National Imaging Associates, Inc.*

2024 NIA Clinical Guidelines For Medical Necessity Review

MUSCULOSKELETAL SURGERY GUIDELINES

Effective January 1, 2024 – December 31, 2024

**National Imaging Associates, Inc. (NIA) is a subsidiary of Evolent Health, LLC.*

Guidelines for Clinical Review Determination

Preamble

NIA 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 National Imaging Associates, Inc. (NIA) 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. NIA's guidelines are reviewed yearly and modified when necessary following a literature search of pertinent and established clinical guidelines and accepted diagnostic imaging practices.

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Clinical guidelines: **CERVICAL SPINE SURGERY**	**Original Date: July 2008**
CPT Codes:** - **Anterior Cervical Decompression with Fusion (ACDF) - Single Level: 22548, 22551, 22554** - **Anterior Cervical Decompression with Fusion (ACDF) - 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** ***See Utilization Review Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_307	**Implementation Date: January 2024**

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.

INDICATIONS FOR CERVICAL SPINE SURGERY

Anterior Cervical Decompression with Fusion (ACDF) - Single Level

The following criteria must be met*:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with **spinal cord compression -** immediate surgical evaluation is indicated.[1-16] 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)[2, 6, 10, 14]; **OR**

When ALL of the following criteria are met[2, 17]

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to **at least 6 weeks** of appropriate conservative treatment
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
  - 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
- 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**.[2] 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).

***Cervical spine decompression with fusion as first-line treatment without conservative care measures in the following clinical cases[6, 10, 11, 14, 16, 18, 19]**

- 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[17, 20]

- 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 Decompression with Fusion (ACDF) – Multiple Levels

The following criteria must be met*:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression –** immediate surgical evaluation is indicated.[1-16] 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[2, 6, 10, 14]; **OR**

When ALL of the following criteria are met[2, 17]

- Cervical radiculopathy or myelopathy due to ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent pain/symptoms with functional limitations that are unresponsive to at least **6 weeks of conservative treatment**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - 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
- 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 following[2]:
    - 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 spine decompression with fusion performed as first-line treatment without conservative care measures in the following clinical cases[6, 10, 11, 14, 16, 18, 19]

- 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[17, 20]

- 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.*

<u>Cervical Posterior Decompression with Fusion - Single Level</u>

The following criteria must be met*

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression -** immediate surgical evaluation is indicated**.**[1, 3, 4, 7, 9-16, 21] 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[2, 6, 10, 14]; **OR**

When **<u>ALL</u> of the following** criteria are met[2, 17]

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to at least **6 weeks of conservative treatment**

- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - 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
- 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**.[2] 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); **AND**

Cervical spine decompression with fusion performed as first-line treatment without conservative care measures in the following clinical cases[10, 11, 14, 16, 18, 19, 21]

- 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[17, 22, 23]:

- 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
The following criteria must be met*

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression –** immediate surgical evaluation is indicated.[1, 3, 4, 7, 9-16, 21] 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[2, 6, 10, 14]; **OR**

When <u>ALL</u> of the following criteria are met[2, 17]

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to at **least 6 weeks of conservative treatment**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - 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 facet injections/selective nerve root block; **AND**
- Imaging studies indicate significant spinal cord or spinal nerve root compression at multiple levels **corresponding with the clinical findings**. Imaging studies may include[2]:
    - 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); **AND**

***Cervical spine decompression with fusion performed as first-line treatment without conservative care measures in the following clinical cases[10, 11, 18 14, 16, 19, 21]**

- 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[17, 22, 23]

- 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

In individuals with non-radicular cervical pain for whom fusion is being considered, **ALL of the following criteria must be met**[24]

- 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.[20]

Cervical Posterior Decompression

The following criteria must be met*

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression -** immediate surgical evaluation is indicated.[1, 2, 9-11, 13-16, 25-27] 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
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to at **least 6 weeks of appropriate conservative treatment**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - 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 facet injections/selective nerve root block
- Imaging studies confirm the presence of spinal cord or spinal nerve root compression at the level(s) **corresponding with the clinical findings.**[2, 28] 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[10, 11, 14, 16, 26, 27]

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

Not Recommended[17, 22, 23]

- 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.

<u>Cervical Artificial Disc Replacement (Single or Two Level)</u>

Indications for cervical artificial disc replacement are as follows:[2, 8, 29-31]

- Skeletally mature individual; **AND**
- Intractable radiculopathy caused by one-or-two-level disease (either herniated disc or spondolytic osteophyte) located at C3-C7; **AND**
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to **at least 6 weeks** of appropriate conservative treatment; **AND**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - 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 facet injections /selective nerve root block; **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.

Cervical Artificial Disc Replacement is **NOT** indicated when **any of the following** clinical scenarios exists[31]

- 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[31]:
    - > 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.[32]

Cervical Anterior Decompression (without fusion)

All requests for anterior decompression without fusion will be reviewed on a **case-by-case basis**.[2, 5, 8, 33]

BACKGROUND

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. Operative treatment is indicated only when the natural history of an operatively treatable problem is better than the natural history of the problem without operative treatment. Choice of surgical approach is based on anatomy, pathology, and the surgeon's experience and preference. 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.

OVERVIEW

***Conservative Therapy:** (Musculoskeletal) includes primarily physical therapy and/or injections and a combination of modalities; rest, ice, heat, modified activities, medical devices (e.g., cervical collar), medications, diathermy, chiropractic treatments, or physician supervised home exercise program.

****Home Exercise Program** (HEP) –two elements are required to meet guidelines for completion of conservative therapy:

- Exercise prescription/plan; **AND**
- Follow-up with member providing documentation regarding completion of HEP, (after 4–6-weeks) or inability to complete HEP due to physical reason (i.e., increased pain, inability to physically perform exercises). Inconvenience or noncompliance without explanation does not constitute "inability to complete" HEP.

