

A case report of old injury of lateral collateral ligament of knee joint combined with injury of common peroneal nerve

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Abstract

Since common peroneal nerve is easy to be injured because of superficial position of caput fibulae, less surrounding soft tissue and poor mobility, injury of common peroneal nerve is a problem worth discussing in the field of trauma orthopedics. Common peroneal nerve injury often causes foot prolapse, inability in dorsiflexion and eversion, sensory disturbance of anterolateral side of the lower leg and dorsum of foot. In this article, a case of old injury of lateral collateral ligament of knee joint combined with an avulsion fracture of fibular head resulting in injury of common peroneal nerve was reported and repaired by surgery with good effects.

Keywords

Surgery, sports medicine

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Introduction

The common peroneal nerve, commonly known as the common fibular nerve, is the main nerve governing the lower limbs. It is one of the two major branches of the sciatic nerve.¹ It was isolated from the distal sciatic nerve behind the popliteal thigh. The nerve bends around the fibula neck, and then split into two branches. The lateral collateral ligament damage of the knee often accumulated nervi peroneus superficialis, easy to lead to sensory disorders. Usually misdiagnosis is caused in the clinical diagnosis, and then lead to irreversible harm to the patients. In the treatment of the lateral knee collateral ligament injury, an international consensus on Chahla et al.² has been reached on the diagnosis, classification, treatment and postoperative rehabilitation of the lateral collateral ligament injury of the knee. At the same time, some study³ believes that the efficacy of knee ligament reconstruction is obviously better than simple ligament repair. However, due to the higher cost of treatment, Chinese orthopedic surgeons will still consider simple ligament repair in the selection of surgical plan combined with individual conditions.

Case report

The patient, female, 46 years old who had suffered from continuous pain in her left knee with limited joint movement due

to a history of sprains 3 months ago consulted at the emergency department of the hospital and was treated symptomatically. The patient consulted the outpatient department 3 months after injury, the magnetic resonance imaging (MRI) showed an avulsion fracture of the fibular head of the left knee and a tear at the fibular insertion of collateral lateral ligament fibula of left knee (Figure 1). Physical examinations show obvious tenderness of fibular insertion point of lateral collateral ligament of left knee joint and slightly lower skin sensation of the lateral side of the left leg than that of the opposite side with abnormal pain sensation in the lower leg. Not obvious tenderness of the lateral joint space, floating patella test (–), hyperextension and inversion (+), eversion and hyperflexion test (–) and front and rear drawer test (–) and slightly weaker dorsiflexor strength of left foot than that of the opposite side. She was admitted to the hospital for treatment on 12 November 2019. Admission diagnosis shows “Injury of lateral collateral ligament of left

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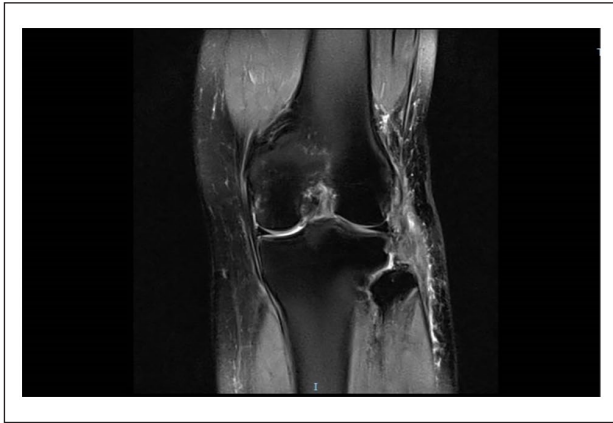


Figure 1. MRI showed an avulsion fracture of the fibular head of the left knee and a tear at the fibular insertion of collateral lateral ligament fibula of left knee.

