Case Report


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Abstract

An acute isolated lateral leg compartment syndrome with peroneus longus muscle tear and deep peroneal nerve palsy due to avulsion in sport injury is uncommon and rare as well as difficult to diagnose as not all characteristics of the compartment syndrome are presented. This case reports on the pre-surgical finding, surgical finding and postoperative outcome to raise awareness of the injury itself and how to process towards full recovery of deep peroneal nerve palsy.

Keywords: Acute lateral leg compartment syndrome, peroneus longus muscle tear, deep peroneal nerve palsy

An acute isolated lateral leg compartment syndrome with peroneus longus muscle tear associated with deep peroneal nerve palsy has been reported to occur after a sport and non-sport injury. The patient might present at the emergency room or orthopedic department complaining of pain, tingling or burning sensation or paresthesia in the skin, tightness in the muscle, numbness or paralysis of part of the limb. However, a high degree of suspicion is necessary to establish the diagnosis early on in its course to avoid potentially disabling sequelae.

A precise physical examination regardless of the investigation used, together with compartment pressure measurement, is most useful in cases where the clinical examination is uncertain.

Case Report

A 25-year-old male badminton player from a badminton club presented at the emergency department (ER) complaining of left lateral leg pain for four days. He suffered an inversion injury to his left ankle during a badminton game and gradually developed pain which was not under control with medication. Four days post injury he sought medication from the ER due to the increasing pain on the lateral of his left leg. His pain was out of proportion given the amount of swelling of his leg. On physical examination, his leg was moderately tender over the lateral part; the pedal pulse and posterior tibial pulse were present. The range of motion was decreased to zero from five grade of power of tibialis anterior (TA), extensor hallucis longus (EHL) and extensor digitorum longus (EDL) muscle and the pinprick sensation test at the areas of deep and superficial peroneal nerve distribution were decreased, and the inversion stress test (IST) was also negative. An ultrasonography was also performed at the bedside due to the moderate swelling of the muscle, and then the hematoma was detected (Figure 1-2).

The compartment pressure measured by White-Side Infusion Technique1 was eighty mmHg, so a compartment syndrome of lateral leg was immediately diagnosed, and then the patient was taken for urgent lateral fasciotomy (Figure 3). The peroneus longus muscle still showed minimal capillary perfusion and tested positive to the muscle contraction test. The presence of tissue viability is the reason to keep the muscle by anastomosed of the sheath to the peroneus brevis and the primary closure was delayed by shoelace suture technique. Three days after the operation, signs of tissue necrosis were detected so the peroneus longus muscle was completely removed and a secondary closure (Figure 4) was done, and totally stitched off over the next ten days.
Figure 1: The cross sectional view of lateral leg ultrasonography (left), normal lateral compartment in the right leg (right). The left lateral leg presented with a hematoma.

Figure 2: The lateral view of left lateral leg ultrasonography, where a large hematoma was detected.

Figure 3: Intra-operative photograph of left lateral leg, showing the complete torn peroneus longus musculotendinous junction

Figure 4: Intraoperative Finding of the second operation, the Peroneus longus muscle was totally removed and other compartments were normal, the superficial peroneal nerve was also identified

For full motor function, throughout the day and night, ankle foot orthosis (AFO) was required since at day thirty-five post operation foot drop presented as a result of palsy of the deep peroneal nerve. The motor function was developed from grade zero of TA, EHL and EDL to grade five, one and five at fourteen weeks later (Figure 5), and EHL power improved to grade four at thirty two weeks respectively. However, as his ankle was able to present in the natural position, he can walk and run well but is still unable to return to the badminton courts.

Discussion

The acute isolated lateral leg compartment syndrome with the peroneus longus muscle tear and deep peroneal nerve palsy is rare and especially in the sport injury in even high or low energy of the mechanism. Muscle swelling and pain are the chief complaints that bring the patient to the hospital or if they do not find relief from

Figure 5: The active movement of the left foot, with regards to the recovery of motor power of tibialis anterior (TA) and extensor hallucis longus (EHL) and extensor digitorum longus (EDL) muscle at fourteen weeks, and at thirty two weeks when the physical therapy course ended.

References


