MEDICAL POLICY – 7.01.93
Decompression of the Intervertebral Disc Using Laser Energy (Laser Discectomy) or Radiofrequency Coblation (Nucleoplasty)

BCBSA Ref. Policy: 7.01.93
Effective Date: April 1, 2017
Last Revised: Oct. 24, 2017
Replaces: N/A

RELATED MEDICAL POLICIES:
7.01.18 Automated Percutaneous and Percutaneous Endoscopic Discectomy
7.01.72 Percutaneous Intradiscal Electrothermal Annuloplasty, Percutaneous Intradiscal Radiofrequency Annuloplasty and Biacuplasty
7.01.126 Image-Guided Minimally Invasive Decompression for Spinal Stenosis
7.01.551 Lumbar Spine Decompression Surgery: Discectomy, Foraminotomy, Laminotomy, Laminectomy

Select a hyperlink below to be directed to that section.

POLICY CRITERIA | CODING | RELATED INFORMATION
EVIDENCE REVIEW | REFERENCES | HISTORY

∞ Clicking this icon returns you to the hyperlinks menu above.

Introduction

Between each bone of the spine is a round, flat disc. The discs act as cushions between the bones of the spine and help hold them together, while also providing stability and allowing a wide range of motion. Should the discs break down, pain and nerve problems may result. Typical treatment includes physical therapy and/or pain medications. In more severe cases, surgery may be needed. In recent years, using heat from either lasers or radio waves to remove or destroy parts of the discs has been studied as a way to try to treat pain. These techniques are investigational (unproven). More studies are needed to find out if they are safe and effective.

Note: The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.
Policy Coverage Criteria

Service | Investigational
---|---
Laser discectomy and radiofrequency coblation | Laser discectomy and radiofrequency coblation (disc nucleoplasty) are considered investigational as techniques of disc decompression and treatment of associated pain.

Coding

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tr>
<td><strong>CPT</strong></td>
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<tr>
<td>62287</td>
<td>Decompression procedure, percutaneous, of nucleus pulposus of intervertebral disc, any method, single or multiple levels, lumbar (eg, manual or automated percutaneous discectomy, percutaneous laser discectomy)</td>
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<tr>
<td><strong>HCPCS</strong></td>
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<tr>
<td>S2348</td>
<td>Decompression procedure, percutaneous, of nucleus pulposus of intervertebral disc, using radiofrequency energy, single or multiple levels, lumbar</td>
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Related Information

N/A

Evidence Review
Description

Laser energy (laser discectomy) and radiofrequency (RF) coblation (nucleoplasty) are being evaluated for decompression of the intervertebral disc. For laser discectomy under fluoroscopic guidance, a needle or catheter is inserted into the disc nucleus, and a laser beam is directed through it to vaporize tissue. For DISC nucleoplasty™, bipolar RF energy is directed into the disc to ablate tissue. These minimally invasive procedures are being evaluated for the treatment of discogenic back pain.

Background

Discogenic low back pain is a common, multifactorial pain syndrome that involves low back pain without radicular symptoms, in conjunction with radiologically confirmed degenerative disc disease. Typical treatment includes conservative therapy with physical therapy and medication management, with potential for surgical decompression in more severe cases.

A variety of minimally invasive techniques have been investigated over the years as treatment of low back pain related to disc disease. Techniques can be broadly divided into techniques that are designed to remove or ablate disc material, and thus decompress the disc, and those designed to alter the biomechanics of the disc annulus. The former category includes chymopapain injection, automated percutaneous lumbar discectomy, laser discectomy, and most recently, disc decompression using RF energy, referred to as a DISC nucleoplasty™.

Techniques that alter the biomechanics of the disc (disc annulus) include intradiscal electrothermal annuloplasty (ie, the percutaneous intradiscal electrothermal annuloplasty [IDET] procedure) or percutaneous intradiscal radiofrequency thermocoagulation (PIRFT). It should be noted that three of these procedures use radiofrequency (RF) energy—DISC nucleoplasty, IDET, and PIRFT—but apply the energy in distinctly different ways such that the procedures are unique.

