

Evidence Discussion (PN-7.1)

- Magnetic resonance neurography (MRN) offers advantages over standard MRI imaging by utilizing sequences and technology that optimize viewing of the peripheral nerve. MRN presents no increased risk to safety over standard MRI.¹ MRN is a non-invasive, accurate, reliable method of demonstrating normal and abnormal nerve and assessing regional muscle denervation with good surgical correlation to findings.²
- Efficacy and reliability of MRN have been clinically validated in the diagnosis and localization of traumatic and compressive focal neuropathies and brachial plexus injuries for the purpose of surgical consideration.³ A clinical study assessing the impact of MRN data on surgical planning noted that review of MRN altered the suspected nerve involvement in 23% and changed the nerve injury grade in 27% of patients studied. Surgeons reported MRN altered their determination of the need for surgery in 63%, timing of surgery in 41%, length of skin incision in 27%, and time in the operating room in 30% of cases reviewed.² This data suggests that MRN may improve the selection of candidates for surgical repair of these lesions and may narrow the focus of surgery.^{2,3}
- There is insufficient literature to support the role of MRN for evaluation of other pathologies, including but not limited to, lumbosacral plexopathy, neuromuscular disease, and polyneuropathy. Thus, MRN is considered not medically necessary at this time for indications other than traumatic and compressive focal neuropathies and brachial plexus injuries.

References

1. Chhabra A, Madhuranthakam AJ, Andreisek G. Magnetic resonance neurography: current perspectives and literature review. *Eur Radiol.* 2018;28(2):698-707. doi: 10.1007/s0030-017-4976-8
2. Chhabra A, Belzberg AJ, Rosson GD, et al. Impact of high resolution 3 tesla MR neurography (MRN) on diagnostic thinking and therapeutic patient management. *Eur Radiol.* 2016;26(5):1235-1244. doi: 10.1007/s00330-015-3958-y.
3. Holzgrefe RE, Wagner ER, et al. Imaging of the peripheral nerve: concepts and future direction of magnetic resonance neurography and ultrasound. *J Hand Surg Am.* 2019; 44(12): 1066-1079. doi: 10.1016/i.ihsa.2019.06.021