



2024 Evolent Clinical Guidelines for Medical Necessity Review

MUSCULOSKELETAL SURGERY GUIDELINES

Effective January 1, 2024 – December 31, 2024

Guidelines for Clinical Review Determination

Preamble

Evolent is committed to the philosophy of supporting safe and effective treatment for patients. The medical necessity criteria that follow are guidelines for the provision of diagnostic imaging. These criteria are designed to guide both providers and reviewers to the most appropriate diagnostic tests based on a patient's unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice will be used when applying the guidelines. Determinations are made based on both the guideline and clinical information provided at the time of the request. It is expected that medical necessity decisions may change as new evidence-based information is provided or based on unique aspects of the patient's condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient.

Guideline Development Process

These medical necessity criteria were developed by Evolent for the purpose of making clinical review determinations for requests for therapies and diagnostic procedures. The developers of the criteria sets included representatives from the disciplines of radiology, internal medicine, nursing, cardiology, and other specialty groups. Evolent's guidelines are reviewed yearly and modified when necessary following a literature search of pertinent and established clinical guidelines and accepted diagnostic imaging practices.

All inquiries should be directed to:

Evolent Specialty Services, Inc.

c/o Privacy

1812 N. Moore St, Suite 1705, Arlington, VA 22209

Fax 800-830-1762 / Privacy@Evolent.com

TABLE OF CONTENTS

MUSCULOSKELETAL SURGERY (SPINE) GUIDELINES

CERVICAL SPINE SURGERY

LUMBAR SPINE SURGERY

MUSCULOSKELETAL SURGERY (HIP, KNEE, SHOULDER (HKS)) GUIDELINES

HIP ARTHROPLASTY

HIP ARTHROSCOPY

KNEE ARTHROPLASTY

KNEE ARTHROSCOPY

SHOULDER ARTHROPLASTY

SHOULDER ARTHROSCOPY

EXPANDED SPINE SURGERY PROCEDURES GUIDELINES

DEFORMITY SURGERY

THORACIC SPINE SURGERY

SPINE SURGERY, OTHER

LUMBAR ARTIFICIAL DISC REPLACEMENT

PERCUTANEOUS SACROILIAC JOINT FUSION

*Evolent	
Clinical guidelines: CERVICAL SPINE SURGERY	Original Date: July 2008
CPT Codes**: <ul style="list-style-type: none"> - Anterior Cervical Discectomy with Fusion (ACDF) <ul style="list-style-type: none"> - Single Level: 22548, 22551, 22554 - Anterior Cervical Discectomy with Fusion (ACDF) <ul style="list-style-type: none"> - Multiple Levels: +22552, +22585 - Cervical Posterior Decompression with Fusion - Single Level: 22590, 22595, 22600 - Cervical Posterior Decompression with Fusion - Multiple Levels: 22595, +22614 - Cervical Artificial Disc Replacement - Single Level: 22856, 22861, 22864 - Cervical Artificial Disc Replacement - Two Levels: +22858, +0098T, +0095T - Cervical Posterior Decompression (without fusion): 63001, 63015, 63020, +63035, 63040, +63043, 63045, +63048, 63050, 63051 - Cervical Anterior Decompression (without fusion): 63075, +63076 <p><i>**See Utilization Review Matrix for allowable billed groupings and additional covered codes</i></p>	Last Revised Date: December 2023
Guideline Number: Evolent_CG_307	Implementation Date: July 2024

TABLE OF CONTENTS

GENERAL INFORMATION	3
STATEMENT	3
PURPOSE.....	3
SCOPE	3
INDICATIONS	3
ANTERIOR CERVICAL DECOMPRESSION WITH FUSION (ACDF) - SINGLE LEVEL.....	3
ANTERIOR CERVICAL DECOMPRESSION WITH FUSION (ACDF) – MULTIPLE LEVELS	5
CERVICAL POSTERIOR DECOMPRESSION WITH FUSION - SINGLE LEVEL	6
CERVICAL POSTERIOR DECOMPRESSION WITH FUSION – MULTIPLE LEVELS	7
CERVICAL FUSION FOR TREATMENT OF AXIAL NECK PAIN.....	8
<i>Fusion in individuals with non-radicular cervical pain.....</i>	<i>8</i>
<i>Cervical Posterior Decompression.....</i>	<i>9</i>
CERVICAL ARTIFICIAL DISC REPLACEMENT (SINGLE OR TWO LEVEL) [2, 14]	9
CERVICAL FUSION WITHOUT DECOMPRESSION	10
<i>Cervical Anterior Decompression (without fusion) [15, 2]</i>	<i>10</i>
RISK FACTORS AND CONSIDERATIONS [16, 17, 18]	10
NOTE	11
LEGISLATIVE LANGUAGE	11
WASHINGTON.....	11
20170120B – Artificial disc replacement – Re-review [19].....	11
20130322B – Cervical Spinal Fusion for Degenerative Disc Disease [20].....	12
BACKGROUND	12
*CONSERVATIVE TREATMENT.....	12
**HOME EXERCISE PROGRAM (HEP).....	13
REFERENCES.....	15

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.

STATEMENT

Operative treatment is indicated only 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.

Purpose

This guideline outlines the key surgical treatments and indications for common cervical spinal disorders and is 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 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.

See [LEGISLATIVE REQUIREMENTS](#) for specific mandates in the State of Washington

INDICATIONS

Anterior Cervical Discectomy With Fusion (ACDF) - Single Level

When one of the two following criteria are met [1, 2, 3, 4, 5, 6, 7, 8]:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with **spinal cord compression** - immediate surgical evaluation is indicated. Symptoms may include:
 - Upper extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Hoffmann sign
 - Positive Babinski sign and/or clonus;
- OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with evidence of spinal cord or nerve root compression on magnetic resonance imaging (MRI) or computed tomography (CT) imaging - immediate surgical evaluation is indicated (Tetreault, 2013)

OR

When ALL of the following criteria are met [2, 9]

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Failure of [conservative treatment*](#) for a minimum of six (6) weeks within the last six (6) months
- Imaging studies confirm the presence of spinal cord or spinal nerve root compression (disc herniation or foraminal stenosis) at the level **corresponding with the clinical findings**. Imaging studies may include:
 - MRI (preferred study for assessing cervical spine soft tissue); **OR**
 - CT with or without myelography— indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI).

As first-line treatment without conservative care measures in the following clinical cases [3, 6, 8, 10]

- As outlined above for myelopathy or progressive neurological deficit scenarios
- Significant spinal cord or nerve root compression due to tumor, infection, or trauma
- Fracture or instability on radiographic films measuring:
 - Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5mm anterior subluxation in association with radicular/cord dysfunction; **OR**
 - Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not recommended [9]

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis

- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria*

Anterior Cervical Discectomy With Fusion (ACDF) – Multiple Levels

When one of the two following criteria are met [1, 2, 3, 4, 5, 6, 7, 8]:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression** – immediate surgical evaluation is indicated. Symptoms may include:
 - Upper extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Hoffmann sign
 - Positive Babinski sign and/or clonus;
- OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images – immediate surgical evaluation is indicated

OR

When ALL of the following criteria are met [2, 9] :

- Cervical radiculopathy or myelopathy due to ruptured disc, spondylosis, spinal instability, or deformity
 - Failure of [conservative treatment*](#) for a minimum of six (6) weeks within the last six (6) months
 - Imaging studies confirm the presence of spinal cord or spinal nerve root compression (disc herniation or foraminal stenosis) at multiple levels corresponding with the clinical findings. Imaging studies may include any of the following²:
 - MRI (preferred study for assessing cervical spine soft tissue)
- OR**
- CT with or without myelography - indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI)

As first-line treatment without conservative care measures in the following clinical cases [3, 6, 8, 10]

- As outlined above for myelopathy or progressive neurological deficit scenarios
- Significant spinal cord or nerve root compression due to tumor, infection, or trauma
- Fracture or instability on radiographic films measuring:

- Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5mm anterior subluxation in association with radicular/cord dysfunction; **OR**
- Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not recommended [9]

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis.
- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria.*

Cervical Posterior Decompression With Fusion - Single Level

When one of the two following criteria are met [1, 2, 3, 4, 5, 6, 7, 8, 11]:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression** - immediate surgical evaluation is indicated. Symptoms may include:
 - Upper extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Hoffmann sign
 - Positive Babinski sign and/or clonus
- OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images - immediate surgical evaluation is indicated

OR

When ALL of the following criteria are met [2, 9]:

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
 - Failure of [conservative treatment*](#) for a minimum of six (6) weeks within the last six (6) months
 - Imaging studies confirm the presence of spinal cord or spinal nerve root compression (disc herniation or foraminal stenosis) at single level **corresponding with the clinical findings**. Imaging studies may include:
 - MRI (preferred study for assessing cervical spine soft tissue)
- OR**
- CT with or without myelography – indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI)

As first-line treatment without conservative care measures in the following clinical cases [3, 6, 8, 10, 11]

- As outlined above for myelopathy or progressive neurological deficit scenarios
- Significant spinal cord or nerve root compression due to tumor, infection, or trauma.
- Fracture or instability on radiographic films measuring:
 - Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5 mm anterior subluxation in association with radicular/cord dysfunction; **OR**
 - Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not recommended [9]:

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis.
- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria.*

Cervical Posterior Decompression With Fusion – Multiple Levels

When one of the two following criteria are met [1, 2, 3, 4, 5, 6, 7, 8, 11]:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression** – immediate surgical evaluation is indicated. Symptoms may include:
 - Upper extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Hoffmann sign
 - Positive Babinski sign and/or clonus**OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images – immediate surgical evaluation is indicated

OR

When ALL of the following criteria are met [9, 2]

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Failure of [conservative treatment*](#) for a minimum of six (6) weeks within the last six (6) months

AND

- Imaging studies indicate significant spinal cord or spinal nerve root compression at multiple levels **corresponding with the clinical findings**. Imaging studies may include:
 - MRI (preferred study for assessing cervical spine soft tissue); **OR**

- CT with or without myelography - indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI)

As first-line treatment without conservative care measures in the following clinical cases [3, 6, 8, 10, 11]

- As outlined above for myelopathy or progressive neurological deficit scenarios
- Significant spinal cord or nerve root compression due to tumor, infection, or trauma
- Fracture or instability on radiographic films measuring:
 - Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5mm anterior subluxation in association with radicular/cord dysfunction; **OR**
 - Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not recommended [9]

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis.
- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See: Cervical Fusion for Treatment of Axial Neck Pain Criteria.*

Cervical Fusion For Treatment Of Axial Neck Pain

Fusion in individuals with non-radicular cervical pain

ALL of the following criteria must be met [12]

- Improvement of the symptoms has failed or plateaued, and the residual symptoms of pain and functional disability are unacceptable at the **end of 6 to 12 consecutive months of appropriate, active treatment**, or at the end of longer duration of non-operative programs for those debilitated with complex problems

[NOTE: Mere passage of time with poorly guided treatment is not considered an active treatment program]

- All pain generators are adequately defined and treated
- All physical medicine and manual therapy interventions are completed
- X-ray, MRI, or CT demonstrating disc pathology or spinal instability
- Spine pathology limited to one or two levels unless other complicating factors are involved
- Psychosocial evaluation for confounding issues addressed

NOTE: The effectiveness of three-level or greater cervical fusion for non-radicular pain has not been established.

Cervical Posterior Decompression

The following criteria must be met* [1, 2, 3, 5, 6, 7, 8, 13]

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression** - immediate surgical evaluation is indicated. Symptoms may include:
 - Upper extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Hoffmann sign
 - Positive Babinski sign and/or clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images - immediate surgical evaluation is indicated^{10, 14, 26}; **OR**

When ALL of the following criteria are met [2]

- Cervical radiculopathy from ruptured disc, spondylosis, or deformity
- Failure of [conservative treatment*](#) for a minimum of six (6) weeks within the last six (6) months
- Imaging studies confirm the presence of spinal cord or spinal nerve root compression at the level(s) **corresponding with the clinical findings**. Imaging studies may include **any** of the following:
 - MRI (preferred study for assessing cervical spine soft tissue); **OR**
 - CT with or without myelography— indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI)

Cervical decompression performed as first-line treatment without conservative care in the following clinical cases [3, 6, 8, 13]

- As outlined above for myelopathy or progressive neurological deficit scenarios.
- Spinal cord or nerve root compression due to tumor, infection, or trauma.

Not Recommended [9]

- In asymptomatic or mildly symptomatic cases.
- In cases of neck pain alone, without neurological deficits and abnormal imaging findings. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria.*
- In individuals with kyphosis or at risk for development of postoperative kyphosis.

Cervical Artificial Disc Replacement (Single Or Two Level) [2, 14]

When all of the following criteria are met:

- Skeletally mature individual; **AND**
- Intractable radiculopathy caused by one-or-two-level disease (either herniated disc or spondylolytic osteophyte) located at C3-C7;

AND

- Failure of conservative treatment* for a minimum of six (6) weeks within the last six (6) months

AND

- Imaging studies confirm the presence of compression at the level(s) **corresponding with the clinical findings** (MRI or CT); **AND**
- Use of an FDA-approved prosthetic intervertebral discs.

Contraindications

- Symptomatic multiple level disease affecting 3 or more levels
- Infection (at site of implantation or systemic)
- Osteoporosis or osteopenia
- Instability
 - Translation greater than 3mm difference between lateral flexion-extension views at the symptomatic levels
 - 11 degrees of angular difference between lateral flexion-extension views at the symptomatic levels
- Sensitivity or allergy to implant materials
- Severe spondylosis defined as:
 - > 50% disc-height loss compared to minimally or non-degenerated levels; **OR**
 - Bridging osteophytes; **OR**
 - Absence of motion on lateral flexion-extension views at the symptomatic site
- Severe facet arthropathy
- Ankylosing spondylitis
- Rheumatoid arthritis
- Previous fracture with anatomical deformity
- Ossification of the posterior longitudinal ligament (OPLL)
- Active cervical spine malignancy

Cervical Fusion Without Decompression

Cervical fusion without decompression will be reviewed on a **case-by-case basis**. Atraumatic instability due to Down Syndrome-related spinal deformity, rheumatoid arthritis, or basilar invagination are uncommon, but may require cervical fusion.

Cervical Anterior Decompression (without fusion) [15, 2]

All requests for anterior decompression without fusion will be reviewed on a **case-by-case basis**.

RISK FACTORS AND CONSIDERATIONS [16, 17, 18]

- Early intervention may be required in acute incapacitating pain or with progressive neurological deficits.
- Individuals may present with pain, numbness, extremity weakness, loss of coordination, gait issues, or bowel and bladder complaints. Non-operative treatment is an important role in the care of individuals with degenerative cervical spine disorders. If these

symptoms progress to neurological deficits, from corresponding spinal cord or nerve root compression, surgical intervention may be warranted.

- Obesity is an identified risk factor for surgical site infection. For individuals undergoing posterior cervical decompression with or without fusion for a diagnosis other than myelopathy, BMI should be less than 40. These cases will be reviewed on a case-by-case basis and may be denied given the increased risk of infection.
- If operative intervention is being considered, especially procedures that require a fusion, it is required the person refrain from smoking/nicotine for **at least six weeks** prior to surgery and **during the time of healing**.
- In situations requiring possible need for an operation, a second opinion may be necessary. Psychological evaluation is strongly encouraged before surgery is performed for isolated axial pain to determine if the individual will likely benefit from the treatment.
- It is imperative for the clinician to rule out non-physiologic modifiers of pain presentation, or non-operative conditions mimicking radiculopathy, myelopathy or spinal instability (peripheral compressive neuropathy, chronic soft tissue injuries, and psychological conditions), prior to consideration of elective surgical intervention.

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.

LEGISLATIVE LANGUAGE

Washington

Washington State Health Care Authority: Health Technology Clinical Committee

20170120B – Artificial disc replacement – Re-review [19]

HTCC coverage determination:

Cervical artificial disc replacement is a **covered benefit with conditions**, consistent with the criteria identified in the reimbursement determination.

HTCC reimbursement determination:

Limitations of coverage:

Patients must meet FDA approved indications for use and not have any contraindications. FDA approval is device specific but includes:

- Skeletally mature patients
- Disc replacement following one- or two-level discectomy for intractable symptomatic radiculopathy or myelopathy confirmed by patient findings and imaging.

Patients must have advanced imaging and clinical evidence of corresponding nerve root or spinal cord compression and have failed or be inappropriate for non-operative care. For two-level procedures, objective evidence of radiculopathy, myelopathy or spinal cord compression at two consecutive levels is required.

Non-covered indicators: NA

20130322B – Cervical Spinal Fusion for Degenerative Disc Disease [20]

HTCC Coverage Determination:

Cervical Spinal Fusion for Degenerative Disc Disease is a **covered benefit with conditions.**

HTCC Reimbursement Determination:

Limitations of Coverage

Cervical Spinal Fusion is covered when the following conditions are met:

1. Patients with signs and symptoms of radiculopathy; and
2. Advanced imaging evidence of corresponding nerve root compression; and
3. Failure of conservative (non-operative) care.

Non-Covered Indicators

Cervical Spinal Fusion is not a covered benefit for neck pain without evidence of radiculopathy or myelopathy.

BACKGROUND

***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
 - physical therapy
 - a physician-supervised home exercise program (HEP)**
 - chiropractic care [21, 22]
- Inactive components
 - 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 [21] ; **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
December 2023	<ul style="list-style-type: none">• Added legislative language for WA state• Added conservative care language
May 2023	<ul style="list-style-type: none">• Updated references• Moved General Information phrase to top of GL
May 2022	<ul style="list-style-type: none">• Reference added• Background updated (added obesity as a risk factor)

REFERENCES

- [1] D. K. Park, J. W. Jenne and K. S. Bode, "Cervical Spondylotic Myelopathy: Surgical Treatment Options," January 2022. [Online]. [Accessed 2023].
- [2] North American Spine Society, "Diagnosis and Treatment of Cervical Radiculopathy from Degenerative Disorders," 2010. [Online]. [Accessed 2023].
- [3] L. A. Tetreault, A. Karpova and M. G. Fehlings, "Predictors of outcome in patients with degenerative cervical spondylotic myelopathy undergoing surgical treatment: results of a systematic review," *European Spine Journal*, vol. 24, no. Suppl 2, 2015.
- [4] H. Luyao, Y. Xiaoxiao, F. Tianxiao, L. Yuandong and P. Wang, "Management of Cervical Spondylotic Radiculopathy: A Systematic review," *Global Spine Journal*, vol. 12, no. 8, 2022.
- [5] X. Yuan, C. Feng, W. J. Yipeng and H. Jianhua, "Surgical approaches and outcomes for cervical myelopathy with increased signal intensity on T2-weighted MRI: a meta-analysis," *Journal of Orthopaedic Surgery and Research*, vol. 14, 2019.
- [6] S. Guo, T. Lin, R. Wu, Z. Wang, G. Chen and W. Liu, "The Pre-Operative Duration of Symptoms: The Most Important Predictor of Post-Operative Efficacy in Patients with Degenerative Cervical Myelopathy," *Brain Sciences*, vol. 12, 2022.
- [7] R. S. Nunna, S. Khalid, R. G. Chiu, R. Parola, R. G. Fessler, O. Adogwa and A. Mehta, "Anterior vs Posterior Approach in Multilevel Cervical Spondylotic Myelopathy: A Nationwide Propensity-Matched Analysis of Complications, Outcomes, and Narcotic Use," *International Journal of Spine Surgery*, vol. 16, 2022.
- [8] S. S. Kwok and J. P. Cheung, "Surgical decision-making for ossification of the posterior longitudinal ligament versus other types of degenerative cervical myelopathy: anterior versus posterior approaches," *BMC Musculoskeletal Disorders*, vol. 21, 2020.
- [9] I. Nikolaidis, I. P. Fouyas, P. A. Sandercock and P. F. Statham, "Surgery for cervical radiculopathy or myelopathy (Review)," *Cochrane Database of Systematic Reviews*, 2010.
- [10] M. J. Spitnale and G. Grabowski, "Classification in Brief: Subaxial Cervical Spine Injury Classification and Severity Score System," *Clinical Orthopaedic Related Research*, 2020.
- [11] Z. A. Audat, M. D. Fawareh, A. M. Radyeh, M. M. Obeidat, M. A. Odat, K. M. Bashaireh, M. M. Barbarawi, M. T. Nusairat, A. B. Ibraheem and M. Z. Audat, "Anterior versus posterior approach to treat cervical spondylotic myelopathy, clinical and radiological results with long period follow-up," *SAGE Open Medicine*, vol. 6, 2018.
- [12] K. D. Riew, E. Ecker and J. R. Dettori, "Anterior cervical discectomy and fusion for the management of axial neck pain in the absence of radiculopathy or myelopathy," *Evidence-Based Spine-Care Journal*, vol. 1, 2010.
- [13] D. F. Revesz, A. Charalampidis and P. Gerdhem, "Effectiveness of laminectomy with fusion and laminectomy alone in degenerative cervical myelopathy," *European Spine Journal*, vol. 31, 2022.

- [14] K. Eseonu, E. Laurent, H. Bishi, H. Raja, K. Ravi and Z. Dannawi, "A Retrospective Comparative Study of Long-Term Outcomes Following Cervical Total Disc Replacement Versus Anterior Cervical Discectomy and Fusion," *Cureus*, 2022.
- [15] R. D. Donk, A. L. Verbeek, W. I. Verhagen, H. Groenewoud, A. J. Hosman and R. H. Bartels, "What's the best surgical treatment for patients with cervical radiculopathy due to single-level degenerative disease? A randomized controlled trial," *PLOS One*, vol. 12, no. 8, 2017.
- [16] R. K. Badiee, R. Mayer, B. Pennicooke, D. Chou, P. V. Mummaneni and L. A. Tan, "Complications following posterior cervical decompression and fusion: a review of incidence, risk factors, and prevention strategies," *Journal of Spine Surgery*, vol. 6, no. 1, 2020.
- [17] K. L. Jackson II and J. G. Devine, "The Effects of Smoking and Smoking Cessation on Spine Surgery: A Systematic Review of the Literature," *Global Spine Journal*, vol. 6, 2016.
- [18] S. S. Rajaei, L. E. Kanim and H. W. Bae, "National trends in revision spinal fusion in the USA: Patient Characteristics and Complications," *Spine*, vol. 96, no. 6, 2014.
- [19] Washington State Health Authority, "Health Technology Clinical Committee - Artificial disc replacement-Re-review," 2023. [Online]. Available: www.wa.gov. [Accessed 2023].
- [20] Washington State Health Authority, "Health Technology Clinical Committee - Cervical Spinal Fusion for Degenerative Disc Disease," 2023. [Online]. Available: www.wa.gov. [Accessed 2023].
- [21] Annals of Internal Medicine, "Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians," 2017. [Online].
- [22] The American College of Radiology, *ACR Appropriateness Criteria Low Back Pain: 2021 Update*, 2021.

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***



*Evolut	
Clinical guidelines: LUMBAR SPINE SURGERY	Original Date: June 2013
CPT Codes**: <ul style="list-style-type: none"> - 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 <p><i>**See UM Matrix for allowable billed groupings and additional covered codes</i></p>	Last Revised Date: December 2023
Guideline Number: Evolut_CG_304	Implementation Date: July 2024

TABLE OF CONTENTS

GENERAL INFORMATION	2
STATEMENT	2
PURPOSE.....	2
SCOPE	3
INDICATIONS FOR LUMBAR DISCECTOMY/MICRODISCECTOMY	3
INDICATIONS FOR LUMBAR DECOMPRESSION.....	4
INDICATIONS FOR LUMBAR SPINE FUSION	4
SINGLE LEVEL FUSION WITH OR WITHOUT DECOMPRESSION	4
MULTI-LEVEL FUSION WITH OR WITHOUT DECOMPRESSION	5
NOTE	6
INDICATIONS FOR REPEAT LUMBAR SPINE FUSION OPERATIONS	6
RELATIVE CONTRAINDICATIONS FOR SPINE SURGERY	7
NON-COVERED PROCEDURES	7

LEGISLATIVE LANGUAGE	7
WASHINGTON	7
1. 20151120A – Lumbar Fusion for Degenerative Disc Disease	8
2. 20180518A - Surgery for lumbar radiculopathy/ sciatica	8
BACKGROUND	8
DEFINITIONS	8
*CONSERVATIVE TREATMENT.....	9
**HOME EXERCISE PROGRAM (HEP).....	9
REFERENCES.....	12

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.

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.

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 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.

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

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 **OR**
- Cauda equina syndrome (loss of bowel or bladder control)

Lumbar Decompression [1, 2, 3, 4, 5]

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

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 **OR**
- Cauda equina syndrome (loss of bowel or bladder control) **OR**
- Spinal stenosis due to tumor, infection, or trauma

Lumbar Spine Fusion [1, 5, 3, 4, 6, 7, 8, 9]

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
 - 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 6-12 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) [9, 10] **OR**

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

- 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 **OR**

Other Indications

Lumbar spinal fusion 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) **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 **OR**
- 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

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.

INDICATIONS FOR 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) [11].
- **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]. 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 [12, 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]. 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

[Washington State Health Care Authority: Health Technology Clinical Committee](#)

[Number and Coverage Topic:](#)

1. 20151120A – Lumbar Fusion for Degenerative Disc Disease [16]

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

Number and coverage topic:

20180518A - Surgery for lumbar radiculopathy/ sciatica [17]

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.

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 active and one inactive component targeting the affected spinal region.

- Active components
 - physical therapy
 - a physician-supervised home exercise program (HEP)**
 - chiropractic care [18, 19]
- Inactive components
 - 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 [18] ; **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
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
May 2022	Replaced “patients” with “individuals” where appropriate
January 2022	Added CPT Codes +63052, +63053

REFERENCES

- [1] North American Spine Society, "Clinical Guidelines for Diagnosis and Treatment of Lumbar Disc Herniation with Radiculopathy," 2012. [Online]. [Accessed 2023].
- [2] Y. Li, V. Fredrickson and D. K. Resnick, "How Should We Grade Lumbar Disc Herniation and Nerve Root Compression? A Systematic Review," *Clinical Orthopaedics and Related Research*, vol. 473, 2015.
- [3] A. Tosteson, J. D. Lurie, T. D. Tosteson, J. S. Skinner, H. Herkowitz, T. Albert, S. Boden, K. Bridwell, M. Longley, G. B. Andersson, E. A. Blood, M. R. Grove and J. N. Weinstein, "Surgical Treatment of Spinal Stenosis with and without Degenerative Spondylolisthesis: Cost-Effectiveness after 2 Years," *Annals of Internal Medicine*, vol. 149, no. 12, 2008.
- [4] J. N. Weinstein, J. D. Lurie, T. D. Tosteson, B. Hanscom, A. Tosteson, E. A. Blood, N. J. Birkmeyer, A. S. Hilibrand, H. Herkowitz, F. P. Cammisa, T. Albert, S. E. Emery, L. G. Lenke, W. A. Abdu, M. Longley, T. J. Errico and S. S. Hu, "Surgical versus Nonsurgical Treatment for Lumbar Degenerative Spondylolisthesis," *New England Journal of Medicine*, vol. 356, no. 22, 2007.
- [5] A. Delitto, S. R. Piva, C. G. Moore, J. M. Fritz, S. R. Wisniewski, D. A. Josbeno, M. Fye and W. C. Welch, "Surgery versus Nonsurgical Treatment for Lumbar Spinal Stenosis: A Comparative Effectiveness Randomized Trial with 2-Year Follow-up," *Annals of Internal Medicine*, vol. 162, no. 7, 2018.
- [6] J. C. Eck, A. Sharan, Z. Ghogawala, D. K. Resnick, W. C. Watters, P. V. Mummaneni, A. T. Dailey, T. F. Shoudhri, m. W. Groff, J. C. Wang, S. S. Dhall and M. G. Kaiser, "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," *Journal of Neurosurgery Spine*, vol. 21, 2014.
- [7] North American Spine Society, "Diagnosis and Treatment of Degenerative Lumbar Spondylolisthesis: 2nd Edition," 2014. [Online]. [Accessed 2023].
- [8] G. A. Gonzalez, G. Porto, K. Hines, D. Franco, T. S. Montenegro, A. Mahtabfar, M. O'Leary, J. Miao, S. Thalheimer, J. E. Heller, A. Sharan and J. Harrop, "Clinical Outcomes with and without Adherence to Evidence-Based Medicine Guidelines for Lumbar Degenerative Spondylolisthesis Fusion Patients," *Journal of Clinical Medicine*, vol. 12, 2023.
- [9] Y. Kang, Y. Ho, W. Chu, W. Chou and S. Cheng, "Effects and Safety of Lumbar Fusion Techniques in Lumbar Spondylolisthesis: A Network Meta-Analysis of Randomized Controlled Trials," *Global Spine Journal*, vol. 12, no. 3, 2022.
- [10] E. Said, M. E. Abdel-Wanis, M. Ameen, A. A. Sayed, K. H. Mosallam, A. M. Ahmed and H. Tammam, "Posterolateral Fusion Versus Posterior Lumbar Interbody Fusion: A Systematic Review and Meta-Analysis of Randomized Controlled Trials," *Global Spine Journal*, vol. 12, no. 5, 2022.

- [11] V. Puvanesarajah, F. H. Shen, J. M. Cancienne, W. M. Novicoff, A. Jain, A. L. Shimer and H. Hassanzadeh, "Risk factors for revision surgery following primary adult spinal deformity surgery in patients 65 years and older," *Journal of Neurosurgery Spine*, vol. 25, 2016.
- [12] R. S. Nunna, P. B. Ostrov, D. Ansari, J. R. Dettori, P. Godolias, E. Elias, A. Tran, R. J. Oskouian, R. Hart, A. Abdul-Jabbar, K. L. Jackson, J. G. Devine, A. I. Mehta, O. Adogwa and J. R. Chapman, "The Risk of Nonunion in Smokers Revisited: A Systematic Review and Meta-Analysis," *Global Spine Journal*, vol. 12, no. 3, 2022.
- [13] K. L. Jackson II and J. G. Devine, "The Effects of Smoking and Smoking Cessation on Spine Surgery: A Systematic Review of the Literature," *Global Spine Journal*, vol. 6, 2016.
- [14] F. Cofano, G. Di Perna, D. Bongiovanni, V. Roscigno, B. M. Baldassarre, S. Petrone, F. Tartara, D. Garbossa and M. Bozzaro, "Obesity and Spine Surgery: A Qualitative Review About Outcomes and Complications. Is It Time for New Perspectives on Future Researches?," *Global Spine Journal*, vol. 12, no. 6, 2022.
- [15] A. Feeley, J. McDonnell, I. Feeley and J. Butler, "Obesity: An Independent Risk Factor for Complications in Anterior Lumbar Interbody Fusion? A Systematic Review," *Global Spine Journal*, vol. 12, no. 8, 2022.
- [16] Authority WSHC, "Health Technology Clinical Committee - Lumbar Fusion for Degenerative Disc Disease," 2023. [Online]. [Accessed September 2023 2023].
- [17] Authority WSHC, "Health Technology Clinical Committee - Surgery for lumbar radiculopathy/sciatic," 2023. [Online]. [Accessed September 2023].
- [18] Annals of Internal Medicine, "Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians," 2017. [Online].
- [19] The American College of Radiology, *ACR Appropriateness Criteria Low Back Pain: 2021 Update*, 2021.

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***

*Evolut	
Clinical guidelines: HIP ARTHROPLASTY	Original Date: November 2015
CPT Codes**: - Total Hip Arthroplasty (THA): 27130, S2118 - Revision/Conversion Hip Arthroplasty: 27132, 27134, 27137, 27138 <i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	Last Revised Date: December 2023
Guideline Number: Evolent_CG_313	Implementation Date: July 2024

Table of Contents

GENERAL INFORMATION	2
STATEMENT	2
PURPOSE	2
SCOPE.....	2
GENERAL REQUIREMENTS	2
INDICATIONS	3
TOTAL HIP ARTHROPLASTY (THA).....	3
HIP RESURFACING ARTHROPLASTY	5
REVISION / CONVERSION ARTHROPLASTY.....	6
LEGISLATIVE REQUIREMENTS.....	7
STATE OF WASHINGTON	7
BACKGROUND	7
HIP ARTHROPLASTY	7
<i>Revision/Conversion Hip Replacement.....</i>	<i>7</i>
GRADING APPENDIX	7
<i>Tönnis Classification of Osteoarthritis by Radiographic Changes</i>	<i>7</i>
POLICY HISTORY.....	8
REFERENCES.....	9

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.

STATEMENT

Purpose

This guideline addresses elective, non-emergent hip arthroplasty (hip replacement) procedures, including total hip arthroplasty, resurfacing arthroplasty, and revision/conversion arthroplasty procedures.

Scope

Arthritis is the most common cause of chronic hip pain and disability. Degenerative, age-related osteoarthritis causes cartilage to wear away and eventually the bones within the joint rub against each other causing pain and stiffness.

