

Evolut Clinical Guideline 1766 for Lumbar Spine Surgery

Guideline or Policy Number: Evolent_CG_ 304 <u>1766</u>	<u>Applicable Codes</u>	
<i>"Evolent" refers to Evolent Health LLC and Evolent Specialty Services, Inc.</i> <i>© 2013 - 2024<u>2025</u> Evolent. All rights Reserved.</i>		
Original Date: June 2013	Last Revised Date: December 2023 <u>November 2024</u>	Implementation Date: July 2024 <u>2025</u>

TABLE OF CONTENTS

STATEMENT	2
GENERAL INFORMATION.....	2
PURPOSE	2
SCOPE	2
SPECIAL NOTE	2
INDICATIONS	3
LUMBAR DISCECTOMY/MICRODISCECTOMY	3
LUMBAR DECOMPRESSION	3
<i>Laminectomy, Laminotomy, Facetectomy, and Foraminotomy</i>	<i>3</i>
LUMBAR SPINE FUSION.....	4
<i>Single Level Fusion With or Without Decompression.....</i>	<i>4</i>
<i>Multi-Level Fusion With or Without Decompression</i>	<i>5</i>
REPEAT LUMBAR SPINE FUSION OPERATIONS.....	6
RELATIVE CONTRAINDICATIONS FOR SPINE SURGERY	6
NON-COVERED PROCEDURES.....	7
LEGISLATIVE LANGUAGE	7
WASHINGTON.....	7
20151120A – Lumbar Fusion for Degenerative Disc Disease.....	7
20180518A - Surgery for Lumbar Radiculopathy/Sciatica.....	8
CODING AND STANDARDS	8
CODING	8
CPT Codes.....	8
APPLICABLE LINES OF BUSINESS	9
BACKGROUND.....	9
DEFINITIONS.....	9
*CONSERVATIVE TREATMENT	9
**HOME EXERCISE PROGRAM (HEP).....	10
POLICY HISTORY	10
LEGAL AND COMPLIANCE	11
GUIDELINE APPROVAL	11
Committee.....	11
DISCLAIMER	11

STATEMENT

Operative treatment is indicated when the natural history of surgically treated lesions is better than the natural history for non-operatively treated lesions. All operative interventions must be based on a positive correlation with clinical findings, the natural history of the disease, the clinical course, and diagnostic tests or imaging results. All individuals being considered for surgical intervention should receive a comprehensive neuromusculoskeletal examination to identify pain generators that may either respond to non-surgical techniques or may be refractory to surgical intervention.

Aggressive surgical approaches to fusion may be an indication for denial of cases (when such techniques have not been demonstrated to be superior to less morbid techniques) or recommendation for alternative procedure. Because of variable outcomes with fusion surgery, individuals should be actively involved in the decision-making process and provided appropriate decision-support materials explaining potential risks/benefits and treatment alternatives when considering this intervention.

General Information

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

Purpose

This guideline outlines the key surgical treatments and indications for common lumbar spinal disorders and is a consensus document based upon the best available evidence. Spine surgery is a complex area of medicine, and this document breaks out the clinical indications by surgical type.

This guideline does not address spinal deformity surgeries or the clinical indications for spinal deformity surgery.

Scope

Spinal surgeries should be performed only by those with extensive and specialized surgical training (neurosurgery, orthopedic surgery). Choice of surgical approach is based on anatomy, pathology, and the surgeon's experience and preference.

Instrumentation, bone formation or grafting materials, including biologics, should be used at the surgeon's discretion; however, use should be limited to FDA approved indications regarding the specific devices or biologics.

Special Note

See Legislative Language for specific mandates for the State of Washington

INDICATIONS

Lumbar Discectomy/Microdiscectomy (1,2)

Surgical Indications

- When **ALL of the following** are present:
 - Primary radicular symptoms noted upon clinical exam that significantly hinders daily activities
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- Lack of meaningful improvement after a full course of treatment; **OR**
- Progression or worsening of symptoms during treatment; **OR**
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute “inability to complete” treatment.

- Imaging studies showing evidence of inter-vertebral disc herniation that correlate exactly with the individual’s symptoms/signs

Other Indications

Microdiscectomy may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios:

- Progressive nerve compression resulting in an acute neurologic deficit (motor) due to herniated disc. The neurological deficits should be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with conservative treatment and are not considered an indication for early surgery
- Cauda equina syndrome (~~loss of bowel or bladder control~~)

Lumbar Decompression (1,2,3,4)

Laminectomy, Laminotomy, Facetectomy, and Foraminotomy

Surgical Indications

- When **ALL of the following** are present:
 - Neurogenic claudication, and/or radicular leg pain that impairs daily activities
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- **Lack of meaningful improvement after a full course of treatment; OR**

- Progression or worsening of symptoms during treatment; OR
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute “inability to complete” treatment.

- Imaging studies demonstrating moderate to severe stenosis consistent with clinical signs/symptoms

Other Indications

Lumbar decompression may be used as the first line of treatment (*no conservative treatment required*) in any of the following clinical scenarios:

- Progressive nerve compression resulting in an acute neurologic (motor) deficit. The neurological deficits should be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with conservative treatment and are not considered an indication for early surgery
- Cauda equina syndrome ~~(loss of bowel or bladder control)~~
- Spinal stenosis due to tumor, infection, or trauma

Lumbar Spine Fusion (1,3,4,5,6,7,8)

Single Level Fusion With or Without Decompression

Surgical Indications

- When **ALL of the following** are present:
 - Lumbar back pain, neurogenic claudication, and/or radicular leg pain without sensory or motor deficit that impairs daily activities **for at least 6 months**
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- Lack of meaningful improvement after a full course of treatment; OR
- Progression or worsening of symptoms during treatment; OR
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute “inability to complete” treatment.

