

MEDICAL POLICY

Medical Policy Title	Radiofrequency Facet and Sacroiliac Joint Ablation/ Denervation
Policy Number	7.01.42
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Next Review Date	June 2027

Our medical policies are guides to evaluate technologies or services for medical necessity. Criteria are established through the assessment of evidence based, peer-reviewed scientific literature, and national professional guidelines. Federal and state law(s), regulatory mandates and the member's subscriber contract language are considered first in the determination of a covered service. (Link to [Product Disclaimer](#))

POLICY STATEMENT(S)

- I. An initial facet joint radiofrequency denervation/ablation is considered **medically appropriate** when **ALL** the following criteria have been met:
 - A. Performed for facet-mediated cervical, thoracic, or lumbar axial pain resulting from disease, injury, or surgery;
 - B. Clinical findings and imaging studies suggest no other obvious cause of the cervical, thoracic, or lumbar axial pain (e.g., central spinal stenosis with neurogenic claudication/myelopathy, foraminal stenosis or disc herniation with concordant radicular pain/radiculopathy that has been treated, infection, tumor, fracture, pseudoarthrosis, pain related to spinal instrumentation);
 - C. Pain has persisted for at least three (3) months;
 - D. In the past three (3) months, pain has persisted despite at least four (4) weeks of conservative treatment (e.g., exercise, physical therapy, chiropractic care, or nonsteroidal anti-inflammatory drugs [NSAIDs] or analgesics). Note: If conservative therapy is contraindicated, the reason(s) for the contraindication(s) is/are required to be documented in the medical record;
 - E. Documented positive response with two (2) sequential diagnostic facet joint injections/medial branch blocks at the same level(s). Positive response is evidenced by at least 80% relief of the facet-mediated pain for at least the expected minimum duration of effect (relief) of the local anesthetic used;
 - F. The spinal motion segment(s) is/are not posteriorly fused (unfused) at the requested level(s). Criteria exception: An exception is allowed for individuals with clinically suspected pseudoarthrosis at the posteriorly fused spinal motion segment(s).
- II. For an individual patient with a prior spinal fusion, facet joint radiofrequency denervation/ablation performed at an unfused spinal level contiguous to the posteriorly fused spinal segment is considered **medically appropriate**, when **ALL** criteria in Policy Statement I have been met.

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- III. A repeat facet joint radiofrequency denervation/ablation is considered **medically appropriate**, when **ALL** of the following criteria have been met:
- A. There is documented pain relief of at least 50% that has lasted for at least 12 weeks;
 - B. The procedure is performed at a minimum of six (6) months following the prior denervation/ablation;
 - C. Clinical findings and imaging studies suggest no other obvious cause of the cervical, thoracic, or lumbar axial pain (e.g., central spinal stenosis with neurogenic claudication/myelopathy, foraminal stenosis or disc herniation with concordant radicular pain/radiculopathy that has been treated, infection, tumor, fracture, pseudoarthrosis, pain related to spinal instrumentation).
- IV. Facet joint radiofrequency denervation/ablation is considered **not medically necessary** when performed under **ANY** of the following circumstances:
- A. Performed without the use of computed tomography (CT) or fluoroscopic guidance;
 - B. More than two (2) facet joint radiofrequency denervations/ablations at the same level(s) during a rolling 12-month. Note: At least six (6) months is required between facet joint radiofrequency denervations/ablations;
 - C. For cervical, thoracic, or lumbar axial pain, in the presence of an untreated radicular pain/radiculopathy;
 - D. On more than three (3) contiguous facet joint levels (whether unilateral or bilateral) during the same session or if performed bilaterally on more than a total of six (6) facet joints during the same session;
 - E. To treat pain arising from above C2-C3 and below L5-S1 spinal levels;
 - F. More than one (1) invasive modality or procedure performed on the same date of service (e.g., facet joint injection, medial branch block, epidural steroid injection, and sacroiliac joint injection).
- V. Facet joint radiofrequency denervation/ablation of facet and sacroiliac joints using **ANY** of the following techniques is considered **investigational**:
- A. Pulsed radiofrequency ablation;
 - B. Endoscopic radiofrequency denervation/endoscopic dorsal ramus rhizotomy;
 - C. Cryoablation/cryoneurolysis/cryodenervation;
 - D. Chemical ablation (e.g., alcohol, phenol, glycerol);
 - E. Laser ablation;
 - F. Cooled radiofrequency ablation;
 - G. Radiofrequency denervation/ablation of the nerves innervating the sacroiliac joint for the treatment of sacroiliac joint pain;

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- H. L5 medial nerve branch and sacral lateral nerve branch blocks or ablations/neurotomies for the diagnosis or treatment of sacroiliac (SI) joint mediated pain;
- I. Radiofrequency denervation/ablation of the intraosseous basivertebral nerve for the treatment of vertebrogenic back pain.