[See Legislative Requirements for specific mandates for the State of Washington](#)

General Requirements

Elective hip arthroplasty may be considered if the following general criteria are met:

- Hip pain with documented loss of function, which may include painful weight bearing, painful or inadequate range of motion to accomplish age-appropriate activities of daily living (ADLs) and/or employment, and mechanical catching, locking
- Individual is medically stable and optimized for surgery, and any treatable comorbidities are adequately medically managed such as diabetes, nicotine addiction, or an excessively high BMI. There should also be a shared decision between the patient and physician to proceed with a total joint replacement when comorbidities exist as it pertains to the increased risk of complications. [1]
- Individual does not have an active local or systemic infection
- Individual does not have active, untreated drug dependency (including but not limited to narcotics, opioids, muscle relaxants) unless engaged in treatment program
- Individual has good oral hygiene and does not have major dental work scheduled or anticipated (ideally, within one year of joint replacement), due to increased post-surgical infection risk

Clinical notes should address:

- Symptom onset, duration, and severity
- Loss of function and/or limitations
- Type and duration of non-operative management modalities
- Discussion with patient regarding decision making and timing

Non-operative management must include at least **TWO** or more of the following unless otherwise specified in clinical indications below:

- Rest or activity modifications/limitations
- Weight reduction for individual with elevated BMI
- Protected weight-bearing with cane, walker, or crutches
- Physical therapy modalities
- Physician-supervised exercise program (including home exercise program)
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
- Intra-articular injection(s)

INDICATIONS

Total Hip Arthroplasty (THA)

There is no medical necessity to perform THA in individuals with severe radiological disease and no symptoms, except in the case of malignancy

THA may be considered medically necessary when the following criteria are met: [2, 3, 4]

- Hip pathology is due to rheumatoid arthritis, femoral neck fracture, malignancy, dysplasia, avascular necrosis (confirmed by imaging) **or** radiographs (X-rays) demonstrate bone-on-bone articulation

AND

- There is persistent pain and documented loss of function with any of the above

OR

- When **ALL** of the following criteria are met:
 - Pain due to advanced osteoarthritis (Tönnis Grade-2 or 3 [see Grading Appendix]) **AND** documented loss of function that has been present for at least 12 weeks
 - Failure of **at least 12 weeks** of non-operative treatment, including **at least two** of the following: [4]
 - Rest or activity modifications/limitations
 - Weight reduction for individual with elevated BMI
 - Protected weight-bearing with cane, walker, or crutches
 - Physical therapy modalities
 - Physician-supervised exercise program (including home exercise program)

- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
- Intra-articular corticosteroid injection
- Physical exam demonstrates findings of hip pathology as evidenced by **one or more** of the following:
 - Painful, limited range of motion or antalgic gait
 - Contracture
 - Crepitus
 - Leg length difference
- Radiographic findings show evidence of advanced arthritic changes, described as Tönnis grade 2 or 3 [see [grading appendix](#)] or described as X-rays showing advanced changes such as, severe narrowing or bone-on-bone compartment collapse, subchondral sclerosis or cysts, osteophyte formation and/or bony deformity etc.; X-rays described only as showing “severe”, “advanced” or “end-stage” arthritis require more definitive descriptions as stated above (Weightbearing X-rays are not required)

NOTE: MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint.
- **NO** corticosteroid injection into the joint within 12 weeks of surgery [5, 6, 1, 7, 8, 9]

Simultaneous Bilateral THA

- **ALL** requests for simultaneous bilateral total hip replacements should clearly indicate why simultaneous THA is preferable to staged procedures. Associated risks with simultaneous bilateral total hip replacements should also be discussed with the individual and documented in the medical record [10, 11]

Absolute Contraindications

- Active infection (local or remote). If a local or remote infection is documented in the patient’s history, records should clearly demonstrate that the previous infection had been treated and symptoms have resolved or that the individual has no clinical signs or symptoms of the previous infection at the time of the operation. [3]
- Any corticosteroid injection into the joint within 12 weeks of surgery [5, 6, 1, 7, 8, 9]

Relative Contraindications [2, 3]

- Prior infection at site (unless aspiration with cultures and serology [CBC with differential, ESR, CRP] demonstrates no infection). If prior infection at site, tissue biopsies should be sent intra-operatively to exclude latent/dormant infection
- Documented allergy to any proposed component
- BMI > 40kg/m²; without discussion of increased risk conferred by BMI
- Compromised soft tissue envelope
- Uncontrolled comorbidities [12]

Hip Resurfacing Arthroplasty

Hip resurfacing procedures will be reviewed on a case-by-case basis.

Hip resurfacing arthroplasty may be considered medically necessary when **ALL** of the following criteria are met:

- Pain and documented loss of function are present for at least 12 weeks
- 12 weeks of non-operative treatment have failed to improve symptoms
- Physical exam has typical findings of hip pathology as evidenced by **one or more** of the following:
 - Painful, limited range of motion or antalgic gait
 - Contracture
 - Crepitus
 - Leg length difference
- Imaging demonstrates advanced hip joint pathology of at least Tönnis grade 2 or 3, or avascular necrosis involving less than 50% of the femoral head [see grading appendix]
- Male patient is less than 65 years old or female patient is less than 55 years old [13, 14]
- BMI < 40 [15]
- **NO** corticosteroid injection into the joint within 12 weeks of surgery [5, 6, 1, 7, 8, 9]

Absolute Contraindications [15, 13, 16, 14]

- Any corticosteroid injection into the joint within 12 weeks of surgery [5, 6, 1, 7, 8, 9]
- Osteoporosis or osteopenia (DEXA scan bone mineral density evaluation)
 - Osteoporosis or poor bone quality may increase the risk of fixation failure or femoral neck fracture after hip resurfacing
- Other co-morbidity (including medications that contribute to decreased bone mineral density (glucocorticoid steroids, heparin, aromatase inhibitors, thiazolidinediones, proton pump inhibitors, loop diuretics, cyclosporine, antiretrovirals, anti-psychotics, anti-seizures, certain breast cancer drugs, certain prostate cancer drugs, Depo-Provera, aluminum-containing antacids) that may contribute to active bone demineralization
- Cystic degeneration at the junction of the femoral head and neck on radiographs or MRI or CT
- Malignancy at the proximal femur
- Evidence of current, ongoing, or inadequately treated hip infection, or sepsis
- Female of child-bearing age (due to metal ions circulating in blood with potential risk to fetus)
- Chronic renal insufficiency (due to metal ions circulating and potential renal toxicity)
- Metal allergy

Revision / Conversion Arthroplasty

Hip revision/conversion arthroplasty may be considered medically necessary when a previous hip reconstruction meets **ALL** the following criteria in either of the following subsections: [17, 18]

- Previous removal of infected hip prosthesis **AND** no evidence of current, ongoing, or inadequately treated hip infection (ruled out by normal inflammatory markers* (ESR and CRP) or significant improvement in these markers and a clear statement by the treating surgeon that infection has been adequately treated) **AND** off antibiotics.

***NOTE:** If these inflammatory markers are elevated, further evaluation is required, including an aspiration with synovial fluid WBC count, gram stain and cultures, or an intraoperative frozen biopsy.

OR

- When **ALL** the following criteria are met:
 - Failed hip arthroplasty as defined by symptomatic or unstable joint upon physical examination, documented persistent, severe, or disabling pain with loss of function or instability, or there is persistent pain or radiographic evidence of hardware failure from previous hip fracture surgery
 - Physical exam and radiographic evidence support extensive disease or damage due to fracture, malignancy, osteolysis, other bone or soft-tissue reactive or destructive process, inappropriate positioning of components, recurrent instability, subluxation, dislocation, critical polyethylene wear, or other mechanical failure.
NOTE: MRI is used less often in these circumstances unless it is a metal-on-metal prosthesis and looking for soft-tissue lesions; x-ray, CT, nuclear studies are used more frequently
 - For implant loosening seen on routine X-rays or bone scan, documentation of no current, ongoing, or inadequately treated hip infection, ruled out by normal inflammatory markers (ESR and CRP) [17, 18]
 - If the revision is for obvious hardware failure or recurrent dislocations, inflammatory markers are not required
 - **NO** corticosteroid injection into the joint within 12 weeks of surgery [5, 6, 1, 7, 8, 9]

Additional Information

- Removal of infected hip prosthesis and subsequent insertion of antibiotic spacer is not considered to be a revision arthroplasty

LEGISLATIVE REQUIREMENTS

State of Washington

- **Washington State Health Care Authority Technology Assessment 20131114B – Hip Resurfacing [19]**
 - **HTCC Coverage Determination**
 - **Hip Resurfacing is not a covered benefit**
 - **HTCC Reimbursement Determination**
 - **Limitations of Coverage**
 - **Not applicable**
 - **Non-Covered Indicators**
 - **All**

BACKGROUND

Hip Arthroplasty

Revision/Conversion Hip Replacement

In some cases, the hip prosthesis may wear out or loosen. If loosening is painful, a second surgery, such as a revision or conversion may be necessary. In this procedure some or all of the components of the original replacement prosthesis are removed and replaced with new ones.

Hemiarthroplasty or partial hip replacement involves the reconstruction of the femoral head but not the acetabulum. This procedure is indicated for select traumatic events, guidelines for which fall outside of the scope of this document.

Grading Appendix

Tönnis Classification of Osteoarthritis by Radiographic Changes

Grade	Description
0	No signs of osteoarthritis
1	Mild: Increased sclerosis, slight narrowing of the joint space, no or slight loss of head sphericity
2	Moderate: Small cysts, moderate narrowing of the joint space, moderate loss of head sphericity
3	Severe: Large cysts, severe narrowing or obliteration of the joint space, severe deformity of the head

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"> • Legislative Requirements added for the State of Washington • Relative contraindications: BMI – removed without attempts at weight loss • Added Table of Contents • Reduced Background Section • Updated References
May 2023	<ul style="list-style-type: none"> • Addition of references pertaining to the risk of infection following a cortisone injection within 3 months of surgery • Deleted risk/benefit discussion requirement for revision hip arthroplasty • Clarification of the definition of failed hip arthroplasty
May 2022	<p>Deleted:</p> <ul style="list-style-type: none"> • Documented risk and benefit discussion requirement (THA) • “Efforts have been made to ensure that the patient is optimally informed and prepared for surgery” (general requirements) <p>Revised:</p> <ul style="list-style-type: none"> • Individual is medically stable and <i>optimized for surgery</i> • 3 months to 12 weeks throughout • “patient” to “individual” where appropriate

References

- [1] C. P. Hannon, S. M. Goodman, M. S. Austin, A. . Yates Jr, G. Guyatt, V. K. Aggarwal, J. Baker, P. Bass, D. I. Bekele, D. Dass, H. M. Ghomrawi, D. S. Jevsevar, C. K. Kwoh, C. M. Lajam, C. F. Meng, L. W. Moreland, L. I. Suleiman, J. Wolfstadt, K. Bartosiak, N. A. Bedard, J. L. Blevins, A. . Cohen-Rosenblum, P. M. Courtney, R. Fernandez-Ruiz, E. B. Gausden, N. Ghosh, L. K. King, A. S. Meara, B. Mehta, R. Mirza and A. j. Rana, "2023 American College of Rheumatology and American Association of Hip and Knee Surgeons Clinical Practice Guideline for the Optimal Timing of Elective Hip or Knee Arthroplasty for Patients With Symptomatic Moderate-to-Severe Osteoarthritis," *Arthritis Care & Research*, vol. 0, no. 0, pp. 1-12, 2023.
- [2] M. Varacallo, T. D. Luo and N. A. Johanson, "Total Hip Arthroplasty Techniques. StatPearls. Treasure Island FL," 4 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK507864/>. [Accessed 13 September 2023].
- [3] C. Lutzner, S. Deckert, K.-P. Gunther, A. E. Postler, J. Lutzner, J. Schmitt, D. Limb and T. Lange, "Indication Criteria for Total Hip Arthroplasty in Patients with Hip Osteoarthritis-Recommendations from a German Consensus Initiative," *Medicina (Kaunas)*, vol. 58, no. 5, 22 April 2022.
- [4] American Academy of Orthopaedic Surgeons , "Management of Osteoarthritis of the Hip Evidence-Based Clinical Practice Guideline," 13 March 2017. [Online]. Available: [aaos.org/oahcpg](https://www.aaos.org/oahcpg). [Accessed 2023 16 October].
- [5] L. E. Streck, S. Braun, K. Spilo, C. S. Boettner, M. Brenneis and F. Boettner, "How safe are intra-articular corticosteroid injections to the hip?," *BMC Musculoskeletal Disord*, vol. 24, no. 1, 22 August 2023.
- [6] M. Saracco, V. Ciriello, F. D'Angelo, L. Zagra, G. Solarino and G. Logroscino, "Do prior intra-articular injections impact on the risk of periprosthetic joint infection in patients undergoing total hip arthroplasty? A meta-analysis of the current evidences with a focus on the timing of injection before surgery," *EFORT Open Rev*, vol. 8, no. 6, pp. 459-467, 8 June 2023.
- [7] B. Werner, J. Cancienne and J. Browne, "The Timing of Total Hip Arthroplasty After Intraarticular Hip Injection Affects Postoperative Infection Risk," *J Arthroplasty*, vol. 31, no. 4, pp. 820-23, 2016.
- [8] E. Forlenza, R. Burnett, A. B. Korrapati, J. Yang, B. Forsythe and C. Della Valle, "Preoperative Corticosteroid Injections Demonstrate a Temporal and Dose-Dependent Relationship with the Rate of Postoperative Infection Following Total Hip Arthroplasty," *J Arthroplasty*, vol. 36, no. 6, pp. 2033-2037, 2021.
- [9] W. Schairer, B. Nwachukwu, D. Mayman, S. Lyman and S. Jerabek, "Preoperative Hip Injections Increase the Rate of Periprosthetic Infection After Total Hip Arthroplasty," *J Arthroplasty*, vol. 31, no. 9 Suppl, pp. 166-169, Sept 2016.

- [10] A. Ramenzani, A. G. Raeini, A. . Sharafi, M. Sheikhavatan, S. H. J. Mortazavi and h. S. Shafiei, "Simultaneous versus staged bilateral total hip arthroplasty: a systematic review and meta-analysis," *J Orthop Surg Res*, vol. 17, no. 1, 13 August 2022.
- [11] S.-J. Guo, H.-Y. Shao, Y. . Huang, D.-J. Yang, H.-L. Zheng and Y.-X. Zhou, " Guo SJ, Shao HY, Huang Y, Yang DJ, Zheng HL, Zhou YX. Retrospective Cohort Study Comparing Complications, Readmission, Transfusion, and Length of Stay of Patients Undergoing Simultaneous and Staged Bilateral Total Hip Arthroplasty. *Orthop Surg*. Feb 2020;," *Guo SJ, Shao HY, Huang Y, Yang DJ, Zheng HL, Zhou YX. Retrospective Cohort Study Comparing Complications, Readmission, Transfusion, and Length of Stay of Patients Undergoing Simultaneous and Staged Bilateral Total Hip Arthroplasty. Orthop Surg*. Feb 2020;, vol. 12, no. 1, pp. 233-240, 2020.
- [12] I. Patel, F. Nham, A. K. Zalikha and M. M. El-Othmani, "10.1302/2058-5241.3.180011," *Arthroplasty*, vol. 5, no. 1, 3 January 2023.
- [13] R. Sershon, R. Balkissoon and C. J. Valle, "https://www.fda.gov/medical-devices/metal-metal-hip-implants/information-orthopaedic-surgeons," *Curr Rev Musculoskelet Med*, vol. 9, no. 1, pp. 84-92, 2016.
- [14] E. J. Clough and T. M. Clough, "Metal on metal hip resurfacing arthroplasty: Where are we now?," *J Orthop*, vol. 23, pp. 123-127, 31 December 2021.
- [15] U.S. Food & Drug Administration, "Information for Othopaedic Surgeons - General Recommendations for Orthopaedic Surgeons Before Metal-on-Metal Hip Resurfacing Surgery," 15 March 2019. [Online]. Available: <https://www.fda.gov/medical-devices/metal-metal-hip-implants/information-orthopaedic-surgeons>. [Accessed 16 October 2023].
- [16] R. M. Nunley, C. J. Della Valle and R. L. Barrack, "Is patient selection important for hip resurfacing?," *Clin Orthop Relat Res*, vol. 467, no. 1, pp. 56-65, 2009.
- [17] S.-J. Kim and Y. J. Cho, "Lee HD, Prashant K, Shon WY. Management of Periprosthetic Hip Joint Infection. *Hip Pelvis*. Jun 2015;27(2):63-71. doi:10.5371/hp.2015.27.2.63," *Lee HD, Prashant K, Shon WY. Management of Periprosthetic Hip Joint Infection. Hip Pelvis*. Jun 2015;27(2):63-71. doi:10.5371/hp.2015.27.2.63, vol. 33, no. 1, pp. 11-17, 2021.
- [18] H. D. Lee , K. Prashant and W. Y. Shon, "Management of Periprosthetic Hip Joint Infection," *Hip Pelvis*, vol. 27, no. 2, pp. 63-71, 2015.
- [19] Washington State Health Care Authority, "Health Technology Assessment: Hip Resurfacing," 21 March 2014. [Online]. Available: [https://www.hca.wa.gov/assets/program/hip_final_findings_decision_032414\[1\].pdf](https://www.hca.wa.gov/assets/program/hip_final_findings_decision_032414[1].pdf). [Accessed 10 October 2023].

Reviewed / Approved by Clinical Guideline 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.***

*Evolut	
Clinical guidelines: HIP ARTHROSCOPY	Original Date: November 2015
CPT Codes**: - Femoroacetabular Impingement (FAI) Hip Surgery: 29914, 29915, 29916 - Hip Surgery – Other: 29860, 29861, 29862, 29863 <i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	Last Revised Date: December 2023
Guideline Number: Evolut_CG_314	Implementation Date: July 2024

Table of Contents

GENERAL INFORMATION	3
STATEMENT	3
PURPOSE	3
SCOPE.....	3
GENERAL REQUIREMENTS	3
INDICATIONS	4
DIAGNOSTIC HIP ARTHROSCOPY	4
LABRAL TEARS AND FEMOROACETABULAR IMPINGEMENT (FAI).....	5
<i>Labral Repair.....</i>	<i>5</i>
<i>CAM, Pincer, Combined CAM & Pincer Repair</i>	<i>6</i>
ARTHROSCOPY FOR SYNOVECTOMY, BIOPSY, OR REMOVAL OF LOOSE OR FOREIGN BODY.....	7
LEGISLATIVE REQUIREMENTS.....	8
STATE OF WASHINGTON	8
BACKGROUND	8
FEMOROACETABULAR IMPINGEMENT (FAI)	8
CAM, PINCER, COMBINED CAM & PINCER REPAIR	9
GRADING APPENDIX	9
<i>Tönnis Classification of Osteoarthritis by Radiographic Changes</i>	<i>9</i>
HIP DYSPLASIA	9
RADIOGRAPHIC MEASUREMENT APPENDIX.....	9
<i>Alpha Angle</i>	<i>9</i>
<i>Femoral Head Extrusion</i>	<i>10</i>
<i>Global Acetabular Retroversion</i>	<i>10</i>

Lateral Center Edge Angle 10

POLICY HISTORY..... 11

REFERENCES..... 12

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.

STATEMENT

Purpose

This guideline addresses the following elective, non-emergent, arthroscopic hip repair procedures, including, diagnostic arthroscopy, femoroacetabular impingement (FAI), labral repair only; CAM, pincer, CAM & pincer combined; synovectomy, biopsy, or removal of loose or foreign body.

Scope

Open, non-arthroplasty hip repair surgeries are performed as dictated by the type and severity of injury and/or disease.

Surgical indications are based on relevant clinical symptoms, physical exam, radiologic findings, and response to non-operative, conservative management when medically appropriate.

[See Legislative Requirements for specific mandates for the State of Washington](#)

General Requirements

Elective arthroscopic surgery of the hip may be considered if the following general criteria are met:

- There is clinical correlation of the individual's subjective complaints with objective exam findings and/or imaging (when applicable)
- Individual has limited function (age-appropriate activities of daily living [ADLs], occupational, athletic)
- Individual is medically stable and optimized for surgery, and any treatable comorbidities are adequately medically managed such as diabetes, nicotine addiction, or an excessively high BMI. There should also be a shared decision between the patient and physician to proceed with arthroscopic hip surgery when comorbidities exist as it pertains to the increased risk of complications.
- Individual does not have an active local or systemic infection

- Individual does not have active, untreated drug dependency (including but not limited to narcotics, opioids, muscle relaxants) unless engaged in treatment program

Clinical notes should address:

- Symptom onset, duration, and severity
- Loss of function and/or limitations
- Type and duration of non-operative management modalities (where applicable).

Non-operative management must include **TWO** or more of the following, unless otherwise specified:

- Physical therapy or properly instructed home exercise program
- Rest or activity modification
- Ice/Heat
- Protected weight bearing
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics
- Brace/orthosis
- Weight optimization
- Corticosteroid injections

INDICATIONS

Diagnostic or operative arthroscopy of the hip may be medically necessary when performed in conjunction with **periacetabular osteotomy (PAO)** [1, 2, 3]

OR

As indicated in the following sections:

Diagnostic Hip Arthroscopy

All requests for diagnostic hip arthroscopy will be considered and decided on a case-by-case basis and are rarely deemed medically necessary.

Diagnostic hip arthroscopy may be medically necessary when **ALL** of the following criteria are met:

- At least 6 months of hip pain with documented loss of function
- Failure of at least 12 weeks of non-operative treatment, including at least **two** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing

- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
- Brace/orthosis
- Physical therapy or properly instructed home exercise program
- Weight optimization
- Corticosteroid injection
- Indeterminate radiographs **AND** MRI findings

Individual must have **no radiographic findings of any of the following**:

- Significant arthritis (joint space less than 2 mm on X-ray or subchondral edema on MRI)
- Femoroacetabular impingement (non-spherical femoral head or prominent head-neck junction (pistol-grip deformity), alpha angle > 50 degrees, overhang of the anterolateral rim of the acetabulum, posterior wall sign, prominent ischial spine sign, acetabular protrusion, or retroversion with a center edge (CE) angle > 35° and/or cross-over sign) [4]
- Hip dysplasia (lateral center edge angle < 20 degrees, anterior center edge angle < 20 degrees, Tönnis angle > 15 degrees or femoral head extrusion index > 25%), unless combined with concomitant periacetabular osteotomy [1, 2]
- Fractures of the femoral head or acetabulum
- Labral tear (on MRI or MR arthrogram)
- Pigmented villonodular synovitis (PVNS) or synovial chondromatosis
- Intra-articular loose body
- Adductor tear or hamstring tear
- Pubic edema or osteitis pubis
- Gluteus medius or minimus tear
- Ischiofemoral impingement (narrowed ischiofemoral and quadratus femoris spaces)

Labral Tears and Femoroacetabular Impingement (FAI)

Labral Repair

Arthroscopic labral repair may be medically necessary when **ALL** of the following criteria are met: [4, 5, 1]

- Hip or groin pain in positions of flexion and rotation that may be associated with mechanical symptoms of locking, popping, or catching
- Positive provocative test on physical exam with pain at the hip joint with flexion, adduction, and internal rotation (FADIR test)
- Acetabular labral tear on MRI, with or without intra-articular contrast
- Failure of at least 6 weeks of non-operative treatment, including at least **two** of the following:

- Physical therapy or properly instructed home exercise program
- Rest or activity modification
- Ice/heat
- Protected weight bearing
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics
- Weight optimization
- Corticosteroid injection
- No evidence of significant hip joint arthritis, defined as joint space narrowing 2 mm or less or Tönnis grade 3 [see Grading Appendix]. Weight-bearing X-rays are not required.

NOTE: Arthroscopy of the hip for labral repair is considered not medically necessary in the presence of significant hip joint arthritis (joint space narrowing 2 mm or less or a Tönnis grade 3) [see Grading Appendix], or dysplasia [see Grading Appendix] unless combined with concomitant periacetabular osteotomy. [4, 1, 5]

CAM, Pincer, Combined CAM & Pincer Repair

Arthroscopic CAM, pincer or combined CAM and pincer repair may be medically necessary when **ALL** of the following criteria are met: [4, 1, 5, 6]

- Positional hip pain
- Failure of at least 6 weeks of non-operative treatment, including **at least two** of the following: [7]
 - Physical therapy or properly instructed home exercise program
 - Rest or activity modification
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics
 - Weight optimization
 - Corticosteroid injection
- Positive impingement sign on physical exam (hip or groin pain with flexion, adduction, and internal rotation (FADIR test) [8]
- **ANY** of the following radiograph, CT and/or MRI findings of FAI:
 - Non-spherical femoral head or prominent head-neck junction (pistol-grip deformity) with alpha angle > 50 degrees indicating CAM impingement [see radiographic measurement appendix]
 - Overhang of the anterolateral rim of the acetabulum, posterior wall sign, prominent ischial spine sign, acetabular protrusion, or retroversion with a center edge (CE) angle > 35° and/or cross-over sign indicating pincer deformity [see radiographic measurement appendix]
 - Combination of CAM and pincer criteria

- No evidence of significant hip joint arthritis, defined as joint space narrowing 2 mm or less or a Tönnis Grade 3 [see Grading Appendix] [9]
- Skeletally mature patient [partial or complete closure of the proximal femoral physis]
- BMI < 40* [10]
- Radiographic images show no evidence of severe or advanced hip dysplasia [see Grading Appendix] unless combined with concomitant periacetabular osteotomy**

*Individuals with a BMI > 40 will be reviewed on a case-by-case basis.

Additional Notes:

There is no evidence to support hip arthroscopy for FAI and/or labral tear in an asymptomatic individual and there is a high prevalence of abnormal radiographs found in asymptomatic individuals [11]: 33% of asymptomatic hips have a cam lesion, 66% of asymptomatic hips have a pincer lesion, and 68% of asymptomatic hips have a labral tear. [4, 3]

**Even though hip dysplasia, as well as symptomatic FAI and labral tears are believed to be precursors to hip arthritis, arthroscopy is not indicated solely for the treatment of osteoarthritis of the hip and rarely indicated for severe dysplasia, unless combined with concomitant periacetabular osteotomy. However, individuals with borderline dysplasia (lateral center-edge angle [LCEA], 18° to 25°), that require arthroscopic procedures appear to do as well as those with no evidence of dysplasia. [4, 2, 5]

Recent literature has demonstrated that individuals who undergo hip arthroscopy for femoroacetabular impingement syndrome and have an unrepaired capsule have lower functional outcome scores, achievement of meaningful outcomes, success rates, as well as greater failure rates and reported pain when compared with individuals who have complete capsular closure. [12, 13]

Arthroscopy for Synovectomy, Biopsy, or Removal of Loose or Foreign Body

Arthroscopic synovectomy, biopsy, removal of loose or foreign body, or a combination of these procedures may be medically necessary when the following criteria are met: [1]

- X-ray, MRI, or CT evidence of acute post-traumatic intra-articular foreign body or displaced fracture fragment;

OR

- When **ALL** of the following criteria are met:
 - Hip pain associated with grinding, catching, locking, or popping
 - Physical examination demonstrates painful range of motion of the hip

- Failure of at least 12 weeks of non-operative treatment, including at least **two** of the following:
 - Physical therapy or properly instructed home exercise program
 - Rest or activity modification
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics
 - Weight optimization
 - Corticosteroid injection
- Radiographs, CT, and/or MRI demonstrate synovial proliferation, calcifications, nodularity, inflammation, pannus, or a loose body.

LEGISLATIVE REQUIREMENTS

State of Washington

- **Washington State Health Care Authority Technology Assessment 20191122B – Hip surgery for femoroacetabular impingement syndrome [14]**
 - **HTCC Coverage Determination**
 - **Hip surgery for femoroacetabular impingement syndrome is not a covered benefit**
 - **HTCC Reimbursement Determination**
 - **Limitations of Coverage**
 - **Not applicable**
 - **Non-Covered Indicators**
 - **Hip surgery for femoroacetabular impingement syndrome**

BACKGROUND

Femoroacetabular Impingement (FAI)

FAI is a condition characterized by a mechanical impingement between the proximal femur/femoral head (cam) and/or the acetabulum (pincer) that may result in labral injury (labral tear) or articular cartilage injury (chondral defect, arthritis). Up to 95% of labral tears are observed in the presence of FAI and “isolated” labral tears are very uncommon (as are labral tears caused by trauma). [15] Labral repair (compared with labral debridement) and capsular

closure (compared with unrepaired capsulotomy) are associated with a lower risk of conversion to arthroplasty. [13]

CAM, Pincer, Combined CAM & Pincer Repair

Technically not a repair, this procedure involves bony decompression, shaving, osteoplasty, femoroplasty, acetabuloplasty, and/or osteochondroplasty. Greater than 95% of labral repairs should be performed with at least a femoral osteoplasty or an acetabuloplasty. For persistent symptoms, FAI surgery appears to be more successful than physical therapy and activity modification [16] and has been shown to be effective in returning athletes to their sport.

Grading Appendix

Tönnis Classification of Osteoarthritis by Radiographic Changes [17]

Grade	Description
0	No signs of osteoarthritis
1	Mild: Increased sclerosis, slight narrowing of the joint space, no or slight loss of head sphericity
2	Moderate: Small cysts, moderate narrowing of the joint space moderate loss of head sphericity
3	Severe: Large cysts, severe narrowing or obliteration of the joint space, severe deformity of the head

Hip Dysplasia

Defined as any of the following criteria: [4, 2, 5]

- Lateral center edge angle < 20 degrees
- Anterior center edge angle < 20 degrees
- Tönnis angle > 15 degrees
- Femoral head extrusion index > 25%
- Borderline dysplasia (lateral center-edge angle [LCEA], 18° to 25°)

Radiographic Measurement Appendix [18]

Alpha Angle

- Alpha angle was measured on the AP pelvis and Dunn 45° radiographs. First, a Mose circle was placed around the circumference of the femoral head. A line was drawn from

the center of the femoral head down the center of the femoral neck. A line was then drawn connecting the center of the femoral head to the point of the Mose circle where the head goes out of round. The angle bisecting these two lines was the alpha angle

- An alpha angle of 55° (Dunn 45°) or greater or an alpha angle of 50° (AP pelvis) was defined as cam morphology

Femoral Head Extrusion

- Femoral head extrusion index was measured as the proportion (%) of laterally uncovered femoral head versus the femoral head (horizontal distance)
 - A femoral head extrusion index greater than 25% defined dysplasia

Global Acetabular Retroversion

- Global acetabular retroversion was defined by the presence of a prominent ischial spine sign or posterior wall sign
 - Prominent ischial spine sign: Visible ischial spine medial to the iliopectineal line on AP pelvis radiograph
 - Posterior wall sign: Center of the femoral head lateral to the posterior wall of the acetabulum

Lateral Center Edge Angle

- Lateral center edge angle was measured after multiple lines were drawn on the AP pelvis radiograph. First, a Moses circle was placed around the circumference of the femoral head. Next, a line was drawn connecting the ischial tuberosities. A perpendicular line was then drawn up through the center of the femoral head from the ischial tuberosity line. Then, a line was drawn from the center of the femoral head to the most lateral aspect of the sourcil. The angle bisecting the latter two lines was the lateral center edge angle
 - A lateral center edge angle less than 20° defines dysplasia, 20 to 25° borderline dysplasia, 26 to 39° normal, and greater than 40° lateral over coverage pincer impingement
 - Lateral over coverage was defined as a lateral center edge angle greater than 40°.

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none">• Legislative Requirements added for the State of Washington• Added table of contents• Reduced background section• Updated references
May 2023	<ul style="list-style-type: none">• Updated references for Femoroacetabular Impingement (FAI)
May 2022	<ul style="list-style-type: none">• Updated references• Removal of sections pertaining to extra-articular (Endoscopic) and articular cartilage restoration procedures (CPT codes have not been assigned to these procedures that currently use unlisted procedure codes).• Clarified: Significant arthritis (joint space less than 2 mm <i>on X-ray</i> or subchondral edema <i>on MRI</i>)• Replaced “patient” with “individual” where appropriate

References

- [1] J. R. Ross, C. M. Larson and A. Bedi, "Indications for Hip Arthroscopy," *Indications for Hip Arthroscopy*, vol. 9, no. 5, pp. 402-413, 2017.
- [2] C. Barton, E. Scott, Z. M. Khazi, M. . Willey and R. Westermann, "Outcomes of Surgical Management of Borderline Hip Dysplasia: A Systematic Review," *Iowa Orthop J*, vol. 39, no. 2, pp. 40-48, 2019.
- [3] M. Jamil, W. Dandachli, S. Noordin and J. Witt, "Hip arthroscopy: Indications, outcomes and complications," *Int J Surg*, vol. 54, no. Pt B, pp. 341-344, 2018.
- [4] R. J. O'Rourke and Y. E. Bitar, "Femoroacetabular Impingement In StatPearls. Treasure Island (FL)," 26 June 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK547699/>. [Accessed 16 October 2023].
- [5] C. Mella, I. E. Villalon, A. Nunez, D. . Paccot and C. Diaz-Ledezma, "Hip arthroscopy and osteoarthritis: Where are the limits and indications," *SICOT J*, vol. 1, 16 October 2015.
- [6] T. S. Lynch , A. Minkara, S. Aoki, A. Bedi, S. Bharam, J. Clohisy, J. Harris, C. Larson, J. Nepple, S. Nho, M. Philippon, J. Rosneck, M. Safran, A. J. Stubbs, R. Westermann and J. T. Byrd, "Best Practice Guidelines for Hip Arthroscopy in Femoroacetabular Impingement: Results of a Delphi Process," *Journal of the American Academy of Orthopaedic Surgeons* , vol. 28, no. 2, pp. 81-89, 15 January 2020.
- [7] N. C. Casartelli, M. Bizzini, N. A. Maffiuletti, R. Sutter, C. W. Pfirrmann, M. Leunig and F. D. Naal, "Exercise Therapy for the Management of Femoroacetabular Impingement Syndrome: Preliminary Results of Clinical Responsiveness," *Arthritis Care Res (Hoboken)*, vol. 71, no. 8, pp. 1074-1083, 2019.
- [8] A. Palsson, L. Kostogiannis and E. Ageberg, "Combining results from hip impingement and range of motion tests can increase diagnostic accuracy in patients with FAI syndrome," *Knee Surg Sports Traumatol Arthrosc*, vol. 28, no. 10, pp. 3382-3392, 2020.
- [9] P. Lei, W. K. Conaway and S. D. Martin, "Outcome of Surgical Treatment of Hip Femoroacetabular Impingement Patients with Radiographic Osteoarthritis: A Meta-analysis of Prospective Studies," *J Am Acad Orthop Surg*, vol. 27, no. 2, pp. e70-e76, 2019.
- [10] N. H. Bech, I. F. Kodde, P. A. Druyts, S. P. Jansen and D. Haverkamp, "Hip arthroscopy in obese, a successful combination," *J Hip Preserv Surg*, vol. 3, no. 1, pp. 37-42, 2015.
- [11] A. J. Lee, P. Armour, D. Thind, M. H. Coates and A. C. Kang, "The prevalence of acetabular labral tears and associated pathology in a young asymptomatic population," *Bone Joint J*, Vols. 97-B, no. 5, pp. 623-627, 2015.
- [12] M. E. Arakgi and R. M. Degen, "Approach to a Failed Hip Arthroscopy," *Curr Rev Musculoskelet Med*, vol. 13, no. 3, pp. 233-239, 2020.

