Discectomy

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Policy: 12/2014  Next Review: 12/2020

Policy
Blue Cross and Blue Shield of Kansas City (Blue KC) will provide coverage for Discectomy when it is determined to be medically necessary because the criteria shown below are met.

When Policy Topic is covered
Lumbar discectomy (see Considerations) may be considered medically necessary for the treatment of lumbar herniated disc when the following criteria are met:

- Signs and symptoms of radiculopathy on history and physical exam (see Considerations)
- One of the following clinical presentations is present:
  - Rapidly progressing neurologic deficits; OR
  - Persistent debilitating back or leg pain that is refractory to at least 6 weeks of conservative therapy (see Considerations).
- Documentation of nerve root compress on imaging (MRI or CT) at a level that corresponds with the patient’s symptoms (see Considerations).

Cervical discectomy (see Considerations) may be considered medically necessary for the treatment of cervical herniated disc when the following criteria are present:

- Signs and symptoms of radiculopathy and/or myelopathy on history and physical exam (see Considerations)
- One of the following clinical presentations is present:
  - Rapidly progressing neurologic deficits; OR
  - Persistent debilitating neck, back, or arm pain that is refractory to at least 6 weeks of conservative therapy (see Considerations); OR
  - Persistent or progressive symptoms of myelopathy that are refractory to at least 6 weeks of conservative therapy (see Considerations).
- Documentation of nerve root compress on imaging (MRI or CT) at a level that corresponds with the patient’s symptoms (see Considerations).

When Policy Topic is not covered
Lumbar discectomy is considered not medically necessary for the treatment of lumbar herniated disc when the above criteria are not met.
Cervical discectomy is considered **not medically necessary** for the treatment of cervical herniated disc when the above criteria are not met.

Discectomy is considered **investigational** for all other indications.

**Considerations**

Lumbar discectomy refers to standard open discectomy or minimally invasive microdiscectomy. Microdiscectomy will be defined for the purpose of this assessment as having the following features: 1) Uses a small surgical incision (as opposed to an endoscopic “port”, 2) Uses a specially designed microscope to achieve direct visualization of the vertebral column (as opposed to indirect visualization with an endoscope or other type of cameras), and 3) removes disc and other surgical products by direct visualization through the surgical incision. Microdiscectomy may be done with adjunctive devices, such as tubular retractors to improve visualization, or endoscopy to localize the correct areas to operate. However, removal of the disc itself must be done under direct visualization in order to be considered microdiscectomy.

Cervical discectomy refers to open anterior cervical discectomy (with or without fusion), or minimally invasive posterior cervical discectomy/foraminotomy.

There are numerous other alternative procedures for performing discectomy, with uncertain efficacy compared with standard procedures. For the purpose of this reference policy, the following procedures are considered investigational and therefore not valid alternatives for discectomy:

- Laser discectomy
- Radiofrequency coblation (nucleoplasty)
- Automated percutaneous discectomy
- Endoscopic discectomy
- Intradiscal electrothermal annuloplasty (IDET)
- Intradiscal radiothermal annuloplasty
- Chemonucleolysis

Radiculopathy presents with a characteristic set of signs and symptoms, as follows:

**History**

- Pain that radiates down the back of the leg to below the knee
- Numbness and tingling in a dermatomal distribution
- Muscular weakness in a pattern associated with spinal nerve root compression

**Physical Exam**

- Positive straight leg raise test
- Loss of deep tendon reflexes corresponding to affected nerve root level
- Loss of sensation in a dermatomal pattern
Conservative nonsurgical therapy for the duration specified should include the following:

- Use of prescription strength analgesics for several weeks at a dose sufficient to induce a therapeutic response
  - Analgesics should include anti-inflammatory medications with or without adjunctive medications such as nerve membrane stabilizers or muscle relaxants AND
- Participation in at least 6 weeks of physical therapy (including active exercise) or documentation of why the patient could not tolerate physical therapy, AND
- Evaluation and appropriate management of associated cognitive, behavioral, or addiction issues
- Documentation of patient compliance with the preceding criteria.

Persistent debilitating pain is defined as:

- Significant level of pain on a daily basis defined on a visual analog scale (VAS) as greater than 4; AND
- Pain on a daily basis that has a documented impact on activities of daily living in spite of optimal conservative nonsurgical therapy as outlined above and appropriate for the patient.