- Imaging studies corresponding to the clinical findings
- **At least ONE of the following** clinical conditions:
 - Spondylolisthesis (neural arch defect - spondylolytic spondylolisthesis, degenerative spondylolisthesis, and congenital unilateral neural arch hypoplasia)
 - Evidence of segmental instability - Excessive motion, as in degenerative spondylolisthesis, segmental instability, and surgically induced segmental

instability

- Revision surgery for failed previous operation(s) for pseudoarthrosis at the same level at least ~~6~~**9**-12 months from prior surgery ~~**~~ if significant functional gains are anticipated
- Revision surgery for failed previous operation(s) repeat disk herniations if significant functional gains are anticipated (Note: Many recurrent disc herniations can be treated with discectomy alone, so specific indications for the addition of fusion will be required)
- Fusion for the treatment of spinal tumor, cancer, or infection
- Chronic low back pain or degenerative disc disease (disc degeneration without significant neurological compression presenting with low back pain) must have failed at least 6 months of appropriate active non-operative treatment (**completion of a comprehensive cognitive-behavioral rehabilitation program is mandatory**) and must be evaluated on a case-by-case basis

NOTE: The results of several randomized trials suggest that in many degenerative cases un-instrumented posterolateral intertransverse fusion has similar results to larger instrumented (PLIF, TLIF, etc.) fusion techniques with fewer morbidities and less likelihood of revision surgery. Accordingly, specific findings suggesting more significant instability should be present when larger techniques are used (gaping of facets, gross motion on flexion/extension radiographs, wide disc spaces) ^(7,9)

Other Indications

Lumbar spinal fusion may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios ⁽¹⁾:

- Progressive nerve compression resulting in an acute neurologic deficit (motor) **AND**
 - One of the aforementioned clinical conditions, except chronic low back pain or degenerative disc disease. The neurological deficits must be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with conservative treatment and are not considered an indication for early surgery.
- Cauda equina syndrome ~~(loss of bowel or bladder control)~~ **AND**
 - One of the aforementioned clinical conditions, except chronic low back pain or degenerative disc disease

Multi-Level Fusion With or Without Decompression

Surgical Indications

- When **ALL of the following** are present:
 - Lumbar back pain, neurogenic claudication, and/or radicular leg pain without sensory or motor deficit that impairs daily activities for **at least 6 months**
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- **Lack of meaningful improvement after a full course of treatment; OR**

- Progression or worsening of symptoms during treatment; OR
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute “inability to complete” treatment.

- Imaging studies corresponding to the clinical findings
- **At least ONE of the following** clinical conditions:
 - Multiple level spondylolisthesis (Note: Fusions in cases with single level spondylolisthesis should be limited to the unstable level)
 - Fusion for the treatment of spinal tumor, trauma, cancer, or infection affecting multiple levels
 - Intra-operative segmental instability

Other Indications

Lumbar spinal fusion may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios ⁽¹⁾:

- Progressive nerve compression resulting in an acute neurologic deficit (motor) **AND**
 - One of the aforementioned clinical conditions except chronic low back pain or degenerative disc disease. The neurological deficits must be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with appropriate conservative treatment and are not considered an indication for early surgery
- Cauda equina syndrome ~~(loss of bowel or bladder control)~~ **AND**
 - One of the aforementioned clinical conditions, except chronic low back pain or degenerative disc disease

Repeat Lumbar Spine Fusion Operations

Repeat lumbar fusion operations will be reviewed on a case-by-case basis upon submission of medical records and imaging studies that demonstrate remediable pathology. The below must also be **documented and available for review of repeat** fusion requests:

- Rationale as to why surgery is preferred over other non-invasive or less invasive treatment procedures
- Signed documentation that the individual has participated in the decision-making process and understands the high rate of failure/complications

Relative Contraindications for Spine Surgery

NOTE: Cases may not be approved if the below contraindications exist:

- **Medical contraindications to surgery** (e.g., ~~severe~~ osteoporosis; infection of soft tissue adjacent to the spine and may be at risk for spreading to the spine; severe cardiopulmonary disease; anemia; malnutrition and systemic infection) ^(10,11,12)
- **Psychosocial risk factors.** It is imperative to rule out non-physiologic modifiers of pain presentation or non-operative conditions mimicking radiculopathy or instability (e.g., peripheral neuropathy, piriformis syndrome, myofascial pain, sympathetically

mediated pain syndromes, sacroiliac dysfunction, psychological conditions, etc.) prior to consideration of elective surgical intervention. ^(1,12) Individuals with clinically significant depression or other psychiatric disorders being considered for elective spine surgery will be reviewed on a case-by-case basis and the surgery may be denied for risk of failure.

- **Active Tobacco or Nicotine use prior to fusion surgery.** Individuals must be free from smoking and/or nicotine use for at least six weeks prior to surgery and during the entire period of fusion healing. ^(13,14)
- **Morbid Obesity.** Contraindication to surgery in cases where there is significant risk and concern for improper post-operative healing, post-operative complications related to morbid obesity, and/or an inability to participate in post-operative rehabilitation. ^(15,16) These cases will be reviewed on a case-by-case basis and may be denied given the risk of failure.

Non-Covered Procedures

- Percutaneous lumbar discectomy
- Radiofrequency disc decompression
- Percutaneous decompressions
- Laser discectomy
- Intradiscal electrothermal annuloplasty (IDEA) or more commonly called IDET (intradiscal electrothermal therapy)
- Nucleus pulposus replacement
- Pre-sacral fusion

LEGISLATIVE LANGUAGE

Washington

20151120A – Lumbar Fusion for Degenerative Disc Disease ⁽¹⁷⁾

Washington State Health Care Authority

Health Technology Clinical Committee

Findings and Decision

HTCC Coverage Determination:

Lumbar fusion for degenerative disc disease uncomplicated by comorbidities is **not a covered benefit**.

The population addressed in this decision includes individuals > 17 years of age with chronic (3 or more months) lumbar pain and uncomplicated degenerative disc disease; excluded conditions include radiculopathy, spondylolisthesis (> Grade 1) or severe spinal stenosis, as well as acute trauma or systemic disease affecting the lumbar spine (e.g., malignancy).