- [13] I. Bolia, K. Briggs and M. Philippon, "Superior Clinical Outcomes with Capsular Closure versus Non-Closure in Patients Undergoing Arthroscopic Hip Labral Repair," *Orthopaedic Journal of Sports Medicine*, vol. 6, no. 3 Suppl, 6 March 2018.
- [14] Washington State Health Care Authority, "Health Technology Assessment: Femoroacetabular Impingement Syndrome.," 17 January 2020. [Online]. Available: <https://www.hca.wa.gov/assets/program/fai-final%20findings-decision-20191122.pdf>. [Accessed 10 October 2023].
- [15] M. M. Dolan, B. E. Heyworth, A. Bedi, G. Duke and B. T. Kelly, "CT reveals a high incidence of osseous abnormalities in hips with labral tears," *Clin Orthop Relat Res*, vol. 469, no. 3, pp. 831-838, 2011.
- [16] A. J. Palmer, V. A. Gupta, S. Fernquest, I. Rombach, S. J. Dutton, R. Mansour, S. Wood, V. Khanduja, T. C. Pollard, A. W. McCaskie, K. L. Barker, T. J. Andrade, A. J. Carr, D. J. Beard, S. . Glyn-Jones and FAIT Study Group, "Arthroscopic hip surgery compared with physiotherapy and activity modification for the treatment of symptomatic femoroacetabular impingement: multicentre randomised controlled trial [published correction appears in BMJ]," *BMJ*, vol. 364, 7 February 2019.
- [17] B. Kovalenko, P. Bremjit and N. Fernando, "Classifications in Brief: Tönnis Classification of Hip Osteoarthritis," *Classifications in Brief: Tönnis Classification of Hip Osteoarthritis*, vol. 476, no. 8, pp. 1680-1684, 2018.
- [18] S. . Mannava, A. G. Geeslin, S. J. Frangiamore, M. E. Cinque, M. G. Geeslin, J. Chahla and M. J. Philippon, "Comprehensive Clinical Evaluation of Femoroacetabular Impingement: Part 2, Plain Radiography," *Arthrosc Tech*, vol. 6, no. 5, pp. e2003-e2009, 30 October 2017.

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***

*Evolut	
Clinical guidelines: KNEE ARTHROPLASTY	Original Date: November 2015
CPT Codes** - Total Knee Arthroplasty (TKA): 27447 - Partial-Unicompartmental Knee Arthroplasty (UKA): 27438, 27446 - Revision Knee Arthroplasty: 27486, 27487 <i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	Last Revised Date: December 2023
Guideline Number: Evolut_CG_315	Implementation Date: July 2024

Table of Contents

GENERAL INFORMATION	2
STATEMENT	2
PURPOSE	2
SCOPE.....	2
GENERAL REQUIREMENTS	2
INDICATIONS	3
TOTAL KNEE ARTHROPLASTY (TKA).....	3
UNICOMPARTMENTAL KNEE ARTHROPLASTY (UKA) / PARTIAL KNEE REPLACEMENT (PKA).....	5
PATELLOFEMORAL UKA/PKA.....	6
REVISION ARTHROPLASTY	8
MANIPULATION INDICATIONS	9
LEGISLATIVE REQUIREMENTS.....	9
STATE OF WASHINGTON	9
BACKGROUND	10
KNEE ARTHROPLASTY.....	10
<i>Total, Partial & Revision Knee Replacement.....</i>	<i>10</i>
<i>Unicompartmental Knee Arthroplasty / Partial Knee Replacement.....</i>	<i>10</i>
<i>Revision Arthroplasty</i>	<i>10</i>
GRADING APPENDIX	11
<i>Kellgren-Lawrence Grading System (Standing/weight-bearing X-rays)</i>	<i>11</i>
POLICY HISTORY.....	12
REFERENCES.....	13

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.

STATEMENT

Purpose

This guideline addresses elective, non-emergent knee arthroplasty (knee replacement) procedures, including total knee arthroplasty (TKA), unicompartmental/unicondylar knee arthroplasty (UKA) or hemiarthroplasty (partial knee replacement), and revision arthroplasty procedures.

Scope

Surgical indications are based on relevant subjective clinical symptoms, objective physical exam & radiologic findings, and response to previous non-operative treatments when medically appropriate.

[See LEGISLATIVE REQUIREMENTS for specific mandates in the State of Washington](#)

General Requirements

Elective knee arthroplasty may be considered if the following general criteria are met:

- Knee pain with documented loss of function, which may include painful weight bearing, painful or inadequate range of motion to accomplish age appropriate activities of daily living (ADLs) and/or employment, and painful mechanical catching, locking, or popping
- Individual is medically stable and optimized for surgery, and any treatable comorbidities are adequately medically managed such as diabetes, nicotine addiction, or an excessively high BMI. There should also be a shared decision between the patient and physician to proceed with a total joint replacement when comorbidities exist as it pertains to the increased risk of complications. [1]
- Individual does not have an active local or systemic infection
- Individual does not have active, untreated drug dependency (including but not limited to narcotics, opioids, muscle relaxants) unless engaged in treatment program
- Individual has good oral hygiene and does not have major dental work scheduled or anticipated (ideally within one year of joint replacement), due to increased post-surgical infection risk

Clinical notes should address:

- Symptom onset, duration, and severity
- Loss of function and/or limitations
- Type and duration of non-operative management modalities
- Discussion with patient regarding decision making and timing

Non-operative management must include at least **TWO** or more of the following unless otherwise specified in clinical indications below: [2, 3]

- Rest or activity modifications/limitations
- Weight reduction for individual with elevated BMI
- Protected weight-bearing with cane, walker, or crutches
- Brace/orthosis
- Physical therapy modalities
- Physician-supervised exercise program (including home exercise program)
- Application of heat or ice
- Pharmacologic treatment: oral/topical NSAIDs, acetaminophen, or analgesics
- Intra-articular injection(s)

INDICATIONS

Total Knee Arthroplasty (TKA)

There is no medical necessity to perform TKA in individuals with severe radiological disease and no symptoms). If medical records indicate that possibly either a TKA or a UKA will be performed, based on the findings at the time of surgery, separate requests are to be submitted.

TKA may be considered medically necessary when the following criteria are met, [4]

- Extensive disease or damage due to rheumatoid arthritis, post-traumatic arthritis (i.e., previous proximal tibia or distal femur fracture causing subsequent arthritis), fracture, avascular necrosis [5] confirmed by imaging (radiographs, MRI, or other advanced imaging), or radiographs (X-rays) demonstrate bone-on-bone articulation; **AND**
 - There is persistent pain and documented loss of function with any of the above
- OR**
- When **ALL** of the following criteria are met:
 - Pain due to advanced osteoarthritis (Kellgren-Lawrence (K-L) grade 3 or grade 4 degeneration [see grading appendix]) that is persistent and severe and/or individual has documented loss of function that has been present for at least 12 weeks resulting in a diminished quality of life [6]

- Failure of **at least 12 weeks** of non-operative treatment, including at least **TWO** of the following: [2, 3]
 - Rest or activity modifications/limitations
 - Weight reduction for individual with elevated BMI
 - Protected weight-bearing with cane, walker, or crutches
 - Brace/orthosis
 - Physical therapy modalities
 - Physician-supervised exercise program (including home exercise program)
 - Application of heat or ice
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
 - Injections: corticosteroid or viscosupplementation
 - Physical exam findings demonstrate **one or more** of the following: tenderness, swelling/effusion, limited range of motion (decreased from uninvolved side or as compared to a normal joint), flexion contracture, palpable or audible crepitus, instability and/or angular deformity (not required if radiographs demonstrate bone-on bone articulation)
 - Radiographic findings show evidence of advanced arthritic changes, described as Kellgren-Lawrence grade 3 or grade 4 degeneration or described as X-rays demonstrating advanced changes such as severe narrowing or bone-on-bone compartment collapse, subchondral sclerosis or cysts, osteophyte formation and/or bony deformity. [7] X-rays described only as showing “severe”, “advanced” or “end-stage” arthritis require more definitive descriptions as stated above. The severity of knee osteoarthritis is commonly determined with weight-bearing radiographs, however, if severe arthritic changes (e.g., bone on bone joint space narrowing) are noted on non-weightbearing images, further weight-bearing radiographs are not required
- NOTE:** MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint. [7] Likewise, determinations as to the degree of arthritis should not routinely be determined by findings described from prior arthroscopic surgery of the knee
- **NO** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]
 - **NO** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]

Simultaneous Bilateral TKA

- **ALL** requests for simultaneous bilateral total knee replacements should clearly indicate why simultaneous TKA is preferable to staged procedures. Associated risks with

simultaneous bilateral total knee replacements should also be discussed with the patient and documented in the medical record [16, 17]

Absolute Contraindication

- Active infection (local or remote). If a local or remote infection is documented in the patient's history, records should clearly demonstrate that the previous infection has been treated and symptoms have resolved or that the individual has no clinical signs or symptoms of the previous infection at the time of the operation [4]
- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]
- **ANY** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]

Relative Contraindication [4]

- Prior infection at site (unless aspiration with cultures and serology [CBC with differential, ESR, CRP] demonstrates no infection). If prior infection at site, tissue biopsies should be sent intra-operatively to exclude latent/dormant infection
- Documented allergy to any proposed component
- BMI > 40 without discussion of increased risk [18]
- Severe peripheral vascular disease
- Compromised soft tissue envelope
- Uncontrolled comorbidities [19]

Unicompartmental Knee Arthroplasty (UKA) / Partial Knee Replacement (PKA)

All requests for UKA in individuals with chronic, painless effusion and extensive radiographic arthritis will be evaluated on a case-by-case basis.

Medial or lateral UKA/PKA may be medically necessary when **ALL** of the following criteria are met: [20]

- At least 12 weeks of pain localized to the medial or lateral compartment
- Unless bone-on-bone articulation is present, failure of at least 12 weeks of non-operative treatment, including at least **TWO** of the following: [2, 3]
 - Rest or activity modifications/limitations
 - Weight reduction for individual with elevated BMI⁸
 - Protected weight-bearing with cane, walker, or crutches
 - Brace/orthosis
 - Physical therapy modalities
 - Physician-supervised exercise program (including home exercise program)
 - Application of heat or ice
 - Pharmacologic treatment: oral/topical NSAIDs, acetaminophen, or analgesics

- Injections: corticosteroid or viscosupplementation
- Total arc of motion (goniometer) > 90 degrees
- Normal ACL or stable reconstructed ACL per physical exam test [21, 22]
- Weight-bearing radiographs demonstrate **only** unicompartmental disease (with or without patellofemoral involvement), described as Kellgren-Lawrence grade 3 or grade 4 degeneration

NOTE: MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint [7]

- Contracture < or equal to 10 degrees upon physical exam (goniometer) [23]
- Angular deformity < or equal to 10 degrees, passively correctable to neutral upon physical exam (goniometer)
- **NO** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]
- **NO** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]
- **ALL** requests for simultaneous bilateral partial knee replacements should clearly indicate why simultaneous UKA is preferable to staged procedures. Associated risks with simultaneous bilateral partial knee replacements should also be discussed with the patient and documented in the medical record [16, 17]

Contraindications for Medial or Lateral UKA/PKA [20]

- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]
- **ANY** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]
- Local or systemic active infection
- Inflammatory arthritis
- Angular deformity or contracture greater than indicated range
- Significant arthritic involvement of opposite compartment
- ACL instability
- Poor bone quality or significant osteoporosis or osteopenia
- Meniscectomy of the opposite compartment, involving > 25% of meniscus
- Stiffness greater than indicated range of motion

Patellofemoral UKA/PKA

May be medically necessary when **ALL** of the criteria are met within **ONE** of the following two subsections:

Subsection One: [20, 24]

- Failure of prior patellofemoral unloading procedures (i.e., Maquet or Fulkerson)
- Unless patellofemoral bone-on-bone articulation is present, failure of at least 12 weeks of non-operative treatment, including at least **TWO** of the following:
 - Rest or activity modifications/limitations

- Weight reduction for individual with elevated BMI
- Protected weight-bearing with cane, walker, or crutches
- Brace/orthosis
- Physical therapy modalities
- Physician-supervised exercise program (including home exercise program)
- Application of heat or ice
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
- Injections: corticosteroid or viscosupplementation
- Standing, AP, or PA weight-bearing x-rays demonstrate only unicompartamental disease of the patellofemoral joint, described as Kellgren-Lawrence grade 3 or grade 4 degeneration (joint space narrowing, osteophyte formation, sclerosis and/or subchondral cystic changes), with no evidence of medial or lateral compartment arthritis.

OR

Subsection Two: [20]

- At least 6 months of isolated patellar/anterior knee pain
- Patellar/anterior knee pain that is exacerbated by stairs, inclines, transfers, or prolonged sitting
- Reproducible patellofemoral pain upon physical exam
- **NO** ligamentous instability upon physical exam
- Failure of **at least 12 weeks** of non-operative treatment, including at least **TWO** of the following:
 - Rest or activity modifications/limitations
 - Weight reduction for individual with elevated BMI
 - Protected weight-bearing with cane, walker, or crutches
 - Brace/orthosis
 - Physical therapy modalities
 - Physician-supervised exercise program (including home exercise program)
 - Application of heat or ice
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
 - Injections: corticosteroid or viscosupplementation
- Standing, AP, or PA weight-bearing radiographs demonstrate only unicompartamental disease of the patellofemoral joint, described as Kellgren-Lawrence grade 3 or grade 4 degeneration, with no evidence of medial or lateral compartment arthritis
- **NO** cortisone injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]

NOTE: MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint [7]

Contraindications for Patellofemoral UKA/PKA: [20]

- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]

- Local or systemic active infection
- Inflammatory arthritis
- Angular deformity or contracture greater than indicated range
- Significant arthritic involvement of the medial or lateral knee compartment(s)
- Ligament instability
- Poor bone quality or significant osteoporosis or osteopenia
- Stiffness greater than indicated range of motion

Revision Arthroplasty

Revision TKA may be considered medically necessary when the following criteria are met:

- Previous removal of infected knee prosthesis **AND** no evidence of current, ongoing, or inadequately treated knee infection (ruled out by normal inflammatory markers* (ESR and CRP) or significant improvement in these markers and a clear statement by the treating surgeon that infection has been adequately treated) **AND** off antibiotics [25, 26]

***NOTE:** If these inflammatory markers are elevated, further evaluation is required, including an aspiration with synovial fluid WBC count, gram stain and cultures, or an intraoperative frozen biopsy [27, 28];

OR

- When **ALL** of the following criteria are met [29, 30]:
 - Symptomatic UKA/PKA or TKA as evidenced by persistent, severe, disabling pain, complaints of instability, mechanical abnormalities (“clunking” or audible crepitus), any of which result in a loss of function
 - Any of the following findings upon physical exam: tenderness to palpation objectively attributable to the implant, swelling or effusion, pain on weight-bearing or motion, instability on stress-testing, abnormal or limited motion (compared to usual function), palpable or audible crepitus or “clunking” associated with reproducible pain
 - Aseptic loosening, instability, osteolysis, progressive bone loss, or mechanical failure confirmed on radiographic or advanced imaging (bone scan, CT scan, or MRI)
 - For implant loosening seen on routine X-rays or advanced imaging, documentation of no current, ongoing, or inadequately treated knee infection, ruled out by normal inflammatory markers (ESR and CRP) [25, 31, 26]
 - If the revision is for obvious radiographic evidence of hardware failure or there is a history of instability, inflammatory markers are not required
 - Cases that do not demonstrate any radiographic abnormalities yet show findings of gross instability on physical examination will be evaluated on a case-by-case basis
- **NO** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]

Prosthesis Removal

- Removal of infected knee prosthesis and subsequent insertion of antibiotic spacer is not considered a revision knee arthroplasty

Absolute Contraindication

- Active infection (local or remote). If a local or remote infection is documented in the patient's history, records should clearly demonstrate that the previous infection has been treated and symptoms have resolved or that the individual has no clinical signs or symptoms of the previous infection at the time of the operation
- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]

Relative Contraindication:

- Unstable or poorly controlled comorbidities
- Severe peripheral vascular disease
- Compromised soft-tissue envelope (revision may be performed in conjunction with plastic surgical consultation for soft tissue coverage via pedicle flaps or other acceptable procedure)

Manipulation Indications

Manipulation following total knee arthroplasty: SEE KNEE ARTHROSCOPY & OTHER OPEN PROCEDURES Guideline for specific Manipulation indications.

LEGISLATIVE REQUIREMENTS

State of Washington

- **Washington State Health Care Authority Technology Assessment [32]**
20101022A – Total Knee Arthroplasty
 - **HTTC Coverage Determination**
 - **Computer navigated and unicompartmental knee arthroplasty is a covered benefit for treatment of osteoarthritis and rheumatoid arthritis of the knee.**
 - **Multi-compartmental arthroplasty is not a covered benefit**
 - **HTTC Reimbursement Determination**
 - **Limitations of Coverage**
 - **For Treatment of end stage osteoarthritis and rheumatoid arthritis of the knee**
 - **Total Knee Arthroplasty with Computer Navigation is a covered benefit**

- For individuals with uni-compartmental disease, uni-compartmental partial Knee Arthroplasty is a covered benefit
- Non-Covered Indicators
 - Multi-compartmental partial knee arthroplasty, (including bi-compartmental and bi-unicompartamental) is not a covered benefit.

BACKGROUND

Knee Arthroplasty

Total, Partial & Revision Knee Replacement

Arthroplasty describes the surgical replacement and reconstruction of a joint with implanted devices when the joint has been damaged by an arthritic or traumatic process.

TKA replaces and reconstructs all articular joint surfaces. In some cases, only one surface within the knee develops arthritis and associated pain and functional loss. In these cases, a partial knee replacement may be necessary to remove and reconstruct only the damaged region of the knee.

In some cases, the knee prosthesis may wear out or loosen. If loosening is painful, a revision surgery may be necessary. In this procedure some or all of the components of the original replacement prosthesis are removed and replaced with new ones.

Unicompartamental Knee Arthroplasty / Partial Knee Replacement

Unicompartamental knee arthroplasty (UKA) is also called partial replacement, hemiarthroplasty, unicondylar knee, or bicondylar knee arthroplasty. This procedure involves reconstruction of either the medial or lateral weight bearing compartment of the knee and/or patellofemoral joint. Medial UKA is performed more frequently than lateral procedures.

Revision Arthroplasty

Revision describes surgical reconstruction due to failure or complication of a previous arthroplasty.

Grading Appendix

Kellgren-Lawrence Grading System (Standing/weight-bearing X-rays)

Grade	Description
0	No radiographic features of osteoarthritis
1	Possible joint space narrowing and osteophyte formation
2	Definite osteophyte formation with possible joint space narrowing
3	Moderate multiple osteophytes, definite narrowing of joint space, some sclerosis and possible deformity of bone contour (<i>some sclerosis and cyst formation</i>)
4	Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour.

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"> • Legislative Requirements added for the State of Washington for Total Knee Arthroplasty 20101022A • Indications for TKA/UKA/PKA: added physical exam findings were not required if radiographs show bone-on bone articulation • Relative contraindications: BMI – removed attempts at weight loss and conferred by BMI • Revision Arthroplasty: added in language of radiographic evidence of hardware failure or history of instability, then inflammatory markers are not required • Added table of contents • Reduced background section • Updated references
May 2023	<ul style="list-style-type: none"> • Additional references pertaining to the risk of infection following a cortisone injection within 3 months of surgery • Deleted risk/benefit discussion requirement for revision knee arthroplasty
May 2022	<ul style="list-style-type: none"> • Added arthroscopic surgery within 6 months of an arthroplasty as a contraindication • Removed the risk/benefit discussion requirement • Clarified language (General Requirements) for medically stable and surgically optimized individuals • Revised 3-months to 12-weeks throughout • Replaced “patient” with “individual” where appropriate

References

- [1] C. P. Hannon, S. M. Goodman, M. S. Austin, A. . Yates Jr, G. Guyatt, V. K. Aggarwal, J. Baker, P. Bass, D. I. Bekele, D. Dass, H. M. Ghomrawi, D. S. Jevsevar, C. K. Kwoh, C. M. Lajam, C. F. Meng, L. W. Moreland, L. I. Suleiman, J. Wolfstadt, K. Bartosiak, N. A. Bedard, J. L. Blevins, A. . Cohen-Rosenblum, P. M. Courtney, R. Fernandez-Ruiz, E. B. Gausden, N. Ghosh, L. K. King, A. S. Meara, B. Mehta, R. Mirza and A. j. Rana, "2023 American College of Rheumatology and American Association of Hip and Knee Surgeons Clinical Practice Guideline for the Optimal Timing of Elective Hip or Knee Arthroplasty for Patients With Symptomatic Moderate-to-Severe Osteoarthritis," *Arthritis Care & Research*, vol. 0, no. 0, pp. 1-12, 2023.
- [2] S. L. Kolasinski, T. Neogi, M. C. Hochberg, C. Oatis, G. Guyatt, J. Block, L. Callahan, C. Copenhaver, C. Dodge, D. Felson, K. Gellar, F. Harvey William, G. Hawker, E. Herzig, C. K. Kwoh, A. E. Nelson, J. Samuels, C. . Scanzello, D. White, B. Wise, R. D. Altman, D. DiRenzo, J. Fontanarosa, G. Giradi, M. Ishimori, D. Misra, A. A. Shah, A. Shmagel, L. M. Thoma, M. Turgunbaev, A. S. Turner and J. Reston, "American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee [published correction appears in *Arthritis Care Res (Hoboken)*]," *Arthritis Care Res (Hoboken)*, vol. 73, no. 5, pp. 149-162, May 2021.
- [3] American Academy of Orthopaedic Surgeons, "Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline," 31 August 2021. [Online]. Available: <https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf>. [Accessed 18 September 2023].
- [4] A. C. Gemayel and M. Varacallo, "Total Knee Replacement Techniques. StatPearls (Treasure Island FL)," 4 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK538208/>. [Accessed 18 October 2023].
- [5] C. Wilson and R. Marappa-Ganeshan, "Secondary Osteonecrosis of the Knee," 24 July 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK562286/>. [Accessed 18 October 2023].
- [6] Y. Rehman, M. F. Lindberg, K. Arnljot, C. L. Gay, A. Lerdal and A. Aamodt, "More Severe Radiographic Osteoarthritis Is Associated With Increased Improvement in Patients' Health State Following a Total Knee Arthroplasty," *J Arthroplasty*, vol. 35, no. 11, pp. 3131-3137, 2020.
- [7] S. Newman, H. Ahmed and N. Rehmatullah, "Radiographic vs. MRI vs. arthroscopic assessment and grading of knee osteoarthritis - are we using appropriate imaging," *J Exp Orthop*, vol. 9, no. 1, 3 January 2022.
- [8] X. Yang, L. . Li, X. Ren and L. Nie, "Do preoperative intra-articular injections of corticosteroids or hyaluronic acid increase the risk of infection after total knee arthroplasty? A meta-analysis," *Bone Joint Res*, vol. 11, no. 3, pp. 171-179, 2022.

- [9] Q. Lai, K. Cai, T. Lin, C. Zhou, Z. Chen and Q. Zhang, "Prior Intra-articular Corticosteroid Injection Within 3 Months May Increase the Risk of Deep Infection in Subsequent Joint Arthroplasty: A Meta-analysis," *Clin Orthop Relat Res*, vol. 480, no. 5, pp. 971-979, 2022.
- [10] Y. M. Kim, Y. B. Joo and J. H. Song, "Preoperative intra-articular steroid injections within 3 months increase the risk of periprosthetic joint infection in total knee arthroplasty: a systematic review and meta-analysis," *J Orthop Surg Res*, vol. 18, no. 148, 2023.
- [11] N. Bedard, A. Pugely, J. Elkins, K. Duchman, R. Westermann, S. Liu, Y. Gao and J. Callaghan, "The John N. Insall Award: Do Intraarticular Injections Increase the Risk of Infection After TKA?," *Clin Orthop Relat Res*, vol. 475, no. 1, pp. 45-52, Jan 2017.
- [12] J. Cancienne, B. Werner, L. Luetkemeyer and J. Browne, "Does Timing of Previous Intra-Articular Steroid Injection Affect the Post-Operative Rate of Infection in Total Knee Arthroplasty?," *J Arthroplasty*, vol. 30, no. 11, pp. 1879-82, Nov 2015.
- [13] Q. Liu, Z. Tian, K. Pian, H. Duan, Q. Wang, H. Zhang, L. Shi, D. Song and Y. Wang, "The influence of prior arthroscopy on outcomes of primary total lower extremity arthroplasty: A systematic review and meta-analysis," *Int J Surg*, vol. 98, 2022.
- [14] T. Goyal, S. K. Tripathy, A. Schuh and S. Paul, "Total knee arthroplasty after a prior knee arthroscopy has higher complication rates: a systematic review," *Arch Orthop Trauma Surg*, vol. 142, no. 11, pp. 3415-3425, 2022.
- [15] J.-N. Ma, X.-L. Li, P. Linag and S.-L. Yu, "When can total knee arthroplasty be safely performed following prior arthroscopy," *BMC Musculoskelet Disord*, vol. 22, no. 1, 4 January 2021.
- [16] M. K. Richardson, K. C. Liu, C. K. Mayfield, N. M. Kistler, A. B. Christ and N. D. Heckmann, "Complications and Safety of Simultaneous Bilateral Total Knee Arthroplasty: A Patient Characteristic and Comorbidity-Matched Analysis," *J Bone Joint Surg Am*, vol. 105, no. 14, pp. 1072-1079, 2023.
- [17] L. Liu, H. Liu, H. Zhang, J. Song and L. Zhang, "Bilateral knee arthroplasty Simultaneous or staged? A systematic review and meta-analysis," *Medicine*, vol. 98, no. 22, 2019.
- [18] M. R. D'Apuzzo, W. M. Novicoff and J. A. Browne, "The John Insall Award: Morbid obesity independently impacts complications, mortality, and resource use after TKA," *Clin Orthop Relat Res*, vol. 473, no. 1, pp. 57-63, 2015.
- [19] P. Dooley and C. Secretan, "Total Knee Replacement: Understanding patient-related factors," *BCMJ*, vol. 58, no. 9, pp. 514-519, November 2016.
- [20] T. D. Luo and J. B. Hubbard, "Arthroplasty Knee Unicompartmental," 3 July 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK538267/>. [Accessed 19 October 2023].
- [21] A. Jaber, C. M. Kim, A. Barie, M. Streit, H. Schmitt, M. Clarius, C. Merle and Y. Bangert, "Combined treatment with medial unicompartmental knee arthroplasty and anterior cruciate ligament reconstruction is effective on long-term follow-up," *Knee Surg Sports Traumatol Arthrosc*, vol. 31, no. 4, pp. 1382-1387, 2023.

- [22] F. Mancuso, C. A. Dodd, D. W. Murray and H. Pandit, "Medial unicompartmental knee arthroplasty in the ACL-deficient knee," *J Orthop Traumatol*, vol. 17, no. 3, pp. 267-275, 2016.
- [23] R. L. Purcell, J. P. Cody, D. J. Ammeen, N. Goyal and G. Engh, "Elimination of Preoperative Flexion Contracture as a Contraindication for Unicompartmental Knee Arthroplasty," *J Am Acad Orthop Surg*, vol. 26, no. 7, pp. e158-e163, 2018.
- [24] M. Vasso, A. Antoniadis and N. Helmy, "Update on unicompartmental knee arthroplasty: Current Indications and failure modes," *EFORT Open Rev*, vol. 3, no. 8, pp. 442-448, 1 August 2018.
- [25] H. D. Lee, K. Prashant and W. Y. Shon, "Management of Periprosthetic Hip Joint Infection," *Hip Pelvis*, vol. 27, no. 2, pp. 63-71, 2015.
- [26] J. Parvizi and C. J. Della Valle, "AAOS Clinical Practice Guideline: diagnosis and treatment of periprosthetic joint infections of the hip and knee," *J Am Acad Orthop Surg*, vol. 18, no. 12, pp. 771-772, 2010.
- [27] F. Ayoade, D. D. Li, A. Mabrouk and J. R. Todd, "Prosthetic Joint Infection," 24 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK448131/>. [Accessed 20 October 2023].
- [28] M. K. Yilmaz, A. Abbaszadeh, S. Tarabichi, I. Azboy and J. Parvizi, "Diagnosis of Periprosthetic Joint Infection: The Utility of Biomarkers in 2023," *Antibiotics (Basel)*, vol. 12, no. 6, 15 June 2023.
- [29] M. Motifard, M. Pesteh, M. R. Estemadifar and S. Shirazinejad, "Causes and rates of revision total knee arthroplasty: Local results from Isfahan, Iran," *Causes and rates of revision total knee arthroplasty: Local results from Isfahan, Iran*, vol. 4, no. 111, 29 May 2015.
- [30] N. Goyal and M. S. Austin, "Principles and Techniques of Total Knee Revision Surgery," *AAOS*, vol. 10, no. 6, 2012.
- [31] J. Parvizi and G. A. Chen, "Proceedings of the International Consensus on Periprosthetic Joint Infection," *Bone Joint J*, Vols. 95-B, no. 11, pp. 1450-1452, 2013.
- [32] Washington State Health Care Authority, "Health Technology Assessment: Total Knee Arthroplasty," 10 December 2010. [Online]. Available: [https://www.hca.wa.gov/assets/program/findings_decision_tka_121010\[1\]_0.pdf](https://www.hca.wa.gov/assets/program/findings_decision_tka_121010[1]_0.pdf). [Accessed 10 October 2023].

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***

*Evolut	
Clinical guidelines: KNEE ARTHROSCOPY	Original Date: November 2015
CPT Codes**: <ul style="list-style-type: none"> - Knee Manipulation Under Anesthesia (MUA): 27570, 29884 - Knee Ligament Reconstruction/Repair: 27405, 27407, 27409, 27427, 27428, 27429, 29888, 29889 - Knee Meniscectomy/Meniscal Repair/Meniscal Transplant: 27332, 27333, 27403, 29868, 29880, 29881, 29882, 29883 - Knee Surgery – Other: 27412, 27415, 27416, 27418, 27420, 27422, 27424, 27425, 29866, 29867, 29870, 29873, 29874, 29875, 29876, 29877, 29879, 29885, 29886, 29887, G0289 <p><i>**See UM Matrix for allowable billed groupings and additional covered codes</i></p>	Last Revised Date: December 2023
Guideline Number: Evolut_CG_316	Implementation Date: July 2024

Table of Contents

GENERAL INFORMATION	3
STATEMENT	3
PURPOSE	3
SCOPE	3
GENERAL REQUIREMENTS	3
INDICATIONS	4
DIAGNOSTIC KNEE ARTHROSCOPY	4
DEBRIDEMENT CHONDROPLASTY	5
<i>Debridement for Non-Patellofemoral (Femoral Condyle and Tibial Plateau) Articular Cartilage</i>	<i>5</i>
<i>Debridement chondroplasty for patellofemoral chondrosis.....</i>	<i>5</i>
MENISCECTOMY / MENISCAL REPAIR / MENISCAL TRANSPLANT	6

<i>Meniscectomy / Meniscal Repair</i>	6
<i>Meniscal Transplant</i>	9
LIGAMENT RECONSTRUCTION OR REPAIR	10
<i>Anterior Cruciate Ligament (ACL) Repair or Reconstruction with Allograft or Autograft</i>	10
<i>Posterior Cruciate Ligament (PCL) Reconstruction</i>	10
<i>Collateral Ligament Repair or Reconstruction</i>	11
ARTICULAR CARTILAGE RESTORATION / REPAIR	11
<i>Skeletally Immature Indications</i>	11
<i>Skeletally Mature Indications</i>	12
<i>Articular Cartilage Restoration and Repair Exclusions</i>	15
SYNOVECTOMY (MAJOR [2+ COMPARTMENTS], MINOR [1 COMPARTMENT])	15
LOOSE BODY REMOVAL.....	16
LATERAL RELEASE/PATELLAR REALIGNMENT	17
<i>Lateral Patellar Compression Syndrome</i>	17
<i>Patellar Malalignment and/or Patellar Instability</i>	18
MANIPULATION UNDER ANESTHESIA (MUA)	19
LYSIS OF ADHESIONS FOR ARTHROFIBROSIS OF THE KNEE	19
LEGISLATIVE REQUIREMENTS	19
STATE OF WASHINGTON.....	19
BACKGROUND	20
GRADING APPENDIX	20
<i>Kellgren-Lawrence Grading System (Standing/weight-bearing X-rays)</i>	20
<i>Outerbridge Arthroscopic Grading System</i>	21
<i>Marx Scale</i>	21
<i>Tegner Scores</i>	22
<i>The International Cartilage Research Society (ICRS)</i>	23
<i>American College of Rheumatology Guidelines</i>	24
POLICY HISTORY	25
REFERENCES	26

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.

STATEMENT

Purpose

This guideline addresses the following elective, non-emergent, arthroscopic knee repair procedures; diagnostic knee arthroscopy, debridement with or without chondroplasty, meniscectomy/meniscal repair/meniscal transplant, ligament reconstruction/repair, articular cartilage restoration/repair (marrow stimulating and restorative techniques) , synovectomy (major [2+ compartments], minor [1 compartment]), loose body removal, lateral release/patellar realignment, manipulation under anesthesia (MUA), and lysis of adhesions for arthrofibrosis of the knee.