A comprehensive assimilation of factors should lead to a specific diagnosis with positive identification of the pathologic condition(s).

- Early intervention may be required in acute incapacitating pain or with progressive neurological deficits.
- Operative treatment is indicated when the natural history of surgically treated lesions is better than the natural history for non-operatively treated lesions.
- 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.
- 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.
- 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.[34]
- 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**.[35-40]
- 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.

<u>Anterior Approaches:</u>

Anterior surgical approaches to cervical spine decompression emerged in the 1950s. The first literature reports describe anterior cervical discectomy combined with a spinal fusion procedure (ACDF). Fusion was added to address concerns about potential for loss of spinal stability and disc space height, leading to late postoperative complications such as kyphosis and radicular pain.[5, 6, 20, 33, 41-43]

Anterior cervical fusion (ACF) accounted for approximately 80% of cervical spine procedures performed in the United States between 2002 and 2009, while posterior cervical fusion (PCF) accounted for 8.5% of these procedures.[44]

Anterior Cervical Discectomy and Fusion (ACDF) – removal of all or part of a herniated or ruptured disc or spondolytic bony spur to alleviate pressure on the nerve roots or on the spinal cord in individuals with symptomatic radiculopathy. Discectomy is most often combined with fusion to stabilize the spine.

Cervical Artificial Disc Replacement - Insertion of a prosthetic device into the cervical intervertebral space with the goal of maintaining physiologic motion at the treated cervical segment. The use of artificial discs is based on the surgeon's preference and training; only FDA-approved artificial discs are appropriate.

Posterior Approaches

Laminectomy – removal of the bone between the spinal process and facet pedicle junction to expose the neural elements of the spine.

Laminoplasty – opening of the lamina to enlarge the spinal canal. There are several laminoplasty techniques to alleviate cord compression by reconstructing the spinal canal. Laminoplasty is performed to decompress the spinal cord in individuals with multilevel degenerative spinal stenosis and neutral or lordotic alignment.

Laminoforaminotomy (also known as posterior discectomy) – the creation of a small window in the lamina to facilitate removal of arthritic bone spurs and herniated disc material pressing on the nerve root as it exits through the foramen.

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POLICY HISTORY

Date	Summary
May 2023	• Updated references • Moved General Information phrase to top of GL
May 2022	• Reference added • Background updated (added obesity as a risk factor)

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
Clinical guidelines: **LUMBAR SPINE SURGERY**	**Original Date: June 2013**
CPT Codes:** - **Lumbar Microdiscectomy: 62380, 63030, +63035** - **Lumbar Decompression: 63005, 63012, 63017, 63042, +63044, 63047, +63048, 63056, +63057** - **Lumbar Fusion - Single Level: 22533, 22558, 22612, 22630, 22633, +63052, +63053** - **Lumbar Fusion - Multiple Levels: +22534, +22585, +22614, +22632, +22634, +63052, +63053** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_304	**Implementation Date: January 2024**

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.

INDICATIONS FOR LUMBAR SPINE SURGERY[1]

Lumbar Discectomy/Microdiscectomy: Surgical indications for inter-vertebral disc herniation*

- When **ALL of the following** are present:
  - Primary radicular symptoms noted upon clinical exam that significantly hinders daily activities[2-7]
  - Failure to improve with 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[3, 7, 8]:
    - 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 showing evidence of inter-vertebral disc herniation that correlate exactly with the individual's symptoms/signs[3, 7, 9, 10] **OR**

***Other Indications:** Microdiscectomy may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios[3]:

- 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)

NOTE: Percutaneous lumbar discectomy, radiofrequency disc decompression, and related procedures are deemed investigational procedures and are not approved. Discectomy and microdiscectomy are the gold standards.

Lumbar Decompression: Laminectomy, Laminotomy, Facetectomy, and Foraminotomy.

These procedures allow decompression by partial or total removal of various parts of vertebral bone and ligaments. Surgical indications for spinal canal decompression due to lumbar spinal stenosis*:

- When **ALL of the following** are present:
    - Neurogenic claudication, and/or radicular leg pain that impairs daily activities[2-7, 9-14]
    - Failure to improve with at least 6 consecutive weeks in the last 6 months of documented, physician directed appropriate conservative therapy to include **at least two (2) of the following[3, 8]**:
        - 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
    - Imaging findings demonstrating moderate to severe stenosis consistent with clinical signs/symptoms[3, 13, 14] **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[3, 7]:

- 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

NOTE: Percutaneous decompressions, endoscopic decompression, and related procedures (laser, etc.) are deemed investigational procedures and are not approved. Open or microdecompression via laminectomy or laminotomy are the gold standards.[3, 7]

Lumbar Spine Fusion

Single Level Fusion with or without Decompression

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.

- 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**[2-7, 12, 13, 15-22]
    - Failure to improve with at least 6 consecutive weeks in the last 6 months of documented, physician directed appropriate conservative therapy (6 months for isolated low back pain to include **at least two (2) of the following**[2, 3, 5, 7, 8, 15, 18-21]:
        - 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 facet injections/selective nerve root block
    - Imaging studies corresponding to the clinical findings[3, 13-15, 18, 19, 21]
    - **At least ONE of the following** clinical conditions:
        - Spondylolisthesis (neural arch defect - spondylolytic spondylolisthesis, degenerative spondylolisthesis, and congenital unilateral neural arch hypoplasia)[13, 18, 19, 21-25]
        - Evidence of segmental instability - Excessive motion, as in degenerative spondylolisthesis, segmental instability, and surgically induced segmental instability[13, 18, 19, 21-25]
        - 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[26]
        - 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)[3]
        - Fusion for the treatment of spinal tumor, cancer, or infection[26]
        - 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[2, 5, 7, 9, 10, 16, 17, 20, 23, 25]

NOTE: The results of several randomized trials suggests 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)[22, 23, 25, 27-29] **OR**

***Other Indications:** Lumbar spinal fusion may be used as the first line of treatment (*no conservative treatment required*) in the following clinical scenarios[3, 7]:

- 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.