HTCC Reimbursement Determination:

Limitations of Coverage: N/A

Non-Covered Indicators: N/A

20180518A - Surgery for Lumbar Radiculopathy/Sciatica ⁽¹⁸⁾

Washington State Health Care Authority

Health Technology Clinical Committee

Findings and Decision

HTCC coverage determination:

Surgery for lumbar radiculopathy or sciatica is a **covered benefit with conditions**.

HTCC reimbursement determination:

Limitations of coverage:

Open discectomy or microdiscectomy with or without endoscopy (lumbar laminectomy, laminotomy, discectomy, foraminotomy) are covered with the following conditions:

- For adult patients with lumbar radiculopathy with subjective and objective neurologic findings that are corroborated with an advanced imaging test (i.e., Computed Tomography (CT) scan, Magnetic Resonance Imaging (MRI) or myelogram), AND
- There is a failure to improve with a minimum of six weeks of non-surgical care, unless progressive motor weakness is present

Non-covered indicators:

Minimally invasive procedures that do not include laminectomy, laminotomy, or foraminotomy including but not limited to energy ablation techniques, Automated Percutaneous Lumbar Discectomy (APLD), percutaneous laser, nucleoplasty, etc. are not covered.

CODING AND STANDARDS

Coding

CPT Codes

- **Lumbar Microdiscectomy:** 62380, 63030, +63035
- **Lumbar Decompression:** 63005, 63012, 63017, 63042, +63044, 63047, +63048, 63056, +63057
- **Lumbar Fusion - Single Level:** 22533, 22558, 22612, 22630, 22633, +63052, +63053
- **Lumbar Fusion - Multiple Levels:** +22534, +22585, +22614, +22632, +22634, +63052, +63053

Applicable Lines of Business

<input checked="" type="checkbox"/>	CHIP (Children's Health Insurance Program)
<input checked="" type="checkbox"/>	Commercial
<input checked="" type="checkbox"/>	Exchange/Marketplace
<input checked="" type="checkbox"/>	Medicaid
<input type="checkbox"/>	Medicare Advantage

BACKGROUND

Definitions

Lumbar Discectomy/Microdiscectomy is a surgical procedure to remove part of the damaged spinal disc. The damaged spinal disc herniates into the spinal canal and compresses the nerve roots. Nerve root compression leads to symptoms like low back pain, radicular pain, numbness and tingling, muscular weakness, and paresthesia. Typical disc herniation pain is exacerbated with any movement that causes the disc to increase pressure on the nerve roots.

Lumbar Decompression (Laminectomy, Laminotomy, Facetectomy, and Foraminotomy): Laminectomy is a common decompression surgery. The American Association of Neurological Surgeons defines laminectomy as a surgery to remove the back part of vertebra, lamina, to create more space for the spinal cord and nerves. The most common indication for laminectomy is spinal stenosis. Spondylolisthesis and herniated disk are also frequent indications for laminectomy. Decompression surgery is usually performed as part of lumbar fusion surgery.

Lumbar Fusion Surgery: Lumbar spinal fusion (arthrodesis) is a surgical procedure used to treat spinal conditions of the lumbar, e.g., degenerative disc disease, spinal stenosis, injuries/fractures of the spine, spinal instability, and spondylolisthesis. Spinal fusion is a "welding" process that permanently fuses or joins together two or more adjacent bones in the spine, immobilizing the vertebrae and restricting motion at a painful joint. It is usually performed after other surgical procedures of the spine, such as discectomy or laminectomy. The goal of fusion is to increase spinal stability, reduce irritation of the affected nerve roots, compression on the spinal cord, disability, and pain and/or numbness. Clinical criteria for single level fusion versus multiple level fusions are outlined under the indications section.

Isolated Low Back Pain: Pain isolated to the lumbar region of the spine and the surrounding paraspinal musculature. Also referred to 'mechanical low back pain' or 'discogenic pain.' No associated neurogenic claudication or radiculopathy.

*Conservative Treatment

Non-operative conservative treatment should include a multimodality approach consisting of at least one **(1)** active and one **(1)** inactive component targeting the affected spinal region.

- Active ~~components~~ **Modalities**
 - Physical therapy
 - Physician-supervised home exercise program (HEP)**
 - Chiropractic Care
- Inactive ~~components~~ **Modalities**
 - Medications (e.g., NSAIDs, steroids, analgesics)
 - Injections (e.g., epidural steroid injection, selective nerve root block)
 - Medical devices (e.g., TENS unit, bracing)

****Home Exercise Program (HEP)**

The following two elements are required to meet conservative therapy guidelines for HEP:

- Documentation of an exercise prescription/plan provided by a physician, physical therapist, or chiropractor; **AND**
- Follow-up documentation regarding completion of HEP after the required 6-week timeframe or inability to complete HEP due to a documented medical reason (i.e., increased pain or inability to physically perform exercises)

POLICY HISTORY

Date	Summary
<u>November 2024</u>	<ul style="list-style-type: none"> ● <u>This guideline replaces Evolent Clinical Guideline 304 for Lumbar Spine Surgery</u> ● <u>Updated guideline formatting to Evolent standard</u> ● <u>The duration for indicating lumbar spine fusion as revision surgery following a failed operation modified from 6-12 to 9-12 months post-surgery</u> ● <u>Removed the word 'severe' before osteoporosis as a Relative Contraindication</u> ● <u>Edited language in the Relative Contraindications section for consistency across guidelines</u> ● <u>Updated references</u>
December 2023	<ul style="list-style-type: none"> ● Added conservative tx language ● Added legislative language for WA state ● Removed endoscopic surgery as non-covered procedure
May 2023	<ul style="list-style-type: none"> ● Updated references ● Removed Claims Billing/Coding from background

LEGAL AND COMPLIANCE

Guideline Approval

Committee

Reviewed / Approved by Evolent Specialty Clinical Guideline Review Committee

Disclaimer

Evolent Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment, and medical advice. Evolent uses Clinical Guidelines in accordance with its contractual obligations to provide utilization management. Coverage for services varies for individual members according to the terms of their health care coverage or government program. Individual members' health care coverage may not utilize some Evolent Clinical Guidelines. A list of procedure codes, services or drugs may not be all inclusive and does not imply that a service or drug is a covered or non-covered service or drug. Evolent reserves the right to review and update this Clinical Guideline in its sole discretion. Notice of any changes shall be provided as required by applicable provider agreements and laws or regulations. Members should contact their Plan customer service representative for specific coverage information.