Medical necessity is established by documentation of medical history, physical findings, and diagnostic imaging results that demonstrate spinal nerve compression and support the surgical treatment intervention. Documentation in the medical record must clearly support the medical necessity of the surgery and include medical history, physical examination, and diagnostic testing.

**Medical History**

- Assessment of comorbid physical and psychological health conditions (e.g., morbid obesity, current smoking, diabetes, renal disease, osteoporosis, and severe physical deconditioning)
- History of back surgery, including minimally invasive back procedures
- Prior trial, failure, or contraindication to conservative medical/non-operative interventions that may include but are not limited to the following:
  - Activity modification for at least 6 weeks
  - Oral analgesics and/or anti-inflammatory medications
  - Physical therapy
  - Chiropractic manipulation
  - Epidural steroid injections

**Physical Examination**

- Clinical findings including the patient’s stated symptoms and duration
Diagnostic Testing
- Radiologist’s report of a magnetic resonance image (MRI) or computerized tomography (CT) scan with myelogram of the lumbar spine within the past 6 months showing a lumbar spine abnormality
- Report of the selective nerve root injection results, if applicable to the patient’s diagnostic workup

**Description of Procedure or Service**

<table>
<thead>
<tr>
<th>Populations</th>
<th>Interventions</th>
<th>Comparators</th>
<th>Outcomes</th>
</tr>
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</table>
| Individuals:  
- With lumbar herniated disc and symptoms of radiculopathy that are rapidly progressing or refractory to conservative care | Interventions of interest are:  
- Lumbar discectomy | Comparators of interest are:  
- Conservative, nonsurgical care | Relevant outcomes include:  
- Symptoms  
- Functional outcomes  
- Health status measures  
- Quality of life  
- Treatment-related mortality  
- Treatment-related morbidity |

| Interventions of interest are:  
- Cervical discectomy | Comparators of interest are:  
- Conservative, nonsurgical care | Relevant outcomes include:  
- Symptoms  
- Functional outcomes  
- Health status measures  
- Quality of life  
- Treatment-related mortality  
- Treatment-related morbidity |

Discectomy is a surgical procedure in which one or more intervertebral discs are removed. Extrusion of an intervertebral disc beyond the intervertebral space can compress the spinal nerves and result in pain, numbness, and weakness. Discectomy is intended to treat symptoms by relieving pressure on the affected nerve root(s). Discectomy can be performed by a variety of surgical approaches, with either open surgery or minimally invasive techniques.

For individuals who have lumbar herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care who receive lumbar discectomy, the evidence includes RCTs, nonrandomized comparative studies, and systematic reviews. Relevant outcomes are symptoms, functional outcomes, health status measures, quality of life, and treatment-related mortality and morbidity. In patients with lumbar radiculopathy with disc herniation who receive discectomy, there is sufficient evidence to support the use of discectomy in patients who have not responded to “usual care” for six weeks. The RCT evidence is limited by a lack of high-quality trials. In most, a high percentage of patients in the conservative care group crossed over to surgery. This high degree of crossover reduced the power to detect differences when assessed by intention-to-treat analysis. Analysis by treatment received was also flawed because of the potential noncomparability of groups resulting from the high crossover rate. Despite the methodologic limitations of the evidence, the RCTs have consistently demonstrated a probable short-term benefit for surgery and a more rapid
resolution of pain and disability. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have cervical herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care who receive cervical discectomy, the evidence includes two RCTs, a long-term observational study, and a systematic review. Relevant outcomes are symptoms, functional outcomes, health status measures, quality of life, and treatment-related mortality and morbidity. There is considerably less evidence on cervical discectomy than on lumbar discectomy. The best evidence on the efficacy of cervical discectomy consists of two small RCTs comparing discectomy with conservative care, and a systematic review of these trials. Although there is less evidence for this indication, it does not differ substantially from lumbar herniated disc, showing that patient-reported symptoms and disability favor surgery in the short-term, and that long-term outcomes do not differ. Because cervical discectomy closely parallels lumbar discectomy, with close similarities in anatomy and surgical procedure, it can be inferred that the benefit reported for lumbar discectomy supports a benefit for cervical discectomy. Based on the available evidence and extrapolation from studies of lumbar herniated disc, it is likely that use of discectomy for cervical herniated disc improves short-term symptoms and disability. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

**Background**

**Disc Herniation**
Extrusion of an intervertebral disc beyond the intervertebral space can compress the spinal nerves and result in symptoms of pain, numbness, and weakness.

