Facet Joint Denervation

Description
Percutaneous radiofrequency (RF) facet denervation is used to treat neck and back pain originating in facet joints with degenerative changes. Diagnosis of facet joint pain is confirmed by response to nerve blocks. The goal of facet denervation is long-term pain relief. However, the nerves regenerate and, therefore, repeat procedures may be required.

Facet joint denervation is performed under local anesthetic and with fluoroscopic guidance. A needle or probe is directed to the median branch of the dorsal ganglion innervating the facet joint, where multiple thermal lesions are produced, typically by an RF generator. A variety of terms may be used to describe RF denervation (eg, rhizotomy, rhizolysis). In addition, the structures to which the RF energy is directed may be referred to as facet joint, facet nerves, medial nerve or branch, median nerve or branch, or dorsal root ganglion.

Alternative methods of denervation include pulsed RF, laser, chemodenervation, and cryoablation. Pulsed RF consists of short bursts of electric current of high voltage in the RF range but without heating the tissue enough to cause coagulation. RF is suggested as a possibly safer alternative to thermal RF facet denervation. Temperatures do not exceed 42°C at the probe tip vs temperatures in the 60°C range reached in thermal RF denervation, and tissues may cool between pulses. It is postulated that transmission across small unmyelinated nerve fibers is disrupted but not permanently damaged, while large myelinated fibers are not affected. With chemical denervation, injections with a diluted phenol solution, a chemical ablating agent, are injected into the facet joint nerve.

OBJECTIVE
The objectives of this evidence review are to determine whether the use of: (1) medial branch blocks to identify individuals with facet joint pain; (2) radiofrequency ablation to treat individuals with facet joint pain; and (3) therapeutic medical branch blocks or alternative methods of denervation to treat individuals with facet joint pain improves the net health outcome.

POLICY STATEMENT
Non-pulsed radiofrequency denervation of cervical facet joints (C3-4 and below) and lumbar facet joints is considered medically necessary when ALL of the following criteria are met.
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- No prior spinal fusion surgery in the vertebral level being treated; AND
- Disabling low back (lumbosacral) or neck (cervical) pain, suggestive of facet joint origin as evidenced by absence of nerve root compression as documented in the medical record on history, physical, and radiographic evaluations; and the pain is not radicular; AND
- Pain has failed to respond to 3 months of conservative management, which may consist of therapies such as nonsteroidal anti-inflammatory medications, acetaminophen, manipulation, physical therapy, and a home exercise program; AND
- There has been a successful trial of controlled medial branch blocks (see Policy Guidelines section); AND
- If there has been a prior successful radiofrequency denervation, a minimum time of 6 months has elapsed since prior radiofrequency treatment (per side, per anatomic level of the spine).

Radiofrequency denervation is considered investigational for the treatment of chronic spinal or back pain for all uses that do not meet the criteria listed above, including but not limited to treatment of thoracic facet joint pain.

All other methods of denervation are considered investigational for the treatment of chronic spinal or back pain, including, but not limited to pulsed radiofrequency denervation, laser denervation, chemodenervation (eg, alcohol, phenol, or high concentration local anesthetics), and cryodenervation.

Therapeutic medial branch blocks are considered investigational.

If there has been a prior successful radiofrequency denervation, additional diagnostic medial branch blocks for the same level of the spine are not medically necessary.

POLICY GUIDELINES

A successful trial of controlled diagnostic medial branch blocks consists of 2 separate positive blocks on different days with local anesthetic only (no steroids or other drugs), or a placebo-controlled series of blocks, under fluoroscopic guidance, that has resulted in at least a 50% reduction in pain for the duration of the local anesthetic used (eg, 3 hours longer with bupivacaine than lidocaine). No therapeutic intra-articular injections (ie, steroids, saline, or other substances) should be administered for a period of at least 4 weeks prior to the diagnostic medial branch block. The diagnostic blocks should involve the levels being considered for radiofrequency treatment and should not be conducted under intravenous sedation unless specifically indicated (eg, the patient is unable to cooperate with the procedure). These diagnostic blocks should be targeted to the likely pain generator. Single-level blocks lead to more precise diagnostic information, but multiple single-level blocks require several visits and additional exposure to radiation.

