

## Peroneal neuropathy and foam rollers

We describe an axonal and demyelinating peroneal neuropathy at the fibular head that followed foam roller massage of the leg. Foam rollers, roller massage bars and roller massage sticks are used on muscles during warm-up and post workout recovery. They are thought to impact muscle stiffness, increase range of motion, attenuate exercise-induced declines in sprint and strength, and lessen early or delayed exercise related muscle pain.<sup>1,2</sup> Warnings advise against direct pressure over nerves or use in neurologic conditions with altered sensation.<sup>3</sup> From a search of PubMed, ScienceDirect, and PEDro there have been no reports of compression neuropathies from roller massage use.

A 40-year old male, healthy beyond stable Crohn’s disease, treated with azathioprine and infliximab, developed left lower extremity weakness. Two weeks before presentation he developed a small vesicular rash on the medial left foot sole and lateral left ankle. Over the next week, as part of treatment plan for muscle soreness, he applied a foam roller to massage his left lateral leg and fibular head. One week before presentation, he developed a left foot drop. There were no systemic symptoms nor radicular pain. On examination, there was weakness of left foot and toe dorsiflexion and left foot eversion (MRC 2/5). Left foot plantar flexion, inversion and other lower limb muscle groups were normal. Deep tendon reflexes including the left ankle were intact and there were no sensory deficits. A small healing herpetic rash, confirmed by PCR testing, was seen on the left medial sole and lateral lower leg just superior to the left lateral malleolus.

MR of the lumbar spine showed mild L4-L5 and L5-S1 disc degeneration without root enhancement. Electrodiagnostic testing four days after presentation demonstrated conduction block of the left motor peroneal nerve across the fibular head (Figure 1a), with a low CMAP distal amplitude and normal superficial peroneal sensory conduction (Table 1). Left tibial motor, sural sensory and right peroneal motor studies were normal. At 7 weeks following presentation an MR of the left lower leg confirmed mild edema within the peroneal nerve (Figure 2a) consistent with breakdown of blood nerve barrier

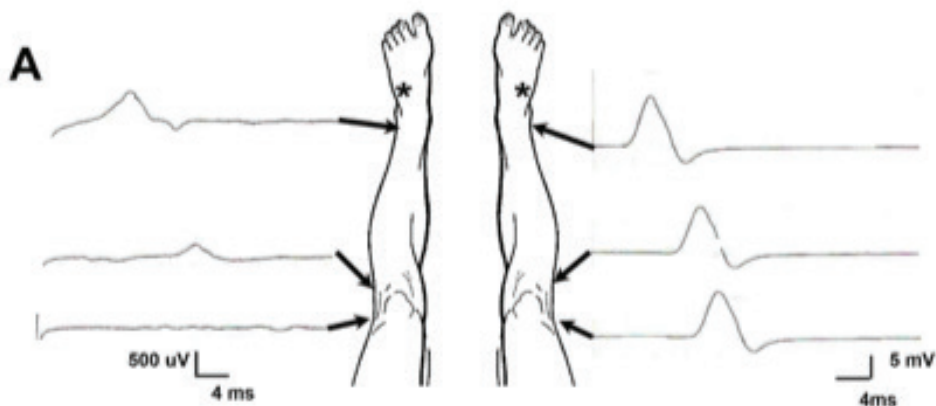


Figure 1. A. Conduction block of the left peroneal nerve across the fibular head

**Table 1: Nerve conduction studies of the left lower extremity showing conduction block in the left peroneal nerve**

Nerve	Distal Latency (ms)	Amplitude (mV,uV)*	Conduction Velocity m/s
Peroneal left (ipsi)	7.9	0.6/0.3/NR**	32
Peroneal right (contra)	4.1	11.5/10.4/10.2	51/53
Tibial left	4.1	11.6/7.3	53
Sural left	2.9	28.5	48
Superficial peroneal left	2.9	20.1	41

\* foot/fibular head/knee stimulation; sensory potentials are in uV; \*\*dispersion with proximal stimulation

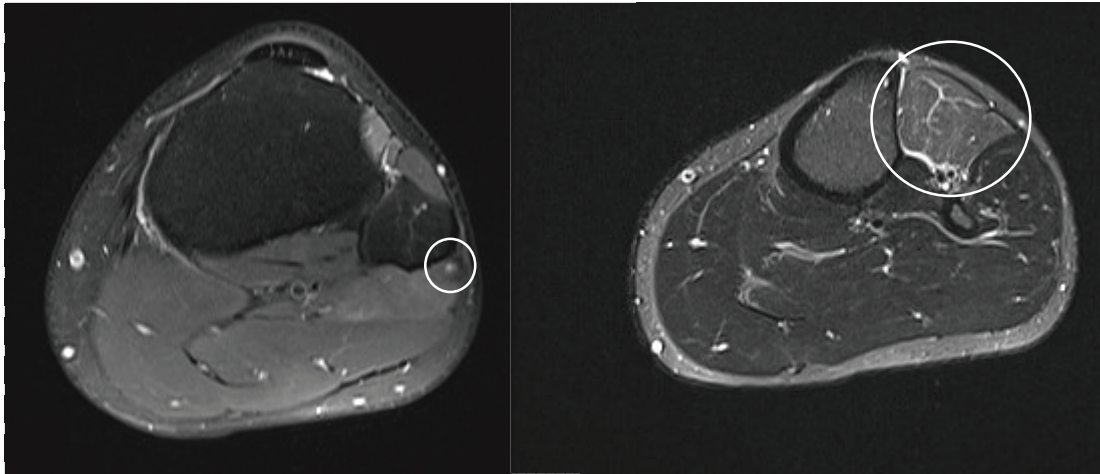


Figure 2. A. Edematous left peroneal nerve on axial proton density weighted MRI, B. Edematous left tibialis anterior muscle on axial STIR

at the site of injury and presence of axonal degeneration. There was also diffuse intramuscular edema within the anterior tibialis, extensor hallucis longus and extensor digitorum longus muscles of the anterior compartment compatible with denervation (Figure 2b). By 7 months there was evidence of reinnervation and clinical improvement.

In this patient, clinical localization and the pattern of electrophysiological and imaging denervation was not compatible with an S1 nor L5 radiculopathy but supported a demyelinating and axonal common peroneal lesion at the site of conduction block. While this patient also had zoster outbreak, nonmotor, in his S1 nerve root territory, we think it very unlikely that spread of zoster or rare reports of conduction block with zoster would account his findings.<sup>4-6</sup> Peroneal neuropathies, as in the present case, are described with minimal sensory symptoms due to relative sparing of sensory fascicles and significant motor weakness. Peroneal neuropathy has many causes, the most common of which is compression from frequent leg crossing.<sup>7</sup> It is most susceptible to injury around the knee as it winds around the fibular head, the likely etiology in our patient secondary to vigorous use of a massage roller.

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## DISCLOSURE

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Conflicts of interest: None

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