A variety of different lasers have been investigated for laser discectomy, including YAG, KTP, holmium, argon, and carbon dioxide lasers. Due to differences in absorption, the energy requirements and the rate of application differ among the lasers. In addition, it is unknown how much disc material must be removed to achieve decompression. Therefore, protocols vary according to the length of treatment, but typically the laser is activated for brief periods only.

RF coblation uses bipolar low-frequency energy in an electrical conductive fluid (eg, saline) to generate a high-density plasma field around the energy source. This creates a low-temperature field of ionizing particles that break organic bonds within the target tissue. Coblation technology
is used in a variety of surgical procedures, particularly related to otolaryngology. The disc nucleoplasty procedure is accomplished with a probe mounted with a RF coblation source. The proposed advantage of coblation is that the procedure provides for controlled and highly localized ablation, resulting in minimal damage to surrounding tissue.

The ArthroCare SpineWand used coblation technology (ArthroCare, Austin, TX). ArthroCare was acquired by Smith & Nephew in 2014; as of 2017, Smith & Nephew has not provided any information about coblation devices specific to spine surgeries on its website.

Summary of Evidence

For individuals who have discogenic back pain or radiculopathy who receive laser discectomy, the evidence includes systematic reviews of observational studies. Relevant outcomes are symptoms, functional outcomes, and treatment-related morbidity. While numerous case series and uncontrolled studies have reported improvements in pain levels and functioning following laser discectomy, the lack of well-designed and conducted controlled trials limits interpretation of reported data. The evidence is insufficient to determine the effect of the technology on health outcomes.

For individuals who have discogenic back pain or radiculopathy who receive disc nucleoplasty with radiofrequency coblation, the evidence includes randomized controlled trials (RCTs) and systematic reviews. Relevant outcomes are symptoms, functional outcomes, and treatment-related morbidity. For nucleoplasty, there are 2 RCTs in addition to several uncontrolled studies. These RCTs are limited by the lack of blinding, an inadequate control condition in 1 trial, and inadequate data reporting in the second. The available evidence is insufficient to permit conclusions concerning the effect of these procedures on health outcomes due to multiple confounding factors that may bias results. High-quality randomized trials with adequate follow-up (at least 1 year), which control for selection bias, the placebo effect, and variability in the natural history of low back pain, are needed. The evidence is insufficient to determine the effect of the technology on health outcomes.

Ongoing and Unpublished Clinical Trials

Some currently unpublished trials that might influence this policy are listed in Table 1.
Table 1. Summary of Key Trials

<table>
<thead>
<tr>
<th>NCT No.</th>
<th>Trial Name</th>
<th>Planned Enrollment</th>
<th>Completion Date</th>
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<tr>
<td>Unpublished</td>
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<tr>
<td>NCT01797172</td>
<td>Percutaneous Cervical Nucleoplasty vs. Pulsed Radio Frequency in Patients With Contained Cervical Disc Herniation; a Double-blind Randomized Clinical Trial</td>
<td>38</td>
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<td>NCT00940810a</td>
<td>A Prospective, Randomized, Controlled, Multi Center, Clinical Study With Plasma Disc Decompression Versus Conservative Care</td>
<td>46</td>
<td>Nov 2011 (completed)</td>
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<tr>
<td>NCT00124774a</td>
<td>Nucleoplasty for Contained Herniated Lumbar Discs: A Randomised, Double Blind, Prospective Comparison With Sham Treatment</td>
<td>50</td>
<td>Apr 2006 (completed)</td>
</tr>
</tbody>
</table>

NCT: national clinical trial.

a Denotes industry-sponsored or cosponsored trial.

Practice Guidelines and Position Statements

National Institute for Clinical Excellence (NICE)

The National Institute for Health and Care Excellence (NICE) guidance on laser lumbar discectomy for the treatment of sciatica was updated in December 2016. The guidance states that current evidence “is inadequate in quantity and quality” and that this procedure should only be used in the context of research.13

NICE’s guidance on percutaneous disc decompression using coblation for lower back pain and sciatica was also updated in 2016. It states: “Current evidence on percutaneous coblation of the intervertebral disc for low back pain and sciatica raises no major safety concerns. The evidence on efficacy is adequate and includes large numbers of patients with appropriate follow-up periods. Therefore, this procedure may be used provided that normal arrangements are in place for clinical governance, consent, and audit.” The guidance also notes that the patient should be informed of the range of treatment options available.14
American Pain Society (APA)