REFERENCES

1. North American Spine Society. Diagnosis and Treatment of Lumbar Disc Herniation with Radiculopathy. NASS. 2012;
<https://www.spine.org/Portals/0/Assets/Downloads/ResearchClinicalCare/Guidelines/LumbarDiscHerniation.pdf>.
2. Li Y, Fredrickson V, Resnick D. How should we grade lumbar disc herniation and nerve root compression? A systematic review. *Clin Orthop Relat Res*. 2015; 473: 1896-1902. 10.1007/s11999-014-3674-y.
3. Delitto A, Piva S, Moore C, Fritz J, Wisniewski S et al. Surgery Versus Nonsurgical Treatment for Lumbar Spinal Stenosis: A Comparative Effectiveness Randomized Trial with 2-Year Follow-up. *Annals of Internal Medicine*. 2015; 162: 465-473. 10.7326/M14-1420.
4. Weinstein J, Lurie J, Tosteson T, Hanscom B, Tosteson A et al. Surgical Versus Nonsurgical Treatment for Lumbar Degenerative Spondylolisthesis. *N Engl J Med*. 2007; 356: 2257-2270. 10.1056/NEJMoa070302.
5. Eck J, Sharan A, Ghogawala Z, Resnick D, Watters 3rd W et al. Guideline update for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 7: lumbar fusion for intractable low-back pain without stenosis or spondylolisthesis. *J Neurosurg Spine*. 2014; 21: 42-47. 10.3171/2014.4.Spine14270.
6. Gonzalez G, Porto G, Hines K, Franco D, Montenegro T et al. Clinical Outcomes with and without Adherence to Evidence-Based Medicine Guidelines for Lumbar Degenerative Spondylolisthesis Fusion Patients. *J Clin Med*. 2023; 12: 10.3390/jcm12031200.
7. Kang Y, Ho Y, Chu W, Chou W, Cheng S. Effects and Safety of Lumbar Fusion Techniques in Lumbar Spondylolisthesis: A Network Meta-Analysis of Randomized Controlled Trials. *Global Spine J*. 2022; 12: 493-502. 10.1177/2192568221997804.
8. North American Spine Society. Diagnosis and Treatment of Degenerative Lumbar Spondylolisthesis: 2nd Edition. NASS. 2014;
<https://www.spine.org/Portals/0/Assets/Downloads/ResearchClinicalCare/Guidelines/Spondylolisthesiss.pdf>.
9. Said E, Abdel-Wanis M, Ameen M, Sayed A, Mosallam K et al. Posterolateral Fusion Versus Posterior Lumbar Interbody Fusion: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Global Spine J*. 2022; 12: 990-1002. 10.1177/21925682211016426.
10. Puvanesarajah V, Shen F, Cancienne J, Novicoff W, Jain A et al. Risk factors for revision surgery following primary adult spinal deformity surgery in patients 65 years and older. *J Neurosurg Spine*. 2016; 25: 486-493. 10.3171/2016.2.Spine151345.
11. Varshneya K, Jokhai R, Fatemi P, Stienen M, Medress Z et al. Predictors of 2-year reoperation in Medicare patients undergoing primary thoracolumbar deformity surgery. *J Neurosurg Spine*. 2020; 1-5. 10.3171/2020.5.Spine191425.
12. Rajaei S, Kanim L, Bae H. National trends in revision spinal fusion in the USA: patient characteristics and complications. *Bone Joint J*. 2014; 96-b: 807-816. 10.1302/0301-620x.96b6.31149.
13. Jackson 2nd K, Devine J. The Effects of Smoking and Smoking Cessation on Spine Surgery: A Systematic Review of the Literature. *Global Spine J*. 2016; 6: 695-701. 10.1055/s-0036-1571285.
14. Nunna R, Ostrov P, Ansari D, Dettori J, Godolias P et al. The Risk of Nonunion in Smokers Revisited: A Systematic Review and Meta-Analysis. *Global Spine J*. 2022; 12: 526-539. 10.1177/21925682211046899.
15. Feeley A, McDonnell J, Feeley I, Butler J. Obesity: An Independent Risk Factor for Complications in Anterior Lumbar Interbody Fusion? A Systematic Review. *Global Spine J*. 2022; 12: 1894-1903. 10.1177/21925682211072849.

16. Cofano F, Perna G, Bongiovanni D, Roscigno V, Baldassarre B et al. Obesity and Spine Surgery: A Qualitative Review About Outcomes and Complications. Is It Time for New Perspectives on Future Researches?. *Global Spine J.* 2022; 12: 1214-1230. 10.1177/21925682211022313.
17. Washington State Health Care Authority. Lumbar Fusion for Degenerative Disc Disease [Adopted January 15, 2016]. Washington State Health Care Authority. 2007; Accessed: September 23, 2024. www.hca.wa.gov/assets/program/lumbar_fusion-rr_final_findings_decision_012016%5B1%5D.pdf.
18. Washington State Health Care Authority. Surgery for Lumbar Radiculopathy/Sciatica [Adopted July 13, 2018]. Washington State Health Care Authority. 2018; Accessed: September 23, 2024. www.hca.wa.gov/assets/program/surgery-lumbar-radiculopathy-sciatica-final-findings-decision-201800713.pdf.