RELATED POLICIES

Corporate Medical Policy

11.01.03 Experimental or Investigational Services

POLICY GUIDELINE(S)

- I. This policy criteria applies to facet joint radiofrequency denervation/ablation for facet-mediated pain. The facet joint radiofrequency denervation/ablation applies directly to the facet joint(s) denervated/ablated and not to the number of nerves that innervate the facet joint(s).
- II. The following are not facet joints: Atlanto-occipital articulation (located between occiput - atlas [C1]), the atlanto-axial articulation (located between atlas [C1] and the axis [C2]), and below L5-S1 (sacrum).
- III. When performing a repeat facet joint radiofrequency denervation/ablation at the same spinal level(s) as a prior successful denervation/ablation procedure, further diagnostic facet joint injections/medial branch blocks at that/those spinal level(s) is/are not required.
- IV. When performing a repeat facet joint radiofrequency denervation/ablation, repeat imaging is not required unless newer symptoms are reported and need evaluation.

DESCRIPTION

Definitions

Axial: relating to or situated in the central part of the body, in the head and trunk as distinguished from the limbs, e.g., axial skeleton.

Cervical Facet Pain: pain located in the cervical spine, which may be characterized by chronic headaches, restricted motion, and axial neck pain, which may radiate sub-occipitally to the shoulders or mid-back.

Facet Joint Pain: a set of concurrent signs or symptoms to describe the facet joint as the pain generator. The typical clinical signs or symptoms may include local paraspinal tenderness; pain that is brought about or increased on hyperextension, rotation, and lateral bending; low back stiffness; absence of neurologic deficit; absence of root tension signs (non- radiating below the knee, absence of paresthesia).

Facet (Zygapophyseal) Joints: paired, diarthrodial synovial joints located between the superior and inferior articular pillars in the posterior spinal column, innervated medial branch nerves, from C2-3 to L5-S1. Note: The following articulations are not facet joints:

- Atlanto-occipital articulation (located between occiput - atlas [C1])

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- Atlanto-axial articulation (located between atlas [C1] and the axis [C2])
- Below L5-S1 (sacrum)

Facet Level: the zygapophyseal joint or the two medial branch (MB) nerves that innervate that zygapophyseal joint. Each level has a pair of facet joints: one on the right side and one on the left side of the spine.

Positive Response (to a diagnostic facet joint injection/medial branch block): at least 80% relief of facet mediated pain for at least the expected minimum duration of the effect of the local anesthetic used.

Facet Joint Radiofrequency Denervation/Ablation (RFA) (i.e., facet neurotomy, facet rhizotomy): Traditional or standard RFA involves the insertion of a radiofrequency probe (under fluoroscopic guidance) towards the medial branch of the posterior primary rami, which supplies the innervation to the facet joints. The radiofrequency electrode is then utilized to create a "continuous" heat lesion by coagulating the nerve supplying the joint with the intention of providing pain relief by denervating the painful facet joint. Note: The facet joint radiofrequency denervation/ablation applies directly to the facet joint(s) denervated ablated and not to the number of nerves denervated/ablated that innervate the facet joint(s).

Region: describes the segments of the spine as follows:

- Cervical/Thoracic region= C1-C7 / T1-T12
- Lumbar/Sacral region= L1-L5 / S1-S5

Sacral Lateral Nerve Block: an injection of corticosteroid and/or local anesthetic adjacent to the sacral lateral nerve resulting in the temporary interruption of conduction of impulses for analgesia. Sacral lateral nerve blocks attempt to block pain signals and theoretically provide relief from pain. The duration of the block depends on the dose, concentration, and type of pharmacological agent injected.

Sacroiliac Joint (SIJ): the synovial joint formed at the junction ilium and sacrum.

Sacroiliac Joint (SIJ) Pain: pain originating from the injury, disease, or surgery. sacroiliac joint as a result of injury, disease, or surgery. Note: The presence of pain over the sacroiliac joint in the absence of radicular findings in and of itself does not substantiate the diagnosis of sacroiliac joint pain.

Session: a time period, which includes all procedures (i.e., epidural steroid injection, selective nerve root block, facet joint injection, medial branch nerve block [MBB], and facet joint radiofrequency ablation [RFA]) performed on a single date of service.

The facet joints (zygapophyseal joints) are located at the posterior aspect of the spine and are designed to provide stability and control motion between the vertebrae. These small joints are prone to injury, deterioration, and inflammation. There are a number of proposed causes of facet joint syndrome. The facet joints may be irritated from trauma, repetitive movements, or arthritic changes. It is very common to develop degenerative changes in facet joints after trauma to the spine, as a result of an injury to the intervertebral disc, or secondary to degenerative disc disease. If the

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intervertebral disc is damaged, and the cushioning effect of the disc is lost, the facet joint at that level will undergo more stress, which may result in degeneration of the facet joint. Diagnosis of facet joint pain is confirmed by response (pain alleviation) to nerve blocks, with at least a 50% improvement after the required two positive blocks.

