Common Peroneal Nerve Entrapment

- Common Peroneal Nerve Paralysis Following Rapid Weight Loss-A Case Report and Literature Review
- Systematic evaluation of the effectiveness of Xuesaitong combined with nutraceutical drugs in the treatment of diabetic peripheral neuropathy
- Lateral Meniscal Cyst Diagnosed After Acute Onset of Common Peroneal Nerve Palsy
- Common Peroneal Nerve Syndrome Following Tibial Shaft Fracture Treated by Intramedullary Nailing Under Regional Anesthesia: A Case Report With 16-Month Follow-Up
- Subclinical hypothyroidism, focusing on carpal tunnel syndrome and peroneal neuropathy at the fibular head: a prospective case-control study
- Changes Over 10 Years in Peripheral Nerve Function in People With Well-Controlled Type 2 Diabetes and Those With Normal Glucose Tolerance
- Entrapment of the Superficial Peroneal Nerve at a Band Proximal to the Crural Fascia: A Cadaveric Case Report
- Accuracy of ultrasound and MRI in the diagnosis of common peroneal nerve injuries

---

Diagnosis

The diagnosis of common peroneal nerve entrapment neuropathy (CPNEN) is based on clinical symptoms and nerve conduction studies.

Nerve conduction studies may not detect abnormalities.

The diagnosis is based on clinical manifestations and electrophysiological studies. Nowadays, however, magnetic resonance (MR) neurography is a complementary diagnostic technique that can help determine the location and cause of peroneal neuropathy. In a article, Pineda et al describe the MR anatomy of the peroneal nerve, its relations, and the muscles it innervates. They also discuss the clinical and electrophysiological manifestations of peroneal neuropathy, describe the technical parameters used at our institution, and illustrate the MR appearance of various diseases that involve the peroneal nerve [1)].

Under the hypothesis that repetitive plantar flexion that loads the peroneal nerve (PN) at the entrapment point without lumbar loading would be a useful CPNEN provocation test, Iwamoto et al evaluated the repetitive plantar flexion (RPF) test as an adjunct diagnostic tool for CPNEN. The study design was a retrospective analysis of prospectively collected data.

The study population consisted of 18 consecutive patients whose ipsilateral CPNEN improved significantly after PN neurolysis. Using repetitive ankle plantar flexion as a CPNEN provocation test, results were recorded as positive when it elicited numbness and/or pain in the affected area of the PN.

The RPF test induced symptoms on all affected sides in the course of 57.4 seconds (range, 14-120 seconds). In 3 patients it induced numbness in the affected area of the PN in the normal leg. Receiver operating characteristic analysis showed that the diagnostic sensitivity and accuracy of the test were 94.4% each. The suggested cutoff point was 110 seconds and the area under the receiver operating characteristic curve was 0.97 (95% confidence interval 0.93-1.02). The positive and the negative predictive values were 89.5% and 94.1%, respectively.

This simple RPF test elicited the symptoms of CPNEN and our provocation test helped to identify dynamic PN entrapment neuropathy as the origin of intermittent claudication [2].

Double-blinded randomized prospective controlled trial

A double-blinded randomized prospective controlled trial of 20 patients, comparing 2 vasodilating agents and their ability to produce the Phoenix effect. Ultrasound guided infiltration of 0.3 mL 1% lidocaine or papaverine HCl 10 mg/mL was executed adjacent to CFN. Motor strength pre- infiltration and 4 min post-infiltration were measured for anterior compartment muscles utilizing MRC manual motor testing reported on a 0-5 scale. The extensor hallucis longus (EHL) muscle proved to be the most significant.

Results: Average motor strength of the EHL improved from 2.2 (+/-0.40) to 4.9 (+/-0.32).) in the lidocaine group. In the papaverine group, pre-infiltration EHL motor strength averaging 2.1 (+/-0.93) improved to 4.4 (+/- 1.01) post-infiltration. Papaverine and lidocaine produced similar statistically significant increases in muscle strength (p = < 0.05).

Conclusion: There was no difference between small local infiltrations of lidocaine or papaverine in production of increased anterior compartment EHL motor strength. It is most likely that the Phoenix Effect is explained by temporary local improvements in the microcirculation of the CFN vasa nervorum.

Trial registration: NCT06637046 10/10/2024 Retrospectively registered [3].

Case report

2016

Peroneal nerve entrapment neuropathy induced by playing the drum [4].

2014

Entrapment neuropathy of the superficial peroneal nerve has been documented in the published data, resulting in pain and paresthesia over the dorsum of the foot. Paraskevas et al report a case of a female cadaver in which an accessory superficial peroneal sensory nerve was encountered. The nerve originated from the main superficial peroneal nerve trunk, proximal to the superficial peroneal nerve emergence from the crural fascia, and followed a subfascial course. After fascial penetration, the supernumerary nerve was distributed to the skin of the proximal dorsum of the foot and lateral malleolar area. A potential entrapment site of the nerve was observed at the lateral malleolar area, because the accessory nerve traveled through a fascial tunnel while perforating the crural fascia, and presented with distinct post-stenotic enlargement at its exit point. The likely presence of such a very rare variant and its potential entrapment is essential for the physician and surgeon to establish a correct diagnosis and avoid complications during procedures to the foot and ankle region [5].

1)

Pineda D, Barroso F, Cháves H, Cejas C. [High resolution 3T magnetic resonance neurography of the peroneal nerve]. Radiologia. 2014 Mar-Apr;56(2):107-17. doi: 10.1016/j.rx.2013.11.001. Epub 2014 Feb 5. Review. Spanish. PubMed PMID: 24508057.

2) Iwamoto N, Kim K, Isu T, Chiba Y, Morimoto D, Isobe M. Repetitive Plantar Flexion Test as an Adjunct Tool for the Diagnosis of Common Peroneal Nerve Entrapment Neuropathy. World Neurosurg. 2016 Feb;86:484-9. doi: 10.1016/j.wneu.2015.09.080. Epub 2015 Dec 18. PubMed PMID: 26433094.

3) Barrett SL, Boyd B, DuCasse S, Nassier W, Mitchell N, Nagra AP, Dalmau-Pastor M, Yamasaki DS, Nickerson S. Is the phoenix sign phenomenon due to vasodilation? A double-blinded, randomized controlled trial comparing motor function recovery after diagnostic common fibular nerve block with lidocaine and papaverine. BMC Musculoskelet Disord. 2024 Oct 23;25(1):840. doi: 10.1186/s12891-024-07972-3. PMID: 39443927.

4) Kitamura T, Morimoto D, Kim K, Morita A. Peroneal nerve entrapment neuropathy induced by playing the drum. Acta Neurochir (Wien). 2016 May;158(5):967-8. doi: 10.1007/s00701-016-2770-z. Epub 2016 Mar 15. PubMed PMID: 26979180.

5) Paraskevas GK, Natsis K, Tzika M, Ioannidis O. Potential entrapment of an accessory superficial peroneal sensory nerve at the lateral malleolus: a cadaveric case report and review of the literature. J Foot Ankle Surg. 2014 Jan-Feb;53(1):92-5. doi: 10.1053/j.jfas.2013.06.012. Epub 2013 Aug 15. PubMed PMID: 23954064.