Evolent Clinical Guideline 1766 for Lumbar Spine Surgery

Guideline Number: Evolent_CG_1766	<u>Applicable Codes</u>	
<i>"Evolent" refers to Evolent Health LLC and Evolent Specialty Services, Inc. © 2013 - 2025 Evolent. All rights Reserved.</i>		
Original Date: June 2013	Last Revised Date: November 2024	Implementation Date: July 2025

TABLE OF CONTENTS

STATEMENT	2
GENERAL INFORMATION.....	2
PURPOSE	2
SCOPE	2
SPECIAL NOTE	2
INDICATIONS.....	3
LUMBAR DISCECTOMY/MICRODISCECTOMY	3
LUMBAR DECOMPRESSION	3
<i>Laminectomy, Laminotomy, Facetectomy, and Foraminotomy</i>	<i>3</i>
LUMBAR SPINE FUSION.....	4
<i>Single Level Fusion With or Without Decompression.....</i>	<i>4</i>
<i>Multi-Level Fusion With or Without Decompression</i>	<i>5</i>
REPEAT LUMBAR SPINE FUSION OPERATIONS.....	6
RELATIVE CONTRAINDICATIONS FOR SPINE SURGERY	6
NON-COVERED PROCEDURES.....	7
LEGISLATIVE LANGUAGE	7
WASHINGTON.....	7
<i>20151120A – Lumbar Fusion for Degenerative Disc Disease.....</i>	<i>7</i>
<i>20180518A - Surgery for Lumbar Radiculopathy/Sciatica.....</i>	<i>8</i>
CODING AND STANDARDS	8
CODING	8
<i>CPT Codes.....</i>	<i>8</i>
APPLICABLE LINES OF BUSINESS	9
BACKGROUND.....	9
DEFINITIONS.....	9
*CONSERVATIVE TREATMENT	9
**HOME EXERCISE PROGRAM (HEP).....	10
POLICY HISTORY	10
LEGAL AND COMPLIANCE	11
GUIDELINE APPROVAL	11
<i>Committee.....</i>	<i>11</i>
DISCLAIMER	11
REFERENCES.....	12

STATEMENT

Operative treatment is indicated when the natural history of surgically treated lesions is better than the natural history for non-operatively treated lesions. All operative interventions must be based on a positive correlation with clinical findings, the natural history of the disease, the clinical course, and diagnostic tests or imaging results. All individuals being considered for surgical intervention should receive a comprehensive neuromusculoskeletal examination to identify pain generators that may either respond to non-surgical techniques or may be refractory to surgical intervention.

Aggressive surgical approaches to fusion may be an indication for denial of cases (when such techniques have not been demonstrated to be superior to less morbid techniques) or recommendation for alternative procedure. Because of variable outcomes with fusion surgery, individuals should be actively involved in the decision-making process and provided appropriate decision-support materials explaining potential risks/benefits and treatment alternatives when considering this intervention.

General Information

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

Purpose

This guideline outlines the key surgical treatments and indications for common lumbar spinal disorders and is a consensus document based upon the best available evidence. Spine surgery is a complex area of medicine, and this document breaks out the clinical indications by surgical type.

This guideline does not address spinal deformity surgeries or the clinical indications for spinal deformity surgery.

Scope

Spinal surgeries should be performed only by those with extensive and specialized surgical training (neurosurgery, orthopedic surgery). Choice of surgical approach is based on anatomy, pathology, and the surgeon's experience and preference.

Instrumentation, bone formation or grafting materials, including biologics, should be used at the surgeon's discretion; however, use should be limited to FDA approved indications regarding the specific devices or biologics.

Special Note

See Legislative Language for specific mandates for the State of Washington

INDICATIONS

Lumbar Discectomy/Microdiscectomy ^(1,2)

Surgical Indications

- When **ALL of the following** are present:
 - Primary radicular symptoms noted upon clinical exam that significantly hinders daily activities
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- Lack of meaningful improvement after a full course of treatment; **OR**
- Progression or worsening of symptoms during treatment; **OR**
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute "inability to complete" treatment.

- Imaging studies showing evidence of inter-vertebral disc herniation that correlate exactly with the individual's symptoms/signs

Other Indications

Microdiscectomy may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios:

- Progressive nerve compression resulting in an acute neurologic deficit (motor) due to herniated disc. The neurological deficits should be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with conservative treatment and are not considered an indication for early surgery
- Cauda equina syndrome

Lumbar Decompression ^(1,2,3,4)

Laminectomy, Laminotomy, Facetectomy, and Foraminotomy

Surgical Indications

- When **ALL of the following** are present:
 - Neurogenic claudication, and/or radicular leg pain that impairs daily activities
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- Lack of meaningful improvement after a full course of treatment; **OR**
- Progression or worsening of symptoms during treatment; **OR**
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute “inability to complete” treatment.

- Imaging studies demonstrating moderate to severe stenosis consistent with clinical signs/symptoms

Other Indications

Lumbar decompression may be used as the first line of treatment (*no conservative treatment required*) in any of the following clinical scenarios:

- Progressive nerve compression resulting in an acute neurologic (motor) deficit. The neurological deficits should be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with conservative treatment and are not considered an indication for early surgery
- Cauda equina syndrome
- Spinal stenosis due to tumor, infection, or trauma

Lumbar Spine Fusion (1,3,4,5,6,7,8)

Single Level Fusion With or Without Decompression

Surgical Indications

- When **ALL of the following** are present:
 - Lumbar back pain, neurogenic claudication, and/or radicular leg pain without sensory or motor deficit that impairs daily activities **for at least 6 months**
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- Lack of meaningful improvement after a full course of treatment; **OR**
- Progression or worsening of symptoms during treatment; **OR**
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute “inability to complete” treatment.

