

Evidence Discussion for Focal Neuropathy (PN 2)

- Focal neuropathies are typically diagnosed by a combination of clinical history, thorough neurological examination, and electrodiagnostic testing with electromyography (EMG) and nerve conduction studies (NCS).^{1,2}
- When clinical evaluation and electrodiagnostic testing are inconclusive, MRI may allow for better identification and anatomic localization of lesions and is considered the gold standard for imaging of the peripheral nerve.^{1,3}
- The sensitivity and specificity of MRI findings for carpal tunnel syndrome are low (sensitivity, 23%–96%; specificity, 39%– 87%), and for this reason MRI imaging does not play a role in the routine clinical assessment of carpal tunnel syndrome. However, MRI of the wrist can help identify surgical candidates when clinical and electrodiagnostic findings are inconclusive.^{2,4}
- When caused by nerve entrapment or compression, focal neuropathies may benefit from surgical release or decompression. MRI can provide visualization of the cause of compression, rule out other causes of nerve injury, and allow for a more focused operative approach, particularly when surgery is considered to decompress common entrapment neuropathies of the ulnar, radial, and peroneal nerves.^{1,3,4}
- Sciatic, femoral, and pudendal neuropathies often occur secondary to trauma, compression, or entrapment of the affected nerve. These are often diagnosed clinically or localized with electrodiagnostic testing. MRI imaging of the pelvis may be indicated to assess for sources of compression, including occult malignancy.^{4,5}
- Meralgia paresthetica is the common term describing pathology of the lateral femoral cutaneous nerve of the thigh. The nerve is prone to injury and compression but may have a variable anatomic course. Meralgia paresthetica is primarily diagnosed by clinical history and exam, as neuroimaging and electrodiagnostic testing results may be difficult to interpret. Neuroimaging is most useful in cases of diagnostic uncertainty, particularly when surgical exploration and treatment are considered.⁴

1. Andreisek G, Crook DW, Burg D, Marincek B, Weishaupt D. Peripheral Neuropathies of the Median, Radial, and Ulnar Nerves: MR Imaging Features. *RadioGraphics*. 2006;26(5):1267-1287 doi: 10.1148/rg.265055712.
2. Linda DD, Harish S, Stewart BG, Finlay K, Parasu N, Rebello RP. Multimodality Imaging of Peripheral Neuropathies of the Upper Limb and Brachial Plexus. *RadioGraphics*. 2010;30(5):1373-1400. doi: 10.1148/rg.305095169.
3. Kalia V, Jacobson JA. Imaging of Peripheral Nerves of the Upper Extremity. *Radiol Clin N Am*. 2019;57(5):1063-1071. doi: 10.1016/j.rcl.2019.04.001.
4. Hobson-Webb LD, Juel VC. Common Entrapment Neuropathies. *Continuum (Minneap Minn)* . 2017;23(2):487-511. doi: 10.1212/con.0000000000000452.
5. Levesque A, Bautrant E, Quistrebert V, et al. Recommendations on the management of pudendal nerve entrapment syndrome: A formalised expert consensus. *Eur J Pain*. 2022;26(1):7-17. doi:10.1002/ejp.1861.