****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[2, 5, 7, 17, 20, 23, 25]:

- 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

Multi-level Fusion with or without decompression (all multi-level fusion surgeries will be reviewed on a case-by-case basis):

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.

- 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**[2, 4-7, 12, 13, 16, 17, 20]
- Failure to improve with at least 6 consecutive weeks in the last 6 months of documented, physician directed appropriate conservative therapy to include **at least two** (2) of the following[8, 18-21]:
  - 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 facet injections/selective nerve root block
- Imaging studies corresponding to the clinical findings[3, 13-15, 18, 19, 21]
- **At least ONE of the following** clinical conditions[18, 19, 21-25]:
  - 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[3, 7]:

- 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: 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.

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

NOTE: Pre-sacral, axial lumbar interbody fusion (AxiaLIF) is not an approved surgical approach due to insufficient evidence.

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).[30, 31]
- **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.[3, 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.[32-37]
- **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.[38] These cases will be reviewed on a case-by-case basis and may be denied given the risk of failure.

BACKGROUND

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.

OVERVIEW

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 treatment modalities for lumbar spine disorders into surgical categories: **lumbar discectomy/microdiscectomy, lumbar decompression, and lumbar fusion surgery.** See below for procedures considered not medically necessary.

- **Spinal surgeries should be performed only by those with extensive surgical training (neurosurgery, orthopedic surgery)**
- **Services Not Covered:** The following procedures are considered either still under investigation or are not recommended based upon the current evidence: Percutaneous lumbar discectomy; Laser discectomy; percutaneous radiofrequency disc decompression; intradiscal electrothermal annuloplasty (IDEA) or more commonly called IDET (intradiscal electrothermal therapy); nucleus pulpous replacement; and pre-sacral fusion.
    - *PERCUTANEOUS DISCECTOMY* is an invasive operative procedure to accomplish partial removal of the disc through a needle which allows aspiration of a portion of the disc under imaging control. Its only indication is to obtain diagnostic tissue, such as, for a biopsy for discitis. Its effectiveness has not been fully established.
    - *LASER DISCECTOMY* is a procedure which involves the delivery of laser energy into the center of the nucleus pulposus using a fluoroscopically guided laser fiber under local anesthesia. The energy denatures protein in the nucleus, causing a structural change which is intended to reduce intradiscal pressure. Its effectiveness has not been fully established.
    - *INTRADISCAL ELECTROTHERMAL ANNULOPLASTY (IDEA) (more commonly called IDET, or Intradiscal Electrothermal therapy)* is an outpatient non-operative procedure in which a wire is guided into the identified painful disc using fluoroscopy. The wire is then heated at the nuclear-annular junction within the disc. It has not been shown to be effective.
    - *NUCLEUS PULPOSUS REPLACEMENT* Involves the introduction of a prosthetic implant into the intervertebral disc, replacing the nucleus pulposus while preserving the annulus fibrosus. It has not been shown to be effective relative to other gold standard interventions.
- **Conservative Therapy:** (Musculoskeletal) includes primarily physical therapy and/or injections; and a combination of modalities, such as rest, ice, heat, modified activities, medical devices (such as braces), medications, diathermy, chiropractic treatments, or physician supervised home exercise program.
- **Home Exercise Program** - (HEP) – the following two elements are required to meet guidelines for completion of conservative therapy:
    - Documentation provided of an exercise prescription/plan **AND**
    - Follow up with member with information provided regarding completion of HEP (after suitable 4–6-week period) or inability to complete HEP due to physical reason- i.e.,

increased pain, inability to physically perform exercises. (Inconvenience or noncompliance without explanation does not constitute "inability to complete" HEP).

- **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.
- **Lumbar Fusion -** Fusions can be performed either anteriorly, laterally, or posteriorly, or via a combined approach, although simple posterolateral fusions are indicated in the great majority of cases requiring fusion. 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. These are the surgical approaches:
    - Intertransverse fusion or posterolateral fusion
    - Anterior interbody fusion (ALIF)
    - Lateral or transpsoas interbody fusion (XLIF)
    - Posterior or trans-foraminal interbody fusion (PLIF or TLIF)
    - Anterior/posterior fusion (360-degree)
    - Pre-sacral, axial lumbar interbody fusion (AxiaLIF) is still being investigated and is not recommended.
        - Use of bone grafts including autologous or allograft which might be combined with metal or biocompatible devices to produce a rigid, bony connection between two or more adjacent vertebrae are common. Bone formation or grafting materials including biologics should be used at the surgeon's discretion; however, use of biologics should be limited to FDA approved indications in order to limit complications (especially BMP).
        - All operative interventions must be based upon positive correlation of clinical findings, clinical course, and diagnostic tests and must be performed by surgeons with appropriate training (neurosurgery, orthopedic surgery). A comprehensive assimilation of these factors must lead to a specific diagnosis with positive identification of pathologic condition(s). A failure of accurate correlation may be an indication for denial of cases. 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.
        - Operative treatment is indicated when the natural history of surgically treated lesions is better than the natural history for non-operatively treated lesions.
            - All individuals being considered for surgical intervention should first undergo a comprehensive neuro-musculoskeletal examination to identify mechanical pain generators that may respond to non-surgical techniques or may be refractory to surgical intervention.

        - 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 (exclusive of "emergent" or urgent pathology such as cauda equina syndrome or associated rapidly progressive neurologic loss).
- 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 to 12 weeks 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.

