Peroneal tendon dislocations are well-known peroneal tendon injuries in athletes. Recurrent peroneal tendon dislocations lead to chronic inflammation and mechanical irritation, which ultimately can result in longitudinal tears of the tendon. Furthermore, peroneus longus or peroneal brevis tendon tears caused by anomalies in the tendon or in the peroneus have been reported. However, complete peroneus longus and brevis tendon ruptures have rarely been reported. This case report describes a patient with a complete peroneus longus and brevis tendon rupture due to a sports injury, for whom a semitendinosus and gracilis tendon graft provided good results.

Case Report

The patient, a 38-year-old woman, suffered a left ankle sprain while dancing and was treated conservatively. She subsequently had pain along the left peroneal tendon during sports activity. Peroneal tendonitis was diagnosed and treated conservatively using low reactive level laser therapy.

Two years after the injury (40-years-old), the patient twisted and re-injured her left ankle while dancing. The pain in the left foot soon improved, but she had difficulty standing with the left foot in equinus. Complete peroneus longus and brevis tendon ruptures were diagnosed. The ipsilateral semitendinosus and gracilis tendons were harvested and used to reconstruct the tendons. Three months after surgery, the patient was able to stand in equinus, and at 5 months after surgery she resumed her original level of sports activities.

Key words: peroneus longus and brevis, complete rupture, reconstruction, hamstring tendon, tendon grafting
longus and brevis tendons were found to be completely ruptured, and exposure along the tendon sheath showed that, in addition to these ruptures, the superior peroneal retinaculum was also ruptured and shortened. The proximal stump was thickened, and the distal stump was adherent to the surrounding soft tissue. When the scarred and damaged area was debrided, an 8-cm defect in the peroneal brevis tendon and a 10-cm defect in the peroneus longus tendon were observed (Fig. 3).

The ipsilateral semitendinosus and gracilis tendons were harvested and used to reconstruct the tendons with interlacing sutures to the torn tendon/muscle stump and distal stump (Fig. 4). Moderate graft tension was applied to the peroneal muscle with the ankle joint plantar flexed at 10 degrees.

The ankle was then immobilized in a plaster cast for 2 weeks. Passive range of motion training was started on day 15 postoperatively, active motion was started on day 21, and partial weight bearing was started on day 35. The

Fig. 3 The peroneus longus and brevis tendons were completely ruptured. The proximal stump was thickened, and the distal stump was adherent to the surrounding soft tissue. When the scarring and damaged area were debrided, an approximately 8-cm defect in the peroneal brevis tendon and a 10-cm defect in the peroneus longus tendon were revealed. PB, peroneal brevis tendon; PL, peroneus longus tendon; LM, lateral malleolus.

Fig. 4 The ipsilateral semitendinosus tendon and gracilis tendon were harvested and used to reconstruct the tendons with interlacing sutures to the torn tendon/muscle stump and the distal stump.
The patient was able to stand on a single leg in equinus 3 months after surgery (Fig. 5). She was allowed to participate in limited sports activity 4 months after surgery, and she resumed her original level of sports activity 5 months after surgery.

Discussion

Peroneal tendon injuries include peroneal tendonitis, peroneal tendon instability, peroneal tendon dislocations, and peroneal tendon tears. [1] Tears can be longitudinal or complete. Bonnin [2] reported in 1997 that, among 77 patients who underwent surgery for ankle joint instability, 23% had longitudinal tears. This suggests that peroneal tendon injuries are not rare. Longitudinal tears associated with peroneal tendon dislocations and longitudinal tears due to muscle variants [3,4] and abnormalities of the peroneal trochlea [5] have also been reported. Overall, several cases of peroneal tendon longitudinal tear have been reported. [2-8] However, based on our search of the literature, complete tears are relatively rare. [9] Furthermore, complete tears of both the peroneus longus and the peroneus brevis tendons are an extremely rare occurrence.

As a mechanism underlying peroneal tendon injury, Sobel et al. [10] described an injury of the peroneus brevis tendon in which there were peroneus brevis tendon dislocations and encroachment between the peroneus longus tendon. With regard to injury of the peroneus longus tendon, Bassett et al. [11] reported repetitive excessive plantar flexion and inversion of the ankle as a mechanism by which injury occurs. In addition, fractures, anatomical variants, degeneration, and inflammation have been reported as causes of complete tears of the peroneal tendon. In the present patient, chronic peroneal tendinitis and repetitive mechanical irritation probably resulted in the complete tearing of the peroneus longus and brevis tendons.

Complete tears of the peroneal tendon can occur beneath the superior peroneal retinaculum, at the distal end, and in the cubital tunnel. The present patient had a tear near the superior peroneal retinaculum.

Surgical treatment is usually performed if there is a tear of the peroneus brevis muscle or peroneus longus muscle. The torn tendon is excised, or tenodesis is performed by suturing the torn side to the healthy side. However, either excision or tenodesis sacrifices tendon function and leads to unsatisfactory outcomes in patients who wish to resume high-level functions such as sports activities. End-to-end anastomosis is sometimes performed for fresh tears, but since there is tendon degeneration in most chronic cases, end-to-end anastomosis is problematic. The flexor hallucis longus muscle tendon is often used for tendon grafting. However, the present patient had ruptures of both the peroneus longus and brevis tendons with a large defect. Moreover, the patient wanted to be able to continue athletic activities. Therefore, to avoid foot and ankle joint dysfunction, reconstruction using semitendinosus and gracilis tendons were determined to be the most effective options.

The present patient had a history of a left ankle sprain followed by peroneal tendonitis and subluxation. In addition, the patient's continuation of sports activities may have prolonged the tendinitis and allowed the tendons to degenerate. The pain laterally in the left foot may also have developed due to a tear in the peroneus brevis tendon occurring at this time, resulting in an increased load on the peroneus longus tendon. The subsequent recurrent twist injury of the left ankle may also have led to rupture of the peroneus longus tendon.

Complete rupture of the peroneal tendon is very rare. In this case, semitendinosus and gracilis tendons were used for the reconstruction of the peroneus longus and
brevis. It is easy to harvest these tendons and reconstruction is relatively complication-free. Following the reconstruction, the patient exhibited no dysfunction in her foot and ankle and was able to return to her previous sports activities. Reconstruction using the semitendinosus and gracilis tendons produced a good outcome.

References