Percutaneous radiofrequency facet denervation is a low risk means of treating “mechanical” pain syndromes in previously unoperated patients with back and/or leg pain. Under local anesthesia, needle placement, under fluoroscopy, is made to the facet (zygapophyseal) joint. The cannula is then redirected until contact with the bone is lost. Following the removal of the guide needle stylet, a thermal monitoring electrode with an exposed tip is passed, and the guide needle is pulled back on the electrode beyond the skin. Electrostimulation is then performed, and a lesion is made using a radiofrequency lesion generator. Control of the temperature over the nerve roots permits selective denervation of the pain conduction fibers. The nerves regenerate, and repeat procedures are effective, though it is not known how many times the procedure can be repeated or if the duration of relief will change.

Pulsed radiofrequency consists of short bursts of electrical current of high voltage in the radio frequency range, but without heating the tissue enough to cause coagulation. It is suggested as a possibly safer alternative to thermal radio frequency facet denervation. Temperatures do not exceed 42°C at the probe tip, as opposed to the temperatures in the 60°s C. reached in thermal radiofrequency 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.

Intraosseous basivertebral nerve (BVN) ablation is a minimally invasive spinal procedure intended for the treatment of chronic low back pain (CLBP).

SUPPORTIVE LITERATURE

Radiofrequency Ablation (RFA) Facet Joint Denervation

For individuals with facet joint pain who receive RFA, the evidence includes systematic reviews (Manchikanti 2015; Janapala 2021) and randomized controlled trials (RCT) (Nath 2008; Civelek 2012; van Eerd 2021). While the evidence is limited to RCTs with relatively small sample sizes, radiofrequency (RF) facet denervation appears to provide at least 50% pain relief in carefully selected patients. Diagnosis of facet joint pain is challenging; however, response to controlled medial branch blocks appears to be a reliable predictor of treatment success.

When RF facet denervation is successful, repeat treatments appear to provide similar success rates and duration of pain relief (Schofferman 2004; Husted 2008; Rambaransingh 2010; Smuck 2012). Thus, in carefully selected individuals with lumbar or cervical facet joint pain, RF treatments can improve outcomes with reproducible benefit.

Therapeutic Medial Branch Blocks

Manchikanti et al (2015) conducted a systematic review that included three double-blind RCTs (n=340 total) by the same investigator group, comparing therapeutic medial branch blocks with bupivacaine alone versus bupivacaine with steroid (betamethasone) in patients with facet joint pain

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(cervical, thoracic, lumbar) confirmed by $\geq 80\%$ pain reduction following two diagnostic medial branch blocks. Significant pain relief with at least 50% improvement in disability scores was reported in all studies for at least 24 months. However, these studies lacked placebo or sham control groups, and the findings have not been replicated by independent investigators.

The FACTS trial (Cohen 2018), a three-arm RCT comparing intra-articular injections, medial branch blocks, and saline controls, randomized participants ($n=229$) in a 2:2:1 ratio. Mean pain score reduction at 1 month was identical across all three groups (0.7 points; $P = 0.993$). In the second phase, 135 participants underwent radiofrequency ablation. The proportions of positive RFA responders were higher in the intra-articular (51%) and medial branch block (56%) groups than the saline group (24%; $P = 0.005$). The authors concluded that facet blocks are not therapeutic but that the higher responder rates in the treatment groups suggest facet blocks might provide prognostic value before radiofrequency ablation. The broader evidence base does not support the routine use of medial branch blocks as a standalone therapeutic intervention.

Radiofrequency Ablation of the Sacroiliac (SI) Joint

Meta-analyses of available sham-controlled RCTs suggest a treatment effect of RFA on SIJ pain at short-term (1 to 3 months) follow-up, though the certainty of evidence remains generally low to very low due to heterogeneity of techniques and small sample sizes (Chen 2019; Chappell 2020; Janapala 2024).

Multiple RCTs have evaluated sacral lateral branch RFA for SI joint pain, with results varying significantly by technique. Two sham-controlled RCTs using cooled RFA (Cohen 2008, $n=28$; Patel 2012, $n=51$) demonstrated superiority over sham, with treated patients approximately four times more likely to achieve $\geq 50\%$ pain reduction at 3 months. Patel (2016) reported 12-month follow-up data ($n=41$) confirming sustained statistically significant improvements in pain, disability, and quality of life measures from baseline. In contrast, Van Tilburg et al (2016) conducted a sham-controlled, double-blind, multicenter RCT ($n=60$) using conventional (85 degrees Celsius) RFA of the L5 dorsal ramus and S1-S4 lateral branches and found no statistically significant difference between treatment and sham in NRS or Global Perceived Effect at 1 or 3 months. The MINT trial (Juch 2017), a pragmatic, open-label RCT ($n=228$ in the SIJ arm), compared RFA plus a standardized exercise program to exercise alone and found no clinically important difference at 3 or 12 months. Multiple RFA techniques were used, and neither participants nor clinicians were blinded.