A 2009 APA Clinical Practice Guideline on nonsurgical interventions for low back pain states 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 coblation.\(^{15,16}\)

American Society of Interventional Pain Physicians (ASIPP)

Practice Guidelines were published in 2009 and updated in 2013 by the ASIPP.\(^{17,18}\) The 2013 guidelines found limited evidence for percutaneous laser disc decompression and limited to fair evidence for nucleoplasty, as described in the 2013 systematic reviews by Singh et al., and Manchikanti et al.\(^2,7\)

Medicare National Coverage

The Centers for Medicare and Medicaid Services (CMS) has determined that thermal intradiscal procedures, including percutaneous (or plasma) disc decompression or coblation, are not reasonable and necessary for the treatment of low back pain. Therefore, thermal intradiscal procedures, which include procedures that employ the use of a radiofrequency energy source or electrothermal energy to apply or create heat and/or disruption within the disc for the treatment of low back pain, are noncovered.\(^{19}\)

CMS has not published a national coverage decision regarding laser discectomy. However, it states the following in its decision on laser procedures:

Medicare recognizes the use of lasers for many medical indications. Procedures performed with lasers are sometimes used in place of more conventional techniques. In the absence of a specific noncoverage instruction, and where a laser has been approved for marketing by the Food and Drug Administration, contractor discretion may be used to determine whether a procedure performed with a laser is reasonable and necessary and, therefore, covered.\(^{20}\)

Regulatory Status

A number of laser devices have been cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process for incision, excision, resection, ablation,
vaporization, and coagulation of tissue. Intended uses described in FDA summaries include a wide variety of procedures, including percutaneous discectomy. Trimedyne Inc. received 510(k) clearance in 2002 for the Trimedyne® Holmium Laser System Holmium:Yttrium, Aluminum Garnet (Holmium:YAG), in 2007 RevoLix Duo™ Laser System, and in 2009 Quanta System LITHO Laser System. All were cleared, based on equivalence with predicate devices for percutaneous laser disc decompression/discectomy, including foraminoplasty, percutaneous cervical disc decompression/discectomy, and percutaneous thoracic disc decompression/discectomy. The summary for the Trimedyne® system states that indications for cervical and thoracic decompression/discectomy include uncomplicated ruptured or herniated discs, sensory changes, imaging consistent with findings, and symptoms unresponsive to 12 weeks of conservative treatment. Indications for treatment of cervical discs also include positive nerve conduction studies. FDA product code: GEX.

Arthrocare’s Perc-D SpineWand™ received 510(k) clearance in 2001 based on equivalence to predicate devices. It is used in conjunction with the Arthrocare Coblation® System 2000 for ablation, coagulation, and decompression of disc material to treat symptomatic patients with contained herniated discs. Smith and Nephew acquired ArthroCare in 2014. FDA product code: GEI.

References


**History**

<table>
<thead>
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<th>Date</th>
<th>Comments</th>
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<td>06/14/05</td>
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<td>10/14/08</td>
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<td>09/14/10</td>
<td>Replace Policy - Policy updated with literature search; reference numbers 6, 7, and 22 added. No change has been made to the policy statement; the title reflects a slight change in wording from, “Decompression of the Intervertebral Disc Using Laser (Laser Discectomy) or Radiofrequency Energy (DISC Nucleoplasty™)” to “Decompression of the Intervertebral Disc Using Laser Energy (Laser Discectomy) or Radiofrequency Coblation (Nucleoplasty)”</td>
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<td>04/17/12</td>
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<td>09/11/12</td>
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<td>09/26/12</td>
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<td>01/21/14</td>
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<td>09/23/14</td>
<td>Annual Review. Policy updated with literature review through June 3, 2014; policy statement unchanged. CPT code 77002 removed from the policy; it does not apply.</td>
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<td>Annual Review, approved March 14, 2017. Policy updated with literature review through November 7, 2016; Rationale revised and some references removed. Policy statement unchanged.</td>
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<td>10/24/17</td>
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  - Qualified interpreters
  - Information written in other languages

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