BENEFIT APPLICATION

Experimental or investigational procedures, treatments, drugs, or devices are not covered (See General Exclusion Section of brochure).

FDA REGULATORY STATUS

A number of RF generators and probes have been cleared for marketing by the U.S. Food and Drug Administration through the 510(k) process. In 2005, the SInergy® (Kimberly Clark/Baylis), a water-cooled single-use probe, was cleared by the Food and Drug Administration, listing the Baylis Pain Management Probe as a predicate device. The intended use is with an RF generator to create RF lesions in nervous tissue. Food and Drug Administration product code: GXD.
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Rationale

Summary of Evidence

For individuals who have suspected facet joint pain who receive diagnostic medial branch blocks, the evidence includes a systematic review of 17 diagnostic accuracy studies, a small randomized trial, and several large case series. Relevant outcomes are other test performance measures, symptoms, and functional outcomes. There is considerable controversy about the role of these blocks, the number of positive blocks required, and the extent of pain relief obtained. Studies have reported the use of single or double blocks and at least 50% or 80% improvement in pain and function. This evidence has suggested that there are relatively few patients who exhibit pain relief following 2 nerve blocks, but that these select patients may have pain relief for several months following RF denervation. Other large series have reported the prevalence and false-positive rates following controlled diagnostic blocks, although there are issues with the reference standards used in these studies because there is no criterion standard for the diagnosis of facet joint pain. There is level I evidence for the use of medial branch blocks for diagnosing chronic lumbar facet joint pain and level II evidence for diagnosing cervical and thoracic facet joint pain. The evidence available supports a threshold of at least 75% to 80% pain relief to reduce the false-positive rate. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have facet joint pain who receive RFA, the evidence includes a systematic review of RCTs. Relevant outcomes are symptoms, functional outcomes, quality of life, and medication use. While evidence is limited to a few randomized controlled trials with small sample sizes, RF facet denervation appears to provide at least 50% pain relief in carefully selected patients. Diagnosis of facet joint pain is difficult. However, response to controlled medial branch blocks and the presence of tenderness over the facet joint appears to be reliable predictors of success. When RF facet denervation is successful, repeat treatments appear to have similar success rates and duration of pain relief. Thus, the data indicate that, in carefully selected individuals with lumbar or cervical facet joint pain, RF treatments can improve outcomes. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have facet joint pain who receive therapeutic medial nerve branch blocks or alternative methods of facet joint denervation, the evidence includes uncontrolled case series and randomized trials without a sham control. Relevant outcomes are symptoms, functional outcomes, quality of life, and medication use. Pulsed RF does not appear to be as effective as conventional RF denervation, and there is insufficient evidence to evaluate the efficacy of other methods of denervation (e.g., alcohol, laser, cryodenervation) for facet joint pain or the effect of therapeutic medial branch blocks on facet joint pain. The evidence is insufficient to determine the effects of the technology on health outcomes.

Supplemental Information

Practice Guidelines and Position Statements

Association of Neurological Surgeons and Congress of Neurological Surgeons

The American Association of Neurological Surgeons and the Congress of Neurological Surgeons (2014) updated their joint guidelines on the treatment of degenerative disease of the lumbar spine. The 2 groups provided grade B recommendations: (1) intra-articular injections of lumbar facet joints were not suggested for the treatment of facet-mediated chronic low back pain; (2) medial nerve blocks were suggested for the short-term relief of facet-mediated chronic low back pain; and (3) lumbar medial nerve
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Ablation was suggested for the short-term (3- to 6-month) relief of facet-mediated pain in patients who have chronic lower back pain without radiculopathy from degenerative disease of the lumbar spine.

American Society of Interventional Pain Physicians

Updated guidelines on interventional techniques for the management of chronic spinal pain from the American Society of Interventional Pain Physicians were published in 2013. Diagnostic lumbar facet joint nerve blocks were recommended in patients with suspected facet joint pain, based on good evidence for diagnostic lumbar facet joint nerve blocks with 75% to 100% pain relief as the criterion standard. For the treatment of facet joint pain, evidence was considered good for conventional radiofrequency (RF), limited for pulsed RF, fair-to-good for lumbar facet joint nerve blocks, and limited for intra-articular injections. Based on the evidence review, the Society recommended treatment with conventional RF neurotomy or therapeutic facet joint nerve blocks.