leg, an avulsion fracture of left fibular head and injury of common peroneal nerve.” The relevant preoperative examination was performed after admission and after the contraindication was eliminated, the lateral collateral ligament repair of the left knee and exploration and release surgery of common peroneal nerve were performed under combined epidural and lumbar anesthesia. First, we should finish the physical examination of the knee ligament: the patient was prone, hip straightening, knee flexion to 90°, the assistant fixed the thigh with both hands, squeeze the knee joint, and rotate the calf, without causing any pain, which shows that the meniscus is intact, and widen the knee gap and rotate cause the lateral knee pain, which shows that the patient’s lateral collateral ligament injury with lateral knee unstable. Then, we chose surgery, and the main operation course: an incision was made on the lateral side of the left knee with a length of about 10 cm, and each layer of subcutaneous tissue was cut in turn to expose the iliotibial tract and biceps femoris. The common peroneal nerve was explored and the exposure of the common peroneal nerve: an incision was made on the lateral side of the left knee with a length of about 10 cm, and each layer of subcutaneous tissue was cut in turn to expose the iliotibial tract, biceps femoris and gastrocnemius. Further exploration of the muscle space showed the small fibula head with avulsion fracture, and extended the fibula head to probe down to the front of the fibula neck, showing the common peroneal nerve and the continuity of the nerve was normal. The scar tissue around the posterior margin of the fibular head was released, and the proximal part of the common peroneal nerve surrounded by scars by was slightly enlarged (Figure 2) and was released. After the lateral collateral ligaments were exposed, it was found that injury at attachment of collateral ligament and fibular head was loosened with a large number of scars formed. A suture anchor (Smith & Nephew) was screwed into the fibular head to repair the torn lateral collateral ligament. The left knee joint

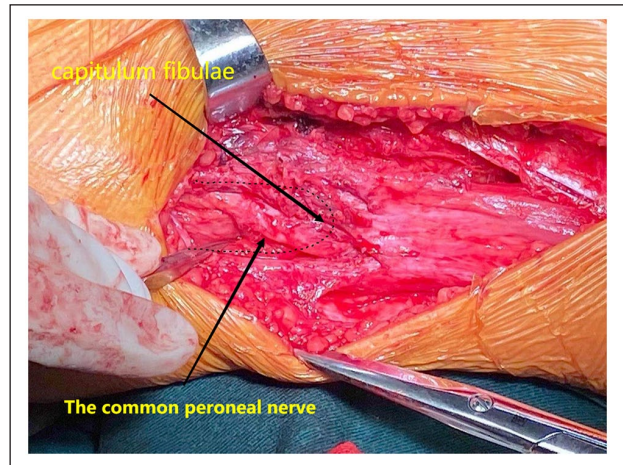


Figure 2. The scar tissue around the posterior margin of the fibular head was released, and the proximal part of the common peroneal nerve surrounded by scars by was slightly enlarged and was released.

was fixed with plaster fixation, and the nutritional neurotherapy was applied after operation. After 4 weeks, the plaster fixation was removed, and the patient was instructed to gradually increase the knee joint extension and flexion exercise, and gradually bear load. Follow-up at 1 month, 3 months and 6 months after operation showed that the sensation of the lateral skin of the lower leg gradually restored to normal, and the lateral side of knee joint restored to normal stably.

Discussion

Fracture of fibular head is often combined with injury of common peroneal nerve, while main manifestations of the injury are:⁴ (1) foot prolapse, inability in dorsiflexion, (2) inability in dorsiflexion and eversion of ankle knee, (3) decreased and even loss of cutaneous sensation of lateral side of lower leg and dorsum of foot and (4) atrophy of tibialis anterior and gastrocnemius. In this case, the patient had no significant movement abnormalities after injury, only pain in the lateral side of the knee and a slight decrease in sensation in the lower leg. The emergency doctor did not check the neurological function carefully, and only treated the patient for pain relief, and the patient developed progressive numbness of the lateral lower leg and radiation pain in 3 months after the injury. Further physical examination and MRI examination indicated an avulsion fracture of fibular head combined with injury of lateral collateral ligament and common peroneal nerve. Later, the department timely performed surgery for the patient to release nerve and repair the ligament. Symptomatic treatment like nutritional neurotherapy after surgery was applied, and the symptoms were obviously alleviated. In this case, the patient who had fracture of fibular head combined with injury of common peroneal