Scope

Open, non-arthroplasty knee surgeries are performed instead of an arthroscopy as dictated by the type and severity of injury and/or disease.

[See LEGISLATIVE REQUIREMENTS for specific mandates in the State of Washington](#)

General Requirements

Elective arthroscopic surgery of the knee may be considered if the following general criteria are met:

- There is clinical correlation of the individual's subjective complaints with objective exam findings and/or imaging (when applicable)
- Knee pain with documented loss of function: Deviation from normal knee function which may include painful weight bearing and/or inadequate range of motion (> 10 degrees flexion contracture or < 110 degrees flexion or both) to accomplish age-appropriate activities of daily living (ADLs), occupational or athletic requirements)
- Individual is medically stable and optimized for surgery, and any treatable comorbidities are adequately medically managed such as diabetes, nicotine addiction, or an excessively high BMI. There should also be a shared decision between the patient and physician to proceed with knee surgery when comorbidities exist as it pertains to the increased risk of complications.

- Individual does not have an active local or systemic infection
- Individual does not have active, untreated drug dependency (including but not limited to narcotics, opioids, or muscle relaxants) unless engaged in a treatment program
- No intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Clinical notes should address:

- Symptom onset, duration, and severity
- Loss of function and/or limitations
- Type and duration of non-operative management modalities (where applicable)

Unless otherwise stated in the subsections below, non-operative management must include **at least TWO** or more of the following, unless otherwise specified: [4]

- Rest or activity modifications/limitations
- Ice/heat
- Protected weight bearing
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
- Brace/orthosis
- Physical therapy modalities
- Supervised home exercise
- Weight optimization
- Injections: corticosteroid, NSAID, viscosupplementation

INDICATIONS

Diagnostic Knee Arthroscopy

Diagnostic knee arthroscopy should rarely be required however may be medically necessary when **ALL** of the following criteria are met:

- At least 12 weeks of knee pain with documented loss of function
- Failure of at least 12 weeks of non-operative treatment, including **at least TWO** of the following: [4]
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise

- Weight optimization
- Corticosteroid injection
- Clinical documentation of painful weight bearing, joint line tenderness, effusion and/or limited motion compared to pre-symptomatic joint range
- Indeterminate radiographs **AND** MRI findings. Radiographs and/or MRI should not demonstrate any of the following: Kellgren-Lawrence Grade 3-4 changes (based on weight-bearing radiographs), meniscus tears, ligament tears, loose bodies, stress fractures (including insufficiency fractures) or patellofemoral instability (lateral patellar tilt or patellar subluxation)
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

NOTE: Subchondroplasty and In-office diagnostic arthroscopy (e.g., Mi-Eye, VisionScope) [5] are not managed by Evolent.

Debridement Chondroplasty

Arthroscopic debridement with or without chondroplasty for the treatment of osteoarthritis of the knee is considered **NOT MEDICALLY NECESSARY**. [6]

Debridement for Non-Patellofemoral (Femoral Condyle and Tibial Plateau) Articular Cartilage

May be medically necessary when **ALL** of the following criteria are met: [7]

- Knee pain with documented loss of function
- Failure of **at least 12 weeks** of non-operative treatment, including **at least two** of the following: [4]
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
- MRI results demonstrate evidence of an area of localized articular cartilage damage or an unstable chondral flap
- History of two or more or persistent effusion(s)
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Debridement chondroplasty for patellofemoral chondrosis

May be medically necessary when **ALL** of the following criteria are met: [8]

- Anterior knee pain with documented loss of function, exacerbated by activities that load the patellofemoral joint such as ascending > descending stairs or being in seated position for extended periods of time with knee flexed
- Other extra-articular or intra-articular sources of pain or dysfunction have been excluded (referred hip pain , radicular pain, tendinitis, bursitis, neuroma)
- Physical exam localizes tenderness to the patellofemoral joint
- Failure of **at least 12 weeks** of non-operative treatment, including **at least two** of the following: [4]
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
- **NO** evidence of moderate to severe osteoarthritis (Kellgren-Lawrence Grade 3-4 based on weight-bearing radiographs and patellofemoral views [see [Grading Appendix](#)])
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Meniscectomy / Meniscal Repair / Meniscal Transplant

Meniscectomy / Meniscal Repair

There is a high incidence of incidental meniscal findings on knee MRI in middle-aged and elderly individuals and several studies have indicated that there is no difference in outcome between operative and non-operative treatment of individuals with degenerative meniscus tears, especially when associated with an arthritic knee. [9, 10, 11] Arthroscopic debridement of degenerative meniscus tears in those with visible arthritis is generally not recommended and, in some cases, may worsen the symptoms and progression of the arthritis. [9, 12, 13] Studies have also demonstrated an increased incidence of revision arthroplasty, infection, loosening and stiffness in individuals who underwent a knee arthroscopy prior to a total knee arthroplasty.

Meniscectomy and/or meniscal repair may be medically necessary when **ALL** the following criteria in any of the following subsections are met: [9, 14]

- Symptomatic meniscal tear confirmed by MRI results that demonstrate a peripheral tear in the vascular zone, root tear, [15] or other tear that the requesting physician considers repairable and is associated with pain localized to the corresponding compartment upon physical examination.

OR

- MRI results demonstrate a meniscus tear in a pediatric or adolescent individual who complains of either pain or mechanical symptoms and has ANY positive meniscal findings on physical examination.

OR

- History of acute injury/onset of symptoms with a locked knee and/or mechanical symptoms of locking
- Physical examination demonstrates ANY positive meniscal findings on examination or demonstrates evidence of a locked knee (loss of terminal extension)
- MRI demonstrates a bucket-handle tear of the meniscus. (Does not include an extruded meniscus or flap tears)

OR

- When **at least two** of the following 5 criteria are met:
 - History of mechanical symptoms such as “catching” or “locking” as reported by the individual
 - Knee joint line pain with forced hyperextension upon physical exam
 - Knee joint line pain with maximum flexion upon physical exam
 - Knee pain, crepitus, or an audible or palpable click with the McMurray’s test or Apley grind test
 - Joint line tenderness to palpation upon physical exam

AND

- Failure of at least 6 weeks of non-operative treatment, including **at least TWO** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

AND

- **ONE** of the following:
 - Weight-bearing X-rays (standing X-rays, Rosenberg view, 45-degree flexed PA view, etc.) that demonstrate no moderate or severe osteoarthritic changes

defined as Kellgren-Lawrence Grade 3-4 [see [Grading Appendix](#)]; X-rays should be described as showing either no arthritis or mild/minimal arthritis only

OR

- MRI results confirm a frank meniscal tear (not simply degenerative changes, i.e., fraying) and the MRI **does not** demonstrate any of the following: moderate or severe articular cartilage thinning, full-thickness articular cartilage loss or defects, extrusion of the meniscus, subchondral edema, more than mild osteophytes, subchondral cysts, or an impression of “moderate” or “advanced/severe” arthritis (see absolute and relative contraindications). If the MRI demonstrates any of the above-described findings of more than mild arthritis, **weight-bearing X-rays are required** to confirm no moderate or severe articular cartilage loss*.

***Arthroscopic meniscus requests and MRI/X-rays of the knee**

The imaging evaluation of the knee for individuals with meniscus tears should be individualized, the goal of which is to recommend treatment for only those with no or minimal associated arthritis.

Although most individuals that have a request for arthroscopic meniscectomy will have had **BOTH** an MRI **AND** X-rays of the knee, only one of these tests is required for approval, provided all other criteria for meniscectomy have been met. For example, if there has been a failure to improve with 6 weeks of non-operative treatment and there are physical examination findings of a meniscus tear, an MRI is not required, only weight-bearing X-rays that demonstrate no more than mild arthritis. Likewise, if an MRI describes a frank meniscus tear and does not describe any significant associated arthritis, weight-bearing X-rays are not required. However, as noted above, if an MRI demonstrates findings of more than mild arthritis, **weight-bearing X-rays are required** to confirm no moderate or severe articular cartilage loss.

Absolute Contraindications Meniscectomy/Meniscal Repair

- Arthroscopic meniscectomy or meniscal repair is never medically necessary in the presence of Kellgren-Lawrence Grade 4 osteoarthritis [see [Grading Appendix](#)].
- **ANY** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Relative Contraindications Meniscectomy / Meniscal Repair

- Meniscectomy or repair is considered NOT MEDICALLY NECESSARY in the presence of Kellgren-Lawrence Grade 3 osteoarthritis [see [Grading Appendix](#)], **Unless**:
 - There has been the acute onset of locking (does not include catching, popping, cracking, etc.); **AND**

- There is MRI evidence of a bucket-handle **or** displaced meniscal fragment that correlates with the correct compartment (i.e., medial tenderness and locking, for a medial meniscus tear).
- If grade 3 changes are present, only a meniscectomy may be indicated, not a repair. If there is evidence of meniscal extrusion on coronal MRI, with/without subchondral edema, arthroscopy is relatively contraindicated, even if a tear is present.

Meniscal Transplant

Meniscal Transplants may be medically necessary when **ALL** of the following criteria are met [16, 17]

- Individual is < 40 years of age
- Individual has no evidence of arthritic changes
- Symptomatic meniscal deficiency confirmed by MRI results that show a meniscal deficient compartment, OR previous arthroscopy photographs or video showing subtotal or total meniscectomy
- Failure of at least 6 weeks of non-operative treatment, including **at least TWO** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection

Absolute Contraindications: Meniscal Transplant

- Uncorrected (staged or simultaneous) ligamentous insufficiency (ACL, PCL, MCL, LCL, PMC, PLC)
- Uncorrected (staged or simultaneous) malalignment greater than 5 degrees varus or 5 degrees valgus
- Uncorrected (staged or simultaneous) full-thickness articular cartilage isolated defects (International Cartilage Research Society Grade 3 or 4; Outerbridge Grade IV [see [Grading Appendix](#)])
- Kellgren-Lawrence Grade 3 or 4 osteoarthritis [see [Grading Appendix](#)]
- Intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Ligament Reconstruction or Repair

Anterior Cruciate Ligament (ACL) Repair or Reconstruction with Allograft or Autograft

ACL reconstruction or repair may be medically necessary when either of the following criteria are met: [18]

- MRI results confirm an ACL tear associated with other ligamentous instability or repairable meniscus
- Acute ACL tear confirmed by MRI in high demand occupation or competitive athlete (as quantified by Marx activity score for athletics (any score greater than 4) and Tegner activity score for athletics and/or occupation (score greater than 2)) [see [Grading Appendix](#)]

OR

When **ALL** the following criteria are met: [16,17]

- Patient history of instability at the time of an acute injury OR history of recurrent knee instability (as defined subjectively as "giving way", "giving out", "buckling", two-fist sign)
- Physical examination findings of instability: Lachman test, Lachman test 1A, 1B, 2A, 2B, 3A, 3B, anterior drawer, pivot shift test, or instrumented (KT-1000 or KT-2000) laxity of greater than 3 mm side-side difference
- MRI results confirm complete ACL tear or substantial "partial tear" with non-functioning ACL as demonstrated on physical examination
- Individual has no evidence of severe arthritis defined as Kellgren-Lawrence grade 3 or 4 [see [Grading Appendix](#)]

NOTE: If the MRI results demonstrate an ACL tear and there is no mention of significant arthritis, especially in the younger individual, X-rays are not required. However, in others with significant MRI evidence of arthritis, standing X-rays are required to confirm that no Kellgren-Lawrence grade 3 or 4 changes are present.

NOTE: Requests for ACL repair or reconstruction in individuals less than age 13 will be reviewed on a case-by-case basis. [21]

Posterior Cruciate Ligament (PCL) Reconstruction

PCL reconstruction or repair may be medically necessary when the following criteria are met: [22, 23]

- Knee instability (as defined subjectively as "giving way", "giving out" or "buckling") with clinical findings of any of the following signs/tests: positive posterior drawer, posterior sag, quadriceps active, dial test at 90 degrees knee flexion or reverse pivot shift test
- MRI results confirm complete PCL tear
- Failure of at least 12 weeks of non-operative treatment, including physical therapy emphasizing quadriceps strengthening

- Absence of medial and patellofemoral K-L grade 3-4 changes in chronic tears [see [Grading Appendix](#)]

The following clinical scenarios will be considered and decided on a case-by-case basis: [24]

- Pediatric and adolescent tears in individuals with open physis or growth plates
- Symptomatic partial tears with persistent instability despite non-operative treatment
- Incidental Kellgren-Lawrence grade 2-3 osteoarthritis [see [Grading Appendix](#)] in acute/subacute tears with unstable joint
- Acute PCL repair or reconstruction when surgery is also required for the ACL, MCL or LCL
- Tears in individuals less than age 13

Collateral Ligament Repair or Reconstruction

Collateral ligament repair or reconstruction should rarely occur independent of additional ligament repair or reconstruction surgery (ACL, MCL, LCL).

All non-traumatic collateral ligament repair/reconstruction requests will be reviewed on a case-by-case basis.

Articular Cartilage Restoration / Repair

Skeletally Immature Indications

Articular cartilage reparative or stimulation procedures may be medically necessary when **ALL** of the following criteria in **any** of the following subsections are met: [25, 26, 27, 28]

- Skeletally immature patient
- Individual is symptomatic (pain, swelling, mechanical symptoms of popping, locking, catching, or limited range of motion)
- Radiographic findings (X-ray or MRI) of a displaced lesion

OR

- Skeletally immature patient
- Individual is symptomatic (pain, swelling, mechanical symptoms of popping, locking, catching, or limited range of motion)
- Failure of at least **12 weeks** of non-operative treatment, including at least **two** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis

- Physical therapy modalities
- Supervised home exercise
- Weight optimization
- Corticosteroid injection
- Radiographic findings (X-ray or MRI) findings of a stable osteochondral lesion

OR

- When **ALL** of the following criteria are met:
 - Skeletally immature
 - Asymptomatic
 - Failure of at least **12 weeks** of non-operative treatment, including at least **TWO** of the following
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
 - Radiographic findings (X-ray or MRI) findings of an unstable osteochondral lesion

Exclusion (applies to all criteria above)

Exclude individuals with evidence of meniscal deficiency and/or malalignment if these are not being addressed (meniscal transplant and/or lateral release/patellar realignment procedure) at the same time as the cartilage restoration procedure.

Skeletally Mature Indications

Articular cartilage reparative marrow stimulation procedures

Reparative marrow stimulation techniques such as microfracture & drilling may be medically necessary when **ALL** the following criteria are met [29, 30, 28, 31, 32]

- Skeletally mature adult
- MRI confirms an isolated full-thickness chondral or osteochondral lesion of the femoral condyle, trochlea, or patella < 2.0 cm
- Individual is symptomatic with pain, swelling, mechanical symptoms of popping, locking, catching, or limited range of motion. For trochlea or patellar lesions, individual has

anterior knee pain with physical examination findings localized to the patellofemoral joint.

- Failure of at least **12 weeks** of non-operative treatment, including at least **TWO** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
- Individual is < 50 years of age
- BMI < 35 (optimal outcomes if patient BMI < 30)
- Physical exam findings and/or (imaging) results confirm no ligamentous instability
- For femoral condyle lesions, no evidence of prior meniscectomy in same compartment unless concurrent meniscal transplant performed.
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

NOTE: Abrasion arthroplasty is included in coding but is not indicated.

Articular cartilage restorative procedures – femoral condyle and trochlea

Restorative procedures for articular cartilage loss may include the following: osteochondral autograft transfer (OAT), osteochondral allograft transplantation (OCA), autologous chondrocyte implantation (ACI), or matrix autologous chondrocyte implantation (MACI). The OAT or OCA procedures are preferable if the lesion involves subchondral bone.

An articular cartilage restorative procedure may be medically necessary when **ALL** of the following criteria are met: [29, 28, 33, 32, 31]

- Skeletally mature adult
- MRI results confirm an isolated full thickness chondral or osteochondral lesion of the femoral condyles or trochlea with stable surrounding articular cartilage:
 - < 2.0 cm² - OAT
 - > 2.0 cm² - ACI, MACI, OCA
- Individual is < 50 years of age
- BMI < 35 (optimal outcomes if patient BMI < 30)
- Individual has been symptomatic (pain, swelling, mechanical symptoms of popping, locking, catching, or limited range of motion) for at least 6 months
- Failure of at least **12 weeks** of non-operative treatment, including at least **TWO** of the following:

- Rest or activity modifications/limitations
- Ice/heat
- Protected weight bearing
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
- Brace/orthosis
- Physical therapy modalities
- Supervised home exercise
- Weight optimization
- Corticosteroid injection
- MRI and/or physical findings confirm knee has normal alignment as defined as +/- 3 degrees from neutral on full-length mechanical axis long-leg x-ray (unless concurrent or staged tibial or femoral osteotomy performed) and stability (unless concurrent ligamentous repair or reconstruction performed)
- MRI and/or X-rays shows no evidence of osteoarthritis (no greater than Kellgren-Lawrence Grade 2 changes on weight-bearing X-rays [see [Grading Appendix](#)])
- **NO** prior meniscectomy in same compartment (unless concurrent or staged meniscal transplant performed)
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Articular cartilage restorative procedures - patella

Restorative procedures for articular cartilage loss of the patella may include the following: osteochondral autograft transfer (OAT), osteochondral allograft transplantation (OCA), autologous chondrocyte implantation (ACI), or matrix autologous chondrocyte implantation (MACI), with or without tibial tubercle osteotomy.*

An articular cartilage restorative procedure may be medically necessary when **ALL** of the following criteria are met: [29, 28, 32, 31, 34]

- Anterior knee pain and loss of function
- Other extra-articular or intra-articular sources of pain or dysfunction have been excluded (referred pain, radicular pain, tendinitis, bursitis, neuroma)
- Physical exam localizes tenderness to the patellofemoral joint with pain aggravated by activities that load the joint (single leg squat, descending > ascending stairs or stair climbing, and being in seated position for extended periods of time with knee flexed)
- MRI results confirm an isolated full thickness chondral or osteochondral lesion of the patella:
 - < 2.0 cm² - OAT
 - >2.0 cm² - ACI, MACI, OCA
- Failure of at least **12 weeks** of non-operative treatment, including at least **TWO** of the following:
 - Rest or activity modifications/limitations

- Ice/heat
- Protected weight bearing
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
- Brace/orthosis
- Physical therapy modalities
- Supervised home exercise
- Weight optimization
- Corticosteroid injection
- Individual is < 50 years of age
- BMI < 35 (optimal outcomes if patient BMI < 30)
- **NO** evidence of associated osteoarthritis greater than Kellgren-Lawrence Grade 2 of the patellofemoral joint or medial/lateral compartments on weight-bearing X-rays [see [Grading Appendix](#)]
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

***Patellofemoral Chondrosis**

For isolated tibial tubercle osteotomy for patellofemoral chondrosis without articular cartilage restoration procedures, the same criteria above apply except patellofemoral X-rays should document Kellgren-Lawrence grade 3 or 4 changes with no more than K-L 2 changes of the medial and lateral compartments on weight-bearing X-rays.

Articular Cartilage Restoration and Repair Exclusions

These requests are excluded from consideration under this guideline:

- Micronized cartilage extracellular matrix (BioCartilage)
- Autologous Matrix-Induced Chondrogenesis (AMIC)
- Bone marrow aspirate concentrate (BMAC) implantation
- Hybrid ACI/OAT procedure
- Particulated juvenile allograft cartilage (PJAC, DeNovo)
- Particulated autologous cartilage implantation (PACI)
- Viable cartilage allograft putty (CartiMax)
- Decellularized Osteochondral Allograft Plugs (e.g., Chondrofix)
- Cryopreserved viable osteochondral allograft (CVOCA; Cartiform and ProChondrix)
- Aragonite biphasic osteochondral scaffolds (Agili-C™)
- Human umbilical cord blood-derived mesenchymal stem cells (CARTISEM)

Synovectomy (major [2+ compartments], minor [1 compartment])

Synovectomy may be medically necessary when **ALL** of the following criteria in **any** of the following subsections are met: [35, 36, 37]

- Proliferative rheumatoid synovium (in individuals with established rheumatoid arthritis according to the American College of Rheumatology Guidelines [see [Grading Appendix](#)])
- Non-responsive to disease modifying drug (DMARD) therapy for at least 6 months and failure of at least 6 weeks of non-operative treatment
- At least one instance of aspiration of joint effusion and corticosteroid injection (if no evidence of infection)

OR

- Hemarthrosis from injury, coagulopathy or bleeding disorder confirmed by physical exam, joint aspiration, and/or MRI

OR

- Proliferative pigmented villonodular synovitis, synovial chondromatosis, sarcoid synovitis, or similar proliferative synovial disease, traumatic hypertrophic synovitis confirmed by history, MRI, or biopsy [38, 39]
- Failure of **at least 6 weeks** of non-operative treatment, including **at least two** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
- At least one instance of aspiration of joint effusion and injection of corticosteroid (if no evidence of infection)

OR

- Detection of painful plica confirmed by physical exam and MRI findings
- Failure of at least 12 weeks of non-operative treatment (see above for criteria)
- At least one instance of aspiration of joint effusion **OR** single injection of corticosteroid (effusion may not be present with symptomatic plica)
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Loose Body Removal

Loose body removal may be medically necessary when the following criteria are met:

- Documentation of mechanical symptoms that cause limitation or loss of function

- X-ray, CT, or MRI documentation of a loose body
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Lateral Release/Patellar Realignment

This guideline describes indications for surgical procedures to address patellofemoral pain disorders and abnormal alignment of the extensor mechanism of the knee by arthroscopic and/or open surgical techniques.

Lateral Patellar Compression Syndrome

Surgical intervention for the treatment of lateral patellar compression syndrome is indicated when **ALL** the following criteria are met: [40, 41, 42]

- Evidence of lateral patellar tilt from radiologic images (patellofemoral view: Merchant (45 degrees flexion; and/or skyline (60-90 degrees flexion); and/or sunrise (60-90 degrees flexion)
- Associated lateral patella facet Kellgren-Lawrence changes grade 1, 2, or 3 [see [Grading Appendix](#)]
- Reproducible isolated lateral patellofemoral pain with patellar tilt test
- Failure of **at least 6 months** of non-operative treatment, including quadriceps strengthening and appropriate hamstring/IT band stretching and patellar mobilization techniques, and **at least one** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Physical therapy modalities
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
- **NO** evidence of patellar dislocation
- **NO** evidence of medial patellofemoral changes (Kellgren-Lawrence Grade 2 osteoarthritis or higher [see [Grading Appendix](#)])
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

Patellar Malalignment and/or Patellar Instability

Surgical intervention for the treatment of patellar malalignment and/or patellar instability is indicated when **ALL** of the following criteria in any of the following subsections are met: [43, 44, 45]

- Acute traumatic patellar dislocation is associated with an osteochondral fracture, loose body, vastus medialis obliquus/medial patellofemoral ligament muscle avulsion, or other intra-articular injury that requires urgent operative management.

OR

- Repeat (2 or more) patellar dislocations or subluxations have occurred despite 6 months of non-operative treatment with radiologic confirmation of MPFL (medial patellofemoral ligament) deficiency (including evidence of acute or remote injury, scarring, incomplete healing, etc.) **OR** physical examination demonstrates evidence of patellar instability (positive apprehension test).

OR

- When all the following criteria have been met:
 - Physical exam has patellofemoral tenderness and abnormal articulation of the patella in the femoral trochlear groove (patellar apprehension or positive J sign)
 - Radiologic and/or advanced images (CT or MRI) rule out fracture or loose body, and show abnormal articulation, trochlear dysplasia, abnormal TT-TG distance (tibial tubercle-trochlear groove)* or other abnormality related to malalignment;
 - Failure of at least 6 months of non-operative treatment, including at least 3 months of physical therapy, and **ONE** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Protected weight bearing
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics, tramadol
 - Brace/orthosis
 - Supervised home exercise
 - Weight optimization
 - Corticosteroid injection
- **NO** intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

*The tibial tubercle-trochlear groove (TT-TG) distance is normally @5-10 mm. Some authors use 13 mm as a cut-off and most agree that a TT-TG of 15 mm or over is abnormal. [46] TT-TG values over 17 mm indicate other possible bony abnormalities such as increased femoral anteversion that may cause patellar instability. [47, 45]

Manipulation under Anesthesia (MUA)

Manipulation under anesthesia (MUA) may be indicated when **ALL** of the following criteria are met: [48, 49]

- Physical exam findings demonstrate inadequate range of motion of the knee defined as less than 110 degrees of flexion or lack of full extension
- Failure to improve range of motion of the knee despite 6 weeks (12 visits) of documented physical therapy
- Individual is less than 20 weeks after ligamentous or joint reconstruction

Lysis of Adhesions for Arthrofibrosis of the knee

Surgical indications are based on relevant clinical symptoms, physical exam, radiologic findings, time from primary surgery, and response to conservative management when medically appropriate. Improved range of motion may be accomplished through arthroscopically assisted or open lysis of adhesions with general anesthesia, regional anesthesia, or sedation. [48, 50]

Lysis of adhesions for arthrofibrosis of the knee may be indicated when **ALL** of the following criteria in any of the following subsections are met:

- Physical exam findings demonstrate inadequate range of motion of the knee, defined as less than 110 degrees of flexion or lack of full extension
- Failure to improve range of motion of the knee despite 6 weeks (12 visits) of documented physical therapy
- Individual is more than 12 weeks post ligamentous or joint reconstruction, or resolved infection
- No intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

OR

- Individual is more than 12 weeks post trauma, or resolved infection
- Individual has native knee
- Manipulation under anesthesia is also performed
- No intra-articular cortisone injections within 4 weeks of surgery [1, 2, 3]

LEGISLATIVE REQUIREMENTS

State of Washington

- [Washington State Health Care Authority Technology Assessment \[51\]](#)
[20080815B – Knee Arthroscopy for Osteoarthritis of the knee](#)
 - [HTCC Coverage Determination](#)

- **Knee Arthroscopy for osteoarthritis of the knee is not a covered benefit. This decision does not apply to the use of knee arthroscopy for other diagnostic and therapeutic purposes.**
- **HTCC Reimbursement Determination**
 - **Limitations of Coverage**
 - **Not applicable**
 - **Non-Covered Indicators**
 - **Osteoarthritis of the Knee**

BACKGROUND

Grading Appendix

- Kellgren-Lawrence Grading System
- Outerbridge Arthroscopic Grading System
- Marx Scale
- Tegner Activity Score
- The International Cartilage Research Society (ICRS)
- American College of Rheumatology Guidelines

Kellgren-Lawrence Grading System (Standing/weight-bearing X-rays) [52]

Grade	Description
0	No radiographic features of osteoarthritis
1	Possible joint space narrowing and osteophyte formation
2	Definite osteophyte formation with possible joint space narrowing
3	Moderate multiple osteophytes, definite narrowing of joint space, some sclerosis and possible deformity of bone contour
4	Large osteophytes, marked narrowing of joint space, severe sclerosis, and definite deformity of bone contour

Outerbridge Arthroscopic Grading System [53]

Grade	Description
0	Normal cartilage
I	Softening and swelling/blistering
II	Partial thickness defect, fissures < 1.5cm diameter/wide
III	Fissures /defects down to subchondral bone with intact calcified cartilage layer, diameter > 1.5cm
IV	Exposed subchondral bone

Marx Scale

For determination of activity level in acute ACL tears. Indicate how often you performed each activity in your healthiest and most active state, in the past year.

Marx Scale table [54]

Activity/Movement	Less than one time in a month	One time in a month	One time in a week	2 or 3 times in a week	4 or more times in a week
Running: running while playing a sport or jogging	0	1	2	3	4
Cutting: changing directions while running	0	1	2	3	4
Deceleration: coming to a quick stop while running	0	1	2	3	4
Pivoting: turning your body with your foot planted while playing sport; For example: skiing, skating, kicking, throwing, hitting a ball (golf, tennis, squash), etc.	0	1	2	3	4

Tegner Scores

For determination of activity level in acute ACL tears. Indicate in the spaces below the HIGHEST level of activity that you participated in BEFORE YOUR INJURY and the highest level you are able to participate in CURRENTLY

Tegner Score table [55]

Level	Activity Description
Level 10	Competitive sports- soccer, football, rugby (national elite)
Level 9	Competitive sports- soccer, football, rugby (lower divisions), ice hockey, wrestling, gymnastics, basketball
Level 8	Competitive sports- racquetball or bandy, squash or badminton, track and field athletics (jumping, etc.), down-hill skiing
Level 7	Competitive sports- tennis, running, motorcars speedway, handball Recreational sports- soccer, football, rugby, bandy, ice hockey, basketball, squash, racquetball, running
Level 6	Recreational sports- tennis and badminton, handball, racquetball, down-hill skiing, jogging at least 5 times per week
Level 5	Work- heavy labor (construction, etc.) Competitive sports- cycling, cross-country skiing; Recreational sports- jogging on uneven ground at least twice weekly
Level 4	Work- moderately heavy labor (e.g., truck driving, etc.)
Level 3	Work- light labor (nursing, etc.)
Level 2	Work- light labor Walking on uneven ground possible, but impossible to backpack or hike
Level 1	Work- sedentary (secretarial, etc.)
Level 0	Sick leave or disability pension because of knee problems

The International Cartilage Research Society (ICRS) [56]

Grade	Description
0	Normal cartilage
1	Nearly normal cartilage <i>Superficial lesions. Soft indentation and/or superficial fissures and cracks.</i>
2	Abnormal cartilage <i>Lesions extending down to <50% of cartilage depth.</i>
3	Severely abnormal cartilage <i>Cartilage defects extending down >50% of cartilage depth as well as down to calcified layer and down to but not through the subchondral bone. Blisters are included in this Grade.</i>
4	Severely abnormal cartilage (through the subchondral bone) <i>Penetration of subchondral bone that may or may not be across the full diameter of defect</i>

American College of Rheumatology Guidelines [57]

2010 ACR/EULAR: Classification Criteria for RA	
JOINT DISTRIBUTION (0-5)	
1 large joint	0
2-10 large joints	1
1-3 small joints (large joints not counted)	2
4-10 small joints (large joints not counted)	3
>10 joints (at least one small joint)	5
SEROLOGY (0-3)	
Negative RF AND negative ACPA	0
Low positive RF OR low positive ACPA	2
High positive RF OR high positive ACPA	3
SYMPTOM DURATION (0-1)	
<6 weeks	0
≥6 weeks 1	1
ACUTE PHASE REACTANTS (0-1)	
Normal CRP AND normal ESR	0
Abnormal CRP OR abnormal ESR	1
≥6 = definite RA	

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"> • Legislative Requirements added for the State of Washington for Knee Arthroscopy 20080815B • Revised surgical optimization and physician/patient discussion language • Reorganized ACL Repair/Reconstruction Section • Added table of contents • Adjusted Background Section • Updated References
June 2023	<ul style="list-style-type: none"> • Updated references pertaining to the relationship of meniscectomy and arthritis of the knee • Clarification of the requirement of X-rays for ACL reconstruction • Additional references for articular cartilage restorative procedures • Revision of the listing of articular cartilage restorative procedures • Clarification of the lesion size for articular cartilage restorative procedures of the knee: < 2.0 cm² - OAT; > 2.0 cm² - ACI, MACI, OCA • Non-operative treatment requirement for articular cartilage procedures changed from 6 months to 3 months • Listing of investigational/non-covered articular cartilage procedures • Added CPT codes: 29885, 29886, 29887
May 2022	<ul style="list-style-type: none"> • Updated references • Added cortisone injection within 4 weeks of arthroscopy as a contraindication. • Expanded references pertaining to recommendations against the use of arthroscopy for arthritis, with or without associated meniscus tears. • Included references pertaining to total knee arthroplasty complications in those with prior arthroscopic surgery of the knee • Replaced “patient” with “individual” where appropriate

References

- [1] J. W. Belk, L. E. Keeling, M. J. Kareutler, M. G. Snow, O. Mei-Dan, A. J. Scillia and E. C. McCarty, "Risk of Infection in Knee Arthroscopy Patients Undergoing Corticosteroid Injections in the Perioperative Period," *Orthop J Sports Med*, vol. 9, no. 8, 17 August 2021.
- [2] B. Forsythe, E. M. Forlenza, A. Agarwalla, M. R. Cohn, O. Lavoie-Gagne, Y. Lu and R. Mascarenhas, "Corticosteroid Injections 1 Month Before Arthroscopic Meniscectomy Increase the Risk of Surgical-Site Infection," *Arthroscopy*, vol. 37, no. 9, pp. 2885-2890, 2021.
- [3] W. Lee, S. Bhattacharjee, M. J. Lee, S. W. Ho, A. Athiviraham and L. L. Shi, "A Safe Interval between Preoperative Intra-articular Corticosteroid Injections and Subsequent Knee Arthroscopy," *J Knee Surg*, vol. 35, no. 1, pp. 47-53, 2022.
- [4] American Academy of Orthopaedic Surgeons, "Management of Osteoarthritis of the Knee (Non-Arthroplasty) Evidence-Based Clinical Practice Guideline," 31 August 2021. [Online]. Available: <https://www.aaos.org/globalassets/quality-and-practice-resources/osteoarthritis-of-the-knee/oak3cpg.pdf>. [Accessed 18 September 2023].
- [5] B. DeClouette, A. Birnbaum, H. Campbell, A. S. Bi, C. C. Lin and S. Struhl, "Needle Arthroscopy Demonstrates High Sensitivity and Specificity for Diagnosing Intra-Articular Shoulder and Knee Pathology," *Cureus*, vol. 14, no. 12, 31 December 2022.
- [6] D. O'Connor, R. V. Johnston, R. Brignardello-Petersen, R. W. Poolman, S. Cyril, P. O. Vandvik and R. Buchbinder, "Arthroscopic surgery for degenerative knee disease (osteoarthritis including degenerative meniscal tears)," *Cochrane Database Syst Rev*, vol. 3, no. 3, 3 March 2022.
- [7] D. E. Anderson, M. B. Rose, A. J. Willie, J. Wiedrick and D. C. Crawford, "Arthroscopic Mechanical Chondroplasty of the Knee Is Beneficial for Treatment of Focal Cartilage Lesions in the Absence of Concurrent Pathology," *Orthop J Sports Med*, vol. 5, no. 5, 24 May 2017.
- [8] J. Kiel and K. Kaiser, "Patellofemoral Arthritis," 12 June 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK513242/>. [Accessed 22 October 2023].
- [9] C. J. Burgess and F. L. De Cicco, "Meniscectomy," 23 May 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK559105/>. [Accessed 22 October 2023].
- [10] N. J. Kise, M. A. Risberg, S. Stensrud, J. Ranstam, L. Engebretsen and E. M. Roose, "Exercise therapy versus arthroscopic partial meniscectomy for degenerative meniscal tear in middle aged patients: randomised controlled trial with two year follow-up [published correction appears in BMJ. 2017 Jan 17;356:j266] [published correction appears," *BMJ*, vol. 354, no. i3740, 20 July 2016.

