

CASE REPORT

“An Unusual Case of Bilateral Foot Drop following Laparoscopic Cholecystectomy due to Intermittent Pneumatic Compression Device”

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ABSTRACT

We report a case of bilateral common peroneal neuropathy secondary to an intermittent pneumatic compression device in a 74-year-old patient after laparoscopic cholecystectomy. Care should be taken to avoid such an adverse

outcome that could lead to a long-term disability.

KEYWORDS

Intermittent pneumatic compression device, Common peroneal nerve palsy, Bilateral foot drop

INTRODUCTION

Intermittent pneumatic compression is a widely used modality in hospitals to prevent deep venous thrombosis in both surgical and non-surgical patients.⁽¹⁾ Our case highlights the risk of compressive common peroneal neuropathy associated with an intermittent pneumatic compression device.

CASE REPORT

We report a case of a 74-year-old Irish man who was referred to the neurology services with numbness and weakness of both his feet following a laparoscopic cholecystectomy for gangrenous cholecystitis. His symptoms started a day after his surgery, with numbness from ankle down and weakness while lifting his feet. Up till his surgery, he was very active and ran a marathon recently. Surgical Pre-assessment was negative for any neurological deficits before.

The total time for the surgery was 1 hour and 25 minutes which was done through a keyhole incision. The gall bladder was entirely necrotic with intra-mural and peri-cholecystic abscess. Throughout the surgery, he was in a simple supine position with heel pads and special gel foam under his body which was used as protection up to his calves. The surgery was uncomplicated. An intermittent pneumatic compression device was used during the perioperative period for 2 days.

During the postoperative period, he developed urinary retention, for which he was catheterized once, which resolved his urinary symptoms. The patient’s family history was negative for any hereditary neurological conditions or neuropathy. He was a non-smoker and a nondrinker. Examination

of his feet revealed the power of 1/5 in dorsiflexion and eversion bilaterally. There were decreased sensations to pin-prick from the dorsum of his feet bilaterally up to half-way between his ankle and knee on the outer aspects. There were no perineal and truncal sensory levels and Tinel’s test overhead of fibula was negative. He walked with a bilateral foot drop and Romberg’s test was positive. Notably, he was thin and lean with a weight of 67 kilograms.

INVESTIGATIONS

The investigative workup revealed a normal full blood count, electrolytes, renal function tests, thyroid functions, coeliac screen, B12, folate, HbA1C, random blood sugar, Lyme serology, syphilis serology, complement, and immunoglobulin levels. The cerebrospinal fluid (CSF) checked was also normal, without any raised protein.

MRI of his whole spine showed no structural cause (cord lesion or nerve compression) to explain his symptoms.

Nerve conduction study (NCS) result showed 1) normal bilateral sural SNAP’s 2) bilateral superficial peroneal SNAP’s absent 3) normal bilateral tibial-AH CMAP’s 4) right peroneal-EDB CMAP was markedly reduced with prolonged distal latency and slowed conduction velocity 5) left peroneal-EDB CMAP showed mildly reduced amplitude with moderately prolonged distal latency and associated slowed conduction velocity more marked above the fibular head. Table 1 and Table 2 showing the motor and sensory studies respectively.

Nerve/ Sites	Rec. Site	Latency (ms)	Amplitude (mV)	Rel Amp %	Area (mVms)	Distance (cm)	Velocity (m/s)
Right Common Peroneal							
Ankle	EDB	10.57	0.8	100	3.1	8	
Fibular Head	EDB	20.00	0.9	105	2.7	30	31.8
Knee	EDB	23.28	1.2	146	2.6	8	24.4
Left Common Peroneal – EDB							
Ankle	EDB	9.43	1.6	100	6.2	8	
Fibular Head	EDB	17.50	0.8	47.4	5.9	29	35.9
Knee	EDB	20.94	0.7	43	4.1	8	23.3
Right Tibial (Knee) – AH							
Ankle	AH	8.91	5.9	100	15.9	8	
Knee	AH	16.98	2.4	40.5	9.2	35	43.4
Left Tibial (Knee) – AH							
Ankle	AH	8.96	7.7	100	25.4	8	
Knee	AH	15.42	3.9	51.3	19.1	36	55.7

Table: 1 Motor Nerve Conduction Study

Nerve/ Sites	Rec. Site	Peak Latency (ms)	NP Amplitude (micro V)	Distance (cm)	Velocity (m/s)
Right Sural					
Calf	Lat Malleolus	4.64	8.4	14	30.2
Left Sural					
Calf	Lat Malleolus	4.48	7.5	14	31.3
Right Superficial Peroneal					
Lat Leg	Ankle	NR	NR	14	NR
Left Superficial Peroneal					
Lat Leg	Ankle	NR	NR	14	NR

Table: 2 Sensory Nerve Conduction Study

Electromyography (EMG) showed increased insertional activity with fibrillation potential, positive sharp waves, and chronic reinnervation changes in bilateral tibialis anterior muscles more marked on the right.

FOLLOW UP

Subsequent follow ups over 4 months showed poor recovery. He was using crutches to walk. In his last follow-up on the 5th month, he reported improvements in his dorsiflexion, with a power which was graded to 2/5 bilaterally. He is on a long-term physiotherapy regimen in the community. This includes a range of exercises including ankle abduction, adduction, dorsiflexion, eversion, toe, and heel raise. There has been no family history of Hereditary Neuropathy with Liability to Pressure Palsy (HNPP) for completeness we have sent a

workup for PMP22 gene mutation to exclude HNPP. The results of this test are awaited.

DISCUSSION

Common peroneal nerve injury is commonly reported unilaterally, however bilateral common peroneal nerve injury is seldom encountered. In most of these cases, the etiological causes have been reported due to bilateral leg trauma, compression wraps for pelvic injury, skeletal traction, hip surgery, prolonged squatting.⁽²⁻⁷⁾

Trivial trauma, thin lean stature, delirious states, and prolonged compression by the bed, chair, or hard surfaces are other possible causes reported in the literature.⁽⁸⁻¹⁰⁾

An interesting case report in a patient following a craniotomy due to a craniopharyngioma reported bilateral foot drop due to an intermittent compression device similar to our patient.⁽¹¹⁾ Similarly, peroneal nerve palsies during hip arthroplasty have been described unilaterally secondary to intermittent pneumatic compression devices.⁽¹²⁾

We postulate thin lean body mass to be a possible predisposing factor in our case for such an adverse outcome. Compression at the fibular head by the intermittent pneumatic compression device resulted in bilateral foot drop.

CONCLUSION

Care should be taken during the use of intermittent pneumatic compression devices to avoid this preventable complication in a hospital setting which can lead to long term disability.

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