Ablation Procedures for Peripheral Neuromas

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Applies to all products administered or underwritten by Blue Cross and Blue Shield of Louisiana and its subsidiary, HMO Louisiana, Inc.(collectively referred to as the "Company"), unless otherwise provided in the applicable contract. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically.

Services Are Considered Investigational

Coverage is not available for investigational medical treatments or procedures, drugs, devices or biological products.

Based on review of available data, the Company considers minimally invasive ablation procedures, radiofrequency ablation (RFA), and cryoablation for the treatment of peripheral neuromas to be **investigational.***

Background/Overview

Neuroma

A neuroma is a pathology of a peripheral nerve that develops as part of a normal reparative process. Neuromas may develop after nerve injury or result from chronic irritation, pressure, stretch, poor repair of nerve lesions or previous neuromas, laceration, crush injury, or blunt trauma. Neuromas typically appear 6 to 10 weeks after trauma, with most presenting within 1 to 12 months after injury or surgery. They may gradually enlarge over 2 to 3 years and may or may not be painful. Pain from a neuroma may be secondary to traction on the nerve by scar tissue, compression of the sensitive nerve endings by adjacent soft tissues, ischemia of the nervous tissue, or ectopic foci of ion channels that elicit neuropathic pain. Patients may describe the pain as low-intensity dull pain or intense paroxysmal burning pain, often triggered by external stimuli such as touch or temperature. Neuroma formation has been implicated as a contributor of neuropathic pain in residual limb pain, post thoracotomy, post mastectomy, and post herniorrhaphy pain syndromes. They may coexist with phantom pain or can predispose to it.

Morton Neuroma

Morton intermetatarsal neuroma is a common and painful compression neuropathy of the common digital nerve of the foot that may also be referred to as interdigital neuroma, interdigital neuritis, and interdigital or Morton metatarsalgia. Morton neuroma is usually associated with a throbbing, burning, or shooting pain localized to the plantar aspect of the foot. It is typically located between

the third and fourth metatarsal heads, although it may appear in other proximal locations. It is histologically characterized by perineural fibrosis, endoneurial edema, axonal degeneration, and local vascular proliferation. Thus, some investigators do not consider Morton neuroma to be a true neuroma; instead, they consider it to be an entrapment neuropathy occurring secondary to compression of the common digital nerve under the overlying transverse metatarsal ligament. Morton neuroma appears 10-fold more often in women than in men, with an average age at presentation of around 50 years.

Diagnosis

Although a host of imaging methods are used to diagnosis Morton neuroma, including plain radiographs, magnetic resonance imaging, and ultrasonography, objective findings are unique to this condition and are primarily used to establish a clinical diagnosis. Thus, a patient's toes often show splaying or divergence. Patients may describe the feeling of a "lump" on the foot bottom or a feeling of walking on a rolled-up or wrinkled sock. Clinical examination with medial and lateral compression may reproduce the painful symptoms with a palpable "click" on interspace compression (Mulder sign).

Treatment

Management of patients diagnosed with Morton neuroma typically starts with conservative approaches, such as the use of metatarsal pads in shoes and orthotic devices that alter supination and pronation of the affected foot. These approaches try to reduce pressure and irritation of the affected nerve. They may provide relief, but do not alter the underlying pathology. There is scant evidence to support the effectiveness or comparative effectiveness of these practices. In a case series, Bennett et al (1995) evaluated a 3-stage protocol of "stepped care" through which private practice patients (N=115) advanced from stage I (education plus footwear modifications, and a metatarsal pad) to stage II (steroid injections with local anesthetic or local anesthetic alone), and into stage III (surgical resection) if stages I and II were not relieved within 3 months. Overall, 97 (85%) of 115 patients believed that pain had been reduced with the treatment program. However, 24 (21%) patients eventually required surgical excision of the nerve, and 23 (96%) of them had satisfactory results.