- Imaging studies corresponding to the clinical findings
- **At least ONE of the following** clinical conditions:
 - Spondylolisthesis (neural arch defect - spondylolytic spondylolisthesis, degenerative spondylolisthesis, and congenital unilateral neural arch hypoplasia)
 - Evidence of segmental instability - Excessive motion, as in degenerative spondylolisthesis, segmental instability, and surgically induced segmental instability
 - Revision surgery for failed previous operation(s) for pseudoarthrosis at the same level at least 9-12 months from prior surgery if significant functional gains are anticipated

- Revision surgery for failed previous operation(s) repeat disk herniations if significant functional gains are anticipated (Note: Many recurrent disc herniations can be treated with discectomy alone, so specific indications for the addition of fusion will be required)
- Fusion for the treatment of spinal tumor, cancer, or infection
- Chronic low back pain or degenerative disc disease (disc degeneration without significant neurological compression presenting with low back pain) must have failed at least 6 months of appropriate active non-operative treatment (**completion of a comprehensive cognitive-behavioral rehabilitation program is mandatory**) and must be evaluated on a case-by-case basis

NOTE: The results of several randomized trials suggest that in many degenerative cases un-instrumented posterolateral intertransverse fusion has similar results to larger instrumented (PLIF, TLIF, etc.) fusion techniques with fewer morbidities and less likelihood of revision surgery. Accordingly, specific findings suggesting more significant instability should be present when larger techniques are used (gaping of facets, gross motion on flexion/extension radiographs, wide disc spaces) ^(7,9)

Other Indications

Lumbar spinal fusion may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios ⁽¹⁾:

- Progressive nerve compression resulting in an acute neurologic deficit (motor) **AND**
 - One of the aforementioned clinical conditions, except chronic low back pain or degenerative disc disease. The neurological deficits must be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with conservative treatment and are not considered an indication for early surgery.
- Cauda equina syndrome **AND**
 - One of the aforementioned clinical conditions, except chronic low back pain or degenerative disc disease

Multi-Level Fusion With or Without Decompression

Surgical Indications

- When **ALL of the following** are present:
 - Lumbar back pain, neurogenic claudication, and/or radicular leg pain without sensory or motor deficit that impairs daily activities for **at least 6 months**
 - Failure of **conservative treatment*** for a minimum of six (6) weeks within the last six (6) months;

NOTE - Failure of conservative treatment is defined as one of the following:

- Lack of meaningful improvement after a full course of treatment; **OR**
- Progression or worsening of symptoms during treatment; **OR**
- Documentation of a medical reason the member is unable to participate in treatment

Closure of medical or therapy offices, patient inconvenience, or noncompliance without explanation does not constitute “inability to complete” treatment.

- Imaging studies corresponding to the clinical findings
- **At least ONE of the following** clinical conditions:
 - Multiple level spondylolisthesis (Note: Fusions in cases with single level spondylolisthesis should be limited to the unstable level)
 - Fusion for the treatment of spinal tumor, trauma, cancer, or infection affecting multiple levels
 - Intra-operative segmental instability

Other Indications

Lumbar spinal fusion may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios ⁽¹⁾:

- Progressive nerve compression resulting in an acute neurologic deficit (motor) **AND**
 - One of the aforementioned clinical conditions except chronic low back pain or degenerative disc disease. The neurological deficits must be significant: 0-2/5 on the motor function scale for L5 or S1 roots **OR** 0-3/5 for L3 or L4 roots. Lesser degrees of motor dysfunction may resolve with appropriate conservative treatment and are not considered an indication for early surgery
- Cauda equina syndrome **AND**
 - One of the aforementioned clinical conditions, except chronic low back pain or degenerative disc disease

Repeat Lumbar Spine Fusion Operations

Repeat lumbar fusion operations will be reviewed on a case-by-case basis upon submission of medical records and imaging studies that demonstrate remediable pathology. The below must also be **documented and available for review of repeat** fusion requests:

- Rationale as to why surgery is preferred over other non-invasive or less invasive treatment procedures
- Signed documentation that the individual has participated in the decision-making process and understands the high rate of failure/complications

Relative Contraindications for Spine Surgery

NOTE: Cases may not be approved if the below contraindications exist:

- **Medical contraindications to surgery** (e.g., osteoporosis; infection of soft tissue adjacent to the spine and may be at risk for spreading to the spine; severe cardiopulmonary disease; anemia; malnutrition and systemic infection) ^(10,11,12)
- **Psychosocial risk factors.** It is imperative to rule out non-physiologic modifiers of pain presentation or non-operative conditions mimicking radiculopathy or instability (e.g., peripheral neuropathy, piriformis syndrome, myofascial pain, sympathetically mediated pain syndromes, sacroiliac dysfunction, psychological conditions, etc.) prior to consideration of elective surgical intervention. ^(1,12) Individuals with clinically significant depression or other psychiatric disorders being considered for elective spine surgery will be reviewed on a case-by-case basis and the surgery may be

denied for risk of failure.

- **Active Tobacco or Nicotine use prior to fusion surgery.** Individuals must be free from smoking and/or nicotine use for at least six weeks prior to surgery and during the entire period of fusion healing. ^(13,14)
- **Morbid Obesity.** Contraindication to surgery in cases where there is significant risk and concern for improper post-operative healing, post-operative complications related to morbid obesity, and/or an inability to participate in post-operative rehabilitation. ^(15,16) These cases will be reviewed on a case-by-case basis and may be denied given the risk of failure.

Non-Covered Procedures

- Percutaneous lumbar discectomy
- Radiofrequency disc decompression
- Percutaneous decompressions
- Laser discectomy
- Intradiscal electrothermal annuloplasty (IDEA) or more commonly called IDET (intradiscal electrothermal therapy)
- Nucleus pulposus replacement
- Pre-sacral fusion

LEGISLATIVE LANGUAGE

Washington

20151120A – Lumbar Fusion for Degenerative Disc Disease ⁽¹⁷⁾

Washington State Health Care Authority

Health Technology Clinical Committee

Findings and Decision

HTCC Coverage Determination:

Lumbar fusion for degenerative disc disease uncomplicated by comorbidities is **not a covered benefit**.