Cohen et al (2024) conducted the largest RCT to date ($n=210$), a multicenter comparative effectiveness study demonstrating that cooled RFA of the L5 dorsal ramus and S1-S3 lateral branches provided statistically superior improvements in pain ($p<0.0001$), Oswestry Disability Index (ODI) ($p<0.0001$), and quality of life compared to standard medical management at 3 months, with sustained relief (56% combined responder rate) at 12 months.

Park et al (2026) conducted a systematic review and network meta-analysis of 18 RCTs ($n=1,075$) comparing interventional treatments for SIJ pain, including conventional, cooled, and pulsed RF ablation; intra-articular steroid injections (under different imaging guidance techniques); prolotherapy; platelet-rich plasma; sham procedures; and conservative management. Primary outcomes were pain intensity and ODI at 1, 3, and 6 months. RF-based interventions consistently

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outperformed steroid injections, sham, and conservative care across time points. For pain relief, cooled RF ranked highest at 1 month, conventional RF at 3 months, and pulsed RF at 6 months, each demonstrating significant superiority over most comparators. For disability outcomes, pulsed RF provided the greatest improvement at 1 and 3 months, whereas CT-guided intra-articular steroid injection ranked highest at 6 months. However, the certainty of evidence was generally low to very low due to imprecision and study limitations. The authors concluded that these findings support the overall effectiveness of RF techniques for SIJ pain while highlighting important evidence gaps warranting further high-quality trials with longer follow-up.

Cooled Radiofrequency Ablation

Chou et al (2021) conducted a systematic review and meta-analysis on interventional treatments for acute and chronic pain for the Agency for Healthcare Research and Quality. The review identified 2 trials (N=79) on cooled RFA versus sham for SIJ pain with results at 3 months, and 1 trial (N=28) with results at 1 month. Meta-analysis indicated that cooled RFA is probably more effective for pain and function compared to sham at 1 and 3 months, with moderate to large benefits. The strength of evidence was rated moderate for pain and function at 3 months and low for function at 1 month. When comparing cooled RFA to conventional RFA, 1 trial (N=43) showed no differences at 1 or 3 months and a small, non-statistically significant reduction in pain at 6 months; the strength of evidence was rated low.

Cohen et al (2024) conducted the first large (n=210), prospective, randomized, multicenter comparative effectiveness study of cooled radiofrequency ablation (CRFA) versus standard medical management (SMM) for chronic sacroiliac joint pain. Adult subjects over 21 years old with chronic SIJ pain lasting at least 3 months were randomized 1:1 to either cooled radiofrequency ablation (CRFA) (treatment group) or physician-prescribed standard medical management (SMM) (control group). The primary endpoint was 3 months, with optional crossover-to-treatment after 3 months and planned follow up through 12 months. Study retention at 3 months was 89.5%, with similar proportions between groups. CRFA resulted in statistically and clinically superior improvements across multiple domains compared with SMM. Fifty-two percent of subjects achieved a positive outcome based on prespecified criteria, and 41.9% obtained substantial benefit ($\geq 50\%$ reduction in pain score). Limitations of the study include industry sponsorship, unblinded study design, lack of specific requirements for the control group, and short follow-up timeframe.

Cohen et al (2025) reported the 12-month follow-up results to the prospective, randomized, multicenter study to compare cooled radiofrequency ablation to standard medical management for subjects with chronic SIJ pain. At 12-months, 67% (124/185) of treated patients reported data. The mean numeric rating pain score declined from a baseline of 6.4 ± 1.4 to 3.5 ± 2.6 , with 57.4% (35/61) of participants in the randomized CRFA cohort experiencing a ≥ 2 -point or 30% decrease in average lower back pain from baseline. In the crossover cohort, 35/63 (55.6%) subjects achieved the same threshold 12-months after the crossover procedure. Patients also experienced clinically meaningful improvements in quality of life (EuroQoL-5D-5L) at 12-months, with ODI scores improving by $12.4\% \pm 14.7$ (CRFA) and $13.7\% \pm 17.1$ (cross over) from baseline. The difference between groups was not significant for average pain ($p=0.15$) but was for worst pain ($p=0.01$), suggesting a possible modest benefit from standard medical management.