Ablation Techniques

Several minimally invasive procedures to treat refractory Morton neuroma are aimed at in situ destruction of the pathology: radiofrequency ablation (RFA) and cryoablation (also known as cryoneurolysis, cryolysis, cryoanalgesia). RFA uses heat generated by an electrode that conducts

electromagnetic energy into a tissue or lesion to denature proteins and destroy cells. RFA is used to ablate a wide range of tissues or lesions, including osteoid osteoma; cardiovascular system pathologies; cervical pain syndromes; liver, lung, and other cancers; and varicosities. Cryoablation uses coolant to chill a cryoprobe to temperatures below -75°C, which when inserted into a lesion, freezes and kills the tissue. It has been used to treat Morton neuroma, other chronic nerve pain syndromes, and conditions for which RFA has been used.

This review primarily focuses on evidence for the use of RFA and cryoablation on painful neuromas, with emphasis on Morton neuroma and the comparative effectiveness of these less invasive therapies with open surgical resection of the nerve pathology.

FDA or Other Governmental Regulatory Approval

U.S. Food and Drug Administration (FDA)

Although RFA probes and generators and cryoablation equipment have been cleared for marketing by the U.S. FDA through the 510(k) process, none appear to be specifically indicated for the treatment of Morton neuroma or any other specific peripheral neuroma.

Rationale/Source

Morton neuroma is a common and painful compression neuropathy of the dorsal foot. Morton neuroma has been treated with conservative measures (pads, orthotics, drugs) or surgery. Minimally invasive procedures, including radiofrequency ablation (RFA) and cryoablation, have been investigated as alternatives to open surgery. These ablation methods have also been used to treat other peripheral neuromas.

For individuals who have Morton neuroma who receive RFA, the evidence includes case series. Relevant outcomes are symptoms, functional outcomes, and treatment-related morbidity. Three case series identified reported outcomes for RFA to treat Morton neuroma. The body of evidence is highly heterogeneous regarding RFA protocols, prior conservative management, patient characteristics, follow-up durations, outcome measures, and reporting of outcomes. Variable proportions of patients require surgery after RFA, making the benefit of RFA for avoiding more invasive treatment uncertain. The evidence is insufficient to determine the effects of the technology on health outcomes. For individuals who have Morton neuroma who receive cryoablation, the evidence includes case series. Relevant outcomes are symptoms, functional outcomes, and treatment-related morbidity.

Only 2 retrospective case series on the use of cryoablation to treat peripheral nerve pain were identified in a literature review. The case series were heterogeneous regarding cryoablation protocols and length of follow-up. Outcome measures did not provide information on functional end points. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have peripheral neuroma(s) other than Morton neuroma who receive ablation, the evidence is very limited: no published literature was identified. Relevant outcomes are symptoms, functional outcomes, and treatment-related morbidity. The evidence is insufficient to determine the effects of the technology on health outcomes.

Supplemental Information

Practice Guidelines and Position Statements

The Association of Extremity Nerve Surgeons (2014) published clinical practice guidelines relevant to this evidence review. The guidelines stated that "We do not recommend ablation in the primary treatment of Intermetatarsal Entrapment (Morton's Neuroma)." The guidelines warned that cryoablation should be used with extreme caution, and, if used, should be performed in an open technique, not percutaneously. The guidelines also warned that radiofrequency ablation might cause thermal necrosis of adjacent tissues.

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

Ongoing and Unpublished Clinical Trials

Some currently unpublished trials that might influence this review are listed in Table 1.

Table 1. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date

Completed			
NCT02838758	A 3-Arm Randomized Controlled Study Comparing Ultrasound-Guided Cryoablation, Ultrasound-Guided Perineural Lidocaine, and Ultrasound-Guided Perineural Saline to Treat Intrametatarsal Neuroma	66 (actual enrollment: 10)	Jun 2018 (completed; but no results posted as of May 2020)

NCT: national clinical trial.

