptures of the tendon (5). We report a case of bilateral peroneus longus tendon rupture with a bipartite os peroneum fracture that occurred almost exactly 1 year apart. To the authors' knowledge, there are no other cases of traumatic bilateral occurrence.

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1067-2516/07/4604-0011\$32.00/0  
doi:10.1053/j.jfas.2007.03.006



**FIGURE 1** Lateral nonweightbearing radiograph of right foot demonstrating significantly displaced fracture of a large os peroneum. Proximal fragment (*black arrow*) retracted within the peroneus longus tendon. The distal fragment (*white arrow*) remains located within the stump of peroneus longus at the cuboid notch.

### Case Presentation

A 37-year-old healthy man presented to the emergency room after sustaining an inversion injury of his right foot and ankle while running around first base during a baseball game. He recalled a popping sound and had pain, swelling, and bruising to the lateral aspect of his ankle and midfoot. He was able to bear weight with pain. Before this injury, he related a history of chronic lateral ankle pain with sporadic ankle sprains, but had never sought medical attention. His past medical history was otherwise unremarkable.

Physical examination of the right lower extremity revealed obvious swelling to the lateral aspect of the ankle and midfoot. Ecchymosis was present inferior to the lateral malleolus. Pinpoint tenderness was present over the peroneal tubercle and at the calcaneocuboid joint. The patient was able to evert his foot with full strength, which appeared to be through the muscular contraction of peroneus brevis. Peroneus longus function could not be isolated and elicited pain with testing. A weight-bearing examination was not performed because of the pain, but loading of the foot revealed a pes cavus foot type. The first ray was stable, and no forefoot callosities were present.

Injury radiographs revealed a displaced fractured right os peroneum (*Fig 1*). The proximal fragment of the os peroneum retracted proximally to the level of the peroneal tubercle (*Fig 2*). The larger distal fragment of os peroneum remained at the cuboid notch and appeared to have both smooth and rough edges. Small flecks of bone were present at the cuboid notch. A diagnosis of peroneus longus rupture with os peroneum fracture was made. The appearance of the bone fragments are suggestive that the os peroneum may have been partite and ruptured/fractured through the partite site. Because of the patient's history of chronic lateral ankle pain and sprains, a magnetic resonance image (MRI) was obtained to evaluate the



**FIGURE 2** Anteroposterior radiograph of right foot demonstrating os peroneum fracture. The proximal fragment (*black arrow*) is retracted to the level of the inferior peroneal retinaculum. In this view, the fractured ossicle may be mistaken for a hypertrophic peroneal tubercle. Distal fragment (*white arrow*) remains located beneath the cuboid.

peroneal tendons for preexisting disease as well as to confirm the diagnosis of an os peroneum fracture (*Fig 3*).

Eleven days after the injury, the patient was brought to the operating room. A curvilinear incision was made directly over the peroneal tendons from the fibular malleolus to the fifth metatarsal base. A subcutaneous hematoma was encountered consistent with the injury. The peroneal sheath and inferior peroneal retinaculum were incised. The peroneus longus rupture with fractured os peroneum was immediately identified at the peroneal tubercle. The large ossicle encompassed the entire width of the tendon. A 1-cm segment of tendinosis with the peroneus longus tendon was identified just proximal to the fracture. The peroneus brevis tendon was intact without rupture, longitudinal tear, or tendinosis. The distal fragment of the fractured os peroneum was identified at the cuboid notch. Because of the size of fracture fragments, tendinosis of the peroneus longus tendon, and inability to access the distal tendon stump, the prospects of performing a primary repair were abandoned. Rather, a peroneus longus to peroneus brevis tendon transfer

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