- [11] S. Leopold, "The New AAOS Guidelines on Knee Arthroscopy for Degenerative Meniscus Tears are a Step in the Wrong Direction," *Clin Orthop Relat Res*, vol. 480, no. 1, pp. 1-3, 1 Jan 2022.
- [12] F. Migliorini, F. Oliva, J. Eschweiler, F. Cuzzo, F. Hildebrand and N. Maffulli, "No evidence in support of arthroscopic partial meniscectomy in adults with degenerative and nonobstructive meniscal symptoms: a level I evidence-based systematic review," *Knee Surg Sports Traumatol Arthrosc*, vol. 31, no. 5, pp. 1733-1743, 2023.
- [13] D. Santana, S. Oak, Y. Jin, A. Roth, L. Lee, J. Katz, C. Winalski, J. Duryea and M. Jones, "Increased Joint Space Narrowing After Arthroscopic Partial Meniscectomy: Data From the Osteoarthritis Initiative," *Am J Sports Med*, vol. 50, no. 8, pp. 2075-2082, July 2022.
- [14] M. A. Raj and M. A. Bubnis, "Knee Meniscal Tears," 17 July 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK431067/>. [Accessed 22 October 2023].
- [15] A. J. Krych, A. Lamba, A. S. Wang, A. M. Boos, C. L. Camp, B. A. Levy, M. J. Stuart and M. Hevesi, "Nonoperative Management of Degenerative Medial Meniscus Posterior Root Tears: Poor Outcomes at a Minimum 10-Year Follow-up," *Am J Sports Med*, vol. 51, no. 10, pp. 2603-2607, 2023.
- [16] C. A. Valdivia Zuniga and F. L. De Cicco, "Osteochondral Allograft," 31 July 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK560511/>. [Accessed 22 October 2023].
- [17] S. Vasta, B. Zampogna, T. D. Hartog, Y. E. Bitar, B. Uribe-Echevarria and A. Amendola, "Outcomes, Complications, and Reoperations After Meniscal Allograft Transplantation," *Orthop J Sports Med*, vol. 10, no. 3, 10 March 2022.
- [18] Z. Li, M. Li, Y. Du, M. Zhang, H. Jiang, R. Zhang, Y. Ma and Q. Zheng, "Femur-tibia angle and patella-tibia angle: new indicators for diagnosing anterior cruciate ligament tears in magnetic resonance imaging," *BMC Sports Sci Med Rehabil*, vol. 14, no. 1, 13 April 2022.
- [19] J. Evans and J. I. Nielson, "Anterior Cruciate Ligament Knee Injury," 5 May 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK499848/>. [Accessed 23 October 2023].
- [20] J.-M. Fayard, F. Wein, M. Ollivier, R. Pahlle, M. Ehlinger, S. Lustig, J.-C. Panisset and French Arthroscopic Society, "Factors affecting outcome of ACL reconstruction in over-50-year-olds," vol. 105, no. 8S, pp. S247-S251, 2019.
- [21] S. J. Shultz, M. R. Cruz, E. Casey, T. P. Dompier, K. R. Ford, B. Pietrosimone, R. J. Schmitz and J. B. Taylor, "Sex-Specific Changes in Physical Risk Factors for Anterior Cruciate Ligament Injury by Chronological Age and Stages of Growth and Maturation From 8 to 18 Years of Age [published correction appears in *J Athl Train*. 2023 Jun 1;58(6):588]," *J Athl Train*, vol. 57, no. 9-10, pp. 830-876, 2022.

- [22] M. A. Raj, A. Mabrouk and M. Varacallo, "Posterior Cruciate Ligament Knee Injuries," 8 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK430726/>. [Accessed 23 October 2023].
- [23] A. Bedi, V. Musahl and J. B. Cowan, "Management of Posterior Cruciate Ligament Injuries: An Evidence-Based Review," *J Am Acad Orthop Surg*, vol. 24, no. 5, pp. 277-289, 2016.
- [24] M. J. Scarcella, S. Yalcin, N. R. Scarcella, P. Saluan and L. D. Farrow, "Outcomes of Pediatric Posterior Cruciate Ligament Reconstruction: A Systematic Review," *Orthopaedic Journal of Sports Medicine*, vol. 9, no. 9, 2021.
- [25] M. M. Chau, M. A. Klimstra, K. L. Wise, J. M. Ellermann, F. Toth, C. S. Carlson, B. Nelson and M. A. Tompkins, "Osteochondritis Dissecans: Current Understanding of Epidemiology, Etiology, Management, and Outcomes," *J Bone Joint Surg Am*, vol. 103, no. 12, pp. 1132-1151, 2021.
- [26] R. S. Valtanen, A. Arshi, B. V. Kelley, P. D. Fabricant and K. J. Jones, "Articular Cartilage Repair of the Pediatric and Adolescent Knee with Regard to Minimal Clinically Important Difference: A Systematic Review," *Cartilage*, vol. 11, no. 1, pp. 9-18, 2020.
- [27] G. M. Salzman, R. Ossendorff, R. Gilat and B. J. Cole, "Autologous Minced Cartilage Implantation for Treatment of Chondral and Osteochondral Lesions in the Knee Joint: An Overview," *Autologous Minced Cartilage Implantation for Treatment of Chondral and Osteochondral Lesions in the Knee Joint: An Overview*, vol. 13, no. 1_suppl, pp. 1124S-1136S, 2021.
- [28] N. A. Mall, J. D. Harris and B. J. Cole, "Clinical Evaluation and Preoperative Planning of Articular Cartilage Lesions of the Knee," *Clinical Evaluation and Preoperative Planning of Articular Cartilage Lesions of the Knee*, vol. 23, no. 10, pp. 633-640, 2015.
- [29] J. P. Filho and E. . Sousa, "Sommerfeldt MF, Magnussen RA, Hewett TE, Kaeding CC, Flanigan DC. Microfracture of Articular Cartilage. JBJS Rev. Jun 28 2016;4(6)doi:10.2106/jbjs.Rvw.15.00005," *Rev Bras Ortop (Sao Paulo)*, vol. 58, no. 4, pp. e551-e556, 30 August 2023.
- [30] J. Medina, I. Garcia-Mansilla, P. D. Fabricant, T. J. Kremen, S. L. Sherman and K. Jones, "Microfracture for the Treatment of Symptomatic Cartilage Lesions of the Knee: A Survey of International Cartilage Regeneration & Joint Preservation Society," *Cartilage*, vol. 13, no. 1_suppl, pp. 1148S-1155S, 2021.
- [31] B. Cong, T. Sun, Y. Zhao and M. Chen, "Current and Novel Therapeutics for Articular Cartilage Repair and Regeneration," *Current and Novel Therapeutics for Articular Cartilage Repair and Regeneration*, vol. 19, pp. 485-502, 20 June 2023.
- [32] B. B. Hinckel, D. Thomas, E. E. Vellios, K. J. Hancock, J. G. Calcei, S. L. Sherman, C. D. Eliasberg, T. L. Fernandes, J. . Farr, C. Lattermann and A. H. Gomoll, "Algorithm for

Treatment of Focal Cartilage Defects of the Knee: Classic and New Procedures," *Cartilage*, vol. 13, no. 1_suppl, pp. 473S-495S, 2021.

- [33] P. Niemeyer, V. Laute, W. Zinser, C. Becher, T. Kolombe, J. Fay, S. Pietsch, T. Kuzma, W. Widuchowski and S. Fickert, "A Prospective, Randomized, Open-Label, Multicenter, Phase III Noninferiority Trial to Compare the Clinical Efficacy of Matrix-Associated Autologous Chondrocyte Implantation With Spheroid Technology Versus Arthroscopic Microfracture for Cartilage Defects o," *Orthop J Sports Med*, vol. 7, no. 7, 10 July 2019.
- [34] E. . Ginesin, N. S. Chari, J. Barnhart, N. Wojnowski and R. M. Patel, "Cartilage Restoration for Isolated Patellar Chondral Defects: An Updated Systematic Review," *Orthopaedic Journal of Sports Medicine*, vol. 11, no. 5, 2023.
- [35] D. . Badin, C. R. Leland, R. S. Bronheim, N. Balmuri and R. J. Lee, "Synovectomy in juvenile idiopathic arthritis: A systematic review and meta-analysis," *Synovectomy in juvenile idiopathic arthritis: A systematic review and meta-analysis*, vol. 101, no. 49, 2022.
- [36] M. Lipina, M. Makarov, V. Mukhanov, A. Karpashevich, S. Maglevaniy, V. Amirdjanova and S. Archipov, "Arthroscopic synovectomy of the knee joint for rheumatoid arthritis," *Int Orthop*, vol. 43, no. 8, pp. 1859-1863, 2019.
- [37] P. N. Chalmers, S. L. Sherman, B. S. Raphael and E. P. Su, "Rheumatoid synovectomy: does the surgical approach matter," *Clin Orthop Relat Res*, vol. 469, no. 7, pp. 2062-2071, 2011.
- [38] C. Fecek and K. R. Carter, "Pigmented Villonodular Synovitis," 7 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK549850/>. [Accessed 23 October 2023].
- [39] A. A. Chandra, S. A. Agarwal, A. Donahue, E. Handorf and J. A. Abraham, "Arthroscopic Versus Open Management of Diffuse-Type Tenosynovial Giant Cell Tumor of the Knee: A Meta-analysis of Retrospective Cohort Studies," *Arthroscopic Versus Open Management of Diffuse-Type Tenosynovial Giant Cell Tumor of the Knee: A Meta-analysis of Retrospective Cohort Studies*, vol. 4, no. 12, 9 December 2021.
- [40] J. M. Bump and L. Lewis, "Patellofemoral Syndrome," 13 February 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK557657/>. [Accessed 24 October 2023].
- [41] W. Pertersen, A. Ellermann, A. Gosele-Koppenburg, R. Best, I. V. Rembitzki, G.-P. Bruggemann and C. Leibau, "Patellofemoral pain syndrome," *Knee Surg Sports*, vol. 22, no. 10, pp. 2264-2274, 2014.
- [42] M. G. Saper and S. M. Shneider, "Diagnosis and treatment of lateral patellar compression syndrome," *Diagnosis and treatment of lateral patellar compression syndrome*, vol. 3, no. 5, pp. e633-e638, 20 Oct 2014.

- [43] S. Wolfe, M. Varacallo, J. D. Thomas, J. J. Carroll and C. I. Kahwaji, "Patellar Instability," 4 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK482427/>. [Accessed 24 October 2023].
- [44] A. Arshi, J. R. Cohen, J. C. Wang, S. L. Hame, D. R. McAllister and K. J. Jone, "Operative Management of Patellar Instability in the United States: An Evaluation of National Practice Patterns, Surgical Trends, and Complications," *Orthop J Sports Med*, vol. 4, no. 8, 31 Aug 2016.
- [45] N. R. Serverino, F. R. Serverino, O. P. de Camargo, L. G. Guglielmetti, V. M. de Oliveria and R. d. Cury, "Update on Patellar Instability," *Thieme Open Access*, vol. 56, no. 2, pp. 147-153, 2 Nov 2020.
- [46] J. M. Brady, A. S. Rosencrans and B. E. Stein, "Use of TT-PCL versus TT-TG," *Curr Rev Musculoskelet Med*, vol. 11, no. 2, pp. 261-265, 2018.
- [47] R. M. Barbosa, M. V. da Silva, C. S. Macedo and C. P. Santos, "Imaging evaluation of patellofemoral joint instability: a review," *Knee Surg Relat Res*, vol. 35, no. 1, 13 Mar 2023.
- [48] N. Fackler, G. Chin, T. Karasavvidis, H. Bohlen, E. Smith, A. Amirhekmat and D. Wang, "Outcomes of Arthroscopic Lysis of Adhesions for the Treatment of Postoperative Knee Arthrofibrosis: A Systematic Review," *Orthop J Sports Med*, vol. 10, no. 9, 28 September 2022.
- [49] N. D. Colacchio, D. Abela, J. V. Bono, V. M. Shah, O. J. Bono and R. D. Scott, "Efficacy of manipulation under anesthesia beyond three months following total knee arthroplasty," *Arthroplast Today*, vol. 5, no. 4, pp. 515-520, 10 Oct 2019.
- [50] L. Eggeling, L. Klepsch, R. Akoto and K.-H. Frosch, "Clinical results after very early, early and late arthroscopic arthrolysis of the knee," *Int Orthop*, vol. 46, no. 2, pp. 265-271, 2022.
- [51] Washington State Health Care Authority, "Health Technology Assessment: Knee Arthroscopy for Osteoarthritis of the Knee," 17 October 2008. [Online]. Available: https://www.hca.wa.gov/assets/program/decision_finding_knee_final%5B1%5D.pdf. [Accessed 10 October 2023].
- [52] J. Kellgren and J. Lawrence, "Radiological assessment of osteo-arthritis," *Ann Rheum Dis*, vol. 16, no. 4, pp. 494-502, Dec 1957.
- [53] C. Slattery and C. Kweon, "Classifications in Brief: Outerbridge Classification of Chondral Lesions," *Clin Orthop Relat Res*, vol. 476, no. 10, pp. 2101-2104, Oct 2018.
- [54] R. Marx, T. Stump, E. Jones, T. Wickiewicz and R. Warren, "Development and evaluation of an activity rating scale for disorders of the knee," *Am J Sports Med*, vol. 29, no. 2, pp. 213-218, 2001.
- [55] Y. Tegner and J. Lysholm, "Rating systems in the evaluation of knee ligament injuries," *Clin Orthop Relat Res*, vol. 198, pp. 43-9, 1985.

- [56] R. Kleemann, D. Krockner, A. Cedraro, J. Tuischer and G. Duda, "Altered cartilage mechanics and histology in knee osteoarthritis: relation to clinical assessment (ICRS Grade)," *Osteoarthritis Cartilage*, vol. 13, no. 11, pp. 958-63, Nov 2005.
- [57] D. Aletaha, T. Neogi, A. Silman, J. Funovits, D. Felson, C. S. Bingham, N. Birnhbaum, G. Burmester, V. Bykerk and et al., "2010 Rheumatoid arthritis classification criteria: an American College of Rheumatology/European League Against Rheumatism collaborative initiative," *Arthritis Rheum*, vol. 62, no. 9, pp. 2569-81, Sept 2010.

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***

*Evolent	
Clinical guidelines: SHOULDER ARTHROPLASTY	Original Date: August 2016
CPT Codes**: <ul style="list-style-type: none"> - Total/Reverse Shoulder Arthroplasty or Resurfacing: 23472 - Partial Shoulder Arthroplasty/Hemiarthroplasty: 23470 - Revision Shoulder Arthroplasty: 23473, 23474 <i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	Last Revised Date: December 2023
Guideline Number: Evolent_CG_317	Implementation Date: July 2024

Table of Contents

GENERAL INFORMATION	3
STATEMENT	3
PURPOSE	3
SCOPE.....	3
GENERAL REQUIREMENTS	3
INDICATIONS	4
TOTAL SHOULDER ARTHROPLASTY (TSA)	4
HEMIARTHROPLASTY.....	5
REVERSE TOTAL SHOULDER ARTHROPLASTY (RTSA)	5
<i>Arthritis</i>	<i>6</i>
<i>Proximal Humeral Fractures</i>	<i>7</i>
<i>Rotator Cuff Tears.....</i>	<i>7</i>
REVISION ARTHROPLASTY	7
<i>Conversion of a Hemiarthroplasty to a Total Shoulder Arthroplasty.....</i>	<i>7</i>
<i>Conversion of a Hemiarthroplasty to a Reverse Shoulder Arthroplasty</i>	<i>8</i>
<i>Revision of a Total Shoulder Arthroplasty to Another Total Shoulder Arthroplasty</i>	<i>8</i>
<i>Revision of a Total Shoulder Arthroplasty to a Reverse Shoulder Arthroplasty</i>	<i>8</i>
<i>Revision of a Reverse Shoulder Arthroplasty to Another Reverse Shoulder Arthroplasty</i>	<i>9</i>
<i>Revision of a Total Shoulder or Reverse Shoulder Arthroplasty to a Hemiarthroplasty.....</i>	<i>9</i>
BACKGROUND	10
SHOULDER ARTHROPLASTY	10
TOTAL SHOULDER ARTHROPLASTY (TSA)	10
REVERSE TOTAL SHOULDER ARTHROPLASTY (RTSA)	10

AGE AND SHOULDER ARTHROPLASTY 10
REVISION ARTHROPLASTY 11
POLICY HISTORY..... 12
REFERENCES..... 13

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.

STATEMENT

Purpose

This guideline addresses elective, non-emergent shoulder arthroplasty (shoulder replacement) procedures, including total shoulder arthroplasty, reverse shoulder arthroplasty, resurfacing arthroplasty, partial shoulder replacement or hemiarthroplasty, and revision arthroplasty procedures.

Scope

Arthroplasty procedures are reserved for end stage arthritis of the shoulder joint, including functional loss of motion, pain, and disability. The choice of arthroplasty is dependent upon surgeon philosophy, experience, and skill. Successful outcome, regardless of procedure, is more likely with high volume (> 20 per year) shoulder specialists.

General Requirements

Elective surgery of the shoulder may be considered if the following general criteria are met:

- Clinical correlation of individual's subjective complaints with objective exam findings and/or imaging (when applicable)
- Individual has limited function (age-appropriate activities of active daily livings (ADLs), occupational, or athletic)
- Individual does not have an active local or systemic infection
- Individual does not have active, untreated drug dependency (including but not limited to narcotics, opioids, muscle relaxants) unless engaged in treatment
- Individual has good oral hygiene and does not have major dental work scheduled or anticipated (ideally within one year of joint replacement; due to increased post-surgical infection risk)
- Individual is medically stable and optimized for surgery, and any treatable comorbidities are adequately medically managed such as diabetes, nicotine addiction, or an excessively high BMI. There should also be a shared decision between the patient and physician to proceed with a total joint replacement when comorbidities exist as it pertains to the added risk of complications. [1, 2, 3]

Clinical notes should address:

- Symptom onset, duration, and severity
- Loss of function and/or limitations
- Type and duration of non-operative management modalities

Non-operative management, when required, will be specified within the clinical indications below and may include one or more of the following:

- Physical therapy or properly instructed home exercise program
- Rest or activity modification
- Application of heat or ice
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics
- Corticosteroid injections

INDICATIONS

Total Shoulder Arthroplasty (TSA)

Total Shoulder Arthroplasty may be necessary when **ALL** of the following criteria are met: [4, 5, 6]

- Evidence of painful osteoarthritis or inflammatory, non-infectious arthritis (e.g., rheumatoid) with functional limitations such as ADLs, employment, or recreation
- Complete or near-complete loss of joint space* on axillary or AP X-rays (internal rotation and/or external rotation)*

***NOTE:** In those with bone-on-bone articulation on axillary or true AP X-rays, non-operative treatment is not required

NOTE: MRI should not be the primary imaging study to determine the extent of disease

- Failure of at least 12 weeks of non-operative treatment that includes at least ONE of the following:
 - Physical therapy or properly instructed home exercise program
 - Rest or activity modification
 - Application of heat or ice
 - Pharmacologic treatment (oral/topical NSAIDS, acetaminophen, analgesics)
 - Corticosteroid injections
- Functional and intact rotator cuff and deltoid (adequate abduction strength); confirmed by physical examination, MRI, or CT scan
- **NO** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]
- **NO** prior arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]

Contraindications

- Neurological disease resulting in complex regional pain syndrome (CRPS or its variants), Charcot arthropathy, or loss of deltoid or rotator cuff function

- Active infection or any infection within 12 weeks of surgery:
 - History of prior shoulder joint infection without documentation that indolent infection has been eliminated (individual has been off antibiotics for a minimum of 6 weeks). Evidence of resolved infection should include laboratory work (serologies, including CBC with differential, ESR (erythrocyte sedimentation rate), CRP (C-reactive protein), with or without blood cultures, soft tissue biopsy cultures, or synovial fluid aspiration (cultures, gram stain, cell count, differential, crystals). Cultures should be for aerobic and anaerobic bacteria (AFB, fungal), with special attention to the possibility of *Cutibacterium acnes* (*C. acnes*) formerly *Propionibacterium acnes* (*P. acnes*). [3, 11]
- Poor dental hygiene (e.g., tooth extraction should be performed prior to arthroplasty). Major dental work within 2 years after a joint replacement **MAY** lead to seeding of the implant and possible revision surgery. If possible, all dental work must be completed prior to shoulder arthroplasty as these procedures increase risk for infection
- **ANY** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]
- Arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]

Hemiarthroplasty

Hemiarthroplasty may be necessary when **the** following criteria are met: [4, 5]

- Acute 3 or 4-part fracture of the proximal humerus
- OR**
- Individual meets all of the criteria for a Total Shoulder Arthroplasty, as detailed above, or has a vascular necrosis or osteonecrosis of the humeral head without advanced glenoid disease
 - **NO** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]
 - **NO** prior arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]

Contraindications

- **ANY** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]
- Arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]
- Neurologic disease resulting in CRPS or Charcot shoulder
- Active infection within 12 weeks of surgery [12]

Reverse Total Shoulder Arthroplasty (RTSA)

For the treatment of arthritis, irreparable rotator cuff tears or proximal humeral fractures: [13, 14]

Arthritis

RTSA may be indicated for the treatment of arthritis when **ALL** of the following criteria are met: [13]

- Evidence of painful osteoarthritis or inflammatory, non-infectious arthritis (e.g., rheumatoid) with functional limitations (such as activities of daily living or employment or simple recreation)
- Complete or near-complete loss of joint space on axillary or AP x-rays (internal rotation and/or external rotation) **OR** radiographic evidence of advanced glenoid bone loss or excessive retroversion*

*In those with bone-on-bone articulation on axillary or true AP X-rays, non-operative treatment is not required.

NOTE: MRI should not be the primary imaging study to determine the extent of disease

- Non-repairable massive tears involving at least two tendons, substantial partial, OR focal full thickness rotator cuff tear with significant rotator cuff dysfunction (weakness, impingement signs on exam) **AND** intact deltoid
- Requests for reverse TSA for advanced glenohumeral arthritis with an intact rotator cuff will be reviewed on a case-by-case basis [15, 16, 17]
- Failure of **at least 12** weeks of non-operative treatment that includes **at least ONE** of the following:
 - Physical therapy or properly instructed home exercise program
 - Rest or activity modification
 - Application of heat or ice
 - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics
 - Corticosteroid injections
- Age > 60; requests for RTSA in individuals < 60 will be reviewed on a case-by-case basis*
- **NO** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]
- **NO** prior arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]

***NOTE:** RTSA has been found to be a reliable operation in younger individuals with improvement in pain, range of motion and strength, without a large number of early failures. [13, 18, 19]

Contraindications [13]

- **ANY** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]
- Active infection within 12 weeks of surgery
- Neurologic disease resulting in CRPS or Charcot shoulder
- Arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]

Proximal Humeral Fractures

RTSA may be indicated for the treatment of fractures when **ALL** of the following criteria are met:

- Acute 2, 3, or 4-part fractures of proximal humerus with or without concomitant tuberosity as evidence by radiographic findings **OR** painful malunion of proximal humerus fracture with rotator cuff dysfunction (weakness, impingement signs on exam) [13]
- Age > 60; requests for RTSA in individuals < 60 will be reviewed on a case-by-case basis.

Rotator Cuff Tears

RTSA may be indicated for the treatment of irreparable rotator cuff tears in the absence of arthritis when **ALL** of the following criteria are met:

- Non-repairable massive rotator cuff tear **AND** intact deltoid **AND** inability to actively elevate the arm above the level of the shoulder (90 degrees) (i.e., pseudoparalysis); **OR** history of previous failed rotator cuff repair with severe pain and functional disability [13, 20]
- Failure of **at least 12** weeks of attempted physical therapy or properly instructed home exercise program unless there is worsening of symptoms
- Age > 60; requests for RTSA in individuals < 60 will be reviewed on a case-by-case basis
- **NO** arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]
- **NO** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]

Contraindications

- **ANY** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]
- Active infection within 12 weeks of surgery
- Neurologic disease resulting in CRPS or Charcot shoulder
- Arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]

NOTE: RTSA is a reasonable surgical option for irreparable rotator cuff repair without arthritis. However, caution should be exercised when offering RTSA to individuals without pseudoparalysis because they can have a higher complication and dissatisfaction rate [21, 22]

Revision Arthroplasty

(See contraindications*)

Conversion of a Hemiarthroplasty to a Total Shoulder Arthroplasty

May be necessary when **ALL** of the following criteria are met: [23]

- Evidence of a prior hemiarthroplasty

- Persistent pain and functional loss
- Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration) [24, 25] **OR** documentation of mechanical failure, or component failure/malposition
- Clinical and radiographic evidence of intact rotator cuff (or repairable rotator cuff tear), including **ONE** of the following two options;
 - Radiographic evidence of failed humeral component, including aseptic loosening or periprosthetic fracture (documentation should include radiolucencies around cemented or uncemented components) **OR**
 - Clinical and radiographic evidence of glenoid articular cartilage disease (including progressive arthritis)

Conversion of a Hemiarthroplasty to a Reverse Shoulder Arthroplasty

May be necessary when **ALL** of the following criteria are met:

- Evidence of a prior hemiarthroplasty
- Persistent pain and functional loss
- Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration) [24, 25] **OR** documentation of mechanical failure, or component failure/malposition
- Intact deltoid and intact axillary nerve
- Age > 60; requests for individuals < 60 will be reviewed on a case-by-case basis
- Evidence of pseudoparalysis (inability to elevate arm) **OR** severe pain with elevation

Revision of a Total Shoulder Arthroplasty to Another Total Shoulder Arthroplasty

May be necessary when **ALL** of the following criteria are met; [26, 27]

- Evidence of prior total shoulder arthroplasty
- Persistent pain and functional loss
- Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration) [24, 25] **OR** documentation of mechanical failure, or component failure/malposition
- Clinical and radiographic evidence of intact rotator cuff (or repairable rotator cuff tear)
- Radiographic evidence of failed humeral and/or glenoid component, including aseptic loosening or periprosthetic fracture [28]

Revision of a Total Shoulder Arthroplasty to a Reverse Shoulder Arthroplasty

May be necessary when **ALL** of the following criteria are met; [29]

- Evidence of prior total shoulder arthroplasty
- Persistent pain and functional loss

- Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration) [24, 25] **OR** documentation of mechanical failure, or component failure/malposition
- Intact deltoid function
- Age > 60 (requests in individuals < 60 will be reviewed on a case-by-case basis)
- Evidence of pseudoparalysis (inability to elevate arm) **OR** severe pain with elevation

Revision of a Reverse Shoulder Arthroplasty to Another Reverse Shoulder Arthroplasty

May be necessary when **ALL** of the following criteria are met: [15]

- All cases should be reviewed on a case-by-case basis and include the following:
 - Evidence of prior reverse shoulder arthroplasty
 - Persistent pain and functional loss
 - Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration) [24, 25] **OR** documentation of mechanical failure, or component failure/malposition
 - Radiographic evidence of failed humeral and/or glenoid component, including aseptic loosening or periprosthetic fracture
 - Intact deltoid

Revision of a Total Shoulder or Reverse Shoulder Arthroplasty to a Hemiarthroplasty

May be necessary when **ALL** of the following criteria are met [30, 31]

- All cases should be reviewed on a case-by-case basis and include the following:
 - Evidence of prior total shoulder or reverse shoulder arthroplasty
 - Persistent pain and functional loss
 - Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration) [24, 25] **OR** documentation of mechanical failure (anterior or superior migration), or component failure
 - Radiographic evidence of failed humeral and/or glenoid component, including aseptic loosening or periprosthetic fracture
 - Intact deltoid and intact axillary nerve
 - Insufficient glenoid bone to support a revision glenoid component

***Contraindications for Revision Arthroplasty**

- Active or recent history of infection
- Neurogenic pain syndrome
- Acromial fracture **OR** overly thin acromion from prior subacromial decompression
- Severe osteoporosis as evidenced by radiographic osteopenia, osteomalacia or severe osteoporosis on DXA scan

- Non-functioning deltoid or axillary nerve injury/palsy
- **ANY** arthroscopic surgery of the shoulder within 12 weeks of surgery [9, 10]
- **ANY** cortisone injection into the joint within 12 weeks of surgery [7, 3, 6, 8]

BACKGROUND

Shoulder Arthroplasty

Total, Partial & Revision Shoulder Replacement

Total Shoulder Arthroplasty (TSA)

The replacement of the glenohumeral joint is called a shoulder arthroplasty. It can be either a TSA where both the glenoid and humerus are replaced, a partial arthroplasty of the humerus only (hemiarthroplasty), or a partial resurfacing of the humerus (humeral head resurfacing).

Reverse Total Shoulder Arthroplasty (RTSA)

This involves placing the ball on the glenoid side (glenosphere and baseplate) of the joint and the socket on the humeral side. It works by moving the center of joint rotation medial and downward and increasing deltoid tension to facilitate active abduction and elevation of the arm. [32]

The original purpose of a RTSA was to allow basic function of a pseudoparalytic shoulder from a non-repairable chronic rotator cuff tear with arthropathy (or arthritis) in an inactive person over age 65. Indications have expanded to include younger individuals, malunions, nonunions, failed arthroplasty, and irreparable cuff tears.

Age and Shoulder Arthroplasty

The more severe the disease, the more loss of motion and glenoid erosion will exist and the more likely a TSA will be required, regardless of age. If surgery is delayed too long, it can be exceedingly difficult to insert the glenoid component for a TSA due to posterior glenoid erosion. For optimal TSA success, only one replacement should be attempted during an individual's lifetime.

Additional research is necessary to support an accurate age range for each type of shoulder arthroplasty. At this time, an individual's age is a relative indication for surgery and ultimately relies on surgeon's judgment and patient presentation.

TSA can be done at any age, but in general, to minimize complications, consideration should be given to the following: [33]

- Age < 55: Hemiarthroplasty can be considered due to the likelihood that these individuals will need the joint converted to a total shoulder arthroplasty. However, primary TSA outperforms HA for implant survival and patient satisfaction at short term follow up for individuals younger than 50 [34]
- Age 55-65: Depending on an individual's anatomy and desired activity level, TSA, resurfacing (HHR), or reverse total shoulder arthroplasty (RTSA) may be indicated. Overall low revision rates and high implant survivorship are reported in the current literature in individuals under age 65 undergoing TSA. Results of HA have been shown to be inferior to TSA, and conversion of HA to TSA yields less optimal result than a primary TSA [35, 36]
- Age > 65: TSA or RTSA is typically the best surgical option for individuals over the age of 65 [37]

Revision Arthroplasty [38]

There are six primary indications for revision shoulder arthroplasty [39]:

- (1) Conversion of a hemiarthroplasty to a total shoulder arthroplasty
- (2) Conversion of a hemiarthroplasty to a reverse shoulder arthroplasty
- (3) Revision of a total shoulder arthroplasty to another total shoulder arthroplasty
- (4) Revision of a total shoulder arthroplasty to a reverse shoulder arthroplasty
- (5) Revision of a reverse total shoulder arthroplasty to another reverse shoulder arthroplasty
- (6) Revision of a total shoulder or reverse shoulder arthroplasty to a hemiarthroplasty.