The natural history of untreated disc herniations is not well-characterized, but most herniations will decrease in size over time due to shrinking and/or regression of the disc.¹ Clinical symptoms will also tend to improve over time in conjunction with shrinkage or regression of the herniation.

**Treatment**

Because most disc herniations improve over time, initial care is conservative, consisting of analgesics and a prescribed activity program tailored to patient considerations. Other potential nonsurgical interventions include opioid analgesics and chiropractic manipulation. Epidural steroid injections can also be used as a second-line intervention and are associated with short-term relief of symptoms.²

However, some disc herniations will not improve over time with conservative care. A small proportion of patients will have rapidly progressive signs and symptoms, thus putting them at risk for irreversible neurologic deficits. These patients are considered to be surgical emergencies, and expedient surgery is intended to prevent further neurologic deterioration and allow for nerve recovery.

Other patients will not progress but will have the persistence of symptoms that require further intervention. It is estimated that up to 30% of patients with
sciatica will continue to have pain for more than 1 year.\(^3\) For these patients, there is a high degree of morbidity and functional disability associated with chronic back pain, and there is a tendency for recurrent pain despite treatment. Therefore, treatments that have more uniform efficacy for patients with a herniated disc and chronic back pain are needed. In particular, decreased chronic pain and decreased disability are the goals of treatment of chronic low back pain due to a herniated disc.

**Surgical Treatment**

Discectomy is a surgical procedure in which one or more intervertebral discs are removed. The primary indication for discectomy is herniation (extrusion) of an intervertebral disc. Discectomy is intended to treat symptoms by relieving pressure on the affected nerve(s).

**Lumbar Discectomy**

Lumbar discectomy can be performed by a variety of surgical approaches. Open discectomy is the traditional approach. In open discectomy, a 2- to 3-cm incision is made over the area to be repaired. The spinal muscles are dissected, and a portion of the lamina may be removed to allow access to the vertebral space. The extruded disc is removed either entirely or partially using direct visualization. Osteophytes that are protruding into the vertebral space can also be removed if deemed necessary.

The main alternative to open discectomy is microdiscectomy, which has gained popularity. Microdiscectomy is a minimally invasive procedure that involves a smaller incision, visualization of the disc through a special camera, and removal of disc fragments using special instruments. Because less resection can be performed in a microdiscectomy, it is usually reserved for smaller herniations, in which a smaller amount of tissue needs to be removed. A few controlled trials comparing open discectomy with microdiscectomy have been published and reported that neither procedure is clearly superior to the other, but that microdiscectomy is associated with more rapid recovery.\(^4,5\) Systematic reviews and meta-analyses have also concluded that the evidence does not support the superiority of 1 procedure over another.\(^6-8\)

**Cervical Discectomy**

The most common procedure for cervical discectomy is anterior cervical discectomy. This is an open procedure in which the cervical spine is approached through an incision in the anterior neck. Soft tissues and muscles are separated to expose the spine. The disc is removed using direct visualization. This procedure can be done with or without spinal fusion, but most commonly it is performed with fusion.

A less invasive procedure for cervical discectomy is posterior cervical discectomy and foraminotomy. They are performed through a small incision in the back of the neck. The nerves and muscles are separated using a small retractor. The spine is visualized with microscopic guidance, and a portion of the spine—the foramen—is
removed to expose the spinal canal. Special instruments are used to remove a portion of the disc or the entire disc.

**Adverse Events**
Complications of discectomy generally include bleeding, infections, and inadvertent nerve injuries. Dural puncture occurs in a small percentage of patients, leading to leakage of cerebrospinal fluid that can be accompanied by headaches and/or neck stiffness. In a small percentage of cases, worsening of neurologic symptoms can occur postsurgery.

**Other Surgical Alternatives**
Other variations on discectomy include the following. These procedures do not have high-quality comparative trials vs standard discectomy, and will therefore not be considered as true alternatives to discectomy for this evidence review:

- Laser discectomy
- Radiofrequency coblation (nucleoplasty)
- Automated percutaneous discectomy
- Automated endoscopic discectomy
- Intradiscal electrothermal annuloplasty
- Intradiscal radiofrequency therapy
- Vertebral axial decompression
- Chemonucleolysis.

**Regulatory Status**
Discectomy is a surgical procedure and, as such, is not subject to regulation by the U.S. Food and Drug Administration. Some instrumentation used during laminectomy may be subject to Food and Drug Administration approval.

