

Paralysis Immediately after Surgical Decompression for Common Peroneal Nerve Entrapment

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Objective: Common peroneal nerve (C-PN) entrapment neuropathy is the most common peripheral nerve neuropathy of the legs. C-PN decompression surgery is less invasive but may result in neurological complications. We report a rare case of nerve paralysis immediately after C-PN decompression surgery.

Case Report: An 85-year-old man presented with leg numbness and pain. An electrophysical study revealed C-PN entrapment in the affected area and he underwent surgical decompression. Immediately after the procedure he complained of slight paralysis without pain (manual muscle test: 3/5), which gradually worsened and was complete at 60 min after surgery. We re-opened the skin incision 3 hours after the first operation and found that a subcutaneous suture had been applied to the connective tissue near the C-PN, resulting in marked compression of the nerve. After release of the suture his paralysis improved immediately. We confirmed that there was no other nerve compression and finished the operation. His paralysis disappeared completely.

Conclusion: Peripheral nerve surgery, including C-PN decompression surgery, is less invasive, and the risk of complications is low. However, because the C-PN is located in the shallow layer under the skin, an excessively deep suture in the subcutaneous layer may compress the nerve and elicit nerve palsy. Therefore, careful postoperative follow-up is necessary because early decompression leads to good surgical results. (*J Nippon Med Sch* 2023; 90: 237–239)

Key words: common peroneal nerve, drop foot, re-operation

Introduction

Common peroneal nerve (C-PN) entrapment neuropathy is the most common peripheral nerve neuropathy of the legs. It elicits motor weakness of the extensors of the toes and ankles and numbness and pain in the lateral lower thigh and instep. Idiopathic C-PN entrapment neuropathy is not uncommon^{1–5} and surgical decompression is an effective treatment.

Peripheral nerve surgery is less invasive and the risk of surgical complications is low^{6–8}. Although C-PN decompression surgery is also less invasive, postoperative neurological complications may arise. We report a rare

case of nerve paralysis immediately after C-PN decompression surgery.

Case Report

An 85-year-old man with a history of diabetes mellitus and hypertension reported leg numbness and pain. He had undergone successful lumbar spine decompression surgery for lumbar spinal stenosis 11 months earlier. He required rest after walking 100 meters because of leg pain (intermittent claudication). His symptoms were located in the area of the C-PN. We detected a Tinel-like sign on the C-PN, near the head of the fibula. He suf-

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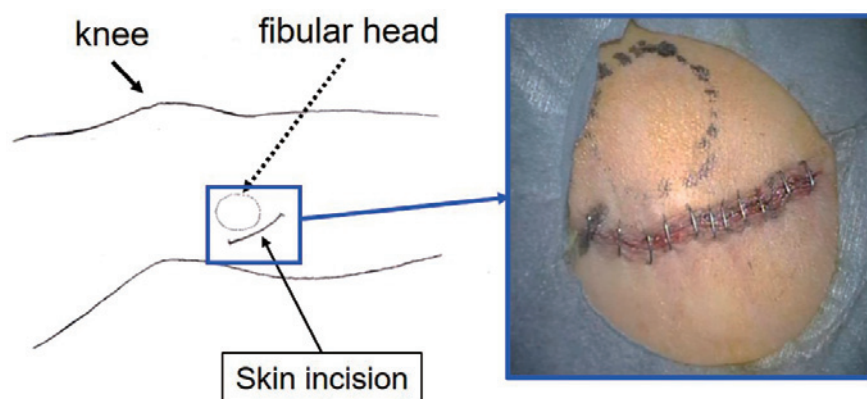


Fig. 1 Photograph and illustration at the end of the procedure

A 2-cm skin incision was made around the fibular head along the common peroneal nerve. An absorbable suture was placed subcutaneously without subcutaneous drainage. The skin was closed with a skin stapler.

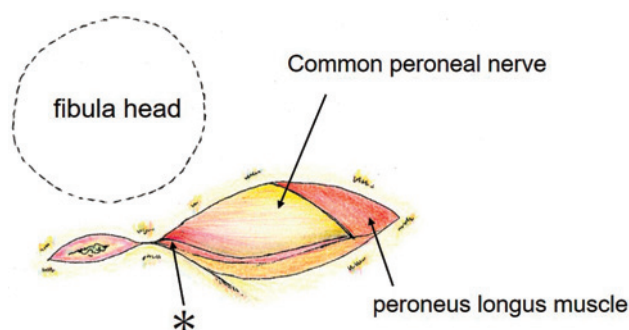


Fig. 2 Illustration of the second operation

A subcutaneous suture was applied to the connective tissue near the C-PN (*), resulting in marked compression of the C-PN.

ferred only mild paralysis of the tibialis anterior muscle and extensor hallucis longus muscle (manual muscle test [MMT]: 5-/5). An electrophysical study revealed that the motor nerve conduction velocity of the peroneal nerve was 28.6 m/s and that the wave and amplitude changed around the fibular head. We diagnosed C-PN entrapment neuropathy and performed surgical decompression.

With the patient in lateral position and under local anesthesia, we made a 2-cm skin incision near the fibular head along the C-PN. The nerve was released by dissection between the peroneus longus and soleus muscles and decompression of the peroneus longus muscle with removal of the fascia¹⁶. Absorbable sutures were placed without subcutaneous drainage, and the skin was closed with a skin stapler (Fig. 1).

Postoperatively he complained of slightly paralysis without pain (MMT: 3/5). We initially thought that skin anesthesia had infiltrated the C-PN. However, his paralysis gradually worsened and was complete at 1 hour post-

operatively. When we re-opened the skin incision at 3 hours postoperatively we observed no subcutaneous hematoma. However, we noted that a subcutaneous suture had been applied to the connective tissue near the C-PN, resulting in marked compression of the nerve (Fig. 2). We cut the suture and his paralysis improved immediately. We confirmed that there was no other nerve compression, and the paralysis had almost completely disappeared by the end the procedure.

The patient was discharged the next day, without further complications. There were no symptoms at a 6-month follow-up examination.

Discussion

Peripheral nerve surgery is less invasive and the risk of complications is low. Comprehensive reports of more than 2,000 peripheral nerve surgeries documented a complication rate of 2.9-4.4%. Wound-related complications were most frequent; no neurological complications were reported⁷⁻⁹. Other studies^{1-3,5} reported that C-PN surgery did not cause neurological deterioration. C-PN surgery is less invasive because the C-PN is located in the shallow layer under the skin; however, an excessively deep suture in the subcutaneous layer can compress the nerve and induce nerve palsy.

Our patient reported mild paralysis immediately after the operation and total paralysis 1 hour later. We re-operated 3 hours after the first operation and surgically released the C-PN strangulation. His paralysis improved immediately thereafter and had completely resolved at 1 hour after nerve decompression.

Absence of paralysis should be confirmed immediately after surgery, and any postoperative symptoms should be

carefully monitored. Paralysis due to the effect of local anesthetic may occur during or immediately after surgery but will resolve over time. When it does not, or when new paralysis is observed, factors other than the anesthetic must be considered immediately. Early reoperation to release C-PN compression will likely yield good results. We recommend that before suturing the skin, it should be raised to confirm there is space between the skin and the entire peroneal nerve and surrounding connective tissue. Alternatively, instead of subcutaneous sutures, mattress sutures can be placed.

Conflict of Interest: None.

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