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"> • No content changes • Added table of contents • Reduced Background section • Updated references
May 2023	<ul style="list-style-type: none"> • Added statement that non-operative treatment is not required in those with X-rays showing bone-on-bone articulation • Additional references to contraindications for cortisone injections within 12 weeks of an arthroplasty. • Added no cortisone injections or arthroscopic surgery within 12 weeks of surgery for a revision arthroplasty
May 2022	<p>Updated references</p> <p>Added:</p> <ul style="list-style-type: none"> • Arthroscopic surgery within 12 weeks of an arthroplasty as a contraindication for surgery. • RTSA request with intact rotator cuff to be reviewed on a case-by-case basis • Replaced patient is medically stable statement (general requirements) with individual is optimized with no uncontrolled co-morbidities statement • Added “or” after, “acute 3 or 4-part fracture of the proximal humerus” (Hemiarthroplasty) <p>Revised:</p> <ul style="list-style-type: none"> • Criterion with ages 65 to 60 for consistency (case-by-case review) • “no injection” statements to “no cortisone injection” and “any injection statements” to “any cortisone injection” • Infection contraindication from 3 months to 12 weeks • Non-repairable massive <i>tears involving at least two tendons</i> (RTSA arthritis) <p>Clarified:</p> <ul style="list-style-type: none"> • Clarification of contraindications for RSTA performed for rotator cuff tears • Functional and intact rotator cuff and deltoid is confirmed by physical examination, MRI, or CT scan. • Chronic regional pain syndrome <p>Replaced “patient” with “individual” where appropriate</p>

References

- [1] I. L. Leeds, J. K. Canner, F. Gani, P. M. Meyers, E. R. Haut, J. E. Efron and F. M. Johnston, "Increased Healthcare Utilization for Medical Comorbidities Prior to Surgery Improves Postoperative Outcomes," *Ann Surg*, vol. 271, no. 1, pp. 114-121, 2020.
- [2] H.-G. Seok, J.-J. Park and S.-G. Park, "Risk Factors for Periprosthetic Joint Infection after Shoulder Arthroplasty: Systematic Review and Meta-Analysis," *J Clin Med*, vol. 11, no. 14, p. 4245, July 21 2022.
- [3] A. R. Markes, J. . Bigham, C. B. Ma, J. J. Lyengar and B. T. Feeley, "Preventing and Treating Infection in Reverse Total Shoulder Arthroplasty," *Curr Rev Musculoskelet Med*, vol. 16, no. 8, pp. 371-380, 2023.
- [4] G. S. Athwal, J. M. Wiater and S. J. Fischer, "Shoulder Joint Replacement," September 2021. [Online]. Available: <https://www.orthoinfo.org/en/treatment/shoulder-joint-replacement/>. [Accessed 27 September 2023].
- [5] L. Mattei, S. . Mortera, C. Arrigoni and F. Castoldi, "Shoulder Joint Replacement," *Shoulder Joint Replacement*, vol. 3, no. 2, pp. 72-77, 3 November 2015.
- [6] H. Razmjou, M. Christakis, D. Nam, D. Drosdowech, U. Sheth, A. Wainwright and R. Richards, "Assessing Appropriateness for Shoulder Arthroplasty Using a Shared Decision-Making Process," *J Shoulder Elb Arthroplast*, vol. 7, 29 March 2023.
- [7] M. Stadecker, A. Gu, P. Ramamurti, S. C. Fassihi, C. Wei, A. R. Agarwal, P. Bovonratwet and U. Srikumaran, "Risk of revision based on timing of corticosteroid injection prior to shoulder arthroplasty," *Bone Joint J*, Vols. 104-B, no. 5, pp. 620-626, 2022.
- [8] B. C. Werner, J. M. Cancienne, M. T. Burrus, J. W. Griffin, F. W. Gwathmey and S. F. Brokmeier, "The timing of elective shoulder surgery after shoulder injection affects postoperative infection risk in Medicare patients," *J Shoulder Elbow Surg*, vol. 25, no. 3, pp. 390-397, 2016.
- [9] A. T. Malik, J. Morris, J. Y. Bishop, A. S. Neviasser, S. N. Khan and G. L. Cvetanovich, "Undergoing an Arthroscopic Procedure Prior to Shoulder Arthroplasty is Associated With Greater Risk of Prosthetic Joint Infection," *Arthroscopy*, vol. 37, no. 6, pp. 1748-1754, 2021.
- [10] J. Wright-Chisem, J. M. Apostolakos, J. S. Dines, D. M. Dines, L. V. Gulotta, S. A. Taylor and B. C. Werner, "The impact of prior ipsilateral arthroscopy on infection rates after shoulder arthroplasty," *The impact of prior ipsilateral arthroscopy on infection rates after shoulder arthroplasty*, vol. 30, no. 7, pp. 1596-1602, 2021.
- [11] M. J. Elston, J. P. Dupaiz, M. I. Opanova and R. E. Atkinson, "Cutibacterium acnes (formerly Propionibacterium acnes) and Shoulder Surgery," *Hawaii J Health Soc Welf*, vol. 78, no. 11 Suppl 2, pp. 3-5, 2019.
- [12] J. S. Somerson, P. Sander, K. Bohsali, R. Tibbetts, C. A. Rockwood Jr and M. A. Wirth, "What Factors are Associated With Clinically Important Improvement After Shoulder

Hemiarthroplasty for Cuff Tear Arthropathy?," *What Factors are Associated With Clinically Important Improvement After Shoulder Hemiarthroplasty for Cuff Tear Arthropathy?*, vol. 474, no. 12, pp. 2682-2688, 2016.

- [13] F. Familiari, J. Rojas, M. N. Doral, G. Huri and E. G. McFarland, "Reverse total shoulder arthroplasty," *Reverse total shoulder arthroplasty*, pp. 58-69, 28 February 2018.
- [14] S. Hermena and M. Rednam, "Reverse Shoulder Arthroplasty," 1 October 2022. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK574545/>. [Accessed 4 October 2023].
- [15] J. J. Heifner, A. D. Kumar and E. R. Wagner, "Glenohumeral osteoarthritis with intact rotator cuff treated with reverse shoulder arthroplasty: a systematic review," *J Shoulder Elbow Surg*, vol. 30, no. 12, pp. 2895-2903, 2021.
- [16] H. . Kim, C.-H. Kim, M. Kim, W. Lee, I.-H. Jeon, K. W. Lee and K. H. Koh, "Is reverse total shoulder arthroplasty (rTSA) more advantageous than anatomic TSA (aTSA) for osteoarthritis with intact cuff tendon? A systematic review and meta-analysis.," *J Orthop Traumatol*, vol. 23, no. 1, January 6 2022.
- [17] E. M. Nazzal , R. P. Reddy, M. Como, A. Rai, J. J. Greiner , M. A. Fox and A. Lin, "Reverse shoulder arthroplasty with preservation of the rotator cuff for primary glenohumeral osteoarthritis has similar outcomes to anatomic total shoulder arthroplasty and reverse shoulder arthroplasty for cuff arthropathy.," *J Shoulder Elbow Surg*, vol. 32, no. 6S, pp. S60-S68, 2023.
- [18] B. T. Goldenberg, B. T. Samuelsen, J. D. Spratt , G. J. Dornan and P. J. Millett, "Complications and implant survivorship following primary reverse total shoulder arthroplasty in patients younger than 65 years: a systematic review," *Complications and implant survivorship following primary reverse total shoulder arthroplasty in patients younger than 65 years: a systematic review*, vol. 29, no. 8, pp. 1703-1711, 2020.
- [19] R. J. Otto, R. E. Clark and M. A. Frankle, "Reverse shoulder arthroplasty in patients younger than 55 years: 2- to 12-year follow-up," *J Shoulder Elbow Surg*, vol. 26, no. 5, pp. 792-797, 2017.
- [20] S. Weber and J. Chahal, "Management of Rotator Cuff Injuries," *J Am Acad Orthop Surg*, vol. 28, no. 5, pp. e193-e201, 2020.
- [21] M. S. Virk, G. P. Nicholson and A. A. Romeo, "Irreparable Rotator Cuff Tears Without Arthritis Treated With Reverse Total Shoulder Arthroplasty," *Open Orthop J*, vol. 10, pp. 296-308, 21 July 2016.
- [22] J. G. Monir, C. Tams, T. W. Wright, M. Parsons, J. J. King and B. S. Schoch, "Preoperative factors associated with loss of range of motion after reverse shoulder arthroplasty," *J Shoulder Elbow Surg*, vol. 30, no. 10, pp. e621-e628, 2021.
- [23] R. M. Carroll, R. Izquierdo, M. . Vazquez, T. A. Blaine, W. N. Levine and L. U. Bigliani, "Conversion of painful hemiarthroplasty to total shoulder arthroplasty: Long-term results," *Conversion of painful hemiarthroplasty to total shoulder arthroplasty: Long-term results*, vol. 13, no. 6, pp. 599-603, 2004.

- [24] A. Hecker, A. Jungwirth-Weinberger, M. R. Bauer, T. Tondelli, I. Uckay and K. Wieser, "Hecker A, Jungwirth-Weinberger A, Bauer MR, Tondelli T, Uçkay I, Wieser K. The accuracy of joint aspiration for the diagnosis of shoulder infections. *J Shoulder Elbow Surg.* Mar 2020;29(3):516-520. doi:10.1016/j.jse.2019.07.016," Hecker A, Jungwirth-Weinberger A, Bauer MR, Tondelli T, Uçkay I, Wieser K. *The accuracy of joint aspiration for the diagnosis of shoulder infections. J Shoulder Elbow Surg.* Mar 2020;29(3):516-520. doi:10.1016/j.jse.2019.07.016, vol. 29, no. 3, pp. 516-520, 2020.
- [25] B. Fink and F. Sevelde, "Periprosthetic Joint Infection of Shoulder Arthroplasties;," *Biomed Res Int*, 2017.
- [26] N. Bonneville, B. Melis, L. Neyton, L. Favard, D. Mole, G. Walch and P. Boileau, "https://doi.org/10.1016/j.jse.2004.03.016," *https://doi.org/10.1016/j.jse.2004.03.016*, vol. 22, no. 6, pp. 745-751, 2013.
- [27] W. R. Aibinder, B. Schoch, C. Schleck, J. W. Sperling and R. H. Cofield, "Revisions for aseptic glenoid component loosening after anatomic shoulder arthroplasty," *J Shoulder Elbow Surg*, vol. 26, no. 3, pp. 443-449, 2017.
- [28] L. E. Streck, C. Gaal, F. Gohlke, M. Rudert and K. List, "Does radiolucency really predict loose components in revision shoulder arthroplasty?," *Skeletal Radiol*, vol. 52, no. 9, pp. 1759-1765, 2023.
- [29] R. S. Otte, A. J. Naylor, K. N. Blanchard, J. M. Cancienne, W. . Chan, A. A. Romeo, G. E. Garrigues and G. P. Nicholson, "Salvage reverse total shoulder arthroplasty for failed anatomic total shoulder arthroplasty: a cohort analysis," *J Shoulder Elbow Surg*, vol. 29, pp. S134-S138, 2020.
- [30] P. Kriechling, O. . Andronic and K. Wieser, "Hemiarthroplasty as a salvage treatment for failed reverse total shoulder arthroplasty," *JSES Int*, vol. 5, no. 6, pp. 1055-1061, September 4 2021.
- [31] K. J. Khoo, R. J. McLaughlin, B. . Sharareh, K. Jurgensmeier, A. J. Whitson, F. A. Matsen 3rd and J. E. Hsu, "Revision of total shoulder arthroplasty to hemiarthroplasty: results at mean 5-year follow-up," *J Shoulder Elbow Surg*, vol. 32, no. 4, pp. e160-e167, 2023.
- [32] C. P. Roche, "Reverse Shoulder Arthroplasty Biomechanics," *J Funct Morphol Kinesiol*, vol. 7, no. 1, 19 January 2022.
- [33] T. Li, A. H. Duey, C. A. White, A. . Pujari, A. V. Patel, B. Zaidat, C. S. Williams, A. Williams, C. M. Cirino, D. Shukla, B. O. Parsons, E. L. Flatow and P. J. Cagle, "Evaluating the effects of age on the long-term functional outcomes following anatomic total shoulder arthroplasty," *Clin Shoulder Elb*, vol. 26, no. 3, pp. 231-237, 2023.
- [34] J. K. Eichinger, L. R. Miller, T. Hartshorn, X. Li, J. J. Warner and L. D. Higgins, "Evaluation of satisfaction and durability after hemiarthroplasty and total shoulder arthroplasty in a cohort of patients aged 50 years or younger: an analysis of discordance of patient satisfaction and implant survival," *J Shoulder Elbow Surg*, vol. 25, no. 5, pp. 772-780, 2016.

- [35] T. A. Roberson, J. C. Bentley, J. T. Griscom, M. J. Kissenberth, S. J. Tolan, R. J. Hawkins and J. M. Tokish, "Outcomes of total shoulder arthroplasty in patients younger than 65 years: a systematic review," *J Shoulder Elbow Surg*, vol. 26, no. 7, pp. 1298-1306, 2017.
- [36] H. Fonte , T. Amorim-Barbosa, S. Diniz, L. Barros, J. Ramos and R. Claro, "Shoulder Arthroplasty Options for Glenohumeral Osteoarthritis in Young and Active Patients (<60 Years Old): A Systematic Review," *J Shoulder Elb Arthroplast*, vol. 6, 23 March 2022.
- [37] O. A. Anakwenze, T. Yehyaw, M. T. Dillon, E. Paxton, R. Navarro and A. Singh, "Effect of Age on Outcomes of Shoulder Arthroplasty," *Perm J*, vol. 21, 2017.
- [38] F. Mauch and J. Huth, "Revision of anatomic shoulder arthroplasty," *Revision of anatomic shoulder arthroplasty*, vol. 52, no. 2, pp. 137-143, 2023.
- [39] K. X. Farley, J. M. Wilson, A. Kumar, M. B. Gottschalk, C. Daly, J. Sanchez-Sotelo and E. R. Wagner, "Prevalence of Shoulder Arthroplasty in the United States and the Increasing Burden of Revision Shoulder Arthroplasty," *JB JS Open Access*, vol. 6, no. 3, 14 July 2021.
- [40] A. R. Jensen, J. Tangtiphaibontana, E. Marigi, K. E. Mallett, J. W. Sperling and J. Sanchez-Sotelo, "Anatomic total shoulder arthroplasty for primary glenohumeral osteoarthritis is associated with excellent outcomes and low revision rates in the elderly," *J Shoulder Elbow Surg*, vol. 30, no. 7S, pp. S131-S139, 2021.

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***

*Evolent	
Clinical guidelines: SHOULDER ARTHROSCOPY	Original Date: August 2016
CPT Codes**: <ul style="list-style-type: none"> - Shoulder Rotator Cuff Repair: 23410, 23412, 23420, 29827 - Shoulder Labral Repair: 23450, 23455, 23460, 23462, 23465, 23466, 29806, 29807 - Frozen Shoulder Repair/Adhesive Capsulitis: 29825 - Shoulder Surgery Other: 23120, 23125, 23130, 23405, 23415, 23430, 23700, 29805, 29819, 29820, 29821, 29822, 29823, 29824, 29825, +29826, 29828 <p><i>**See UM Matrix for allowable billed groupings and additional covered codes</i></p>	Last Revised Date: December 2023
Guideline Number: Evolent_CG_318	Implementation Date: July2024

Table of Contents

GENERAL INFORMATION	3
STATEMENT	3
PURPOSE	3
SCOPE.....	3
GENERAL REQUIREMENTS	3
INDICATIONS	4
DIAGNOSTIC SHOULDER ARTHROSCOPY	4
ROTATOR CUFF REPAIR (RCR)	5
<i>Partial-Thickness Rotator Cuff Tear or Calcific Tendinitis.....</i>	<i>5</i>
<i>Small (< 1 cm), Full-Thickness Rotator Cuff Tear.....</i>	<i>6</i>
<i>Medium (1-3 cm) or Large (3-5 cm), Full-Thickness Rotator Cuff Tear.....</i>	<i>6</i>
<i>Massive (> 5 cm and ≥ 2 tendons involved), Full-Thickness Rotator Cuff Tear.....</i>	<i>7</i>
<i>Subscapularis Tears.....</i>	<i>7</i>
<i>Isolated Superior Capsular Reconstruction</i>	<i>8</i>
<i>Rotator Cuff Repair Revision.....</i>	<i>8</i>
LABRAL REPAIRS	8
<i>Repair of Superior Labral Anterior-Posterior (SLAP) Tear.....</i>	<i>8</i>
<i>Anterior-Inferior Labral Tear (Bankart lesion).....</i>	<i>10</i>

Bankart repair of an acute labral tear.....	10
Bankart repair for recurrent labral tear.....	10
<i>Posterior Labral Tear</i>	11
<i>Combined Labral Tears</i>	11
MULTIDIRECTIONAL INSTABILITY OF THE SHOULDER (MDI).....	12
ADHESIVE CAPSULITIS	12
DISTAL CLAVICLE EXCISION (DCE).....	13
LONG HEAD BICEPS (LHB) TENOTOMY/TENODESIS.....	13
LOOSE BODY REMOVAL	14
SYNOVECTOMY.....	14
SUBACROMIAL DECOMPRESSION (SAD)	15
BACKGROUND:	15
ROTATOR CUFF REPAIR (RCR)	15
<i>Rotator Cuff Classification and Grades</i>	15
Goutallier classification of fatty infiltration of rotator cuff musculature	15
Hamada classification of rotator cuff arthropathy	16
Revision rotator cuff repair.....	16
LABRAL REPAIRS	16
<i>Anterior-Inferior Labral-Tear (Bankart lesion)</i>	16
<i>Posterior Labral Tear</i>	17
<i>Combined Labral Tears</i>	17
ADHESIVE CAPSULITIS	17
DISTAL CLAVICLE EXCISION (DCE).....	18
LONG HEAD BICEPS (LHB) TENOTOMY/TENODESIS.....	18
LOOSE BODY REMOVAL	18
SYNOVECTOMY.....	18
SUBACROMIAL DECOMPRESSION (SAD)	18
POLICY HISTORY.....	20
REFERENCES.....	22

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.

STATEMENT

Purpose

This guideline addresses elective, non-emergent, arthroscopic shoulder repair procedures, including Rotator Cuff Repair, Labral Repairs, Lysis of Adhesions (Capsulotomy), Distal Clavicle Excision (DCE), Long Head Biceps (LHB) Tenotomy or Tenodesis, Loose body removal, Synovectomy, and Subacromial Decompression (SAD).

Scope

Surgical indications are based on relevant subjective clinical symptoms, objective physical exam & radiologic findings, and response to previous non-operative treatments when medically appropriate.

Open, non-arthroplasty shoulder repair surgeries are performed as dictated by the type and severity of injury and/or disease.

General Requirements

Elective surgery of the shoulder may be considered if the following general criteria are met: [1]

- Clinical correlation of individual's subjective complaints with objective exam findings and/or imaging (when applicable)
- Individual has limited function (age-appropriate activities of daily living (ADLs), occupational, or athletic)
- Individual is medically stable and optimized for surgery, and any treatable comorbidities are adequately medically managed such as diabetes, nicotine addiction, or an excessively high BMI. There should also be a shared decision between the patient and physician to proceed with shoulder surgery when comorbidities exist as it pertains to the increased risk of complications.
- Individual does not have an active local or systemic infection
- Individual does not have active, untreated drug dependency (including but not limited to narcotics, opioids, muscle relaxants) unless engaged in a treatment program

*A smoking cessation program is highly recommended and should be instituted pre-operatively for all actively smoking patients [2, 3]

Clinical notes should address:

- Symptom onset, duration, and severity
- Loss of function and/or limitations
- Type and duration of non-operative management modalities (where applicable)

Non-operative management, when required, will be specified within the clinical indications below and may include one or more of the following:

- Physical therapy or properly instructed home exercise program
- Rest or activity modification
- Application of heat or ice
- Minimum of 4 weeks of oral NSAIDs (if not medically contraindicated)
- Single injection of corticosteroid and local anesthetic into subacromial, intra-articular space, or bicipital groove

INDICATIONS

Diagnostic Shoulder Arthroscopy

Diagnostic arthroscopy is considered medically necessary for the evaluation of a painful total shoulder arthroplasty [4, 5]

OR

When **All** of the following criteria have been met:

- Severe, disabling pain and/or a documented loss of shoulder function which interferes with the ability to carry out age-appropriate activities of daily living and/or demands of employment
- Individual demonstrates **any** of the following abnormal, shoulder physical examination findings, as compared to the non-involved side:
 - Functionally limited range of motion (active or passive)
 - Measurable loss in strength
 - Positive impingement signs
- Failure of non-surgical management for at least 12 weeks duration to include **TWO** of the following:
 - Rest or activity modifications/limitations
 - Ice/heat
 - Use of a sling/immobilizer/brace
 - Pharmacologic treatment: oral/topical NSAIDs, acetaminophen, analgesics, tramadol
 - Physical therapy modalities
 - Supervised home exercise program

- Individual has undergone an appropriate radiographic work-up that includes both routine x-rays and an MRI evaluation which are determined to be inconclusive for a specific diagnosis.
- Other potential diagnostic conditions have been excluded, including, but not limited to, fracture, thoracic outlet syndrome, brachial plexus disorders, referred neck pain and arthritis

NOTE: In-office diagnostic arthroscopy (e.g., Mi-Eye, VisionScope) [6] is not managed by Evolent.

Rotator Cuff Repair (RCR)

Surgical treatment of a rotator cuff tear (RCT) should only be performed when there is a clinical correlation of symptoms, clinical exam findings, imaging, and failed non-operative management (where required). [7]

NOTE: See section on [subscapularis tears](#)

Partial-Thickness Rotator Cuff Tear or Calcific Tendinitis

Surgical repair of a partially torn rotator cuff or excision of an area of calcific tendinopathy may be necessary when **ALL** of the following criteria are met:

- Reproducible rotator cuff pain patterns (lateral arm, deltoid pain rarely radiating past the elbow, night pain, or pain with overhead motions)
- Positive impingement signs and/or tests on exam (Hawkins, Neer, Jobe test or reproducible pain when arm is positioned overhead (above plane of shoulder) with relief of pain when arm is repositioned below the plane of the shoulder) [8]
- Functional loss (age-appropriate activities of daily living (ADL), occupational, or athletic)
- MRI or ultrasound (if an MRI cannot be performed [9, 10] that demonstrates a partial thickness tear (articular-sided, concealed, or bursal-sided) or evidence of calcific tendinitis
- Unless worsening symptoms develop, failure of at least 12 weeks of non-operative treatment, including at least 6 weeks of physical therapy or a properly instructed home exercise program that includes exercises for scapular dyskinesis when present **AND** one of the following:
 - Rest or activity modification
 - Minimum of 4 weeks of oral NSAIDs (if not medically contraindicated)
- **NO** cortisone injection within 12 weeks prior to surgery [11, 12, 13, 14, 15, 16]

NOTE: US-guided percutaneous debridement or tenotomy (e.g., Tenex, TenJet) is not managed by Evolent

Small (< 1 cm), Full-Thickness Rotator Cuff Tear

Surgical repair of a small full-thickness rotator cuff tear may be necessary when **ALL** of the following criteria are met:

- Reproducible rotator cuff pain patterns (lateral arm, deltoid pain not radiating past the elbow, night pain, or pain with overhead motions)
- Positive impingement signs and/or tests on exam (Hawkins, Neer, Jobe test or reproducible pain when arm is positioned overhead (above plane of shoulder) with relief of pain when arm is repositioned below the plane of the shoulder) [8]
- Functional loss (age-appropriate activities of daily living (ADLs), occupational, or athletic)
- Rotator cuff weakness or severe pain with rotator cuff testing on physical exam
- MRI or Ultrasound [9, 10] that demonstrates a small, full thickness tear (< 1 cm)
- Unless worsening symptoms develop, failure of at least 6 weeks of non-operative treatment*, including physical therapy or a properly instructed home exercise program (that includes exercises for scapular dyskinesis when present) **AND** one of the following:
 - Rest or activity modification
 - Minimum of 4 weeks of oral NSAIDs (if not medically contraindicated)
- **NO** cortisone injection within 12 weeks prior to surgery [11, 12, 13, 14, 15, 16]

***NOTE:** The requirement for conservative, non-operative treatment is waived in individuals less than age 55 with an acute traumatic tear (onset of shoulder pain attributed to a specific traumatic event with no prior history of significant shoulder pain). For ages > 55, non-operative treatment may be waived on a case-by-case basis.

Medium (1-3 cm) or Large (3-5 cm), Full-Thickness Rotator Cuff Tear

Surgical repair of a medium or large full-thickness rotator cuff tear may be necessary when the following criteria are met:

- Significant progression of a full-thickness tear on serial imaging performed at least 12 weeks apart (at least 50% increase in tear size)
- OR**
- When **ALL** of the following criteria are met:
 - Reproducible rotator cuff pain patterns (lateral arm, deltoid pain rarely not radiating past the elbow, night pain, or pain with overhead motions)
 - Positive impingement signs and/or tests on exam (Hawkins, Neer, Jobe, empty can or drop-arm test or reproducible pain when arm is positioned overhead (above plane of shoulder) with relief of pain when arm is repositioned below the plane of the shoulder [8])
 - Rotator cuff weakness or severe pain with rotator cuff testing on physical exam

- Functional loss (age-appropriate activities of daily living (ADLs), occupational or athletic)
- MRI or ultrasound [9, 10] results support a medium (1-3 cm) or large (3-5 cm), full-thickness tear (tear must be a complete single tendon or greater)
- MRI demonstrates no advanced fatty changes (Goutallier stage 0 (normal muscle), 1 (some fatty streaks), or 2 (less than 50% fatty degeneration or infiltration) [17, 18]
- Warner classification of atrophy 'none' or 'mild' [19, 20]
- **NO** cortisone injection within 12 weeks prior to surgery [11, 12, 13, 14, 15, 16]

Massive (> 5 cm and ≥ 2 tendons involved), Full-Thickness Rotator Cuff Tear

Surgical repair of a massive torn rotator cuff **WITH OR WITHOUT** a superior capsular reconstruction may be necessary when **ALL** of the following criteria are met: [21, 22]

- MRI or ultrasound [9, 10] demonstrates massive (> 5 cm), full-thickness tears (with intact or reparable subscapularis tendon for superior capsular reconstruction)
- MRI demonstrates no advanced fatty changes (Goutallier stage 0 (normal muscle), 1 (some fatty streaks), or 2 (less than 50% fatty degeneration or infiltration) [23, 17, 18]
- Warner classification of atrophy 'none' or 'mild' [19, 20]
- **NO** x-ray evidence of chronic subacromial articulation of the humeral head, defined as an acromiohumeral space less than 5 mm (Hamada grade 2) [24, 25]
- **NO** advanced or severe arthritis (severe narrowing of glenohumeral space or bone-on-bone articulation, large osteophytes, subchondral sclerosis, or cysts, etc.)
- **NO** cortisone injection within 12 weeks prior to surgery [11, 12, 13, 14, 15, 16]

NOTE: AAOS consensus guidelines state that partial repair and superior capsular reconstruction, can improve patient reported outcomes [21, 26]

Subscapularis Tears

Surgical repair of a subscapularis rotator cuff tear may be necessary when the following criteria are met: [27]

- History of an acute injury or chronic complaints of anterior shoulder pain, weakness, or functional impairment
- Positive physical examination findings of subscapularis deficiency – lift-off, bear-hug, belly press test, etc.
- MRI demonstrates a significant partial thickness tear (at least 50% of tendon), full-thickness tear, or any tear associated with subluxation of the biceps tendon
- **NO** cortisone injection within 12 weeks prior to surgery [11, 12, 13, 14, 15, 16]

Isolated Superior Capsular Reconstruction

May be necessary when all of the following criteria are met: [28, 29]

- MRI or ultrasound [9, 10] demonstrates massive (> 5 cm), full-thickness tears with an intact or reparable subscapularis tendon
- **NO** x-ray evidence of chronic subacromial articulation of the humeral head, defined as an acromiohumeral space less than 5 mm (Hamada grade 2) [24, 25]
- **NO** advanced or severe arthritis (severe narrowing of glenohumeral space or bone-on-bone articulation, large osteophytes, subchondral sclerosis, or cysts, etc.)

NOTE: A Concomitant Rotator Cuff Repair is **NOT** allowable with advanced Goutallier or Warner muscle atrophy changes as noted in the previous section

Rotator Cuff Repair Revision

Surgical revision within 1 year of a previously repaired small, medium, large or massive torn rotator cuff will be reviewed on a case-by-case basis and must include an MRI (with or without arthrogram) or CT arthrogram that demonstrate failure of healing (Sugaya type 4-5, see [Background section](#)) or recurrent tear > 12 weeks after index surgery. [30, 31]

All RCR revision cases greater than 1 year following an initial repair must again meet indications as specified by tear size listed in [Background section](#).

Contraindications (applies to all rotator cuff repair): [30, 31]

- Active infection (local or remote)
- Treatment of asymptomatic, full thickness rotator cuff tear
- Active systemic bacteremia
- Deltoid or rotator cuff paralysis
- Advanced or severe arthritis (severe narrowing of glenohumeral space or bone-on-bone articulation, large osteophytes, subchondral sclerosis, or cysts, etc.)
- **ANY** cortisone injection within 12 weeks prior to surgery [11, 12, 13, 14, 15, 16]

Labral Repairs

Repair of Superior Labral Anterior-Posterior (SLAP) Tear

Surgical indications should be focused on clinical symptoms and failure to respond to non-operative treatments, rather than imaging (due to a higher percentage of tears being missed on images **AND** significant over-diagnosing of tears based on imaging-alone).

Repair (*not debridement of a SLAP lesion*) may be necessary when **ALL** of the following criteria are met: [32]

- History compatible with tear (acute onset in thrower or overhead athlete, fall, traction injury, shear injury (MVA), lifting injury)
- Pain localized to the glenohumeral joint (often only associated with certain reaching or lifting activities and at night) or painful catching/popping/locking sensations
- Inability to perform desired tasks without pain (age-appropriate ADLs, sports, or occupation)
- Physical examination demonstrates findings of a SLAP tear (active compression test (O'Brien test), compression rotation test, clunk, or crank test, etc.) [33]
- Age < 40; requests for SLAP repair in an individual age > 40 will be reviewed on a case-by-case basis [34]
- MRI demonstrating superior labral tear
- Type II, IVSLAP tear [35, 36]
 - **Primary SLAP tear classification:**
 - I - Labral and biceps fraying, anchor intact
 - II - Labral tearing with detached biceps tendon anchor
 - III - Bucket handle tear, intact biceps tendon anchor (uncommon)
 - IV - Bucket handle tear with detached biceps tendon anchor, often seen with anterior instability and anterior labral tears
 - **Subclassification for SLAP tears:**
 - V – Type II SLAP tear with Bankart lesion/anterior shoulder instability
 - VI – Superior labral flap, intact biceps anchor
 - VII – Type II SLAP tear with extension to MGHL/IGHL and instability
 - VIII – Type II SLAP with cartilage injury at bicipital footplate

(Type V, VII, and VIII are variants of repairable Type II tears and would usually include additional stabilization procedures or biceps tenodesis)(see note*) [37, 32]

- Failure of at least 12 weeks of non-operative treatment, including activity modification/avoidance of painful activities and **ONE** of the following:
 - Minimum of 4 weeks of oral NSAIDs (if not medically contraindicated)
 - Physical therapy or a properly instructed home exercise program

Contraindications: [32]

- **ANY** evidence of degenerative disease upon imaging
- Smoker and age > 40
- Diabetics with poor control HgBA1c > 7
- MRI findings not attributable to normal common variants (for example, labral overhang)

***NOTE:** In cases where a true SLAP tear exists, but the individual has one or more contraindications or findings at the time of surgery that indicates a repair is not feasible, a SLAP

debridement (limited, extensive debridement), biceps tenotomy or tenodesis may be an alternative. In addition, for some repairable SLAP tears, biceps tenodesis is a viable alternative to repair (see Tenotomy and Tenodesis Indications). [38, 35]

Anterior-Inferior Labral Tear (Bankart lesion)

Bankart repair of an acute labral tear

May be necessary when **ALL** of the following criteria are met: [39]

- History of an acute event of instability (subluxation or dislocation) or acute onset of pain following activity
- Acute labral tear on MRI or CT imaging
- Age < 30
- Range of motion is not limited by stiffness upon physical exam (not required if there has been a recent episode of instability)
- Clinical exam findings demonstrate positive apprehension test, positive relocation test, positive labral grind test, or objective laxity with pain

Bankart repair for recurrent labral tear

(Two or more episodes of subluxation or dislocation)

May be necessary when **ALL** of the following criteria are met: [39]

- Recurrent instability (subluxation or dislocation)
- MRI evidence of a labral tear with or without bony Bankart fracture of the glenoid upon imaging
- Range of motion is not limited by stiffness upon physical exam - (not required if there has been a recent episode of instability)
- Clinical exam findings demonstrate positive apprehension test, positive relocation test, positive labral grind test, or objective laxity with pain - (not required if there has been a recent dislocation by history or there is any documentation of a prior dislocation)

Contraindications: [39]

- Radiographic findings of an engaging Hill Sachs humeral head defect or glenoid bone loss (if surgery only includes Bankart repair). Latarjet or Remplissage procedures should be considered for anterior dislocations of the shoulder when there is evidence of an engaging (“off-track”)* Hill-Sachs lesion of the humerus, or if there is greater than 20% glenoid bone loss by x-ray, CT, or MRI [40, 41, 42, 43, 44]
- Pain only (no documented recurrent instability events) in individuals over 40
- X-ray, MRI, or CT documentation of significant degenerative arthritis of the glenohumeral joint

***NOTE:** The glenoid track, a zone of dynamic contact during arm elevation, is a unique biomechanical model that uses both glenoid and humeral head bone loss to predict subsequent risk of humeral head engagement and possible dislocation. An **engaging** Hill-Sachs bony defect, or “off-track” lesion, is one in which the width of the bony defect is greater than the width of the glenoid track. Off-track engagement occurs when the medial margin of the Hill-Sachs defect engages the glenoid track. If there is bony loss of the glenoid as well, the glenoid track will proportionately be less, causing greater risk of engagement. A **nonengaging**, or “on-track” Hill-Sachs lesion is one in which the width of the bony defect is less than the width of the glenoid track. Using preoperative CT or MR imaging, the glenoid track can identify individuals who are more likely to fail only a primary capsuloligamentous Bankart repair [45]. Glenoid track evaluation shows that restoring the track (glenoid) to its normal width should be the first priority in restoring shoulder stability. [39, 42]

Posterior Labral Tear

Surgical repair of a posterior labral tear may be necessary when **ALL** of the following criteria are met: [46]

- Symptoms of pain **OR** painful catching/popping **OR** instability
- MRI findings of posterior labral tear
- Exam findings demonstrate positive load-and-shift test, jerk test, glenohumeral grind test, or objective laxity with pain or profound weakness
- Failure of at least 12 weeks of non-operative treatment (unless presenting as a traumatic tear in a competitive athlete at any level) that includes any **TWO** of the following:
 - Physical therapy or a properly instructed home exercise program
 - Rest or activity modification
 - Minimum of 4 weeks of oral NSAIDs (if not medically contraindicated)
- Age < 40
- **NO** radiographic evidence of degenerative disease (e.g., posterior glenoid cartilage loss, subchondral glenoid cysts, mucoid degeneration of labrum, narrowing of joint space with posterior humeral head subluxation on axillary x-ray or axial MRI images)

Combined Labral Tears

(E.g., Anterior / Posterior, SLAP / Anterior, SLAP / Posterior, SLAP / Ant. / Post.) [47]

Surgical repair of an **acute combination tear** may be necessary when **ALL** of the following criteria are met:

- History of an acute event of instability (subluxation or dislocation)
- Acute labral tear on MRI/CT imaging with/without bony Bankart fracture not > 25% of glenoid width upon imaging

- Age < 30
- Range of motion not limited by stiffness upon physical exam
- Clinical exam findings demonstrate positive apprehension test and positive relocation test, **OR** positive labral grind test **OR** objective laxity with pain
- Minimal to no evidence of degenerative changes on imaging

Surgical repair of **recurrent combination tear** may be necessary when **ALL** of the following criteria are met:

- Recurrent instability (subluxation or dislocation) with at least 2 instability events
- Labral tear on MRI or CT, with/without bony Bankart fracture not > 25% of glenoid width upon imaging
- Range of motion not limited by stiffness upon physical exam
- Clinical exam findings demonstrate positive apprehension test and positive relocation test, or positive labral grind test, or objective laxity with pain
- Minimal to no evidence of degenerative changes on imaging

Multidirectional Instability of the Shoulder (MDI)

Open or Arthroscopic Capsulorrhaphy

Surgical repair for MDI may be necessary when **ALL** of the following criteria are met: [48, 49]

- Individual has pain and limited function (age-appropriate ADLs, occupation, or sports)
- Individual has recurrent instability due to hyperlaxity or mobility and no traumatic dislocation
- Physical exam supports repeatable increased glenohumeral joint translation (greater than 1 cm of movement during the sulcus test)
- Imaging (x-ray and MRI) rules out fracture and/or other soft-tissue injury
- Failure of at least 6 months of formal physical therapy and activity modification

Adhesive Capsulitis

(Lysis of Adhesions, Capsulotomy/Capsular Release or Manipulation under Anesthesia)

Surgery for adhesive capsulitis may be necessary when **ALL** of [50] the following criteria are met: [51, 52]

- Individual has pain, loss of motion, and limited function (age-appropriate ADLs, occupation, or sports)
- Physical exam demonstrates loss of motion of at least 50% in 2 planes, as compared to the contralateral shoulder
- Co-morbidities (such as diabetes, thyroid disease, lung disease, etc.), and other causes of loss of shoulder motion have been ruled out

- Failure of at least 12 weeks of non-operative treatment that includes physical therapy or a properly instructed home exercise program and documentation of **ONE** of the following:
 - Minimum of 4 weeks of oral or topical NSAIDs (if not medically contraindicated)
 - Rest or activity modification
 - Heat/Ice
 - Corticosteroid injection

Distal Clavicle Excision (DCE)

Distal Clavicle Excision may be necessary when **ALL** of the following criteria are met: [53]

- Positive clinical exam findings as evidenced by pain upon palpation over AC joint and/or pain with cross-body adduction test
- Positive findings on X-ray **OR** MRI: [54]
 - Radiographic (X-ray) demonstrates narrowed joint space, distal clavicle or medial acromial sclerosis, and/or osteophytes or cystic degeneration of distal clavicle or medial acromion correlating with the clinical findings, patient symptoms and diagnosis; **OR** MRI findings with edema in the distal clavicle and/or inflammatory change within the joint space correlating with the clinical findings, patient symptoms and diagnosis
- Failure of at least 12 weeks of non-operative treatment that includes **at least two** of the following:
 - Minimum of 4 weeks of oral or topical NSAIDs (if not medically contraindicated)
 - Rest or activity modification
 - AC joint corticosteroid injection (if DCE is to be performed as a standalone procedure, AC injection must be performed*)
 - Physical therapy or a properly instructed home exercise program

***NOTE:** If DCE is to be performed in **isolation of other shoulder procedures**, an AC joint injection is required for diagnostic purposes and documentation should support pain relief from injection. If no response to injection, this is a strong negative predictor to surgical outcome for isolated DCE.