**Rationale**
This evidence review was created in October 2014 and has been updated regularly with searches of the MEDLINE database. The most recent literature update was performed through April 19, 2019.

Evidence reviews assess the clinical evidence to determine whether the use of a technology improves the net health outcome. Broadly defined, health outcomes are length of life, quality of life, and ability to function. Every clinical condition has specific outcomes that are important to patients and to managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of a technology, 2 domains are examined: the relevance and the quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some
conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. Randomized controlled trials are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

**Lumbar Discectomy**

**Clinical Context and Therapy Purpose**
The purpose of lumbar discectomy in patients who have lumbar herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The question addressed in this evidence review is: Does lumbar discectomy improve the net health outcome in patients with lumbar herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care?

The following PICOs were used to select literature to inform this review.

**Patients**
The relevant population of interest is patients who have lumbar herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care.

Extrusion of an intervertebral disc beyond the intervertebral space can compress the spinal nerves and result in symptoms of pain, numbness, and weakness.

**Interventions**
The therapy being considered is lumbar discectomy. Lumbar discectomy can be performed by a variety of surgical approaches. Open discectomy is the traditional approach. In open discectomy, a 2- to 3-cm incision is made over the area to be repaired. The spinal muscles are dissected, and a portion of the lamina may be removed to allow access to the vertebral space. The extruded disc is removed either entirely or partially using direct visualization. Osteophytes that are protruding into the vertebral space can also be removed if deemed necessary.

**Comparators**
The following therapies and practices are currently being used to make decisions about lumbar discectomy.

Because most disc herniations improve over time, initial care is conservative, consisting of analgesics and a prescribed activity program tailored to patient
considerations. Other potential nonsurgical interventions include opioid analgesics and chiropractic manipulation. Epidural steroid injections can also be used as a second-line intervention and are associated with short-term relief of symptoms.

Outcomes
The general outcomes of interest are symptoms, functional outcomes, health status measures, quality of life, treatment-related mortality, and treatment-related morbidity.

Outcome measures for back surgery are relatively well-established (see Table 1). Most studies used back and leg visual analog scores or the Zurich Claudication Questionnaire to assess pain and the ODI to assess functional limitations related to back pain. Most studies also use a broader functional status index such as the SF-12 or SF-36, particularly the physical function subscale of SF-36. Throughout this report, we refer to a combination of pain and function measures as “Back and Leg Pain Measures.” Determining the minimal clinically important differences (MCID) for these measures is complex. The MCID for a given measure can depend on the baseline score or severity of illness, the method used to calculate MCID, and the times at which the scores are measured. For these reasons, some investigators prefer to calculate a minimum detectable difference (MDD).

Both short-term and long-term outcomes are important in evaluating back treatments. For example, for definitive back surgery, net benefit should take into account immediate (perioperative) adverse events; improvements in pain, neurological status, and function at 12 to 24 months as measured by the ODI, SF-36, Zurich Claudication Questionnaire, or visual analog scale measures; and 5-year secondary surgery rates, which reflect longer-term complications, recurrences, and treatment failures. On the other hand, epidural injections are intended to provide quick, short-term relief from pain. The net benefit of epidural injections should emphasize effectiveness in relieving symptoms for weeks to months. Less important, but still relevant outcomes are the frequency of sustained response and the eventual need for surgery.

Patient preferences are important in decision-making about elective back surgery. In particular, to avoid the morbidity and risk of complications of the surgery, some patients may choose to prolong conservative treatments even if it means they have additional pain and functional limitation. Conversely, some patients will accept long-term outcomes of surgery similar to those of conservative therapy to get faster relief of symptoms and improvement in function.