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Provenzano et al (2026) conducted a prospective, non-inferiority, multicenter, randomized, single-blind trial comparing cooled RFA (CRFA) to standard RFA (SRFA) for chronic facetogenic lumbar back pain. Patients with dual medial branch block-confirmed facet pain were randomized to CRFA or SRFA (n=74; 37 per group), though enrollment ended early (52% of target) due to funding reallocation and strict Medicare criteria requiring $\geq 80\%$ pain relief from dual blocks. The primary endpoint was the proportion of subjects achieving $\geq 50\%$ pain reduction on the NRS at 6 months. CRFA met the predefined non-inferiority criterion relative to SRFA ($p=0.0069$), with 74.1% of CRFA and 64.7% of SRFA patients achieving $\geq 50\%$ pain relief at 6 months. Both groups demonstrated robust, statistically significant, and clinically relevant reductions in pain from baseline at every time point ($p \leq 0.0001$), with significant and comparable improvements in disability, function, and quality of life at 6 and 12 months. No statistically significant differences in pain scores were observed between groups at any time point, likely due to the premature study termination. The authors concluded that with appropriate patient selection and proper procedural technique, both CRFA and SRFA can relieve chronic facetogenic low back pain and improve disability, function, and quality of life for 6-12 months. Study limitations include premature study termination (only 52% of target enrollment) resulting in an underpowered sample, single-blind design, industry sponsorship, and absence of a sham control arm.

Pulsed Radiofrequency Facet (PRF) Denervation

There is limited literature on pulsed radiofrequency denervation. The mechanism of its action is not completely understood, and early published studies are insufficient to draw conclusions about its efficacy (Van Zundert 2007; Kroll 2008, Hashemi 2014). Contreras Lopez et al (2019) conducted a systematic review of three RCTs (n=103), concluding that PRF is less effective than continuous RF regarding pain control and return of functionality in patients with facet joint chronic low back pain.

Moussa et al (2020) conducted an RCT in patients with chronic LBP of facet origin (n=150), randomizing patients to pulsed RF of the dorsal root ganglia (DRG) (n=50), conventional RF denervation of the medial dorsal branch (n=50), or a control group (n=50). All three groups received local anesthetic and steroid injections. The pulsed RF (DRG) group showed significantly better VAS improvement at 3 months ($p=.014$), maintained at 2 years ($p=.041$) and 3 years ($p=.044$), while the conventional medial branch RF group lost significance by 2 years ($p=.32$). Important limitations include the lack of a sham control.

Basivertebral Nerve (BVN) Ablation

Becker et al (2017) conducted a prospective, single-arm, multicenter pilot study to evaluate the effectiveness of intraosseous BVN ablation using the Intrasept System. Patients (n=17) with chronic low back pain greater than 6 months unresponsive to at least 3 months of conservative care were enrolled; 16 patients were treated successfully. Mean baseline ODI of the treated cohort was 52 ± 13 , decreasing to a mean of 23 ± 21 at 3 months follow-up ($p < .001$); the statistically significant improvement in ODI observed at 3 months was maintained through the 12-month follow-up. Mean baseline VAS decreased from 61 ± 22 to 45 ± 35 at 3 months ($p < .05$). No serious device- or procedure-related adverse events were reported. This is an industry-sponsored study. As a pilot study without a control group, it was not designed to be conclusive but established the feasibility of targeting the BVN for the treatment of chronic lumbar back pain.

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The SMART trial (Fischgrund 2018) was a double-blind, sham-controlled, multicenter study of BVN ablation in patients (n=225) with chronic lumbar pain unresponsive to ≥ 6 months of conservative care, with Modic Type 1 or 2 changes at L3-S1. The primary endpoint (intent-to-treat change in ODI at 3 months) was not statistically significant between groups. The per-protocol analysis showed a significant difference at 3 months (ODI improvement 20.5 vs. 15.2 points; $p=.019$), but this difference was no longer significant at 12 months. Visual analog scale (VAS) pain was not significantly different at 3 months ($p=.083$) but showed significantly greater improvement in the treatment group at 6 and 12 months. Long-term follow-up of the treatment arm showed durable improvements: mean ODI reduction of 23.4 points at 2 years (Fischgrund 2019) and 25.9 points at 5 years (mean follow-up 6.4 years), with 66% reporting $>50\%$ pain reduction and 34% complete pain resolution (Fischgrund 2020). Comparative long-term data are unavailable due to a 73% crossover rate from the sham arm.

The INTRACEPT trial (Khalil 2019) was a prospective, parallel, open-label RCT conducted at 20 U.S. sites (n=140; 66 BVN ablation, 74 standard care) in patients with chronic lower back pain of at least 6 months duration, with Modic Type 1 or 2 changes between L3 and S1. Baseline ODI was 46.1, VAS was 6.67, mean age was 50 years, and 67.3% had lower back pain symptoms ≥ 5 years. A predetermined interim analysis at 60% enrollment showed statistical superiority ($p<.001$) for all primary and secondary patient-reported outcome measures in the BVN ablation arm, leading to early study termination and crossover. Smuck et al (2021) reported full trial results, confirming superiority at 3 and 6 months ($p<.001$ for ODI and VAS), with 12-month treatment arm results showing a 25.7 ± 18.5 point ODI reduction and 64% achieving $\geq 50\%$ pain reduction. The proportion of opioid use did not change in either group ($p=0.56$).