Long Head Biceps (LHB) Tenotomy/Tenodesis

The indications and outcomes for tenodesis and tenotomy are the same with the exception that tenodesis is typically better for more active, muscular individuals that are performing higher-demand activities for work or sport; while tenotomy is often preferred in individuals that smoke (this is a relative indication of tenotomy over tenodesis) due to healing problems in tenodesis. [55, 56]

Tenotomy or tenodesis may be necessary when the following criteria are met: [55, 56]

- **Any of the following:**

- When performed in conjunction with a total shoulder arthroplasty
- When performed in conjunction with a subscapularis tendon repair
- Type II (or subcategories) or type IV tear, any age, in lieu of a labral repair
- Age > 50 with SLAP tear
- Smoker with SLAP labral tear (regardless of age, more significant with increasing age)
- Failed SLAP repair
- SLAP tear in diabetic or individual with loss of motion or predisposition to stiff shoulder
- LHB hypertrophy/tearing/subluxation in association with RCR

OR

- Diagnosis of chronic LHB groove pain from tenosynovitis

AND

- Failure of at least 12 weeks of non-operative treatment to include **TWO** of the following:
 - Minimum of 4 weeks of oral or topical NSAIDs (if not medically contraindicated)
 - Rest or activity modification
 - Bicipital groove corticosteroid injection
 - Physical therapy or a properly instructed home exercise program

NOTE: US-guided percutaneous debridement or tenotomy (e.g., Tenex, TenJet) is not managed by Evolent

Loose Body Removal

Loose body removal may be medically necessary when the following criteria are met:

- Documentation of pain, mechanical symptoms (catching or locking), stiffness, loss of motion, feelings of instability or loss of function
- X-ray, CT, or MRI documentation of a loose body

Synovectomy

Synovectomy as an isolated procedure is usually reserved for primary synovial disease or in cases where secondary hypertrophic synovitis is documented during arthroscopy (these include

adhesive capsulitis, osteoarthritis, chronic rotator cuff tear). These should be evident on arthroscopic photographs taken at surgery but may be missed on preoperative images. [57]

Subacromial Decompression (SAD)

Subacromial decompression may be necessary **in conjunction with** other shoulder procedures (listed below) if there is radiographic (x-ray) evidence of mechanical outlet impingement as evidenced by a Bigliani type 3 morphology. Subacromial decompression should not be performed in isolation. [58, 59]

- Rotator cuff repair
- Labral repair
- Capsulorrhaphy
- Loose body removal
- Synovectomy
- Debridement
- Distal clavicle excision
- Lysis of adhesions
- Biceps tenodesis/tenotomy

Contraindications:

- Type 1 or Type 2 or a thinned acromion. Subacromial bursectomy may be a reasonable option.
- If individual has received an injection in the subacromial space and there is failure to adequately respond—significant relief (> 50%) for minimum of 1 week—to injection in the subacromial space (pain should respond temporarily if impingement)
- Prior subacromial decompression with either a Type 1 or a thinned acromion or no evidence of overhang on x-ray (unnecessary revision can thin the acromion and lead to deltoid avulsion and/or acromial fracture)
- Open SAD procedures should rarely be performed given the increased morbidity due to deltoid disruption.

BACKGROUND:

Rotator Cuff Repair (RCR)

Traditional open rotator cuff repair (RCR) with deltoid take-down should be rare given increased morbidity when compared to arthroscopic or mini-open surgery.

Rotator Cuff Classification and Grades

Goutallier classification of fatty infiltration of rotator cuff musculature [17, 18]

Grade 0 – Normal

- Grade 1 – Mild - muscle contains some fatty streaks
- Grade 2 – Moderate – more muscle than fat
- Grade 3 – Severe – equal amounts of fat and muscle
- Grade 4 – More fat than muscle

Hamada classification of rotator cuff arthropathy [24, 25, 60]

Acromiohumeral interval (AHI)

- Grade 1 – AHI over 6 mm
- Grade 2 – AHI < 5mm
- Grade 3 – Acetabulization
- Grade 4 – Acetabulization and narrowed GH joint
- Grade 5 - Acetabulization with humeral head collapse

Revision rotator cuff repair

The Sugaya classification for evaluation in revision rotator cuff repair is as follows:

Sugaya classification

- Type I - Sufficient thickness, homogeneous tendon (low signal on T2 images)
- Type II - Sufficient thickness, partial high-intensity from within the tendon
- Type III - Insufficient thickness without discontinuity
- Type IV - Minor discontinuity on more than one slice, suggesting a small tear
- Type V - Major discontinuity suggesting a moderate or large tear

Labral Repairs

There is a tendency to misinterpret normal degenerative labral changes and variations as “tears” which may lead to over-utilization of surgery if decisions are made upon imaging reports alone. In general, true labral tears lead to pain, catching, popping, functional limitations (including age-appropriate activities of daily living (ADLs), occupational and athletic), micro-, and gross instability. Labral repairs are most-frequently associated with a specific traumatic event.

The anterior-superior labrum (from 12 to 3 o’clock for a right shoulder) has many normal variations that can be misinterpreted as a tear, including sublabral hole/foramen, Buford complex, and a labral overhang with an intact biceps anchor.

Anterior-Inferior Labral-Tear (Bankart lesion)

A Bankart tear of the glenoid labrum is located at the 3-6 o’clock position of a right shoulder. It is typically caused by a traumatic instability event (dislocation or subluxation). It can involve the

labrum, the capsular ligaments (IGHL [inferior glenohumeral ligamentous complex]) and/or the bone (bony Bankart fracture). If symptomatic typically requires surgical repair as individuals less than 30 have a high recurrence rate of instability. If there has been significant bone loss of the anterior glenoid, further stabilization might be required by transferring the coracoid process and attached conjoined tendon (Latarjet Procedure) or using a bone graft to the anterior glenoid. Engaging or “off-track” defects of the humeral head (Hill-Sachs lesion) may require the use of portions of the rotator cuff (Remplissage Procedure) to fill the bony defect, in order to further stabilize the shoulder.

Posterior Labral Tear

Similar to Bankart tears, posterior labral tears are often associated with a paralabral cyst that grows large enough to compress the suprascapular nerve (isolated to infraspinatus). Posterior labral tears are frequently associated with contact sports or a history of a traumatic fall/posterior loading of the joint. They are often observed in athletes performing repetitive posterior loading of the joint (offensive linemen in football, weightlifting, push-ups, and bench press). These tears are more likely to result in pain and weakness rather than recurrent dislocations/instability. Posterior labral changes are often misinterpreted on MRI as a “tear” in age > 40 years old, when changes due to early glenohumeral degeneration begin to appear.

Combined Labral Tears

(E.g., Anterior / Posterior, SLAP / Anterior, SLAP / Posterior, SLAP / Ant. / Post.)

Combined tears that require repair are almost always associated with significant recurrent instability. Often tears begin within one area and overtime the failure to repair the original injury causes the tear to extend.

Adhesive Capsulitis

(Lysis of Adhesions; Capsulotomy/Capsular Release)

Adhesive capsulitis is a thickening and tightening of the soft tissue capsule that surrounds the glenohumeral joint. Adhesive capsulitis usually begins with the gradual onset of pain and limitation of shoulder motion, with a progression to interference of activities of daily living. Primary adhesive capsulitis is the subject of much debate as the specific causes of this condition are not fully understood. Individuals with uncontrolled diabetes have a significantly higher risk of developing adhesive capsulitis than the general population. Secondary (acquired) adhesive capsulitis develops from a known cause, such as stiffness following a shoulder injury, surgery, or a prolonged period of immobilization. Adhesive capsulitis may last from one to three years, despite active treatment, and is more common in women.

Distal Clavicle Excision (DCE)

The AC joint (acromioclavicular joint) can develop degenerative disease in those over 30 years of age, those with a history of a prior grade I or II AC sprain/separation, those with a history of heavy lifting (labor occupation or strength training), or those with evidence of remote trauma. It can occur in isolated form in younger individuals (distal clavicle osteolysis) but is more commonly observed concomitantly with rotator cuff disease in those over 40 years of age.

Long Head Biceps (LHB) Tenotomy/Tenodesis

Pain in the area of the long head of the bicep tendon is common, especially in overhead sports and in the presence of rotator cuff tears (especially subscapularis). It can be an isolated source of pain in chronic tenosynovitis, SLAP tears, or small tears of the biceps sling, resulting in dynamic or static subluxation or dislocation of the tendon. LHB problems are frequently missed on MRI (especially using contrast which can mask the pathology). The choice of tenodesis versus tenotomy is controversial. Typically, tenodesis is better for more active, muscular individuals performing higher demand activity (labor, sports). Tenotomy is generally a better option for older, less active individuals with poor muscle definition, as it generally leaves the individual with a "Popeye" deformity and the possibility of biceps cramping or anterior shoulder pain with activity. The choice of tenotomy vs. tenodesis is generally left up to the surgeon/patient.

Loose Body Removal

Although not as common as in the knee, a loose body in the shoulder may require arthroscopic removal if symptoms such as pain, catching or locking are present. Because of the non-weightbearing status of the shoulder and the axillary fold where a loose body might be positioned, not every loose body diagnosed by imaging requires removal.

Synovectomy

Synovitis is common in many shoulder conditions and typically resolves when the primary pathology is treated. Most commonly, this includes loose bodies, inflammatory arthritis or degenerative arthritis, labral tears, and adhesive capsulitis. Primary synovial diseases include pigmented villonodular synovitis, synovial chondromatosis, rheumatoid arthritis, other inflammatory arthritides, traumatic synovial hypertrophy or metaplasia.

Subacromial Decompression (SAD)

There are 3 types of acromion anatomy according to Bigliani classification: type 1, flat (20%), type 2, curved (40%) and type 3, hooked, (40%). Acromioplasty involves removing bone from the undersurface of the acromion to change a type 3 (hooked) acromion to a type 1 (flat)

acromion. Although debated for decades, current evidence concludes that there is no role for isolated acromioplasty (subacromial decompression), which prompted conversion of CPT code 29826 (acromioplasty, subacromial decompression) from an index, primary, "stand-alone" code to an "add-on" code only. [61]

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"> • Partial thickness Rotator Cuff Tear or Calcific Tendinitis: in surgical repair of the partially torn rotator cuff added in “or excision of an area of calcific tendinopathy” • Modified criteria for failure of non-operative treatment to include “unless worsening symptoms develop” • Labral Repairs: SLAP tear – updated the classification of SLAP I-VIII • Anterior-Inferior Labral Tear (Bankart lesion): added in under clinical exam findings demonstration of positive test were not required if recent or prior documented dislocation • LHB Tenotomy/Tenodesis: added in Type II (or subcategories) or type IV tear, any age, in lieu of repair as a criteria • Added table of contents • Reduced Background Section • Updated references
May 2023	<ul style="list-style-type: none"> • Added the requirement of 6 weeks of physical therapy for partial rotator cuff repairs • Added the requirement for no significant muscle atrophy or fatty infiltration for medium or large rotator cuff repairs • Clarification of the indications for Latarjet or Remplissage procedures • Added requirement for 50% decreased ROM in 2 planes, as compared to the opposite shoulder, for frozen shoulder surgery • Added requirement for a chest X-ray in the past 12 months for frozen shoulder surgery
May 2022	<ul style="list-style-type: none"> • Updated background and references • Further defined the glenoid track verbiage for “off-track” and “on-track” Hill-Sachs lesions (bony defects of the humeral head) • Clarified individual is medically stable and <i>optimized for surgery</i> • Revised Partial-Thickness Rotator Cuff Tear or Calcific Tendinitis to “include <i>two</i> of the following criteria” • Revised criteria for Latarjet or Remplissage to “Recurrent <i>anterior dislocations</i>” • Non-operative treatment for small RCT revised to <i>ONE</i> of the following (previously “at least one”) • Revised 3 months to 12 weeks throughout • Replace “patient” with “individual” where appropriate

	<p>Added:</p> <ul style="list-style-type: none">• Evaluation of pain prior total shoulder arthroplasty as indication for a diagnostic arthroscopy• Cortisone injection within 12 weeks of a rotator cuff repair or revision as a contraindication• Added more specific indications for repair of a subscapularis rotator cuff tear• Physical examination findings requirement for SLAP tears• Criteria for loose body removal• “performed in conjunction with a subscapularis tendon repair” to criteria for Long Head Biceps Tenotomy/Tenodesis <p>Deleted:</p> <ul style="list-style-type: none">• Requirement for a cortisone injection for calcific tendinopathy• Deleted cortisone injections from lists of treatment modalities• IA joint corticosteroid injection from non-operative treatments for LHB Tenotomy/Tenodesis• Rotator cuff repair surgical management statement
--	--

References

- [1] I. L. Leeds, J. K. Canner, F. Gani, P. M. Meyers, E. R. Haut, J. E. Efron and F. M. Johnston, "Increased Healthcare Utilization for Medical Comorbidities Prior to Surgery Improves Postoperative Outcomes," *Ann Surg*, vol. 271, no. 1, pp. 114-121, 2020.
- [2] K. I. Kashanchi, A. K. Nazemi, D. E. Komatsu and E. D. Wang, "Smoking as a risk factor for complications following arthroscopic rotator cuff repair," *JSES Int*, vol. 5, no. 1, pp. 83-87, 20 November 2020.
- [3] J. Zabrzynski, G. Huri, M. Gagat, L. Lapaj, A. Yataganbaba, D. Szwedowski, M. Askin and L. Paczesny, "Impact of Smoking on Clinical Results Following the Rotator Cuff and Biceps Tendon Complex Arthroscopic Surgery," *Impact of Smoking on Clinical Results Following the Rotator Cuff and Biceps Tendon Complex Arthroscopic Surgery*, vol. 10, no. 4, p. 599, 2021.
- [4] D. Akgun, N. Maziak, F. Plachel, M. Minkus, M. Scheibel, C. Perka and P. Moroder, "Diagnostic Arthroscopy for Detection of Periprosthetic Infection in Painful Shoulder Arthroplasty," *Arthroscopy*, vol. 35, no. 9, pp. 2571-2577, 2019.
- [5] T. Guild, G. Kuhn, M. Rivers, R. Cheski, S. Trenhaile and R. Izquierdo, "The Role of Arthroscopy in Painful Shoulder Arthroplasty: Is Revision Always Necessary?," *Arthroscopy*, vol. 36, no. 6, pp. 1508-1514, 2020.
- [6] K. Zhang, R. J. Crum, K. . Samuelsson, E. Cadet, O. R. Ayeni and D. de Sa, "In-Office Needle Arthroscopy: A Systematic Review of Indications and Clinical Utility," *Arthroscopy*, vol. 35, no. 9, pp. 2709-2721, 2019.
- [7] A. Thiagarajan, R. Nagaraj and K. Marathe, "Correlation Between Clinical Diagnosis, MRI, and Arthroscopy in Diagnosing Shoulder Pathology," *Cureus*, vol. 13, no. 12, December 23 2021.
- [8] S. O. Gismervik, J. O. Drogset, F. . Granviken, M. Ro and G. Leivseth, "Physical examination tests of the shoulder: a systematic review and meta-analysis of diagnostic test performance," *Physical examination tests of the shoulder: a systematic review and meta-analysis of diagnostic test performance*, vol. 18, no. 1, p. 41, 25 January 2017.
- [9] A. P. Apostolopoulos, S. Angelis, R. K. Yallapragada, S. Khan, J. Nadjafi, T. Balfousias and T. P. Selvan, "The Sensitivity of Magnetic Resonance Imaging and Ultrasonography in Detecting Rotator Cuff Tears," *Cureus*, vol. 11, no. 5, 1 May 2019.
- [10] S. Katepun, P. Boonsun, W. S. Boonsaeng and A. Apivatgaroon, "Reliability of the Single-Arm and Double-Arm Jobe Test for the Diagnosis of Full-Thickness Supraspinatus Tendon Tear," *Orthop J Sports Med*, vol. 11, no. 8, 3 August 2023.
- [11] E. Remily, J. Dubin, S. S. Bains, R. Monarrez, M. G. Livesey, T. B. Weir, D. Hameed, J. V. ingari, M. N. Gilotra and S. A. Hasan, "Preoperative Corticosteroid Injections Within 4

Weeks of Arthroscopic Shoulder Procedures Are Associated With Increased Postoperative Infection Rates," *Arthroscopy*, 7 September 2023.

- [12] B. C. Werner, J. M. Cancienne, M. T. Burrus, J. W. Griffin, F. W. Gwathmey and S. F. Brockmeier, "The timing of elective shoulder surgery after shoulder injection affects postoperative infection risk in Medicare patients," *J Shoulder Elbow Surg*, vol. 25, no. 3, pp. 390-397, 2016.
- [13] A. M. Cimino, G. C. Veazey, J. T. McMurtrie, J. Isbell, A. M. Arguello, E. W. Brabston, B. A. Ponce and A. M. Momaya, "Corticosteroid Injections May Increase Retear and Revision Rates of Rotator Cuff Repair: A Systematic Review," *Arthroscopy*, vol. 36, no. 8, pp. 2334-2341, 2020.
- [14] A. Agarwalla, R. Puzzitielo, R. Mascarenhas, S. Sumner, A. Romeo and B. Forsythe, "Preoperative Injections May Be an Iatrogenic Cause of Reoperation After Arthroscopic Rotator Cuff Repair," *Arthroscopy*, vol. 35, no. 2, pp. 325-331, Feb 2019.
- [15] S. Traven, D. Brinton, K. Simpson, Z. Adkins, A. Althoff, J. Palsis and H. Sone, "Preoperative Shoulder Injections Are Associated With Increased Risk of Revision Rotator Cuff Repair," *Arthroscopy*, vol. 35, no. 3, pp. 706-713, March 2019.
- [16] J. Lubowitz, J. Brand and M. Rossi, "Preoperative Shoulder Corticosteroid Injection Is Associated With Revision After Primary Rotator Cuff Repair," *Arthroscopy*, vol. 35, no. 3, pp. 693-694, March 2019.
- [17] J. S. Somerson, J. E. Hsu, J. D. Gorbaty and A. O. Gee, "Classifications in Bried: Goutallier Classification of Fatty Infiltration of Rotator Cuff Musculature," *Clin Orthop Relat Res*, vol. 474, pp. 1328-1332, 2016.
- [18] J. Bogdanov, R. Lan, T. N. Chu, I. K. Bolia, A. E. Weber and F. A. Petrigliano, "Fatty degeneration of the rotator cuff: pathogenesis, clinical implications, and future treatment," *JSES Rev Rep Tech*, vol. 1, no. 4, pp. 301-308, 12 July 2021.
- [19] M. Naimark, T. Trinh, C. Robbins, B. Rodoni, J. Carpenter, A. Bedi and B. Miller, "Effect of Muscle Quality on Operative and Nonoperative Treatment of Rotator Cuff Tears," *Orthop J Sports Med*, vol. 7, no. 8, 5 August 2019.
- [20] B. R. Kuzel, S. Grindel, R. Papandrea and D. Ziegler, "Fatty infiltration and rotator cuff atrophy," *J Am Acad Orthop Surg*, vol. 21, no. 10, pp. 613-623, 2013.
- [21] S. Weber and J. Chahal, "Management of Rotator Cuff Injuries," *J Am Acad Orthop Surg*, vol. 28, no. 5, pp. e193-e201, 2020.
- [22] M. M. Sheth and A. A. Shah, "Massive and Irreparable Rotator Cuff Tears: A Review of Current Definitions and Concepts," *Orthop J Sports Med*, vol. 11, no. 5, 10 May 2023.
- [23] R.-O. D. Hazra, M. E. Hazra and P. J. Millett, "Minimum 5-Year Clinical Outcomes of Athroscopically Repaired Massive Rotator Cuff Tears: Effect of Age on Clinical Outcomes," *The American Journal of Sports Medicine*, vol. 51, no. 8, pp. 1979-1987, 1 June 2023.

- [24] R. Furuhashi, N. Matsumura, S. Oki, T. Nishikawa, H. Kimura, T. Suzuki, M. Nakamura and T. Iwamoto, "Hamada K, Yamanaka K, Uchiyama Y, Mikasa T, Mikasa M. A radiographic classification of massive rotator cuff tear arthritis. Clin Orthop Relat Res. Sep 2011;469(9):2452-60. doi:10.1007/s11999-011-1896-9," *Sci Rep*, vol. 12, no. 1, 9 August 2022.
- [25] A. Hasegawa, T. Mihata, K. Fukunishi, A. Uchida and M. Neo, "Relationship between the Hamada Grade and underlying pathological conditions in the rotator cuff and long head of biceps in symptomatic patients with rotator cuff tears," *JSES Int*, vol. 6, no. 3, pp. 488-494, 18 February 2022.
- [26] Z. Meng, Z. Yiming and J. Chunyan, "Long-term efficacy of arthroscopic partial repair in the treatment of massive irreparable rotator cuff tears," *Chinese Journal of Restorative and Reconstructive Surgery*, vol. 37, no. 4, April 2023.
- [27] S. A. Ghasemi, J. A. McCahon, H. C. Yoo, B. Toussaint, E. G. McFarland, A. R. Bartolozzi, J. S. Raphael and J. D. Kelly, "Subscapularis tear classification implications regarding treatment and outcomes: consensus decision-making," *JSES Rev Rep Tech*, vol. 3, no. 2, pp. 201-208, 10 January 2023.
- [28] R. Claro and H. Fonte, "Superior capsular reconstruction: current evidence and limits," *EFORT Open Rev*, vol. 8, no. 5, pp. 340-350, 9 May 2023.
- [29] H. Li, M. Yang, Y. Li, B. Zhou and K. Tang, "Research progress of indication and treatment of graft in shoulder superior capsular reconstruction for rotator cuff tear," vol. 35, no. 2, pp. 252-257, 2021.
- [30] A. Mandaleson, "Re-tears after rotator cuff repair: Current concepts review," *J Clin Orthop Trauma*, vol. 19, pp. 168-174, 21 May 2021.
- [31] E. J. Strauss, R. A. McCormack, I. Onyekwelu and A. S. Rokito, "Management of failed arthroscopic rotator cuff repair," *J Am Acad Orthop Surg*, vol. 20, no. 5, pp. 301-309, 2012.
- [32] M. Varacallo, D. C. Tapscott and S. D. Mair, "Superior Labrum Anterior Posterior Lesions," 4 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK538284/>. [Accessed 9 October 2023].
- [33] R. S. Dean, L. Onsen, J. Lima and M. R. Hutchinson, "Physical Examination Maneuvers for SLAP Lesions: A Systematic Review and Meta-analysis of Individual and Combinations of Maneuvers," *Am J Sports Med*, vol. 51, no. 11, pp. 3042-3052, 2023.
- [34] J. Erickson, K. Lavery, J. Monica, C. Gatt and A. Dhawan, "Surgical treatment of symptomatic superior labrum anterior-posterior tears in patients older than 40 years: a systematic review," *Am J Sports Med*, vol. 43, no. 5, pp. 1274-82, May 2015.
- [35] F. Familiari, G. Huri, R. Simonetta and E. G. McFarland, "SLAP lesions: current controversies," *EFORT Open Rev*, vol. 4, no. 1, pp. 25-32, 2019.
- [36] J. Andrews, W. Carson Jr and W. McLeod, "Glenoid labrum tears related to the long head of the biceps," *Am J Sports Med*, vol. 13, no. 5, pp. 337-41, Sept-Oct 1985.

- [37] B. Erickson, A. Jain, G. Abrams, G. Nicholson, B. Cole, A. Romeo and N. Verma, "SLAP Lesions: Trends in Treatment," *Arthroscopy*, vol. 32, no. 6, pp. 976-81, June 2016.
- [38] W. A. Hester, M. J. O'Brien, W. M. Heard and F. H. Savoie, "Current Concepts in the Evaluation and Management of Type II Superior Labral Lesions of the Shoulder," *Open Orthop J*, vol. 12, pp. 331-341, 31 July 2018.
- [39] R. N. Tupe and V. Tiwari, "Anteroinferior Glenoid Labrum Lesion (Bankart Lesion)," 3 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK587359/>. [Accessed 9 October 2023].
- [40] G. Di Giacomo, E. Itoi and S. S. Buckhart, "Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from "engaging/non-engaging" lesion to "on-track/off-track" lesion," *Arthroscopy*, vol. 30, no. 1, pp. 90-98, 2014.
- [41] E. Itoi, "'On-track' and 'off-track' shoulder lesions," *EFORT Open Rev*, vol. 2, no. 8, pp. 343-351, 1 August 2017.
- [42] A. M. Momaya and J. M. Tokish, "Applying the Glenoid Track Concept in the Management of Patients with Anterior Shoulder Instability," *Curr Rev Musculoskelet Med*, vol. 10, no. 4, pp. 463-468, 2017.
- [43] K. Min, J. Horng, C. Cruz, H. Ahn and J. Patzkowski, "Glenoid Bone Loss in Recurrent Shoulder Instability After Arthroscopic Bankart Repair: A Systematic Review," *J Bone Joint Surg Am*, vol. 105, no. 22, pp. 1815-1821, 15 Nov 2023.
- [44] C. Wu, B. Liu, C. Xu, S. Zhao, Y. Li, J. Xu and J. Zhao, "Native Glenoid Depth and Hill-Sachs Lesion Morphology in Traumatic Anterior Shoulder Instability," *Am J Sports Med*, vol. 51, no. 13, pp. 3374-3382, Nov 2023.
- [45] J. L. Makovicka, M. L. Moore, J. R. Pollock, M. J. Rodriguez, J. S. Shaha, J. M. Haglin and J. M. Tokish, "MRI Analysis Demonstrates Improved Reliability in Measuring Shoulder Glenoid Bone Loss Using a Two-thirds Glenoid Height Technique Compared to the "Best-fit Circle"," *Arthroscopy*, 6 July 2023.
- [46] R. Doehrmann and T. J. Frush, "Posterior Shoulder Instability," 10 July 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK557648/>. [Accessed 10 October 2023].
- [47] M. L. Ireland and J. R. Hatzenbuehler, "Superior labrum anterior to posterior (SLAP) tears," 11 May 2023. [Online]. Available: <https://www.uptodate.com/contents/superior-labrum-anterior-to-posterior-slap-tears>. [Accessed 11 October 2023].
- [48] D. J. Johnson and P. Tadi, "Multidirectional Shoulder Instability," 3 July 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK557726/>. [Accessed 11 October 2023].
- [49] C. Gerber and R. W. Nyffeler, "Classification of glenohumeral joint instability," *Clin Orthop Relat Res*, vol. 400, pp. 65-76, 2002.

- [50] V. Pandey, R. Chidambaram, A. Modi, A. Badhulkar, D. Pardiwala, W. Willems, J. Thilak, J. Maheshwari, K. Narang, N. Kamat and et al., "Trends in Practice Among Shoulder Specialists in the Management of Frozen Shoulder: A Consensus Survey," *Orthop J Sports Med*, vol. 10, no. 10, 12 Oct 2022.
- [51] J. M. St Angelo, M. Taqi and S. E. Fabiano, "Adhesive Capsulitis," 4 August 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK532955/>. [Accessed 11 October 2023].
- [52] V. Pandey and S. Madi, "Clinical Guidelines in the Management of Frozen Shoulder: An Update," *Indian J Orthop*, vol. 55, no. 2, pp. 299-309, 1 February 2021.
- [53] S. Docimo Jr, D. Kornitsky, B. Futterman and D. E. Elkowitz, "Surgical treatment for acromioclavicular joint osteoarthritis: patient selection, surgical options, complications, and outcome," *Surgical treatment for acromioclavicular joint osteoarthritis: patient selection, surgical options, complications, and outcome*, vol. 1, no. 2, pp. 154-160, 2008.
- [54] D. V. Flores, P. K. Goes, C. M. Gomez, D. F. Umpire and M. N. Pathria, "Imaging of the Acromioclavicular Joint: Anatomy, Function, Pathologic Features, and Treatment," *RadioGraphics*, vol. 40, no. 5, pp. 1355-1382, 2020.
- [55] R. Ranieri, M. Nabergoj, L. Xu, P. Le Coz, A. F. M. Don, A. Ladermann and P. Collin, "Chae SH, Jung TW, Lee SH, et al. Hidden Long Head of the Biceps Tendon Instability and Concealed Intratendinous Subscapularis Tears. *Orthop J Sports Med*. Jan 2020;8(1):2325967119898123. doi:10.1177/2325967119898123," *J. Clin. Med*, vol. 11, no. 19, 2022.
- [56] E. Franceschetti, E. G. de Sanctis, A. Palumbo, M. Paciotti, L. La Verde, N. Maffulli and F. Franceschi, "The management of the long head of the biceps in rotator cuff repair: A comparative study of high vs. subpectoral tenodesis," *J Sport Health Sci*, vol. 12, pp. 613-618, 2023.
- [57] S. F. Habusta, A. Mabrouk and J. A. Tuck, "Synovial Chondromatosis," 22 April 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK470463/>. [Accessed 12 October 2023].
- [58] T. V. Karjalainen, N. B. Jain, C. M. Page, T. A. Lahdeoja, R. V. Johnston, P. Salamh, L. Kavaja, C. Ardern, A. Agarwal, P. O. Vandvik and R. Buchbinder, "Subacromial decompression versus diagnostic arthroscopy for shoulder impingement: randomized, placebo surgery controlled clinical trial. *BMJ*. Jul 19 2018;362:k2860. doi:10.1136/bmj.k2860," *Cochrane Database Syst Rev*, vol. 1, no. 1, 17 January 2019.
- [59] J. A. Creech and S. Silver, "StatPearls Treasure Island FL," 17 April 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK554518/>. [Accessed 12 October 2023].
- [60] T. J. Brolin, G. F. Updegrove and J. G. Horneff, "Classifications in Brief: Hamada Classification of Massive Rotator Cuff Tears," *Clin Orthop Relat Res*, vol. 475, no. 11, pp. 2819-2823, 2017.

[61] P. Lavignac, P.-M. Lacroix and A. Billaud, "Quantification of acromioplasty. Systematic review of the literature," *Orthop Traumatol Surg Res*, vol. 107, no. 4, 2021.