In some trials, the epidural injection has been considered an event indicative of treatment failure. This is usually not appropriate. Instead, patient-reported outcomes should be measured at prespecified time intervals in all patients, whether or not they undergo injections or secondary procedures. When possible, trials should use explicit criteria for secondary surgeries or measure patient-reported outcomes just prior to secondary procedures so those implicit criteria for reoperation can be compared across studies.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Outcome Evaluated</th>
<th>Description</th>
<th>MDD and MCID</th>
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</table>
| Oswestry Disability Score (ODI)              | Functional disability and pain related to back conditions.                         | Ten 5-point items; scores 0 (no disability) to 50 (totally disabled) or 0-100% of maximum score                                                                                                               | MDD: 8-10 points  
MCID varies; often 15 points (30 percentage points).                                             |
| Zurich Claudication Questionnaire (ZCQ)      | Pain, numbness, weakness, walking tolerance, and (if applicable) satisfaction with treatment results. | Eighteen items; three subscales. Total score is expressed in points or as a percentage of maximum score (higher scores are worse)                                                                 | MDD: 5 points.  
MCID: Varies; sometimes defined as a detectable improvement on 2 of 3 subscales.                   |
| RMDQ                                          | Disability from back problems.                                                     | Twenty-four items; scored 0-24 (higher scores are worse).                                                                                                                                                  | MCID: 30% reduction                                                                                   |
| Visual analog scale for leg pain             | Degree of leg pain.                                                                | Patients indicate the degree of pain on a 0-100 scale.                                                                                                                                                     | MDD: 5 points                                                                                          |
| Visual analog scale for back pain            | Degree of back pain.                                                               | Patients indicate the degree of pain on a 0-100 scale.                                                                                                                                                     | MDD: 2 points                                                                                          |
MDD: minimal detectable difference; MCID: Minimal clinically important difference; RMDQ: Roland and Morris Disability Questionnaire.

**Study Selection Criteria**
Methodologically credible studies were selected using the following principles:

a. To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs and systematic review of RCTs;
b. In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
c. To assess longer term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.

**Systematic Reviews**
Recent systematic reviews confirm that discectomy improves patient-reported outcomes but disagree about the duration of the effect.

A very comprehensive systematic review and meta-analysis of 7 RCTs published between 1983 and 2017 concluded that, at 6 months, surgery reduced mean VAS-leg pain scores by 6 to 26 points more than conservative interventions; the evidence was mixed for ODI scores, the RMDQ, and the SF-36 Physical Functioning subscale. Surgery and nonsurgical interventions produced similar improvements in quality of life, neurologic symptoms, and return to work. No between-group differences were observed at one year or later. A limitation of this review is that it considered only the intention-to-treat analyses of the SPORT trial and similar trials. The as-treated analysis of the SPORT trial found persistently better outcomes for surgery in up to eight years of follow-up.

Another comprehensive systematic review and meta-analysis of eight RCTs and six prospective cohort studies found that over one to five years of follow-up, compared with conservative treatment, lumbar discectomy reduced leg pain by ten points on the VAS-leg pain scale and back pain by seven points on the VAS-back pain scale. A small, six-month trial conducted in Egypt published later than this systematic review found no difference in the ODI and better return to work outcomes for six months of intensive physical therapy vs discectomy.

**Section Summary: Lumbar Discectomy**
For individuals who have lumbar herniated disc(s) and symptoms of radiculopathy refractory to conservative care who receive lumbar discectomy, the evidence includes RCTs, nonrandomized comparative studies, and systematic reviews. Relevant outcomes are symptoms, functional outcomes, health status measures, quality of life, and treatment-related mortality and morbidity. In patients with lumbar radiculopathy with disc herniation who receive discectomy, there is sufficient evidence to support the use of discectomy in patients who have not responded to "usual care" for six weeks, but the net benefit is uncertain because of the lack of a robust RCT comparing discectomy with a comprehensive conservative treatment program. The RCT evidence is limited by a lack of high-quality trials. In most, a high percentage of patients in the conservative care
group crossed over to surgery. This high degree of crossover reduced the power to detect differences when assessed by intention-to-treat analysis. Analysis by treatment received was also flawed because of the potential noncomparability of groups resulting from the high crossover rate. Despite the methodologic limitations of the evidence, the RCTs have consistently demonstrated a probable short-term benefit for surgery and a more rapid resolution of pain and disability. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

**Cervical Discectomy**

**Clinical Context and Therapy Purpose**
The purpose of cervical discectomy in patients who have cervical herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The question addressed in this evidence review is: Does cervical discectomy improve the net health outcome in patients with cervical herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care?

The following PICOs were used to select literature to inform this review.

**Patients**
The relevant population of interest is patients who have cervical herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care.

Extrusion of an intervertebral disc beyond the intervertebral space can compress the spinal nerves and result in symptoms of pain, numbness, and weakness.

**Interventions**
The therapy being considered is cervical discectomy.

The most common procedure for cervical discectomy is anterior cervical discectomy. This is an open procedure in which the cervical spine is approached through an incision in the anterior neck. Soft tissues and muscles are separated to expose the spine. The disc is removed using direct visualization. This procedure can be done with or without spinal fusion, but most commonly it is performed with fusion.