INTRACEPT trial long-term 24-month findings were reported by Koreckij et al (2021). Of the 58 patients who completed the 24-month visit, ODI improved 28.5 ± 16.2 points (from baseline 44.5; $p<0.001$) and VAS improved 4.1 ± 2.7 cm (from baseline 6.6; $p<0.001$). A combined responder rate of $ODI\geq 15$ and $VAS\geq 2$ was 73.7%; $\geq 50\%$ reduction in pain was reported in 72.4% and 31.0% were pain-free at 2 years. At 24 months, 62% fewer patients were actively taking opioids, and only 3 (5%) had BVNA-level steroid injections. There were no serious device or device-procedure related adverse events reported through 24 months. Limitations include industry sponsorship, open-label design, lack of a sham group, early study termination, and early crossover (92%).

Mekhail et al (2023) conducted a systematic review and meta-analysis comparing percutaneous interventions for chronic low back pain, including BVN ablation, medial branch radiofrequency ablation, corticosteroid injections, multifidus muscle stimulation, and biological implantations. BVN ablation provided statistically significant improvements in VAS and ODI at 6, 12, and 24 months. BVN ablation, biological therapy, and multifidus muscle stimulation were the only therapies with significant, durable improvements in both pain and disability. RF ablation of the medial branch and steroid injections provided comparable pain relief through 1 year but significantly less improvement in ODI. Only BVN ablation studies reported no serious adverse events. Limitations include heterogeneity of comparisons across different interventions targeting different pain generators, and the indirect nature of cross-study comparisons.

Schnapp et al (2023) conducted the first independently funded U.S. study (n=16) of BVN ablation in

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a community practice setting, reporting significant ODI and VAS improvements at 1, 3, and 6 months ($p < 0.05$). No adverse events were observed. Approximately 25% of patients with low baseline ODI did not show improvement at 6 months, emphasizing the importance of appropriate patient selection criteria. Limitations include the small sample size, single-arm design without controls, and short follow-up duration. The authors concluded that the study demonstrates feasibility in a community practice setting and emphasizes the need to further define optimal inclusion and exclusion criteria.

Khalil et al (2024) reported 5-year pooled results from three prospective clinical trials (SMART, INTRACEPT, and a single-arm study). A total of 249 participants, of the 320 BVNA-treated participants (78% participation rate), completed a 5-year visit. At baseline, 71.9% reported back pain for ≥ 5 years, 27.7% were taking opioids, and 61.8% had prior therapeutic lumbar spinal injections. From baseline, significant mean improvement from baseline in numeric pain scores (NPS) and ODI scores ($p < 0.0001$). Nearly one-third (32.1%) reported being pain-free (NPS=0) at 5 years, 72.7% indicated their condition improved, and 68.7% resumed activity levels they had prior to onset of chronic lower back pain. In the 69 participants taking opioids at baseline, 65.2% were no longer taking them at 5 years, and spinal injections decreased by 58.1%. The rate of lumbosacral treatment for the same index pain source and vertebral level was 33/249 (13.2%) at 5 years, including a 6.0% rate of lumbar fusion. There were no serious device or device-procedure related adverse events reported during the long-term follow-up. Limitations include that all long-term data are derived from treatment arms without comparative controls due to high crossover rates, all three trials were industry-sponsored, and pooling across studies with different designs introduces heterogeneity.

McCormick et al (2026) conducted a single-arm, single-center, prospective cohort study of BVN ablation in a real-world population ($n=60$) with LBP ≥ 6 months and Type 1 or Type 2 Modic changes on MRI. This cohort included patients with histories of spine surgery, radicular pain, and concomitant non-vertebrogenic pain generators. At 12 months, 52.8% achieved $\geq 30\%$ ODI improvement, 49.1% achieved $\geq 50\%$ numerical rating scale improvement, and 54.7% reported being "much or very much improved." Significant reductions in healthcare utilization were observed, including a 47.2% decrease in lumbosacral spinal injections ($P < .001$) and reduction in medial branch lumbosacral radiofrequency ablation procedures ($P = .039$), with only 1.9% undergoing lumbar fusion during follow-up. Baseline opioid use and older age were identified as significant predictors of poorer outcomes post-BNVA. Key limitations include the single-center design, absence of a control group, lack of requirement for diagnostic medial branch blocks or sacroiliac joint injections prior to enrollment (potentially including patients without dominant vertebrogenic pain), and incomplete capture of all LBP-related healthcare utilization.

PROFESSIONAL GUIDELINE(S)

Facet Joint Interventions for Management of Chronic Spinal Pain

In 2020, the American Society of Interventional Pain Physicians (ASIPP) published guidelines on facet joint interventions for management of chronic spinal pain (Manchikanti 2020).