References

1. Blue Cross and Blue Shield Association, Medical Policy Reference Manual, "Ablation Procedures for Peripheral Neuromas", 7.01.147, 7:2020.
2. Rajput K, Reddy S, Shankar H. Painful neuromas. Clin J Pain. Sep 2012;28(7):639-645. PMID 22699131
3. Jain S, Mannan K. The diagnosis and management of Morton's neuroma: a literature review. Foot Ankle Spec. Aug 2013;6(4):307-317. PMID 23811947
4. Clinical Practice Guideline Forefoot Disorders Panel, Thomas JL, Blitch ELt, et al. Diagnosis and treatment of forefoot disorders. Section 3. Morton's intermetatarsal neuroma. J Foot Ankle Surg. Mar-Apr 2009;48(2):251-256. PMID 19232980
5. Wu KK. Morton's interdigital neuroma: a clinical review of its etiology, treatment, and results. J Foot Ankle Surg. Mar-Apr 1996;35(2):112-119; discussion 187-118. PMID 8722878
6. Mulder JD. The causative mechanism in Morton's metatarsalgia. J Bone Joint Surg Br. Feb 1951;33-B(1):94-95. PMID 14814167
7. Bennett GL, Graham CE, Mauldin DM. Morton's interdigital neuroma: a comprehensive treatment protocol. Foot Ankle Int. Dec 1995;16(12):760-763. PMID 8749346
8. Dierselhuis EF, van den Eerden PJ, Hoekstra HJ, et al. Radiofrequency ablation in the treatment of cartilaginous lesions in the long bones: results of a pilot study. Bone Joint J. Nov 2014;96-B(11):1540-1545. PMID 25371471
9. Boersma D, van Eekeren RR, Kelder HJ, et al. Mechanochemical endovenous ablation versus radiofrequency ablation in the treatment of primary small saphenous vein insufficiency (MESSI trial): study protocol for a randomized controlled trial. Trials. Oct 29 2014;15(1):421. PMID 25354769

10. Di Costanzo GG, Tortora R, D'Adamo G, et al. Radiofrequency ablation versus laser ablation for the treatment of small hepatocellular carcinoma in cirrhosis: a randomized trial. J Gastroenterol Hepatol. Mar 2015;30(3):559- 565. PMID 25251043
11. Anchala PR, Irving WD, Hillen TJ, et al. Treatment of metastatic spinal lesions with a navigational bipolar radiofrequency ablation device: a multicenter retrospective study. Pain Physician. Jul-Aug 2014;17(4):317-327. PMID 25054391
12. Hillen TJ, Anchala P, Friedman MV, et al. Treatment of metastatic posterior vertebral body osseous tumors by using a targeted bipolar radiofrequency ablation device: technical note. Radiology. Oct 2014;273(1):261-267. PMID 24927327
13. Wang X, Wang X, Song Y, et al. Efficiency of radiofrequency ablation for surgical treatment of chronic atrial fibrillation in rheumatic valvular disease. Int J Cardiol. Jul 01 2014;174(3):497-502. PMID 24820759
14. Huang WZ, Wu YM, Ye HY, et al. Comparison of the outcomes of monopolar and bipolar radiofrequency ablation in surgical treatment of atrial fibrillation. Chin Med Sci J. Mar 2014;29(1):28-32. PMID 24698675
15. Avery J, Kumar K, Thakur V, et al. Radiofrequency ablation as first-line treatment of varicose veins. Am Surg. Mar 2014;80(3):231-235. PMID 24666862
16. Hiraki T, Gobara H, Iguchi T, et al. Radiofrequency ablation as treatment for pulmonary metastasis of colorectal cancer. World J Gastroenterol. Jan 28 2014;20(4):988-996. PMID 24574771
17. Morillo CA, Verma A, Connolly SJ, et al. Radiofrequency ablation vs antiarrhythmic drugs as first-line treatment of paroxysmal atrial fibrillation (RAAFT-2): a randomized trial. JAMA. Feb 19 2014;311(7):692-700. PMID 24549549
18. Fuller CW, Nguyen SA, Lohia S, et al. Radiofrequency ablation for treatment of benign thyroid nodules: systematic review. Laryngoscope. Jan 2014;124(1):346-353. PMID 24122763
19. Huang XM, Hu JQ, Li ZF, et al. Symptomatic sinus tachycardia with perpetuating slow pathway: successful treatment with radiofrequency ablation. Pacing Clin Electrophysiol. Oct 2014;37(10):e1-4. PMID 21077914
20. Prologo JD, Passalacqua M, Patel I, et al. Image-guided cryoablation for the treatment of painful musculoskeletal metastatic disease: a single-center experience. Skeletal Radiol. Nov 2014;43(11):1551-1559. PMID 24972918
21. Kim EH, Tanagho YS, Saad NE, et al. Comparison of laparoscopic and percutaneous cryoablation for treatment of renal masses. Urology. May 2014;83(5):1081-1087. PMID 24560975