A less invasive procedure for cervical discectomy is posterior cervical discectomy and foraminotomy. They are performed through a small incision in the back of the neck. The nerves and muscles are separated using a small retractor. The spine is visualized with microscopic guidance, and a portion of the spine—the foramen—is removed to expose the spinal canal. Special instruments are used to remove a portion of the disc or the entire disc.
Comparators
The following therapies and practices are currently being used to make decisions about cervical discectomy.

Because most disc herniations improve over time, initial care is conservative, consisting of analgesics and a prescribed activity program tailored to patient considerations. Other potential nonsurgical interventions include opioid analgesics and chiropractic manipulation. Epidural steroid injections can also be used as a second-line intervention and are associated with short-term relief of symptoms.

Outcomes
The general outcomes of interest are symptoms, functional outcomes, health status measures, quality of life, treatment-related mortality, and treatment-related morbidity.

Both short-term and long-term outcomes are important in evaluating discectomy. Net benefit should take into account immediate (perioperative) adverse events; improvements in pain, neurological status, and function at 12 to 24 months as measured by the ODI, SF-36, Zurich Claudication Questionnaire, or visual analog scale measures; and 5-year secondary surgery rates, which reflect longer-term complications, recurrences, and treatment failures.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:

a. To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs and systematic review of RCTs;
b. In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
c. To assess longer term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.

Randomized Controlled Trials
Peolsson et al (2013) published a multicenter RCT from Sweden in which 63 patients with cervical disc disease (verified by magnetic resonance imaging) were randomized to structured exercise alone or structured exercise with cervical discectomy. The surgical procedure consisted of anterior cervical decompression with fusion. Follow-up was at 3, 6, 12, and 24 months. During the trial, there were 2 crossovers from the exercise group to surgery. At the 2-year follow-up, there were no significant differences on any of the main outcomes. There were improvements in both groups on multiple measures of functional status over time, but these improvements do not differ significantly between groups. This trial did not assess any outcomes for pain or disability.

An earlier trial, reported by Persson et al (1997), compared surgery with conservative care in 81 patients who had longstanding cervical radiculopathy. Patients were randomized to surgery or 1 of 2 control groups: an active exercise program or use of a cervical collar. Outcome measures included a
VAS for pain (range, 0-100), muscle strength in the upper extremities, and sensation in the upper extremities. Follow-up time points were at 4 and 12 months. Three patients in the surgery group declined surgery because of improvement in symptoms, and there were no crossovers from conservative care to surgery. At the 4-month follow-up, the surgery group had less sensory loss and better muscle strength. By 1-year, there were no group differences on any of the main outcomes.

**Systematic Reviews**
A Cochrane systematic review by Nikolaidis et al (2010) included 2 RCTs, which are summarized below. Reviewers judged both trials to have a significant risk of bias due to inadequate allocation concealment and unclear blinding of outcomes assessment. Reviewers concluded that there was low-quality evidence for a short-term benefit of surgery, with an uncertain risk-benefit ratio for surgery. They found no evidence for a long-term benefit of surgery.

**Observational Studies**
Faught et al (2016) published results from a telephone interview evaluating the long-term outcomes among a cohort of patients (N=338) who underwent posterior cervical foraminotomies. Each interview collected information on symptomatic and functional improvements postsurgery. The EuroQol-5D, a standardized instrument to measure health-related quality of life, was also administered. Mean follow-up was 10 years. Ninety-three percent of patients who could not work before surgery were able to return to work. As measured by the EuroQol-5D, patients reported: "no problems" in mobility (65%), self-care (90%), usual activities (60%), pain (41%), and anxiety/depression (77%).