- Facet joint nerve blocks for diagnosis are recommended with moderate to strong strength for the lumbar spine (evidence level I–II), moderate strength for the cervical spine (evidence level II), and moderate strength for the thoracic spine (evidence level II), using a criterion standard of

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≥80% pain relief with dual comparative blocks.

- Radiofrequency ablation for treatment is recommended with moderate strength for the lumbar and cervical spine (evidence level II) and weak to moderate strength for the thoracic spine (evidence level III).
- Facet joint nerve blocks are recommended for treatment of pain in the lumbar spine (moderate strength recommendation; evidence level II), cervical spine (moderate strength recommendation; evidence level II), and thoracic spine (weak to moderate strength recommendation; evidence level III).
- Intra-articular injections received a weak recommendation with lower levels of evidence (level III–V across spinal regions).

Sacroiliac Joint – Ablation and Injection

In 2020, North American Spine Society (NASS) acknowledge the limited available data and that the optimal procedural technique has not been established. However, based on this limited data, NASS indicates it is reasonable to offer coverage for thermal radiofrequency neurotomy at the L5 dorsal ramus and S1-S3 sacral lateral branches for SIJ pain. NASS does not include recommendation details for other ablative techniques (e.g., pulsed RF, laser, cooled RF, cryoablation).

The American Society of Pain and Neuroscience (ASPN) Best Practice Guideline for the Treatment of Sacroiliac Disorders (Sayed 2024) recommends RFA of the lateral branches of the S1-S3 dorsal rami along with the L5 dorsal rami (and possibly L4) after an appropriate trial of conservative care and appropriate response to diagnostic blockade. Dual diagnostic blockade of the L5 dorsal ramus and S1-S3 sacral lateral branches with ≥50% improvement in pain and function is the preferred strategy prior to neuroablative procedures. The ASPN notes that rarer modalities such as intra-articular chemical neurolysis and cryoablation have low-quality evidence supporting mild efficacy with limitations due to adverse effect profile.

In 2025, the American Academy of Pain Medicine (AAPM) and American Society of Regional Anesthesia & Pain Medicine (ASRA-PM) issued multispecialty consensus practice guidelines on SIJ complex pain (McCormick 2025), developed by an international working group, and endorsed by 21 organizations. The consensus found strong evidence for sacral lateral branch RFA to provide relief for at least 6 months in individuals with extra-articular pathology. The guidelines recommend targeting S1-S3 lateral branches in all patients (Grade A, high certainty), with consideration of the L5 dorsal ramus and S4 lateral branch based on individual anatomy (Grade B, moderate certainty). Stronger evidence supports larger lesions or more aggressive lesioning strategies over less stringent techniques. The evidence for cryoablation was found to be very limited.

Basivertebral Nerve Ablation (BVNA)

In 2022, the International Society for the Advancement of Spine Surgery (ISASS) published an updated policy guideline for interosseous basivertebral nerve ablation, issuing coverage indications and limitations (Lorio 2022). The ISASS finds that the utilization of intraosseous BVNA to address vertebrogenic LBP has become a recognized safe, predictable, and durable surgical method for the management of chronic axial LBP identified using well-established clinical and magnetic resonance

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imaging findings, Modic type 1 and/or type 2 changes. The procedure is supported by level I evidence including a systematic review and 2 RCTs demonstrating a statistically significant decrease in pain and an improvement in function with outcomes sustained >5 years after a single treatment.

In 2022, the American Society of Pain and Neuroscience (ASPN) published best practice guidelines for the diagnosis and treatment of vertebrogenic pain with BVN ablation (Sayed 2022). A multidisciplinary work group examined the available literature and formed best practice guidelines. The authors concluded that the cumulative data has established that there is moderate-to-high quality evidence supporting BVNA to improve pain, function, quality of life, opioid utilization reduction, and has demonstrated high patient satisfaction and statistical significance and clinically meaningful superiority of BVNA in contrast to standard of care for the management of vertebrogenic pain in strictly selected patients.

The North American Spine Society (NASS) 2023 Basivertebral Nerve (BVN) Ablation Coverage Recommendations support the use of percutaneous interosseous radiofrequency ablation of the BVN, for the following indications:

- Patients are skeletally mature and have chronic low back pain for at least 6 months.
- Patients have failed to adequately improve despite attempts at nonsurgical management.
- Patients have Type 1 or Type 2 Modic changes on the endplates between L3 and S1.

The NASS (2023) also supports that there is a growing body of published evidence that damage to the innervated vertebral endplates can result in vertebrogenic back pain (VBP) transmitted through branches of the BVN, with radiofrequency ablation of the BVN, via a percutaneous interosseous approach, emerging as a possible interventional therapy for this condition. The NASS does not support transforaminal epiduroscopic BVN laser ablation, stating that although the results from a single-arm case series were promising the procedure remains to be further investigated.

