

Bilateral Iatrogenic Femoral Neuropathy

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Dear Editor,

Postoperative femoral neuropathy is an uncommon complication associated with pelvic/abdominal surgery. The main mechanism underlying this neuropathy is stretching and/or prolonged compression of the nerve.^{1,2} The nerve compression can be caused by the self-retaining retractors that are sometimes used during surgery directly constricting the nerve against the pelvic sidewall and inducing ischemia.¹

Symptoms of femoral neuropathy are weakness of ipsilateral hip flexion and knee extension, and sensory deficit on the anteromedial thigh. The prognosis is generally good, with partial or complete recovery being common. Postoperative femoral neuropathy is generally unilateral²⁻⁴; bilateral postoperative femoral neuropathy appears to be very rare.^{5,6} Herein we report a case of bilateral femoral nerve neuropathy that occurred in a patient undergoing abdominal surgery.

A thin 44-year-old woman was diagnosed with rectosigmoid cancer and underwent a Hartmann surgical procedure, which involves resection of the rectosigmoid colon with creation of a colostomy bag. The presurgery general and neurological visits did not disclose any unexpected abnormalities. She had previously been physically healthy, with no underlying diseases such as hypertension, diabetes mellitus, or peripheral neuropathy. During the surgery, she was placed in a lithotomy position and a bilateral self-retaining retractor was used to facilitate the exploration of the surgical field. The surgery took about 2 hours. During recovery from the anesthesia, the patient complained of hypoesthesia over the anteromedial side of both thighs and proximal weakness in both lower limbs; in the immediate postoperative period she could neither stand nor get out of bed.

A neurological examination revealed bilateral weakness of the knee extensor and hip flexor, hypoesthesia in the anteromedial thigh, and bilateral patellar areflexia. Muscle strength was assessed on both legs on the Medical Research Council scale: the iliopsoas and quadriceps muscles scored 2/5, while the adductor, hamstrings, and tibialis anterior muscles scored 5/5. An extensive diagnostic work-up was negative for abnormalities. Neurophysiological studies performed a few days after the onset of symptoms revealed bilateral femoral neuropathy (Table 1). The patient underwent physical therapy.

At a 6-month follow-up the patient had only partially regained sensory and motor functions; she was able to walk with a double cane. Electromyography performed 1 year after symptom onset demonstrated persistent bilateral femoral nerve neuropathy.

The femoral nerve originates from the posterior division of the ventral branch of the second to fourth lumbar roots behind the psoas muscle; it passes in the groove between the psoas and iliac muscles and descends into the thigh beneath the inguinal ligament. The pathophysiology of the nerve injury in abdominal/pelvic surgery includes compression, stretch, ischemia, and ileopsoas hematoma.^{1,2} The injury is often caused by the use of a self-retraining retractor directly compressing the nerve against the abdominal wall as it courses through the body of the psoas muscle, or compression of the iliac vessels, causing ischemia

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Table 1. Electromyography (EMG) summary of lower limb muscles in the patient with bilateral femoral neuropathy

1st EMG (three days after onset)								
Summary muscles	Spontaneous activity				MUAP			Recruitment pattern
	IA	Fib	PSW	Fasc	Amp	Dur	PPP	
Quadriceps R	N	N	N	N	Absent	Absent	Absent	Absent
Quadriceps L	N	N	N	N	Absent	Absent	Absent	Absent
Adductor longus R	N	N	N	N	Normal	Normal	Normal	Normal
Adductor longus L	N	N	N	N	Normal	Normal	Normal	Normal
Gastrocn (med) R	N	N	N	N	Normal	Normal	Normal	Normal
Gastrocn (med) L	N	N	N	N	Normal	Normal	Normal	Normal
Tibialis anter R	N	N	N	N	Normal	Normal	Normal	Normal
Tibialis anter L	N	N	N	N	Normal	Normal	Normal	Normal
2nd EMG (one year after onset)								
Summary muscles	Spontaneous activity				MUAP			Recruitment pattern
	IA	Fib	PSW	Fasc	Amp	Dur	PPP	
Quadriceps R	N	N	N	N	2+	2+	2+	Reduced
Quadriceps L	N	N	N	N	2+	2+	2+	Reduced
Adductor longus R	N	N	N	N	Normal	Normal	Normal	Normal
Adductor longus L	N	N	N	N	Normal	Normal	Normal	Normal
Gastrocn (med) R	N	N	N	N	Normal	Normal	Normal	Normal
Gastrocn (med) L	N	N	N	N	Normal	Normal	Normal	Normal
Tibialis anter R	N	N	N	N	Normal	Normal	Normal	Normal
Tibialis anter L	N	N	N	N	Normal	Normal	Normal	Normal

Amp: amplitude, Dur: duration, Fasc: fasciculation potentials, Fib: fibrillation potentials, IA: insertion activity, L: left, PPP: polyphasic potentials, PSW: positive sharp waves, R: right.

to the nerve.¹ Individual patient factors such as comorbid conditions (e.g., diabetes or peripheral neuropathy), and factors related to the surgery (e.g., prolonged lithotomy position) might contribute to postoperative femoral neuropathy.

This case represents a rare case of postsurgery bilateral femoral neuropathy. A review of the patient's clinical chart revealed that the duration of the intervention was about 2 hours, which is within the normal range for the Hartmann procedure, and that there were no surgery-related complications. This suggests that the bilateral nerve damage in this patient was most probably caused by improper retractor use.

Neurologists and surgeons should be aware of this rare and potentially treacherous complication of the pelvic/abdominal surgery. Diagnosis should be prompt so that physical therapy is commenced as soon as is practicable.

Conflicts of Interest

The authors have no financial conflicts of interest.

REFERENCES

- Celebrezze JP Jr, Pidala MJ, Porter JA, Slezak FA. Femoral neuropathy: an infrequently reported postoperative complication. Report of four cases. *Dis Colon Rectum* 2000;43:419-422.
- Al-Ajmi A, Rouseff RT, Khuraibet AJ. Iatrogenic femoral neuropathy: two cases and literature update. *J Clin Neuromuscul Dis* 2010;12:66-75.
- Huang WS, Lin PY, Yeh CH, Chin CC, Hsieh CC, Wang JY. Iatrogenic femoral neuropathy following pelvic surgery: a rare and often overlooked complication--four case reports and literature review. *Chang Gung Med J* 2007;30:374-379.
- Kuo LJ, Penn IW, Feng SF, Chen CM. Femoral neuropathy after pelvic surgery. *J Chin Med Assoc* 2004;67:644-646.
- Hsieh LF, Liaw ES, Cheng HY, Hong CZ. Bilateral femoral neuropathy after vaginal hysterectomy. *Arch Phys Med Rehabil* 1998;79:1018-1021.
- Hernández Castrillo A, de Diego Rodríguez E, Rado Velázquez MA, Lanzas Prieto JM, Galindo Palazuelos M, Terrazas Hontañón JM. [Bilateral femoral neuropathy after prostatectomy. Case report and bibliographic review]. *Arch Esp Urol* 2008;61:929-932.