American Society of Anesthesiologists et al

Practice guidelines on chronic pain management from the American Society of Anesthesiologists and the American Society of Regional Anesthesia and Pain Medicine were published in 2010. The guidelines included the following recommendations:

“Radiofrequency ablation: Conventional (e.g., 80°C) or thermal (e.g., 67°C) radiofrequency ablation of the medial branch nerves to the facet joint should be performed for low back (medial branch) pain when previous diagnostic or therapeutic injections of the joint or medial branch nerve have provided temporary relief.”

“Chemical denervation (e.g., alcohol, phenol, or high concentration local anesthetics) should not be used in the routine care of patients with chronic noncancer pain.”

American Pain Society

The American Pain Society (2009) practice guidelines on nonsurgical interventions for low back pain stated that “there is insufficient (poor) evidence from randomized trials (conflicting trials, sparse and lower quality data, or no randomized trials) to reliably evaluate” a number of interventions including facet denervation.

National Institute for Health and Care Excellence

The National Institute for Health and Care Excellence (NICE; 2016) published guidance on the assessment and management of low back pain and sciatica in those over 16 years of age. NICE recommended that RF denervation can be considered for patients with chronic low back pain when “nonsurgical treatment has not worked for them and the main source of pain is thought to come from structures supplied by the medial branch nerve and they have moderate or severe levels of localized back pain.” RF denervation should only be performed “after a positive response to a diagnostic medial branch block.” NICE cautioned that the length of pain relief after RF denervation is uncertain, and that results from repeat RF denervation procedures are also uncertain.
California Technology Assessment Forum

The California Technology Assessment Forum (2001) published a review of the evidence for percutaneous RF neurotomy of cervical and lumbar zygapophyseal joints for chronic neck and low back pain; it concluded that the technology met its criteria for efficacy and safety for treatment of lower cervical (C3 and below) and for lumbar pain but not for treatment of upper (C2-3) levels. The Forum (2007) reviewed the evidence for treatment of C2-3 joints and did not reverse its position.37.

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

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

REFERENCES


The policies contained in the FEP Medical Policy Manual are developed to assist in administering contractual benefits and do not constitute medical advice. They are not intended to replace or substitute for the independent medical judgment of a practitioner or other health care professional in the treatment of an individual member. The Blue Cross and Blue Shield Association does not intend by the FEP Medical Policy Manual, or by any particular medical policy, to recommend, advocate, encourage or discourage any particular medical technologies. Medical decisions relative to medical technologies are to be made strictly by members/patients in consultation with their health care providers. The conclusion that a particular service or supply is medically necessary does not constitute a representation or warranty that the Blue Cross and Blue Shield Service Benefit Plan covers (or pays for) this service or supply for a particular member.


POLICY HISTORY

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<tr>
<th>Date</th>
<th>Action</th>
<th>Description</th>
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<tbody>
<tr>
<td>March 2014</td>
<td>Update Policy</td>
<td>Policy updated with literature review through September 16, 2014; Rationale section revised; references 20 and 31 added; some references removed; policy statements unchanged.</td>
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<tr>
<td>March 2015</td>
<td>Update Policy</td>
<td>Policy updated with literature review through September 11, 2017; reference 38 added. Policy statements unchanged except “not medically necessary” corrected to “investigational” due to FDA 501k status in the following statements: Radiofrequency denervation is considered investigational for the treatment of chronic spinal or back pain for all uses that do not meet the criteria listed above, including but not limited to treatment of thoracic facet joint pain; All other methods of denervation are considered investigational for the treatment of chronic spinal or back pain, including, but not limited to pulsed radiofrequency denervation, laser denervation, chemodenervation (eg, alcohol, phenol, or high concentration local anesthetics), and cryodenervation; Therapeutic medial branch blocks are considered investigational.</td>
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