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***

*Evolut	
Clinical guidelines: DEFORMITY SURGERY	Original Date: July 2015
CPT Codes**: - Deformity Surgery: 22800, 22802, 22804, 22808, 22810, 22812, 22830, 22630, +22632, 22206, 22207, +22208, 22210, 22212, 22214, +22216, 22220, 22222, 22224, +22226, 22558, 22633, +22614	Last Revised Date: December 2023
<i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	
Guideline Number: Evolut_CG_311	Implementation Date: July 2024

TABLE OF CONTENTS

GENERAL INFORMATION	2
STATEMENT	2
PURPOSE	2
SCOPE.....	2
INDICATIONS	3
THORACIC DEFORMITY (MINIMAL/SECONDARY/FLEXIBLE LUMBAR INVOLVEMENT) IN ADULTS	3
LUMBAR DEFORMITY (WITH OR WITHOUT SECONDARY THORACIC INVOLVEMENT) IN ADULTS	3
*NON-OPERATIVE CARE [2, 1, 4, 5, 6].....	3
RELATIVE CONTRAINDICATIONS FOR SPINE SURGERY.....	4
REFERENCES.....	6

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.

STATEMENT

All surgery requests to treat adult deformity will be reviewed on a case-by-case basis.

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.

Purpose

This guideline covers the surgical indications for adult spinal deformity. Whenever possible, spinal deformity in adults is treated non-operatively.

Scope

Spinal surgeries should be performed only by those with extensive 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.

INDICATIONS

Thoracic Deformity (Minimal/Secondary/Flexible Lumbar Involvement) In Adults

- When **ALL the following** criteria are met [1, 2, 3]:
 - Individual has significant pain or symptoms that impairs daily activities for ≥ 6 months
 - Failure of symptom or pain improvement upon completion of at least 12 weeks of focused non-operative* therapy/rehabilitation in the past year
 - Imaging studies confirm spinal curvature and demonstrate at least one of the following⁴:
 - Spinal curvature > 50 degrees (scoliosis); **OR**
 - Spinal curvature > 75 degrees (kyphosis); **OR**
 - Severe kyphosis (chin-brow vertical angle greater than 35 degrees)

Lumbar Deformity (With Or Without Secondary Thoracic Involvement) In Adults

- When **ALL the following** criteria are met [2, 1, 3]:
 - Lumbar back pain, neurogenic claudication, and/or radicular leg pain without significant motor deficit (0-3/5) that impairs daily activities for **at least 6 months**
 - Failure of symptom or pain improvement upon completion of at least 12 weeks of focused non-operative therapy/rehabilitation* in the past year
 - Imaging studies that correspond to clinical findings and show at least one of the following:
 - Sagittal or coronal imbalance of at least 5 cm measured on long plate standing x-rays of the entire spine; **OR**
 - Documented progression of 10 degrees in one year in the coronal plane on x-ray (scoliosis); **OR**
 - A fixed scoliosis of at least 40 degrees.

*Non-Operative Care [2, 1, 4, 5, 6]

- Documented failure of **at least twelve (12)** consecutive weeks in the past year of **any 2** of the following physician-directed conservative treatments:
 - Analgesics, steroids, and/or NSAIDs
 - Structured program of physical therapy aimed at increasing core muscle strength
 - Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician
 - Epidural steroid injections and or facet injections/selective nerve root block

Relative Contraindications For Spine Surgery

- **Medical contraindications** to surgery (e.g., severe osteoporosis; infection of soft tissue adjacent to the spine, whether or not it has spread to the spine; severe cardiopulmonary disease; anemia; malnutrition and systemic infection) [7].
- **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 [8].
- **Active Nicotine Use** prior to **fusion** surgery. The individual must refrain from nicotine use for at least six weeks prior to surgery and during the period of fusion healing [9].
- **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 [10, 11].

POLICY HISTORY

Date	Summary
December 2023	• Reconciled CPT code discrepancies
May 2023	Added References
May 2022	Replaced “patient” with “individual” where appropriate

REFERENCES

- [1] Y. P. Charles and Y. Ntilikina, "Scoliosis surgery in adulthood: what challenges for what outcome?," *Annals of Translational Medicine*, vol. 8, no. 2, 2020.
- [2] North American Spine Society, "Diagnosis and Treatment of Low Back Pain," 2020. [Online]. [Accessed 2023].
- [3] H. Ghandhari, E. Ameri, F. Nikouei, S. M. Mahdavi, M. Chehrassan and M. Motalebi, "Selective Thoracolumbar/Lumbar Fusion in Adolescent Idiopathic Scoliosis: A Comprehensive Review of the Literature," *The Archives of Bone and Joint Surgery*, vol. 11, no. 5, 2023.
- [4] S. D. Glassman, S. H. Berven, C. I. Shaffrey, P. V. Mummaneni and D. W. Polly, "Commentary: Appropriate Use Criteria for Lumbar Degenerative Scoliosis: Developing Evidence-based Guidance for Complex Treatment Options," *Neurosurgery*, vol. 80, 2017.
- [5] C. Laverdiere, M. Georgiopoulos, C. P. Ames, J. Corban, P. Ahangar, K. Awadhi and M. H. Weber, "Adult Spinal Deformity Surgery and Frailty: A Systematic Review," *Global Spine Journal*, vol. 4, 2022.
- [6] B. J. Neuman, C. Baldus, L. P. Zebala, M. P. Kelly, C. Shaffrey, C. Edwards, T. Koski, F. Schwab, S. Glassman, S. Parent, S. Lewis, L. G. Lenke, J. M. Buchowski, J. S. Smith, C. H. Crawford, O. Boachie-Adjei, H. J. Kim, V. Lafage, J. Lurie, L. Carreon and K. H. Bridwell, "Patient Factors That Influence Decision Making: Randomization versus Observational Nonoperative versus Observational Operative Treatment for Adult Symptomatic Lumbar Scoliosis (ASLS)," *Spine (Phila Pa 1976)*, vol. 41, no. 6, 2016.
- [7] V. Puvanesarajah, F. H. Shen, J. M. Cancienne, W. M. Novicoff, A. Jain, A. L. Shimer and H. Hassanzadeh, "Risk factors for revision surgery following primary adult spinal deformity surgery in patients 65 years and older," *Journal of Neurosurgery Spine*, vol. 25, 2016.
- [8] North American Spine Society, "Diagnosis and Treatment of Degenerative Lumbar Spinal Stenosis," 2011. [Online]. [Accessed 2023].
- [9] K. L. Jackson II and J. G. Devine, "The Effects of Smoking and Smoking Cessation on Spine Surgery: A Systematic Review of the Literature," *Global Spine Journal*, vol. 6, 2016.
- [10] A. Feeley, J. McDonnell, I. Feeley and J. Butler, "Obesity: An Independent Risk Factor for Complications in Anterior Lumbar Interbody Fusion? A Systematic Review," *Global Spine Journal*, vol. 12, no. 8, 2022.
- [11] F. Cofano, G. Di Perna, D. Bongiovanni, V. Roscigno, B. M. Baldassarre, S. Petrone, F. Tartara, D. Garbossa and M. Bozzaro, "Obesity and Spine Surgery: A Qualitative Review About Outcomes and Complications. Is It Time for New Perspectives on Future Researches?," *Global Spine Journal*, vol. 12, no. 6, 2022.

Reviewed / Approved by Clinical Guideline Committee

Disclaimer: *Evolut Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment and medical advice. Evolut 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 Evolut 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. Evolut 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.***

*Evolut	
Clinical guidelines: THORACIC SPINE SURGERY	Original Date: July 2015
CPT Codes**: - Thoracic Spine Surgery: 22532, +22534, 22556, 22585, 22610, +22614, 22830, 63003, 63016, 63046, +63048, 63055, +63057, 63064, +63066, 63077, +63078 <i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	Last Revised Date: December 2023
Guideline Number: Evolut_CG_308	Implementation Date: July 2024

TABLE OF CONTENTS

GENERAL INFORMATION	2
STATEMENT	2
PURPOSE	2
SCOPE.....	2
INDICATIONS	3
DECOMPRESSION SURGERY ONLY	3
THORACIC DECOMPRESSION WITH FUSION SURGERY	3
RELATIVE CONTRAINDICATIONS FOR SPINE SURGERY	4
BACKGROUND	4
REFERENCES.....	7

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.

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.

Purpose

This guideline outlines the key surgical treatments and indications for common thoracic 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 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.

INDICATIONS

All requests for thoracic spine surgery will be reviewed on a **case-by-case** basis. The following criteria **must** be met for consideration.

Decompression Surgery Only

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening spinal cord compression – immediate surgical evaluation is indicated. Symptoms may include any of the following: [1, 2]
 - Lower extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Positive Babinski sign
 - Clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) or lower extremity weakness or paralysis with corresponding evidence of spinal cord compression on a magnetic resonance imaging (MRI) or computed tomography (CT) scan images – immediate surgical evaluation is indicated; **OR**
- When **All** of the following criteria are met:
 - Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to at least 6 consecutive weeks in the last 6 months of documented, physician-directed appropriate conservative treatment to include at least 2 of the following:
 - Analgesics, steroids, and/or NSAIDs
 - Structured program of physical therapy
 - Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician
 - Epidural steroid injections and/or selective nerve root block; **AND**
 - Imaging studies confirm the presence of spinal cord or spinal nerve root compression at the level corresponding with the clinical findings (MRI or CT)

Thoracic Decompression With Fusion Surgery

- Deformity cases – please refer to our Deformity Spine Surgery (Adult) Guideline; **OR**

- For myelopathy or radiculopathy secondary to cord or root compression (see criteria described above) satisfying the indications for decompressive surgery requiring extensive decompression that results in destabilization of the thoracic spine

NOTE: There is no current evidence base to support fusion in the thoracic spine for degenerative disease without significant neurological compression or significant deformity as outlined above.

RELATIVE CONTRAINDICATIONS FOR SPINE SURGERY

- **Medical contraindications to surgery**, e.g., severe osteoporosis; infection of soft tissue adjacent to the spine, whether or not it has spread to the spine; severe cardiopulmonary disease; anemia; malnutrition and systemic infection [3]
- **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 [4]
- **Active nicotine use prior to fusion surgery.** Individuals must refrain from nicotine use for at least six weeks prior to surgery and during the period of fusion healing [5]
- **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 [6, 7]

NOTE: Cases of severe myelopathy and progressive neurological dysfunction may require surgery despite these general contraindications.

BACKGROUND

Thoracic Decompression with or without fusion

Thoracic disc herniation with or without nerve root compression is usually treated conservatively (non-surgically). A back brace may be worn to provide support and limit back motion. Injection of local anesthetic and steroids around the spinal nerve (spinal nerve blocks) may be effective in relieving radicular pain. As symptoms subside, activity is gradually increased. This may include physical therapy and/or a home exercise program. Preventive and maintenance measures (e.g., exercise, proper body mechanics) should be continued indefinitely. Job modification may be necessary to avoid aggravating activities.

Simple laminectomy is rarely used in the treatment of thoracic disc herniation because of the high risk of neurologic deterioration and paralysis. Excision of the disc (discectomy) may be performed via several different surgical approaches –anteriorly, laterally, or transpedicular.

Fusion should be performed only if surgery causes instability in the spinal column. Many newer techniques do not usually destabilize the thoracic spine.

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"><li data-bbox="548 279 1044 310">• Reconciled CPT code discrepancies
May 2023	Added references
May 2022	No changes

REFERENCES

- [1] Z. Li, D. Ren, Y. Zhao, S. Hou, L. Li, S. Yu and T. Hou, "Clinical characteristics and surgical outcome of thoracic myelopathy caused by ossification of the ligamentum flavum: a retrospective analysis of 85 cases," *Spinal Cord*, vol. 54, 2016.
- [2] H. Wang, L. Ma, R. Xue, D. Yang, T. Wang, Y. Wang, S. Yang and W. Ding, "The incidence and risk factors of postoperative neurological deterioration after posterior decompression with or without instrumented fusion for thoracic myelopathy," *Medicine*, vol. 95, 2016.
- [3] V. Puvanesarajah, F. H. Shen, J. M. Cancienne, W. M. Novicoff, A. Jain, A. L. Shimer and H. Hassanzadeh, "Risk factors for revision surgery following primary adult spinal deformity surgery in patients 65 years and older," *Journal of Neurosurgery Spine*, vol. 25, 2016.
- [4] North American Spine Society, "Diagnosis and Treatment of Degenerative Lumbar Spinal Stenosis," 2011. [Online]. [Accessed 2023].
- [5] K. L. Jackson II and J. G. Devine, "The Effects of Smoking and Smoking Cessation on Spine Surgery: A Systematic Review of the Literature," *Global Spine Journal*, vol. 6, 2016.
- [6] A. Feeley, J. McDonnell, I. Feeley and J. Butler, "Obesity: An Independent Risk Factor for Complications in Anterior Lumbar Interbody Fusion? A Systematic Review," *Global Spine Journal*, vol. 12, no. 8, 2022.
- [7] F. Cofano, G. Di Perna, D. Bongiovanni, V. Roscigno, B. M. Baldassarre, S. Petrone, F. Tartara, D. Garbossa and M. Bozzaro, "Obesity and Spine Surgery: A Qualitative Review About Outcomes and Complications. Is It Time for New Perspectives on Future Researches?," *Global Spine Journal*, vol. 12, no. 6, 2022.

Reviewed / Approved by Clinical Guideline 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.***

*Evolut	
Clinical guidelines: SPINE SURGERY OTHER	Original Date: July 2015
CPT Codes**: - Spine Surgery Other: Neoplasm, Lesion, Infection (All Regions): 63265, 63266, 63267, 63268, 63270, 63271, 63272, 63273, 63275, 63276, 63277, 63278, 63280, 63281, 63282, 63283, 63285, 63286, 63287, 63290, 63295, 63290, 63295, 22590, 22595, 22600, 22610, 22612, 22614, 22630, 22632, 22633, 22634, 22554, 22556, 22558, 22585, 22532, 22533, 22534	Last Revised Date: December 2023
<i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	
Guideline Number: Evolut_CG_309	Implementation Date: July 2024

TABLE OF CONTENTS

GENERAL INFORMATION	2
STATEMENT	2
INDICATIONS	3
FUSION SURGERY (ANY REGION) FOR THE TREATMENT OF SPINAL NEOPLASM, LESION, OR INFECTION	3
DECOMPRESSION SURGERY (ANY REGION) FOR THE TREATMENT OF SPINAL NEOPLASM, LESION, OR INFECTION	3
REFERENCES.....	6

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.

STATEMENT

Significant spinal cord or nerve root compression due to tumor, lesion or infection may require surgical intervention. 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.

Scope

Spinal surgeries should be performed only by those with extensive 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.

INDICATIONS

Fusion Surgery (Any Region) For The Treatment Of Spinal Neoplasm, Lesion, Or Infection

The following criteria must be met for urgent intervention

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression due to tumor or infection**—immediate surgical evaluation is indicated. Symptoms may include any of the following [1, 2]:
 - Upper extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized
 - Lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Hoffmann sign
 - Positive Babinski sign
 - Clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with evidence of spinal cord or nerve root compression due to tumor or infection on magnetic resonance imaging (MRI) or computed tomography (CT) imaging—immediate surgical evaluation is indicated; **OR**
- **When ALL of the following criteria are met:**
 - Evidence of gross biomechanical instability resulting in acute neurological risk requiring surgical reconstruction/fusion
 - Imaging studies demonstrate evidence of infection or neoplasm of the spine. Findings must align with corresponding clinical findings. Imaging studies may include:
 - Magnetic resonance imaging (MRI); preferred study for assessing spine soft tissue (including the spinal cord and roots); **OR**
 - Computed tomography (CT) - with or without myelography - indicated in individuals who have a contraindication to MRI; preferred for examining the spine's bony structures.

Decompression Surgery (Any Region) For The Treatment Of Spinal Neoplasm, Lesion, Or Infection [3, 4, 5]

The following criteria must be met:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression due to tumor or infection**—immediate surgical evaluation is indicated. Symptoms may include **any** of the following:
 - Upper extremity weakness
 - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
 - Disturbance with coordination
 - Hyperreflexia
 - Hoffmann sign
 - Positive Babinski sign
 - Clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with evidence of spinal cord or nerve root compression due to tumor or infection on MRI or CT imaging—immediate surgical evaluation is indicated; **OR**
- When ***ALL of the following*** criteria are met:
 - Clinical exam findings confirm significant radiculopathy or severe axial pain
 - Imaging studies demonstrate evidence of infection or neoplasm of the spine that align with corresponding clinical findings. Imaging studies may include:
 - Magnetic resonance imaging (MRI); preferred study for assessing spine soft tissue (including cord and roots); **OR**
 - Computed tomography (CT) - with or without myelography - indicated in individuals who have a contraindication to MRI; preferred for examining the spine's bony structures.

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"><li data-bbox="558 279 867 310">• No content changes
May 2023	Updated references
May 2022	Replaced “patients” with “individuals” where appropriate

REFERENCES

- [1] M. Schwake, E. Maragno, M. Gallus, S. Schipmann, D. Spille, B. Al Barim, W. Stummer and M. Muther, "Minimally Invasive Facetectomy and Fusion for Resection of Extensive Dumbbell Tumors in the Lumbar Spine," *Medicina*, vol. 58, 2022.
- [2] M. A. MacLean, C. J. Touchette, M. Georgiopoulos, T. Brunette-Clement, F. H. Abduljabbar, C. P. Ames, C. Bettegowda, R. Charest-Morin, N. Dea, M. G. Fehlings, Z. L. Gokaslan, R. C. Goodwin, I. Laufer, N. Cordula, L. D. Rhines, A. Sahgal, J. H. Shin, D. M. Sciubba, B. F. Stephens, D. R. Fourney and M. H. Weber, "Systemic considerations for the surgical treatment of spinal metastatic disease: a scoping literature review," *Lancet Oncology*, vol. 23, no. 7, 2022.
- [3] H. Al Farii, A. Aoude, A. Al Shammasi, J. Reynolds and M. Weber, "Surgical Management of the Metastatic Spine Disease: A Review of the Literature and Proposed Algorithm," *Global Spine Journal*, vol. 13, no. 2, 2023.
- [4] R. R. Rispile, G. Targato, S. D'Agostini, G. Fasola, M. Trovo, M. Calci, R. Fanin and B. Cappelletto, "Multidisciplinary Approach to Patients With Metastatic Spinal Cord Compression: A Diagnostic Therapeutic Algorithm to Improve the Neurological Outcome," *Frontiers in Oncology*, vol. 12, 2022.
- [5] G. Zaveri, R. Jain, N. Mehta and B. Garg, "An Overview of Decision Making in the Management of Metastatic Spinal Tumors," *Indian Journal of Orthopaedics*, vol. 55, 2021.
- [6] North American Spine Society, "Diagnosis and Treatment of Degenerative Lumbar Spinal Stenosis," 2011. [Online]. [Accessed 2023].

Reviewed / Approved by Clinical Guideline 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.***

*Evolut	
Clinical guidelines: LUMBAR ARTIFICIAL DISC REPLACEMENT	Original Date: June 2021
CPT Codes**: <ul style="list-style-type: none"> - Lumbar Artificial Disc Replacement - Single Level: 22857, 22862, 22865 - Lumbar Artificial Disc Replacement - Multiple Levels: 22860, 0164T, 0165T <p><i>**See UM Matrix for allowable billed groupings and additional covered codes</i></p>	Last Revised Date: December 2023
Guideline Number: Evolut_CG_304-1	Implementation Date: July 2024

TABLE OF CONTENTS

GENERAL INFORMATION	2
STATEMENT	2
SCOPE	2
INDICATIONS	2
CONTRAINDICATIONS	3
LEGISLATIVE LANGUAGE	4
WASHINGTON	4
REFERENCES.....	6

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.

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.

Because of variable outcomes with 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.

Scope

Spinal surgeries should be performed only by those with extensive 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.

See [LEGISLATIVE REQUIREMENTS](#) for specific mandates in the State of Washington

INDICATIONS

Lumbar total disc arthroplasty (artificial disc replacement) may be considered **medically necessary** when **ALL** of the following indications are met [1, 2]:

- The individual is between the ages of 18 to 60

- Degenerative disc disease or significant discogenic back pain with disc degeneration, is confirmed by documented patient history, physical examination, and key radiographic studies, with no more than Grade 1 (low level) spondylolisthesis demonstrated on x-ray at the operative levels
- Imaging confirms absence of significant facet arthropathy at operative levels
- At least six months of non-operative (conservative) treatment have failed to resolve symptoms
 - Conservative care is focused multi-modal nonoperative treatment that must include a physical therapy/rehabilitation program with cognitive-behavioral components. Treatment may also include pain management injections and active exercise programs. This must be clearly outlined in the medical record.
 - In general, if the program of non-operative treatment fails, operative treatment is indicated when:
 - Improvement of the symptoms has plateaued or failed to occur, and the residual symptoms of pain and functional disability are unacceptable at the end of 6 months of active treatment, or at the end of longer duration of non-operative programs for debilitated individuals with complex problems; and/or
 - Frequent recurrences of symptoms cause serious functional limitations even if a non-operative active treatment program provides satisfactory relief of symptoms, and restoration of function on each recurrence.
- Disc reconstruction with the device is performed at one or two consecutive levels in the lumbar spine from L3-S1 using an anterior retroperitoneal approach.
- The device used as the disc replacement device is FDA-approved for lumbar disc replacement and is used in accordance with FDA labelling

CONTRAINDICATIONS

- Disease above L3-4
- Active systemic or local infection
- Osteoporosis or osteopenia (DXA bone mineral density T-score less than or equal to -1.0), or vertebral bodies compromised by disease or prior trauma
- Allergy or sensitivity to implant materials
- Isolated lumbar radiculopathy (especially due to herniated disc), or chronic radiculopathy (unremitting especially leg symptoms lasting over 1 year)
- Spinal stenosis, or spinal deformity (scoliosis)
- Spondylolisthesis greater than Grade 1
- Disc degeneration requiring treatment at more than two levels
- Severe facet arthrosis or joint degeneration
- Presence of free disc fragment
- Poorly managed psychiatric disorder

Artificial lumbar disc replacement is considered **not medically necessary** in all other circumstances, including artificial disc arthroplasty done at more than two spinal levels, and hybrid (combination artificial disc and fusion) procedures.

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) [3, 4]
- **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 [5]. 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
- **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 [6, 7]. These cases will be reviewed on a case-by-case basis and may be denied given the risk of failure

LEGISLATIVE LANGUAGE

Washington

Washington State Health Care Authority: Health Technology Clinical Committee
20170120B – Artificial disc replacement – Re-review [8]

HTCC coverage determination:

Lumbar artificial disc replacement is **not a covered benefit.**

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"><li data-bbox="548 279 1110 310">• Added legislative language for WA state
May 2023	Updated References
November 2022	CPT code revision – removed 0163T, added 22860
May 2022	No changes

REFERENCES

- [1] J. E. Zigler and R. B. Delamarter, "Five-year results of the prospective, randomized, multicenter, FDA investigational device exemption study of the Pro-Disc-L total disc replacement versus circumferential arthrodesis for the treatment of single-level degenerative disc disease," *Journal of Neurosurgery Spine*, vol. 17, 2012.
- [2] J. Zigler, M. F. Gornet, N. Ferko, C. Cameron, F. W. Schranck and L. Patel, "Comparison of Lumbar Total Disc Replacement With Surgical Spinal Fusion for the Treatment of Single-Level Degenerative Disc Disease: A Meta-Analysis of 5-Year Outcomes From Randomized Controlled Trials," *Global Spine Journal*, vol. 8, no. 4, 2018.
- [3] V. Puvanesarajah, F. H. Shen, J. M. Cancienne, W. M. Novicoff, A. Jain, A. L. Shimer and H. Hassanzadeh, "Risk factors for revision surgery following primary adult spinal deformity surgery in patients 65 years and older," *Journal of Neurosurgery Spine*, vol. 25, 2016.
- [4] K. Varshneya, T. J. Rayyan, P. Fatemi, M. N. Stienen, Z. A. Medress, A. L. Ho, J. K. Ratliff and A. Veeravagu, "predictors of 2-year reoperation in Medicare patients undergoing primary thoracolumbar deformity surgery," *Journal of Neurosurgery Spine*, vol. 33, 2020.
- [5] North American Spine Society, "Clinical Guidelines for Diagnosis and Treatment of Lumbar Disc Herniation with Radiculopathy," 2012. [Online]. [Accessed 2023].
- [6] F. Cofano, G. Di Perna, D. Bongiovanni, V. Roscigno, B. M. Baldassarre, S. Petrone, F. Tartara, D. Garbossa and M. Bozzaro, "Obesity and Spine Surgery: A Qualitative Review About Outcomes and Complications. Is It Time for New Perspectives on Future Researches?," *Global Spine Journal*, vol. 12, no. 6, 2022.
- [7] A. Feeley, J. McDonnell, I. Feeley and J. Butler, "Obesity: An Independent Risk Factor for Complications in Anterior Lumbar Interbody Fusion? A Systematic Review," *Global Spine Journal*, vol. 12, no. 8, 2022.
- [8] Authority WSHC, "Health Technology Clinical Committee - Artificial disc replacement-Review," 2023. [Online]. Available: www.wa.gov. [Accessed 2023].

Reviewed / Approved by Clinical Guideline 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.***



*Evolent	
Clinical guidelines: PERCUTANEOUS SACROILIAC JOINT FUSION	Original Date: June 2021
CPT Codes**: - Percutaneous Sacroiliac Joint (SIJ) Fusion: 27279 <i>**See UM Matrix for allowable billed groupings and additional covered codes</i>	Last Revised Date: December 2023
Guideline Number: Evolent_CG_407	Implementation Date: July 2024

TABLE OF CONTENTS

GENERAL INFORMATION 2

STATEMENT 2

 SCOPE 2

PERCUTANEOUS SACROILIAC JOINT (SIJ) FUSION 2

RELATIVE CONTRAINDICATIONS FOR SPINE SURGERY 3

LEGISLATIVE LANGUAGE 4

 WASHINGTON 4

 1. 20210618A – Sacroiliac joint fusion – rereview..... 4

BACKGROUND 4

REFERENCES..... 7

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.

STATEMENT

All SIJ fusion surgeries will be reviewed on a case-by-case basis.

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.

Scope

Spinal surgeries should be performed only by those with extensive surgical training (neurosurgery, orthopedic surgery).

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.

See [LEGISLATIVE REQUIREMENTS](#) for specific mandates in the State of Washington

PERCUTANEOUS SACROILIAC JOINT (SIJ) FUSION

- **Surgical indications (when ALL of the following are present):** [1, 2, 3, 4]
 - Low back/buttock pain that is typically unilateral and caudal to the lumbar spine localized over the SIJ that impairs daily activities for **at least 6 months**
 - Failure to improve with at least 6 months of appropriate active non-operative treatment that must include medications, PT, and a home exercise program
 - Physical exam demonstrating pain to palpation over the sacral sulcus in the absence of tenderness of similar severity elsewhere
 - Absence of generalized pain behavior
 - Positive pain response to a cluster of 3 provocative tests (e.g., thigh thrust, compression test, Gaenslen’s test, distraction test, Faber test)
 - Diagnostic imaging studies that include **ALL** of the following:
 - Imaging (plain radiographs and a CT or MRI) of the sacroiliac (SI) joint that excludes the presence of destructive lesions (e.g., tumor, infection) or inflammatory arthropathy that would not be properly addressed by percutaneous SIJ fusion
 - Imaging of the pelvis (AP plain radiograph) to rule out concomitant hip pathology
 - Imaging of the lumbar spine (CT or MRI) to rule out neural compression or other degenerative condition that can be causing low back or buttock pain
 - Imaging of the SI joint that indicates evidence of injury and/or degeneration
 - At least 75% reduction of pain for the expected duration of the anesthetic used following an image-guided, contrast -enhanced intra-articular SIJ injection on 2 separate occasions
 - A trial of at least one therapeutic intra-articular SIJ injection (i.e., corticosteroid injection)

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) [5, 6].
- **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 [7]. 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 [8, 9].
- **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 [10, 11]. These cases will be reviewed on a case-by-case basis and may be denied given the risk of failure.

LEGISLATIVE LANGUAGE

Washington

Washington State Health Care Authority: Health Technology Clinical Committee [12]

Number and coverage topic:

1. 20210618A – Sacroiliac joint fusion – rereview

HTCC coverage determination:

In adults, 18 years old and older, with chronic sacroiliac joint pain related to degenerative sacroiliitis and/or sacroiliac joint dysfunction, minimally invasive and open sacroiliac joint fusion procedures are **not covered benefits**.

Note - The scope of this decision does not apply to the following:

- Low back pain of other etiology (e.g., radiculopathy, neurogenic claudication), sacroiliac joint pain related to recent major trauma or fracture, infection, cancer, or sacroiliitis associated with inflammatory arthropathies;
- Sacroiliac joint fusion revision surgery.

HTCC reimbursement determination:

Limitations of coverage: N/A

Non-covered indicators: N/A

BACKGROUND

- While sufficient time allowances for non-operative treatment are required to determine the natural cause and response to non-operative treatment of low back pain disorders, timely decision making for operative intervention is critical to avoid de-conditioning and increased disability

- In general, if the program of non-operative treatment fails, operative treatment is indicated when:
 - Improvement of the symptoms has plateaued or failed to occur, and the residual symptoms of pain and functional disability are unacceptable at the end of 6 months of active treatment, or at the end of longer duration of non-operative programs for debilitated individuals with complex problems; and/or
 - Frequent recurrences of symptoms cause serious functional limitations even if a non-operative active treatment program provides satisfactory relief of symptoms, and restoration of function on each recurrence

POLICY HISTORY

Date	Summary
December 2023	<ul style="list-style-type: none"><li data-bbox="537 279 1105 310">• Added legislative language for WA state
May 2023	Updated references
May 2022	Replaced “patients” with “individuals” where appropriate

REFERENCES

- [1] A. S. Himstead, N. J. Brown, S. Shahrestani, K. Tran, Davies, L. J and M. Oh, "Trends in Diagnosis and Treatment of Sacroiliac Joint Pathology Over the Past 10 Years: Review of Scientific Evidence for New Devices for Sacroiliac Joint Fusion," *Cureus*, vol. 13, no. 6, 2021.
- [2] North American Spine Society, "Diagnosis and Treatment of Adults with Sacroiliac Joint Pain: A Protocol for a Systematic Review and Clinical Guideline by the North American Spine Society," 24 February 2023. [Online]. Available: <https://www.spine.org/Portals/0/assets/downloads/ResearchClinicalCare/Guidelines/SacroiliacJointPain-Protocol.pdf>. [Accessed 2023].
- [3] D. W. Polly, J. Swofford, P. G. Whang, C. J. Frank, J. A. Glaser, R. P. Limoni, D. J. Cher, K. D. Wine, J. N. Sembrano and INSITE Study Group, "Two-Year Outcomes from a Randomized Controlled Trial of Minimally Invasive Sacroiliac Joint Fusion vs. Non-Surgical Management for Sacroiliac Joint Dysfunction," *International Journal of Spine Surger*, vol. 10, 2016.
- [4] P. G. Whang, E. Darr, S. C. Meyer, D. Kovalsky, C. Frank, H. Lockstadt, R. Limoni, A. J. Redmond, P. Ploska, M. Oh, A. Chowdhary, D. Cher and T. Hillen, "Long-Term Prospective Clinical and Radiographic Outcomes After Minimally Invasive Lateral Trasiliac Sacroiliac Joint Fusion Using Triangular Titanium Implants," *Medical Devices: Evidence and Research*, vol. 12, pp. 411-22, 2019.
- [5] V. Puvanesarajah, F. H. Shen, J. M. Cancienne, W. M. Novicoff, A. Jain, A. L. Shimer and H. Hassanzadeh, "Risk factors for revision surgery following primary adult spinal deformity surgery in patients 65 years and older," *Journal of Neurosurgery Spine*, vol. 25, 2016.
- [6] K. Varshneya, T. J. Rayyan, P. Fatemi, M. N. Stienen, Z. A. Medress, A. L. Ho, J. K. Ratliff and A. Veeravagu, "predictors of 2-year reoperation in Medicare patients undergoing primary thoracolumbar deformity surgery," *Journal of Neurosurgery Spine*, vol. 33, 2020.
- [7] North American Spine Society, "Clinical Guidelines for Diagnosis and Treatment of Lumbar Disc Herniation with Radiculopathy," 2012. [Online]. [Accessed 2023].
- [8] K. L. Jackson II and J. G. Devine, "The Effects of Smoking and Smoking Cessation on Spine Surgery: A Systematic Review of the Literature," *Global Spine Journal*, vol. 6, 2016.
- [9] R. S. Nunna, P. B. Ostrov, D. Ansari, J. R. Dettori, P. Godolias, E. Elias, A. Tran, R. J. Oskouian, R. Hart, A. Abdul-Jabbar, K. L. Jackson, J. G. Devine, A. I. Mehta, O. Adogwa and J. R. Chapman, "The Risk of Nonunion in Smokers Revisited: A Systematic Review and Meta-Analysis," *Global Spine Journal*, vol. 12, no. 3, 2022.

- [10] F. Cofano, G. Di Perna, D. Bongiovanni, V. Roscigno, B. M. Baldassarre, S. Petrone, F. Tartara, D. Garbossa and M. Bozzaro, "Obesity and Spine Surgery: A Qualitative Review About Outcomes and Complications. Is It Time for New Perspectives on Future Researches?," *Global Spine Journal*, vol. 12, no. 6, 2022.
- [11] A. Feeley, J. McDonnell, I. Feeley and J. Butler, "Obesity: An Independent Risk Factor for Complications in Anterior Lumbar Interbody Fusion? A Systematic Review," *Global Spine Journal*, vol. 12, no. 8, 2022.
- [12] Authority WSHC, "Health Technology Clinical Committee - Sacroiliac joint fusion-rereview," 2023. [Online]. [Accessed September 2023].

Reviewed / Approved by Clinical Guideline 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.***