**Section Summary: Cervical Discectomy**
For individuals who have cervical herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care who receive cervical discectomy, the evidence includes two RCTs, a long-term observational study, and a systematic review. Relevant outcomes are symptoms, functional outcomes, health status measures, quality of life, and treatment-related mortality and morbidity. There is considerably less evidence on cervical discectomy than on lumbar discectomy. The best evidence on the efficacy of cervical discectomy consists of two small RCTs comparing discectomy with conservative care, and a systematic review of these trials. Although there is less evidence for this indication, it does not differ substantially from lumbar herniated disc, showing that patient-reported symptoms and disability favor surgery in the short-term, and that long-term outcomes do not differ. Because cervical discectomy closely parallels lumbar discectomy, with close similarities in anatomy and surgical procedure, it can be inferred that the benefit reported for lumbar discectomy supports a benefit for cervical discectomy. Based on the available evidence and extrapolation from studies of lumbar herniated disc, it is likely that use of discectomy for cervical herniated disc improves short-term symptoms and disability. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.
Summary of Evidence
For individuals who have lumbar herniated disc(s) and symptoms of radiculopathy rapidly progressing or refractory to conservative care who receive lumbar discectomy, the evidence includes RCTs, nonrandomized comparative studies, and systematic reviews. Relevant outcomes are symptoms, functional outcomes, health status measures, quality of life, and treatment-related mortality and morbidity. In patients with lumbar radiculopathy with disc herniation who receive discectomy, there is sufficient evidence to support the use of discectomy in patients who have not responded to “usual care” for six weeks. The RCT evidence is limited by a lack of high-quality trials. In most, a high percentage of patients in the conservative care group crossed over to surgery. This high degree of crossover reduced the power to detect differences when assessed by intention-to-treat analysis. Analysis by treatment received was also flawed because of the potential noncomparability of groups resulting from the high crossover rate. Despite the methodologic limitations of the evidence, the RCTs have consistently demonstrated a probable short-term benefit for surgery and a more rapid resolution of pain and disability. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

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SUPPLEMENTAL INFORMATION

Practice Guidelines and Position Statements

North American Spine Society
The North American Spine Society published evidence-based clinical guidelines in 2014 on the diagnosis and treatment of lumbar disc herniation with radiculopathy. Table 2 summarizes the recommendations specific to open discectomy or microdiscectomy.
Table 2. Recommendations for Treating Lumbar Disc Herniation With Radiculopathy

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>GOR(^a)</th>
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<tbody>
<tr>
<td>Endoscopic percutaneous discectomy is suggested for carefully selected patients to reduce early postoperative disability and reduce opioid use compared with open discectomy.</td>
<td>B</td>
</tr>
<tr>
<td>There is insufficient evidence to make a recommendation for or against the use of automated percutaneous discectomy compared with open discectomy.</td>
<td>I</td>
</tr>
<tr>
<td>Discectomy is suggested to provide more effective symptom relief than medical/interventional care for patients whose symptoms warrant surgical care. In patients with less severe symptoms, both surgery and medical/interventional care appear to be effective in short and long term relief.</td>
<td>B</td>
</tr>
<tr>
<td>Use of an operative microscope is suggested to obtain comparable outcomes to open discectomy for patients whose symptoms warrant surgery.</td>
<td>B</td>
</tr>
<tr>
<td>There is insufficient evidence to make a recommendation for or against the use of tubular discectomy compared with open discectomy.</td>
<td>I</td>
</tr>
</tbody>
</table>

GOR: grade of recommendation. 
\(^a\) Grade B: fair evidence (level II or III studies with consistent findings); grade I: insufficient evidence.

The North American Spine Society published evidence-based clinical guidelines (2011) on the diagnosis and treatment of cervical radiculopathy from degenerative disorders.\(^8\) The guidelines included evaluations of anterior cervical discectomy (ACD), ACD with fusion, ACD with instrumented fusion, ACD with fusion plus plate, and posterior laminoforaminotomy. Recommendations are listed in Table 1.

Table 1. Recommendations Treating Cervical Radiculopathy from Degenerative Disorders

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>GOR(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical intervention is suggested for the rapid relief of symptoms when compared to medical/interventional treatment.</td>
<td>B</td>
</tr>
<tr>
<td>Surgery is an option to produce and maintain favorable long-term (&gt;4 years) outcomes.</td>
<td>C</td>
</tr>
<tr>
<td>Both ACD and ACDF are suggested as comparable treatment strategies, producing similar clinical outcomes.</td>
<td>B</td>
</tr>
</tbody>
</table>
ACDF and total disc arthroplasty are suggested as comparable treatments, resulting in similarly successful short-term outcomes.  

Both ACDF with and without a plate are suggested as comparable treatments, resulting in similar clinical outcomes and fusion rates.  

Either ACDF or PLF are suggested for treatment of single level degenerative cervical radiculopathy secondary to foraminal soft disc herniation to achieve comparably successful clinical outcomes.

ACD: anterior cervical discectomy; ACDF: anterior cervical discectomy with fusion; GOR: grade of recommendation; PLF: posterior laminoforaminotomy.

a Grade B: fair evidence (level II or III studies with consistent findings); grade C: poor quality evidence (level IV or V studies).

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 3.