22. Durand M, Barret E, Galiano M, et al. Focal cryoablation: a treatment option for unilateral low-risk prostate cancer. BJU Int. Jan 2014;113(1):56-64. PMID 24053685
23. Duarte R, Pereira T, Pinto P, et al. [Percutaneous image-guided cryoablation for localized bone plasmacytoma treatment]. Radiologia. Sep-Oct 2014;56(5):e1-4. PMID 22621822
24. Rodriguez-Entem FJ, Exposito V, Gonzalez-Enriquez S, et al. Cryoablation versus radiofrequency ablation for the treatment of atrioventricular nodal reentrant tachycardia: results of a prospective randomized study. J Interv Card Electrophysiol. Jan 2013;36(1):41-45; discussion 45. PMID 23080326
25. Yamauchi Y, Izumi Y, Hashimoto K, et al. Percutaneous cryoablation for the treatment of medically inoperable stage I non-small cell lung cancer. PLoS One. Mar 2012;7(3):e33223. PMID 22413004
26. Collins KK, Schaffer MS. Use of cryoablation for treatment of tachyarrhythmias in 2010: survey of current practices of pediatric electrophysiologists. Pacing Clin Electrophysiol. Mar 2011;34(3):304-308. PMID 21077912
27. Kaufman CS, Bachman B, Littrup PJ, et al. Cryoablation treatment of benign breast lesions with 12-month follow- up. Am J Surg. Oct 2004;188(4):340-348. PMID 15474424
28. Genon MP, Chin TY, Bedi HS, et al. Radio-frequency ablation for the treatment of Morton's neuroma. ANZ J Surg. Sep 2010;80(9):583-585. PMID 20857612
29. Moore JL, Rosen R, Cohen J, et al. Radiofrequency thermoneurolysis for the treatment of Morton's neuroma. J Foot Ankle Surg. Jan-Feb 2012;51(1):20-22. PMID 22055491
30. Chuter GS, Chua YP, Connell DA, et al. Ultrasound-guided radiofrequency ablation in the management of interdigital (Morton's) neuroma. Skeletal Radiol. Jan 2013;42(1):107-111. PMID 23073898
31. Friedman T, Richman D, Adler R. Sonographically guided cryoneurolysis: preliminary experience and clinical outcomes. J Ultrasound Med. Dec 2012;31(12):2025-2034. PMID 23197557
32. Cazzato RL, Garnon J, Ramamurthy N, et al. Percutaneous MR-guided cryoablation of Morton's neuroma: rationale and technical details after the first 20 patients. Cardiovasc Intervent Radiol. Oct 2016;39(10):1491- 1498. PMID 27189181
33. Barrett SL, Nickerson DS, Elison P, et al. Clinical Practice Guidelines. Edition 1. Wimberley, TX: Association of Extremity Nerve Surgeons; 2014.

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Coding

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Codes used to identify services associated with this policy may include (but may not be limited to) the following:

Code Type	Code
CPT	0441T, 64632, 64640
HCPCS	No codes
ICD-10 Diagnosis	G57.60-G57.63

*Investigational – A medical treatment, procedure, drug, device, or biological product is Investigational if the effectiveness has not been clearly tested and it has not been incorporated into standard medical practice. Any determination we make that a medical treatment, procedure, drug, device, or biological product is Investigational will be based on a consideration of the following:

A. Whether the medical treatment, procedure, drug, device, or biological product can be lawfully marketed without approval of the U.S. Food and Drug Administration (FDA) and whether such approval has been granted at the time the medical treatment, procedure, drug, device, or biological product is sought to be furnished; or
B. Whether the medical treatment, procedure, drug, device, or biological product requires further studies or clinical trials to determine its maximum tolerated dose, toxicity, safety, effectiveness, or effectiveness as compared with the standard means of treatment or diagnosis, must improve health outcomes, according to the consensus of opinion among experts as shown by reliable evidence, including:
    1. Consultation with the Blue Cross and Blue Shield Association technology assessment program (TEC) or other nonaffiliated technology evaluation center(s);
    2. Credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community; or
    3. Reference to federal regulations.

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NOTICE: If the Patient's health insurance contract contains language that differs from the BCBSLA Medical Policy definition noted above, the definition in the health insurance contract will be relied upon for specific coverage determinations.

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