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POLICY HISTORY

Date	Summary
May 2023	• Updated references • Removed Claims Billing/Coding from background
May 2022	Replaced “patients” with “individuals” where appropriate
January 2022	Added CPT Codes +63052, +63053

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
Clinical guidelines: **HIP ARTHROPLASTY**	**Original Date: November 2015**
CPT Codes:** - **Total Hip Arthroplasty (THA): 27130, S2118** - **Revision/Conversion Hip Arthroplasty: 27132, 27134, 27137, 27138** *See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_313	**Implementation Date: January 2024**

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.

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 with no uncontrolled comorbidities (such as diabetes)
- 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)

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

- Hip pathology is due to rheumatoid arthritis,[1, 2] femoral neck fracture,[3, 4] malignancy, dysplasia, avascular necrosis (confirmed by imaging)[5] **or** radiographs (X-rays) demonstrate bone-on-bone articulation

  AND

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

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

  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[6, 7]
  - Failure of **at least 12 weeks** of non-operative treatment, including **at least two** of the following:
    - Rest or activity modifications/limitations[8]
    - Weight reduction for individual with elevated BMI[8]
    - Protected weight-bearing with cane, walker, or crutches
    - Physical therapy modalities[9]
    - Physician-supervised exercise program (including home exercise program)[10]
    - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics[8]

        - Intra-articular corticosteroid injection[8]
    - 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.[11]

      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[12-18]

Additional Information

- 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[19-26].

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.
- Any corticosteroid injection into the joint within 12 weeks of surgery[12-18]

Relative Contraindications

- 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[27]; without attempts at weight loss or discussion of increased risk conferred by BMI
- Compromised soft tissue envelope
- Uncontrolled comorbidities[28]

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[29]
- BMI < 40[30]
- No corticosteroid injection into the joint within 12 weeks of surgery[12-18]

Absolute Contraindications

- Any corticosteroid injection into the joint within 12 weeks of surgery[12-18]
- Osteoporosis or osteopenia (DEXA scan bone mineral density evaluation)[29]
    - Osteoporosis or poor bone quality may increase the risk of fixation failure or femoral neck fracture after hip resurfacing[30]
- 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[31]
- 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)[32, 33]
- Chronic renal insufficiency (due to metal ions circulating and potential renal toxicity)[33]
- Metal allergy[33]

TOTAL HIP ARTHROPLASTY 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:

- 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.[34-36]

*__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)[34, 35, 37-40]
    - 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[12-18]

Additional Information

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

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

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BACKGROUND

HIP ARTHROPLASTY - Total & Revision/Conversion Hip Replacement

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

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. In a total hip replacement, the femoral head and acetabulum are removed and replaced with prosthetic components. In hip resurfacing arthroplasty, a metal cup is placed in the acetabulum and a metal cap is placed over the head of the femur with limited removal of the femoral head and neck.

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.

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POLICY HISTORY

Date	Summary
May 2023	• 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	Deleted: • 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) Revised: • Individual is medically stable and *optimized for surgery* • 3 months to 12 weeks throughout • "patient" to "individual" where appropriate

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
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** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_314	**Implementation Date: January 2024**

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.

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 with no uncontrolled comorbidities
- 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]

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)
- 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:

- 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[3-6] or Tönnis grade 3[7-11] [see Grading Appendix] Weight-bearing X-rays are not required[12].

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[3-5] or a Tönnis grade 3) [see Grading Appendix],[5, 13, 14] or dysplasia [see grading appendix] unless combined with concomitant periacetabular osteotomy.[1, 2]

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:

- Positional hip pain
- Failure of at least 6 weeks of non-operative treatment, including **at least two** of the following[15-17]:
    - 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)[18]
- **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][19, 20]
    - 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[3-6] or a Tönnis Grade 3 [see Grading Appendix][5, 7, 8, 13, 14, 21]
- Skeletally mature patient [partial or complete closure of the proximal femoral physis][22]
- BMI < 40[23, 24] *****
- Radiographic images show no evidence of severe or advanced hip dysplasia [see grading appendix] unless combined with concomitant periacetabular osteotomy[1, 2] ******

*****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[26-28]: 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.

**Even though hip dysplasia, as well as symptomatic FAI and labral tears are believed to be precursors to hip arthritis,[29] arthroscopy is not indicated solely for the treatment of osteoarthritis of the hip[5, 13, 14] and rarely indicated for severe dysplasia, unless combined with concomitant periacetabular osteotomy.[1, 2] However, individuals with borderline dysplasia (lateral center-edge angle [LCEA], 18° to 25°)[30], that require arthroscopic procedures appear to do as well as those with no evidence of dysplasia.[30-32]

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.[33-35]

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:

- X-ray, MRI, or CT evidence of acute post-traumatic intra-articular foreign body or displaced fracture fragment[36, 37];

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.

BACKGROUND

This guideline addresses the following elective, non-emergent, arthroscopic hip repair procedures:

- Diagnostic arthroscopy
- Femoroacetabular impingement (FAI)
- Labral repair only
- CAM, pincer, CAM & pincer combined
- Synovectomy, biopsy, or removal of loose or foreign body

Arthroscopy introduces a fiber-optic camera into the hip joint through a small incision for diagnostic visualization purposes. This camera may also be used in the surrounding extra-articular areas, in a procedure called endoscopy. Other instruments may then be introduced to remove, repair, or reconstruct joint pathology.

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.

OVERVIEW

FEMOROACETABULAR IMPINGEMENT (FAI)[5, 14, 38-43]

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).[44, 45] Labral repair (compared with labral debridement) and capsular closure (compared with unrepaired capsulotomy) are associated with a lower risk of conversion to arthroplasty.[33-35]

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[46] and has been shown to be effective in returning athletes to their sport.[47, 48]

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

Hip Dysplasia

Defined as any of the following criteria:

- 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[49]

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°.