nerve only received X-ray examination when consulted at the emergency department and the doctor in the emergency department did not follow the standard of visual examination, touch, movement and measurement for orthopedics during physical examination, and failed to find timely signs of tenderness of the lateral side of the left knee and numbness of the lateral part of the left lower leg and failed to instruct the patient to follow up regularly and have MRI examination, which resulted in missed diagnosis. Some scholars have proved that⁵ if the compression or injury of common peroneal nerve is not found in time, there is the possibility of nerve inactivation, which may cause decreased sensation and pain of the innervated area,⁶ and even irreversible damage to the movement. It can be recovered effectively by timely detection and early surgery release. According to the latest study,⁷ the lateral collateral ligament damage of the knee joint usually chooses the ligament reconstruction surgery. However, the patient still chose the more original ligament repair surgery program, and the main reasons are as follows: this patient for fibula head avulsion fracture with lateral collateral ligament injury, no complete tear and combined with personal economic factors, according to the latest research shows that ligament reconstruction can maximize the stability of the knee joint, but high surgical cost, combined with the patient's own condition and economic conditions, we considered to choose simple ligament repair, in fact when patients return to hospital in 1, 3 and 6 months, stability of the knee was recovered, knee function is normal. Also, the long-term results still keep in follow in 2 years.⁸ We also found some other therapeutic methods of the common peroneal nerve injury, postoperative can assist ultrasound treatment, oral methylcobalamin treatment, acupuncture treatment and other programs also can promote the recovery of the common peroneal nerve. In this case, we only release the common peroneal nerve and repair the lateral collateral ligament, never do the surgery of ligament reconstruction and internal fixation of fibula head fracture, so no radiological examination was performed after surgery, and only a dynamic return visit to the knee function and stability was done after surgery. In a word, the main reason for this case is that the emergency doctor did not provide a detailed physical examination, which caused the omission of nerve and tendon injury, so as a warning to remind myself to be responsible for the first diagnosis and avoid the recurrence of missed diagnosis.

Conclusion

In case of fracture or even minor avulsion fracture of the fibular head, the innervated area of the common peroneal nerve and the skin sensation and limb movement of the specific area should be carefully examined in the treatment when a patient consults at the outpatient department or the

emergency department. Since acute phase fracture pain may cause interference to physical examination, further MRI examination of the knee joint should be applied after acute stage when necessary. The nerve function and ligament function can be recovered completely if the injury of common peroneal nerve and lateral collateral ligament can be found early and treated symptomatically in time or by surgery, such as peroneal nerve decompression if necessarily.

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Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.



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Informed consent

Written informed consent was obtained from taken from patient herself for anonymized patient information to be published in this article.

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References

1. Lezak B, Massel DH and Varacallo M. *Peroneal nerve injury*. Treasure Island, FL: StatPearls Publishing, 2021.
2. Chahla J, Murray IR, Robinson J, et al. Posterolateral corner of the knee: an expert consensus statement on diagnosis, classification, treatment, and rehabilitation. *Knee Surg Sports Traumatol Arthrosc* 2019; 27(8): 2520–2529.
3. Levy BA, Dajani KA, Morgan JA, et al. Repair versus reconstruction of the fibular collateral ligament posterolateral corner in the multiligament-injured knee. *Am J Sports Med* 2010; 38(4): 804–809.
4. van Zantvoort A, Setz M, Hoogeveen A, et al. Chronic lower leg pain: entrapment of common peroneal nerve or tibial

- nerve—German version. *Unfallchirurg* 2019; 122(11): 854–859.
5. Park JH, Yang J, Park KR, et al. A cadaveric study of the distal biceps femoris muscle in relation to the normal and variant course of the common peroneal nerve: a possible cause of common peroneal entrapment neuropathy. *Biomed Res Int* 2020; 2020: 3093874.
 6. Puffer RC, Sabbag OD, Logli AL, et al. Causing compression of common peroneal nerve at fibular tunnel. *World Neurosurg* 2019; 128: 1–3.
 7. Angelini FJ, Helito CP, Tozi MR, et al. Combined reconstruction of the anterior cruciate ligament and posterolateral corner with a single femoral tunnel. *Arthrosc Tech*; 2013; 2(3): e285–e288.
 8. Helito CP, Bonadio MB, Demange MK, et al. Functional assessment of combined reconstruction of the anterior cruciate ligament and posterolateral corner with a single femoral tunnel: a two-year minimum follow-up. *Int Orthop* 2015; 39(3): 543–548.