

Postoperative lower limb paralysis due to retractors

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Abstract: We report a case of femoral neuropathy caused by retractors used during operation. The patient (a 74-year-old woman) was scheduled for right hemicolectomy for cecum cancer, and anesthesia was maintained with nitrous oxide and sevoflurane in oxygen plus extradural anesthesia. After operation, the patient complained of hypesthesia in the anterolateral and medial area governed by the femoral nerve. Magnetic resonance imaging findings, were normal and the straight leg raising test was negative. After 2 months, the patient had completely recovered from the neurological symptoms. These manifestations were indicative of femoral neuropathy resulting from the pressure of large-bladed self-retracting retractors. It is important to include femoral neuropathy in the differential diagnosis of postoperative paralysis of the lower limb.

Key words: Lower limb paralysis, Femoral neuropathy, Retractors

Introduction

Paralysis of the lower limb can occur after laparotomy. We experienced one patient who exhibited transient sensory disturbance and motor weakness after right hemicolectomy.

Case report

A 74-year-old woman, weight 57 kg and height 150 cm, was scheduled for right hemicolectomy for cecum cancer to be performed under general anesthesia plus epidural anesthesia. She had been treated for hypertension for 24 years. There was no history of diabetes mellitus

or neurological disturbances, except for right low back pain. Premedication consisted of intramuscular atropine 0.5 mg and midazolam 4.0 mg. Through the median approach, a Touhy needle (Epidural minipack 18G; Portex, Hythe, England) was inserted into the extradural space at the level of Th. 11-12 with the patient being in the left lateral decubitus position. The extradural space was confirmed by the loss of resistance method [1]. A catheter was easily inserted 5 cm cephalad into the extradural space. The course of extradural catheterization was uneventful. General anesthesia was induced intravenously with thiopental 250 mg, followed by succinylcholine 60 mg to facilitate tracheal intubation. The anesthesia was maintained with nitrous oxide and sevoflurane in oxygen. Large-bladed self-retracting retractors were used to obtain a wide range of vision during the surgery. The operation was performed uneventfully. One h before the completion of the operation, 3 ml 1% mepivacaine, 0.1 mg buprenorphine, and 1.25 mg droperidol were administered through the catheter. To lessen the postoperative pain, extradural infusion of local anesthetics was continued for 48 h, apart from some breaks due to hypotensive events. The extradural catheter was withdrawn on the 2nd postoperative day. However, as soon as the patient regained consciousness, she complained of numbness in her right leg. On the 2nd day, she could not stand because of muscle weakness in the right leg, and the leg collapsed at the knee. On the 3rd day, physical examination showed hypesthesia in the anterolateral and medial areas of the right thigh (Fig. 1). There was no significant difference between the two lower limbs in muscle strength. Right patellar tendon reflex was decreased. Straight leg raising test, which shows positive in cases of lumbar disc herniation, had negative results. Magnetic resonance imaging (MRI) findings were normal, except for lumbar canal stenosis associated with L2-3 intervertebral hernia. On the 4th day, she was able to walk and the paresthesia had disappeared, but hypesthesia per-

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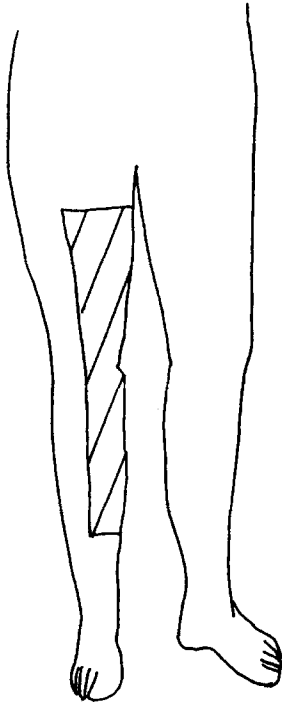


Fig. 1. Area of hypesthesia

sisted in the right thigh. She was discharged 3 weeks after the operation, and she had completely recovered from these neurological symptoms 2 months after the surgery.

Discussion

Various factors may lead to femoral nerve injury during operation. In this patient, the association between the neuropathy and the extradural catheter did not seem to be causal, since the extradural catheter was inserted uneventfully in the Th. 11–12 interspace cephalad and MRI disclosed no findings associated with the catheter, such as extradural hematoma or changes in the dura mater or spinal cord. Lumbar disc herniation also wouldn't have caused the neuropathy because of negative straight leg raising test. However, it appeared likely that femoral nerve injury was the cause of the disturbances, since the area of hypesthesia was consistent with the area governed by the femoral nerve, and the muscle weakness in the leg was suggestive of disturbances in the quadriceps femoris muscle, which is controlled by the femoral nerve; further, the neurological disturbances recovered spontaneously. The femoral nerve branches from the lumbar plexus (L1–4) and follows a course between the psoas and iliac muscles (Fig. 2). Because of its course in the iliopsoas, the femoral nerve may be damaged by intrapelvic procedures, including abdominal hysterectomy, sigmoidectomy, and open prostatectomy [2,3]. Rosenblum et al. [4] reported

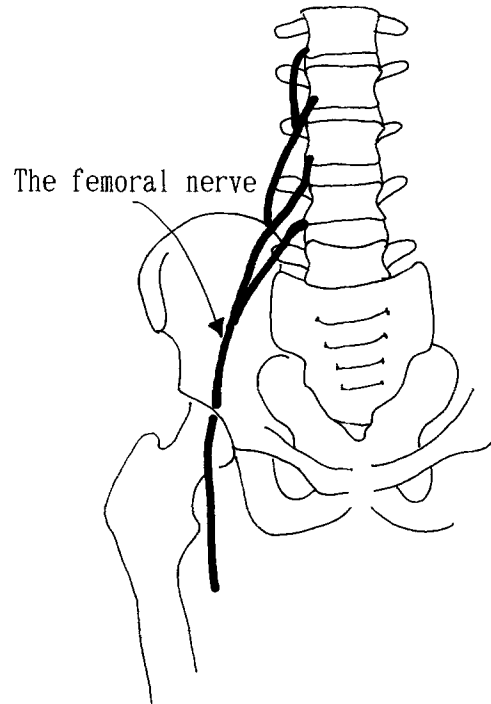


Fig. 2. Course of femoral nerve

that the use of large-bladed self-retracting retractors, which compress the femoral nerve continuously, could damage the nerve. We speculated that the continuous pressure exerted by the blade of the abdominal wall retractors was the main cause of this femoral neuropathy.

It is important to include femoral neuropathy in the differential diagnosis, if manifestations such as those in our patient are present, particularly after spinal, epidural, or other forms of conduction anesthesia [5].

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