Table 3. Summary of Key Trials

<table>
<thead>
<tr>
<th>NCT No.</th>
<th>Trial Name</th>
<th>Planned Enrollment</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unpublished</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCT02477176</td>
<td>A Prospective Multicenter Study Investigating Reherniation Risk Factors and Associated Costs in Primary Lumbar Disc Herniation Patients</td>
<td>100</td>
<td>Feb 2019</td>
</tr>
<tr>
<td>NCT01335646</td>
<td>Surgery Versus Standardized Non-operative Care for the Treatment of Lumbar Disc Herniations: A Canadian Trial</td>
<td>140</td>
<td>Aug 2018</td>
</tr>
</tbody>
</table>

NCT: national clinical trial.
REFERENCES
14. Mu, XX, Wei, JJ, Li, PP. What were the advantages of microendoscopic discectomy for lumbar disc herniation comparing with open discectomy: a meta-analysis?. Int J Clin Exp Med, 2016 Jan 16;9(10). PMID 26770340

Billing Coding/Physician Documentation Information

<table>
<thead>
<tr>
<th>BILLING CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>63020</td>
<td>Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; 1 interspace, cervical</td>
</tr>
<tr>
<td>63030</td>
<td>Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; 1 interspace, lumbar</td>
</tr>
<tr>
<td>63035</td>
<td>Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; 1 interspace, cervical</td>
</tr>
</tbody>
</table>
herniated intervertebral disc; each additional interspace, cervical or lumbar (List separately in addition to code for primary procedure)

63040 Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; cervical

63042 Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; lumbar

63043 Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; each additional cervical interspace (List separately in addition to code for primary procedure)

63044 Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; each additional lumbar interspace (List separately in addition to code for primary procedure)

63056 Transpedicular approach with decompression of spinal cord, equina and/or nerve root(s) (eg, herniated intervertebral disc), single segment; lumbar (including transfacet, or lateral extraforaminal approach) (eg, far lateral herniated intervertebral disc)

63057 Transpedicular approach with decompression of spinal cord, equina and/or nerve root(s) (eg, herniated intervertebral disc), single segment; each additional segment, thoracic or lumbar (List separately in addition to code for primary procedure)

63075 Discectomy, anterior, with decompression of spinal cord and/or nerve root(s), including osteophyteectomy; cervical, single interspace

63076 Discectomy, anterior, with decompression of spinal cord and/or nerve root(s), including osteophyteectomy; cervical, each additional interspace (List separately in addition to code for primary procedure)

C2614 Probe, percutaneous lumbar discectomy

**ICD10 Codes**

**M50.00-** Cervical disc disorder with myelopathy or radiculopathy code range

**M50.13**

**M50.20-** Other cervical disc displacement code range

**M50.23**

**M51.05; M51.06; M51.15; M51.16; M51.17 M51.25-** Lumbar intervertebral disc disorders with myelopathy or radiculopathy code list

**M51.27** Other lumbar intervertebral disc displacement code list
### Additional Policy Key Words

N/A

### Policy Implementation/Update Information

<table>
<thead>
<tr>
<th>Date</th>
<th>Update Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/1/14</td>
<td>New Policy. Discectomy is medically necessary for the treatment of herniated disc when symptoms are refractory to conservative care and criteria are met.</td>
</tr>
<tr>
<td>3/1/16</td>
<td>Policy statements revised for clarity. &quot;Rapidly progressing neurologic symptoms&quot; changed to &quot;Rapidly progressing neurologic deficits&quot;, and in statement on cervical discectomy &quot;Persistent debilitating back or leg pain&quot; changed to &quot;Persistent debilitating neck, back, or arm pain&quot;</td>
</tr>
<tr>
<td>12/1/16</td>
<td>No policy statement changes.</td>
</tr>
<tr>
<td>12/1/17</td>
<td>No policy statement changes.</td>
</tr>
<tr>
<td>12/1/18</td>
<td>No policy statement changes.</td>
</tr>
<tr>
<td>12/1/19</td>
<td>No policy statement changes.</td>
</tr>
</tbody>
</table>

State and Federal mandates and health plan contract language, including specific provisions/exclusions, take precedence over Medical Policy and must be considered first in determining eligibility for coverage. The medical policies contained herein are for informational purposes. The medical policies do not constitute medical advice or medical care. Treating health care providers are independent contractors and are neither employees nor agents Blue KC and are solely responsible for diagnosis, treatment and medical advice. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, photocopying, or otherwise, without permission from Blue KC.