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POLICY HISTORY

Date	Summary
May 2023	• Updated references for Femoroacetabular Impingement (FAI)
May 2022	• 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 *on X-ray* or subchondral edema *on MRI*) • Replaced “patient” with “individual” where appropriate

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
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** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_315	**Implementation Date: January 2024**

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.

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 with no uncontrolled comorbidities (such as diabetes)
- 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
- 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)

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

- Extensive disease or damage due to rheumatoid arthritis,[1] post-traumatic arthritis (i.e., previous proximal tibia or distal femur fracture causing subsequent arthritis), fracture,[2] avascular necrosis[3] 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.

  NOTE: There is no medical necessity to perform TKA in individuals with severe radiological disease and no symptoms

  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[4]

- Failure of **at least 12 weeks** of non-operative treatment, including **at least two** of the following:[5-8]
  - Rest or activity modifications/limitations
  - Weight reduction for individual with elevated BMI[8]
  - 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[8]
  - 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
- 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.[4, 9] 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.[10] 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[11-20]
- No prior arthroscopic knee surgery within 6 months of surgery[21-26]

Additional Information

- 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[27-31]

- 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

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[11-15]
- Any prior arthroscopic knee surgery within 6 months of surgery[21-25]

Relative Contraindication

- 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[32] without attempts at weight loss or discussion of increased risk conferred by BMI
- Severe peripheral vascular disease
- Compromised soft tissue envelope
- Uncontrolled comorbidities[33]

UNICOMPARTMENTAL KNEE ARTHROPLASTY (UKA) / PARTIAL KNEE REPLACEMENT (PKA)

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

- At least 12 weeks of pain localized to the medial or lateral compartment[4]
- Failure of at least 12 weeks of non-operative treatment, including **at least two** of the following[5-8]):
    - Rest or activity modifications/limitations
    - Weight reduction for individual with elevated BMI[8]
    - 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[8]
    - Injections: corticosteroid or viscosupplementation
- Total arc of motion (goniometer) > 90 degrees
- Normal ACL or stable reconstructed ACL per physical exam test[34]

- 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[10]

- Contracture < or equal to 10 degrees upon physical exam (goniometer)[35]
- Angular deformity < or equal to 10 degrees, passively correctable to neutral upon physical exam (goniometer)[36]
- No corticosteroid injection into the joint within 12 weeks of surgery[11-15]
- No prior arthroscopic knee surgery within 6 months of surgery[21-25]
- 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[27]

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

Contraindications for Medial or Lateral UKA/PKA

- Any corticosteroid injection into the joint within 12 weeks of surgery[11-15]
- Any prior arthroscopic knee surgery within 6 months of surgery[21-25]
- 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:

- Failure of prior patellofemoral unloading procedures (i.e., Maquet or Fulkerson)
- 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 unicompartmental 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

- 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 **<u>two</u>** 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 unicompartmental 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[11-15]

  NOTE: MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint[10]

Contraindications for Patellofemoral UKA/PKA:

- Any corticosteroid injection into the joint within 12 weeks of surgery[11-15]
- 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[37-39]

  ***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[37];

  OR

- When **ALL** of the following criteria are met[40, 41]:
  - 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)[38, 39, 42-44]
  - If the revision is for obvious hardware failure only, 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[11-15]

Additional Information

- 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[11-15]

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)

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 (*some sclerosis and cyst formation)*
4	Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour.

Other Notes

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

BACKGROUND

KNEE ARTHROPLASTY - Total, Partial & Revision Knee Replacement

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.

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. A normal knee functions as a hinge joint between the femur and the tibia. The surfaces where these bones meet can become worn out over time, due to arthritis or other conditions, which can cause pain and swelling.

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.

Overview

UNICOMPARTMENTAL KNEE ARTHROPLASTY (UKA) / PARTIAL KNEE REPLACEMENT (PKA)
Unicompartmental 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.

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POLICY HISTORY

Date	Summary
May 2023	• 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	• 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

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
Clinical guidelines: **KNEE ARTHROSCOPY**	**Original Date: November 2015**
CPT Codes:** - **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** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: June 2023**
Guideline Number: NIA_CG_316	**Implementation Date: January 2024**

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.

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 with no uncontrolled comorbidities
- 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[1-3]

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 <u>two</u>** or more of the following, unless otherwise specified:

- 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 may be medically necessary when **<u>ALL</u>** 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 **<u>at least two</u>** 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
- 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[1-3]

NOTE: The following are not managed by NIA :

- Subchondroplasty
- In-office diagnostic arthroscopy (e.g., Mi-Eye, VisionScope)[4-6]

DEBRIDEMENT CHONDROPLASTY

NOTE: Arthroscopic debridement with or without chondroplasty for the treatment of osteoarthritis of the knee is considered **NOT MEDICALLY NECESSARY**.[7-12]

Debridement for **non-patellofemoral (femoral condyle and tibial plateau) articular cartilage** may be medically necessary when **ALL** of the following criteria are met[13-15]:

- Knee 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 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

- Two or more or persistent effusion(s)
- No intra-articular cortisone injections within 4 weeks of surgery[1-3]

Debridement chondroplasty may be medically necessary for **patellofemoral chondrosis** when **ALL** of the following criteria are met:

- Anterior knee pain with documented loss of function, exacerbated by activities that load the 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 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:
    - 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[1-3]

MENISCECTOMY / MENISCAL REPAIR / MENISCAL TRANSPLANT

MENISCECTOMY / MENISCAL REPAIR

NOTE: There is a high incidence of incidental meniscal findings on knee MRI in middle-aged and elderly individuals[16, 17] 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.[17-28] 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.[29-34] Studies have also demonstrated an increased incidence of revision arthroplasty, infection, loosening and stiffness in individuals who underwent a knee arthroscopy prior to an arthroplasty.

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

- Symptomatic meniscal tear confirmed by MRI results that demonstrate a peripheral tear in the vascular zone, root tear, 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

AND

- No intra-articular cortisone injections within 4 weeks of surgery[1-3]

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*.