The population addressed in this decision includes individuals > 17 years of age with chronic (3 or more months) lumbar pain and uncomplicated degenerative disc disease; excluded conditions include radiculopathy, spondylolisthesis (> Grade 1) or severe spinal stenosis, as well as acute trauma or systemic disease affecting the lumbar spine (e.g., malignancy).

HTCC Reimbursement Determination:

Limitations of Coverage: N/A

Non-Covered Indicators: N/A

20180518A - Surgery for Lumbar Radiculopathy/Sciatica ⁽¹⁸⁾

Washington State Health Care Authority

Health Technology Clinical Committee

Findings and Decision

HTCC coverage determination:

Surgery for lumbar radiculopathy or sciatica is a **covered benefit with conditions**.

HTCC reimbursement determination:

Limitations of coverage:

Open discectomy or microdiscectomy with or without endoscopy (lumbar laminectomy, laminotomy, discectomy, foraminotomy) are covered with the following conditions:

- For adult patients with lumbar radiculopathy with subjective and objective neurologic findings that are corroborated with an advanced imaging test (i.e., Computed Tomography (CT) scan, Magnetic Resonance Imaging (MRI) or myelogram), AND
- There is a failure to improve with a minimum of six weeks of non-surgical care, unless progressive motor weakness is present

Non-covered indicators:

Minimally invasive procedures that do not include laminectomy, laminotomy, or foraminotomy including but not limited to energy ablation techniques, Automated Percutaneous Lumbar Discectomy (APLD), percutaneous laser, nucleoplasty, etc. are not covered.

CODING AND STANDARDS

Coding

CPT Codes

- **Lumbar Microdiscectomy:** 62380, 63030, +63035
- **Lumbar Decompression:** 63005, 63012, 63017, 63042, +63044, 63047, +63048, 63056, +63057
- **Lumbar Fusion - Single Level:** 22533, 22558, 22612, 22630, 22633, +63052, +63053
- **Lumbar Fusion - Multiple Levels:** +22534, +22585, +22614, +22632, +22634, +63052, +63053

Applicable Lines of Business

<input checked="" type="checkbox"/>	CHIP (Children's Health Insurance Program)
<input checked="" type="checkbox"/>	Commercial
<input checked="" type="checkbox"/>	Exchange/Marketplace
<input checked="" type="checkbox"/>	Medicaid
<input type="checkbox"/>	Medicare Advantage

BACKGROUND

Definitions

Lumbar Discectomy/Microdiscectomy is a surgical procedure to remove part of the damaged spinal disc. The damaged spinal disc herniates into the spinal canal and compresses the nerve roots. Nerve root compression leads to symptoms like low back pain, radicular pain, numbness and tingling, muscular weakness, and paresthesia. Typical disc herniation pain is exacerbated with any movement that causes the disc to increase pressure on the nerve roots.

Lumbar Decompression (Laminectomy, Laminotomy, Facetectomy, and Foraminotomy): Laminectomy is a common decompression surgery. The American Association of Neurological Surgeons defines laminectomy as a surgery to remove the back part of vertebra, lamina, to create more space for the spinal cord and nerves. The most common indication for laminectomy is spinal stenosis. Spondylolisthesis and herniated disk are also frequent indications for laminectomy. Decompression surgery is usually performed as part of lumbar fusion surgery.

Lumbar Fusion Surgery: Lumbar spinal fusion (arthrodesis) is a surgical procedure used to treat spinal conditions of the lumbar, e.g., degenerative disc disease, spinal stenosis, injuries/fractures of the spine, spinal instability, and spondylolisthesis. Spinal fusion is a “welding” process that permanently fuses or joins together two or more adjacent bones in the spine, immobilizing the vertebrae and restricting motion at a painful joint. It is usually performed after other surgical procedures of the spine, such as discectomy or laminectomy. The goal of fusion is to increase spinal stability, reduce irritation of the affected nerve roots, compression on the spinal cord, disability, and pain and/or numbness. Clinical criteria for single level fusion versus multiple level fusions are outlined under the indications section.

Isolated Low Back Pain: Pain isolated to the lumbar region of the spine and the surrounding paraspinal musculature. Also referred to ‘mechanical low back pain’ or ‘discogenic pain.’ No associated neurogenic claudication or radiculopathy.

*Conservative Treatment

Non-operative conservative treatment should include a multimodality approach consisting of at least one (1) active and one (1) inactive component targeting the affected spinal region.

- Active Modalities

- Physical therapy
- Physician-supervised home exercise program (HEP)**
- Chiropractic Care
- Inactive Modalities
 - Medications (e.g., NSAIDs, steroids, analgesics)
 - Injections (e.g., epidural steroid injection, selective nerve root block)
 - Medical devices (e.g., TENS unit, bracing)

**Home Exercise Program (HEP)

The following two elements are required to meet conservative therapy guidelines for HEP:

- Documentation of an exercise prescription/plan provided by a physician, physical therapist, or chiropractor; **AND**
- Follow-up documentation regarding completion of HEP after the required 6-week timeframe or inability to complete HEP due to a documented medical reason (i.e., increased pain or inability to physically perform exercises)

POLICY HISTORY

Date	Summary
November 2024	<ul style="list-style-type: none"> ● This guideline replaces Evolent Clinical Guideline 304 for Lumbar Spine Surgery ● Updated guideline formatting to Evolent standard ● The duration for indicating lumbar spine fusion as revision surgery following a failed operation modified from 6-12 to 9-12 months post-surgery ● Removed the word 'severe' before osteoporosis as a Relative Contraindication ● Edited language in the Relative Contraindications section for consistency across guidelines ● Updated references
December 2023	<ul style="list-style-type: none"> ● Added conservative tx language ● Added legislative language for WA state ● Removed endoscopic surgery as non-covered procedure
May 2023	<ul style="list-style-type: none"> ● Updated references ● Removed Claims Billing/Coding from background

LEGAL AND COMPLIANCE

Guideline Approval

Committee

Reviewed / Approved by Evolent Specialty Clinical Guideline Review Committee

Disclaimer

Evolent Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment, and medical advice. Evolent uses Clinical Guidelines in accordance with its contractual obligations to provide utilization management. Coverage for services varies for individual members according to the terms of their health care coverage or government program. Individual members' health care coverage may not utilize some Evolent Clinical Guidelines. A list of procedure codes, services or drugs may not be all inclusive and does not imply that a service or drug is a covered or non-covered service or drug. Evolent reserves the right to review and update this Clinical Guideline in its sole discretion. Notice of any changes shall be provided as required by applicable provider agreements and laws or regulations. Members should contact their Plan customer service representative for specific coverage information.