REGULATORY STATUS

The U.S. Food and Drug Administration (FDA) regulates radiofrequency generators as medical devices. All radiofrequency generators including related components require FDA approval before marketing and use in the United States to ensure they are safe and effective for human use. Refer to the FDA Medical Device website. Available from: <https://www.fda.gov/medical-devices> [accessed 2026 May 6]

The FDA lists the most serious type of medical device recalls as well as early alert communications about corrective actions being taken by companies that the FDA believes are likely to be the most serious type of recalls. Available from: <https://www.fda.gov/medical-devices/medical-device-safety/medical-device-recalls-and-early-alerts> [accessed 2026 May 6]

Radiofrequency generators and probes used for facet and sacroiliac joint denervation have been cleared for marketing through the FDA's Section 510(k) process for the use in pain management procedures. FDA product code: GXD.

Intraosseous basivertebral nerve ablation (BVNA) systems are classified under a separate FDA product code (GXI). Multiple systems have received 510(k) clearance, including the Intrasept System

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(Boston Scientific), VIVOS System (Channel Medsystems), and Luminos System (Ortus Medical). The Intracept System was the first device cleared (2016), with an expanded indication added in 2022 for use in patients with Type 1 or Type 2 Modic changes on MRI. Subsequent systems were cleared as substantially equivalent.

CODE(S)

- Codes may not be covered under all circumstances.
- Code list may not be all inclusive (AMA and CMS code updates may occur more frequently than policy updates).
- (E/I)=Experimental/Investigational
- (NMN)=Not medically necessary/appropriate

CPT Codes

Code	Description
64451 (E/I)	Injection(s), anesthetic agent(s), and/or steroid; nerves innervating the sacroiliac joint, with image guidance (i.e., fluoroscopy or computed tomography)
64625 (E/I)	Radiofrequency ablation, nerve innervating the sacroiliac joint, with image guidance (i.e., fluoroscopy or computed tomography)
64628 (E/I)	Thermal destruction of intraosseous basivertebral nerve, including all imaging guidance; first 2 vertebral bodies, lumbar or sacral
64629 (E/I)	Thermal destruction of intraosseous basivertebral nerve, including all imaging guidance; each additional vertebral body, lumbar or sacral (List separately in addition to code for primary procedure)
64633	Destruction by neurolytic agent, paravertebral facet joint nerves(s) with imaging guidance (fluoroscopy or CT); cervical or thoracic, single facet joint
64634	cervical or thoracic each additional facet joint
64635	lumbar or sacral, single facet joint
64636	lumbar or sacral, each additional facet joint

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HCPCS Codes

Code	Description
Not Applicable	

ICD10 Codes

Code	Description
M47.011- M47.9	Spondylosis (code range)

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Code	Description
M54.10- M54.9	Dorsalgia (code range)

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SEARCH TERMS

Not Applicable

CENTERS FOR MEDICARE AND MEDICAID SERVICES (CMS)

Intraosseous basivertebral nerve (BVN) ablation is not addressed in National or Regional Medicare coverage determinations or policies.

[Thermal Destruction of the Intraosseous Basivertebral Nerve \(BVN\) for Vertebrogenic Lower Back Pain \(LCD L40302\)](#) [accessed 2026 Jun 16]

[Facet Joint Intervention for Pain Management \(LCD L35936\)](#) [accessed 2026 Mar 23]

PRODUCT DISCLAIMER

- Services are contract dependent; if a product does not cover a service, medical policy criteria do not apply.
- If a commercial product (including an Essential Plan or Child Health Plus product) covers a

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specific service, medical policy criteria apply to the benefit.

- If a Medicaid product covers a specific service, and there are no New York State Medicaid guidelines (eMedNY) criteria, medical policy criteria apply to the benefit.
- If a Medicare product (including Medicare HMO-Dual Special Needs Program (DSNP) product) covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit.
- If a Medicare HMO-Dual Special Needs Program (DSNP) product DOES NOT cover a specific service, please refer to the Medicaid Product coverage line.

POLICY HISTORY/REVISION

Committee Approval Dates

09/21/00, 09/19/01, 07/18/02, 06/19/03, 03/18/04, 02/15/07, 01/17/08, 01/15/09, 01/21/10, 01/20/11, 01/19/12, 01/17/13, 01/16/14, 12/18/14, 12/17/15, 11/17/16, 11/16/17, 06/21/18, 12/20/18, 06/20/19, 08/20/20, 04/15/21, 05/19/22, 05/18/23, 10/17/24, 06/26/25, 06/18/26

Date	Summary of Changes
06/18/26	• Annual review; policy intent unchanged.
06/26/25	• Annual review; policy intent unchanged. Revised conservative treatment criteria.
01/01/25	• Summary of changes tracking implemented.
09/21/00	• Original effective date