***NOTE: 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].
- No intra-articular cortisone injections within 4 weeks of surgery[1-3]

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[35-39]

- 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[1-3]

LIGAMENT RECONSTRUCTION OR REPAIR

ANTERIOR CRUCIATE LIGAMENT (ACL) RECONSTRUCTION WITH ALLOGRAFT OR AUTOGRAFT

ACL reconstruction or repair may be medically necessary when **ALL** of the following criteria in any of the following subsections are met[39-42]:

- 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) with clinical 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
- Individual has no evidence of severe arthritis defined as Kellgren-Lawrence grade 3 or 4 [see grading appendix]**

OR

- When one of the following criteria are met:
  - MRI results confirm an ACL tear associated with other ligamentous instability or repairable meniscus
  - MRI results confirm partial or complete ACL tear AND individual has persistent symptoms despite at least 12 weeks of non-operative treatment
  - 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])

AND

Individual has no evidence of severe arthritis defined as Kellgren-Lawrence grade 3 or 4 [see grading appendix]*

* 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: ACL tears in individuals less than age 13 will be reviewed on a case-by-case basis.

POSTERIOR CRUCIATE LIGAMENT (PCL) RECONSTRUCTION

PCL reconstruction or repair may be medically necessary **when the following criteria are met**[43, 44]:

- 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:

- 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[45-52]:

- 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.

ARTICULAR CARTILAGE RESTORATION / REPAIR

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[53-62]

- Skeletally mature adult
- MRI confirms an isolated full-thickness chondral or osteochondral lesion of the femoral condyle, trochlea, or patella < 2.0 cm^2

- 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[1-3]

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 [48, 58, 63-88]:

- 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 cm^2 - OAT
  > 2.0 cm^2 - 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[1-3]

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:[75, 89-105]

- 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 cm^2 - OAT

>2.0 cm^{2} - 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[1-3]

***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.

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[106-108]:

- 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
- 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[1-3]

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[1-3]

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[109-113]:

- 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[1-3]

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[114-121]:

- 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[118, 122-125];
  - 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

*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.[118, 123, 125] TT-TG values over 17 mm indicate other possible bony abnormalities such as increased femoral anteversion that may cause patellar instability.[126-128]

Manipulation under Anesthesia (MUA)

Manipulation under anesthesia (MUA) may be indicated when **ALL** of the following criteria are met[129-134]**:**

- 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.[135-137]

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 after ligamentous or joint reconstruction, or resolved infection
- No intra-articular cortisone injections within 4 weeks of surgery[1-3]

OR

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

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)

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

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

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

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)

Grade	Description
0	Normal cartilage
1	Nearly normal cartilage *Superficial lesions. Soft indentation and/or superficial fissures and cracks.*
2	Abnormal cartilage *Lesions extending down to <50% of cartilage depth.*
3	Severely abnormal cartilage *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.*
4	Severely abnormal cartilage (through the subchondral bone) *Penetration of subchondral bone that may or may not be across the full diameter of defect*

American College of Rheumatology Guidelines

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

BACKGROUND

KNEE ARTHROSCOPY - Knee Arthroscopy & Open, Non-Arthroplasty

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)
- Lysis of adhesions for arthrofibrosis of the knee

Arthroscopy introduces a fiber-optic camera into the knee joint through a small incision for diagnostic visualization purposes. Other instruments may then be introduced to remove, repair, or reconstruct intra- and extra-articular joint pathology. Surgical indications are based on relevant subjective clinical symptoms, objective physical exam and radiologic findings, and response to previous non-operative treatments when medically appropriate.

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

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ADDITIONAL RESOURCES

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POLICY HISTORY

Date	Summary
June 2023	• 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 cm^2 - OAT; > 2.0 cm^2 - 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	• 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

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
Clinical guidelines: **SHOULDER ARTHROPLASTY**	**Original Date: August 2016**
CPT Codes:** - **Total/Reverse Shoulder Arthroplasty or Resurfacing: 23472** - **Partial Shoulder Arthroplasty/Hemiarthroplasty: 23470** - **Revision Shoulder Arthroplasty: 23473, 23474** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_317	**Implementation Date: January 2024**

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.

General Requirements

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

- There is 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, 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
- Recommendations for elective total shoulder or reverse shoulder arthroplasty should only be considered after the individual has been optimized for surgery and the individual's overall medical condition demonstrates no uncontrolled co-morbidities.[1-5]

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[6-8]:

- Evidence of painful osteoarthritis or inflammatory, non-infectious arthritis (e.g., rheumatoid) with functional limitations such as activities of daily living, employment or simple recreation
- Complete or near-complete loss of joint space* on axillary or AP x-rays (internal rotation and/or external rotation) *
  *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[9-12]
- No prior arthroscopic surgery of the shoulder within 12 weeks of surgery[13, 14]

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*).[15, 16]
- 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[9-12]
- Arthroscopic surgery of the shoulder within 12 weeks of surgery[13, 14]

HEMIARTHROPLASTY

Hemiarthroplasty may be necessary when **the** following criteria are met:

- Acute 3 or 4-part fracture of the proximal humerus[17]

  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[9, 18]
- No prior arthroscopic surgery of the shoulder within 12 weeks of surgery[13, 14]

Contraindications

- Any cortisone injection into the joint within 12 weeks of surgery[9-12]
- Arthroscopic surgery of the shoulder within 12 weeks of surgery[13, 14]
- Neurologic disease resulting in CRPS or Charcot shoulder
- Active infection within 12 weeks of surgery

REVERSE TOTAL SHOULDER ARTHROPLASTY (RTSA) for the treatment of arthritis, irreparable rotator cuff tears or proximal humeral fractures:

Arthritis

RTSA may be indicated for the **treatment of arthritis** when **ALL** of the following criteria are met[18]:

- 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[19]*
  *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[20-23]
- 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[9-12]
- No prior arthroscopic surgery of the shoulder within 12 weeks of surgery[13, 14]

***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.[24-27]

Contraindications

- Any cortisone injection into the joint within 12 weeks of surgery[9-12]
- 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[13, 14]

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)[19]
- 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[28, 29]
- 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[13, 14]
- No cortisone injection into the joint within 12 weeks of surgery[9-12]

Contraindications

- Any cortisone injection into the joint within 12 weeks of surgery[9-12]
- 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[13, 14]

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.[28]

REVISION ARTHROPLASTY (See contraindications*)

Conversion of a **Hemiarthroplasty to a Total 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)[30-33] **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)[30-33] **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[7]:

- Evidence of prior total shoulder arthroplasty
- Persistent pain and functional loss
- Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration)[30-33] **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[34]

Revision of a **Total Shoulder Arthroplasty to a Reverse Shoulder Arthroplasty** may be necessary when **ALL** of the following criteria are met:

- Evidence of prior total shoulder arthroplasty
- Persistent pain and functional loss
- Negative infection evaluation (including CRP, ESR, CBC, with or without negative aspiration)[30-33] **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[35]:

- 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)[30-33] **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[36]:

- 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),[30-33] **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
- No arthroscopic surgery of the shoulder within 12 weeks of surgery[13, 14]
- No cortisone injection into the joint within 12 weeks of surgery[9-12]

BACKGROUND

SHOULDER ARTHROPLASTY - Total, Partial & Revision Shoulder Replacement

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.

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.

In both a total shoulder replacement and a reverse shoulder replacement, the damaged joint surfaces (humeral head and glenoid) are removed and replaced with prosthetic components, with the goal of reducing pain and improving joint function. In a reverse shoulder procedure, the ball and socket feature of the joint is reversed, allowing for added rotator cuff support.

In the event the shoulder joint cannot support a glenoid prosthesis, a hemiarthroplasty, or partial joint replacement may be performed to replace the humeral head with a prosthesis.

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

OVERVIEW

Total Shoulder Arthroplasty (TSA)

The replacement of the glenohumeral joint is called a shoulder arthroplasty. It can be either a total shoulder arthroplasty (TSA), where both the glenoid and humerus are replaced, a partial arthroplasty of the humerus only (hemiarthroplasty [HA]), or a partial resurfacing of the humerus (humeral head resurfacing [HHR, HR]). In general, these 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. Revision shoulder arthroplasty is most commonly required because of technical problems encountered at the time of surgery, such as insertion of the wrong size components, improper technique, and poor surgical exposure.

Reverse Total Shoulder Arthroplasty (RTSA)

This shoulder surgery 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.[37]

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. Complication rates have steadily decreased as surgeons become more familiar with this procedure and technical advances have been made. Indications have expanded to include younger individuals, malunions, nonunions, failed arthroplasty, and irreparable cuff tears.

Age and Shoulder Arthroplasty

In general, 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. However, 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.[6]

TSA can be done at any age, but in general, to minimize complications, consideration should be given to the following[38]:

- 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[39]
- 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[38]
- Age > 65: TSA or RTSA is typically the best surgical option for individuals over the age of 65

Revision Arthroplasty

There are six primary indications for revision shoulder arthroplasty: (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.

NOTE: Historically, this procedure was coded as the removal of hardware and total shoulder arthroplasty. CPT introduced shoulder revision procedure codes in January 2013.

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POLICY HISTORY

Date	Summary
May 2023	• 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	Updated references **Added:** • 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) **Revised:** • 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 *tears involving at least two tendons* (RTSA arthritis) **Clarified:** • 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 Replaced "patient" with "individual" where appropriate

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
Clinical guidelines: **SHOULDER ARTHROSCOPY**	**Original Date: August 2016**
CPT Codes:** - **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, 23700** - **Shoulder Surgery Other: 23120, 23125, 23130, 23405, 23415, 23430, 23700, 29805, 29819, 29820, 29821, 29822, 29823, 29824, 29825, +29826, 29828** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_318	**Implementation Date: January 2024**

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.

General Requirements for Elective Surgery of the Shoulder

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

- There is 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, athletic)
- Individual is medically stable and optimized for surgery with no uncontrolled comorbidities (such as diabetes)
- 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[1, 2]

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[3-6]

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: The following is not managed by NIA:

- In-office diagnostic arthroscopy (e.g., Mi-Eye, VisionScope)[7]

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).[8-10]

NOTE: See section on subscapularis tears

Partial-Thickness Rotator Cuff Tear or Calcific Tendinitis

Surgical repair of **a partially torn rotator cuff** 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)[11]
- Functional loss (age-appropriate activities of daily living (ADL), occupational, athletic)
- MRI or ultrasound[12, 13](if an MRI cannot be performed) that demonstrates a partial thickness tear (articular-sided, concealed, or bursal-sided) or evidence of calcific tendinitis
- 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.[14-23]

NOTE: The following is not managed by NIA

- US-guided percutaneous debridement or tenotomy (e.g., Tenex, TenJet)

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)
- Functional loss (age-appropriate activities of daily living (ADLs), occupational, athletic)
- Rotator cuff weakness or severe pain with rotator cuff testing on physical exam
- MRI or Ultrasound[12, 13] that demonstrates a small, full thickness tear (< 1 cm)
- 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.[14-23]

***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
- 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[12, 13] 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)[24-26]
- Warner classification of atrophy "none" or "mild"[27, 28]
- No cortisone injection within 12 weeks prior to surgery.[14-23]

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[29-32]:

- MRI or ultrasound[12, 13] 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)[24-26]
- Warner classification of atrophy "none" or "mild"[27, 28]
- No x-ray evidence of chronic subacromial articulation of the humeral head, defined as an acromiohumeral space less than 5 mm (Hamada grade 2)[31, 33, 34]
- 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.[14-23]