REFERENCES

1. North American Spine Society. Diagnosis and Treatment of Lumbar Disc Herniation with Radiculopathy. NASS. 2012; <https://www.spine.org/Portals/0/Assets/Downloads/ResearchClinicalCare/Guidelines/LumbarDiscHerniation.pdf>.
2. Li Y, Fredrickson V, Resnick D. How should we grade lumbar disc herniation and nerve root compression? A systematic review. *Clin Orthop Relat Res*. 2015; 473: 1896-1902. 10.1007/s11999-014-3674-y.
3. Delitto A, Piva S, Moore C, Fritz J, Wisniewski S et al. Surgery Versus Nonsurgical Treatment for Lumbar Spinal Stenosis: A Comparative Effectiveness Randomized Trial with 2-Year Follow-up. *Annals of Internal Medicine*. 2015; 162: 465-473. 10.7326/M14-1420.
4. Weinstein J, Lurie J, Tosteson T, Hanscom B, Tosteson A et al. Surgical Versus Nonsurgical Treatment for Lumbar Degenerative Spondylolisthesis. *N Engl J Med*. 2007; 356: 2257-2270. 10.1056/NEJMoa070302.
5. Eck J, Sharan A, Ghogawala Z, Resnick D, Watters 3rd W et al. Guideline update for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 7: lumbar fusion for intractable low-back pain without stenosis or spondylolisthesis. *J Neurosurg Spine*. 2014; 21: 42-47. 10.3171/2014.4.Spine14270.
6. Gonzalez G, Porto G, Hines K, Franco D, Montenegro T et al. Clinical Outcomes with and without Adherence to Evidence-Based Medicine Guidelines for Lumbar Degenerative Spondylolisthesis Fusion Patients. *J Clin Med*. 2023; 12: 10.3390/jcm12031200.
7. Kang Y, Ho Y, Chu W, Chou W, Cheng S. Effects and Safety of Lumbar Fusion Techniques in Lumbar Spondylolisthesis: A Network Meta-Analysis of Randomized Controlled Trials. *Global Spine J*. 2022; 12: 493-502. 10.1177/2192568221997804.
8. North American Spine Society. Diagnosis and Treatment of Degenerative Lumbar Spondylolisthesis: 2nd Edition. NASS. 2014; <https://www.spine.org/Portals/0/Assets/Downloads/ResearchClinicalCare/Guidelines/Spondylolisthesiss.pdf>.
9. Said E, Abdel-Wanis M, Ameen M, Sayed A, Mosallam K et al. Posterolateral Fusion Versus Posterior Lumbar Interbody Fusion: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Global Spine J*. 2022; 12: 990-1002. 10.1177/21925682211016426.
10. Puvanesarajah V, Shen F, Cancienne J, Novicoff W, Jain A et al. Risk factors for revision surgery following primary adult spinal deformity surgery in patients 65 years and older. *J Neurosurg Spine*. 2016; 25: 486-493. 10.3171/2016.2.Spine151345.
11. Varshneya K, Jokhai R, Fatemi P, Stienen M, Medress Z et al. Predictors of 2-year reoperation in Medicare patients undergoing primary thoracolumbar deformity surgery. *J Neurosurg Spine*. 2020; 1-5. 10.3171/2020.5.Spine191425.
12. Rajaei S, Kanim L, Bae H. National trends in revision spinal fusion in the USA: patient characteristics and complications. *Bone Joint J*. 2014; 96-b: 807-816. 10.1302/0301-620x.96b6.31149.
13. Jackson 2nd K, Devine J. The Effects of Smoking and Smoking Cessation on Spine Surgery: A Systematic Review of the Literature. *Global Spine J*. 2016; 6: 695-701. 10.1055/s-0036-1571285.
14. Nunna R, Ostrov P, Ansari D, Dettori J, Godolias P et al. The Risk of Nonunion in Smokers Revisited: A Systematic Review and Meta-Analysis. *Global Spine J*. 2022; 12: 526-539. 10.1177/21925682211046899.
15. Feeley A, McDonnell J, Feeley I, Butler J. Obesity: An Independent Risk Factor for Complications in Anterior Lumbar Interbody Fusion? A Systematic Review. *Global Spine J*. 2022; 12: 1894-1903. 10.1177/21925682211072849.

16. Cofano F, Perna G, Bongiovanni D, Roscigno V, Baldassarre B et al. Obesity and Spine Surgery: A Qualitative Review About Outcomes and Complications. Is It Time for New Perspectives on Future Researches?. *Global Spine J.* 2022; 12: 1214-1230. 10.1177/21925682211022313.
17. Washington State Health Care Authority. Lumbar Fusion for Degenerative Disc Disease [Adopted January 15, 2016]. Washington State Health Care Authority. 2007; Accessed: September 23, 2024. www.hca.wa.gov/assets/program/lumbar_fusion-rr_final_findings_decision_012016%5B1%5D.pdf.
18. Washington State Health Care Authority. Surgery for Lumbar Radiculopathy/Sciatica [Adopted July 13, 2018]. Washington State Health Care Authority. 2018; Accessed: September 23, 2024. www.hca.wa.gov/assets/program/surgery-lumbar-radiculopathy-sciatica-final-findings-decision-201800713.pdf.