NOTE: AAOS consensus guidelines state that partial repair and superior capsular reconstruction, can improve patient reported outcomes.[29]

Subscapularis Tears

Surgical repair of a subscapularis rotator cuff tear may be necessary when the following criteria are met:[35-42]

- 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.[14-23]

AN ISOLATED SUPERIOR CAPSULAR RECONSTRUCTION MAY BE NECESSARY WHEN ALL OF THE FOLLOWING CRITERIA ARE MET[43-50]:

- MRI or ultrasound[12, 13] 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)[31, 33, 34]
- 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 (RCR) 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.[51]

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):

- 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.)
- No cortisone injection within 12 weeks prior to surgery.[14-23]

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:

- 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, occupation)
- Physical examination demonstrates findings of a SLAP tear (active compression test (O'Brien test), compression rotation test, clunk, or crank test, etc.)
- Age < 40; requests for SLAP repair in an individual age > 40 will be reviewed on a case-by-case basis[52]
- MRI demonstrating superior labral tear
- Type 2 or 4 SLAP tear (not type 1 or 3)
    - I - Labral and biceps fraying, anchor intact
    - II - Labral fraying with detached biceps tendon anchor
    - III - Bucket handle tear, intact biceps tendon anchor (biceps separates from bucket handle tear)
    - IV - Bucket handle tear with detached biceps tendon anchor (remains attached to bucket handle tear)
- Failure of at least 12 weeks of non-operative treatment, including activity modification/avoidance of painful activities **AND <u>ONE</u>** of the following:
    - Minimum of 4 weeks of oral NSAIDs (if not medically contraindicated)
    - Physical therapy or a properly instructed home exercise program

Contraindications:

- **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.[52-54] Even with repairable type II SLAP tears, biceps tenodesis is a viable alternative to repair.[55-57] See Tenotomy and Tenodesis Indications.

Anterior-Inferior Labral Tear (Bankart lesion)[58]

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

- 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 (two or more episodes of subluxation or dislocation) associated with a labral tear** may be necessary when **ALL** of the following criteria are met[59]:

- 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.

Contraindications:

- 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[60-79]
- 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

* 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. Glenoid track evaluation shows that restoring the track (glenoid) to its normal width should be the first priority in restoring shoulder stability.[80-87]

Posterior Labral Tear

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

- Symptoms of pain **OR** painful catching/popping OR instability
- MRI findings of posterior labral tear
- Exam findings demonstrate positive load-shift test, jerk test, glenohumeral grind test, or objective laxity with pain or profound weakness[88]
- 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.)[89]

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

Open or Arthroscopic Capsulorrhaphy for Multidirectional Instability of the Shoulder (MDI)

Surgical repair for MDI may be necessary when **ALL** of the following criteria are met:

- 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 the following criteria are met[90-94]:

- 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.
- A chest X-ray has been obtained in the past 12 months and 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[95]:

- 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[96]:
    - 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[35, 97, 98] with the exception that tenodesis is typically better for more active, muscular individuals that are performing higher-demand activities for work or sport. Tenotomy is often preferred in individuals that smoke (this is a relative indication of tenotomy over tenodesis) due to healing problems in tenodesis.

Tenotomy or tenodesis may be necessary when the following criteria are met[35, 52, 99, 100]:

- **Any of the following:**
    - When performed in conjunction with a total shoulder arthroplasty
    - When performed in conjunction with a subscapularis tendon 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: The following is not managed by NIA:

- US-guided percutaneous debridement or tenotomy (e.g., Tenex, TenJet)

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.[101]

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.[102, 103]

- 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:

This guideline addresses the following elective, non-emergent, arthroscopic shoulder repair procedures:

- Rotator Cuff Repair
- Labral Repairs
- Lysis of Adhesions (Capsulotomy)
- Distal Clavicle Excision (DCE)
- Long Head Biceps (LHB) Tenotomy or Tenodesis
- Loose body removal
- Synovectomy
- Subacromial Decompression (SAD)

Arthroscopy introduces a fiber-optic camera into the shoulder joint through a small incision for diagnostic visualization purposes. Other instruments may then be introduced to remove, repair, or reconstruct joint pathology.

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.

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.

Goutallier Classification of Fatty Infiltration of Rotator Cuff Musculature[26, 104-107]

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[33, 34, 108]

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 addition, 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. In general, true labral tears lead to pain, catching, popping, functional limitations (including age-appropriate activities of daily living (ADLs), occupational and athletic), micro-instability, and gross instability. Labral repairs are most-frequently associated with a specific traumatic event.

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, Bankart lesions typically require 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 age 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.[109]

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ADDITIONAL RESOURCES

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POLICY HISTORY

Date	Summary
May 2023	• 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	• 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 *optimized for surgery* • Revised Partial-Thickness Rotator Cuff Tear or Calcific Tendinitis to "include *two* of the following criteria" • Revised criteria for Latarjet or Remplissage to "Recurrent *anterior dislocations*" • Non-operative treatment for small RCT revised to *ONE* of the following (previously "at least one") • Revised 3 months to 12 weeks throughout • Replace "patient" with "individual" where appropriate **Added:** • 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 **Deleted:** • 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

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
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** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_311	**Implementation Date: January 2024**

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.

INDICATIONS

All surgery requests to treat adult deformity will be reviewed on a case-by-case basis. The most common type of surgery in adults is a posterior spinal fusion with instrumentation. Occasionally anterior fusion is performed for severe curves. The following criteria must be met prior to reconstructive adult deformity surgery:

THORACIC DEFORMITY (MINIMAL/SECONDARY/FLEXIBLE LUMBAR INVOLVEMENT) IN ADULTS

- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) or lower extremity weakness (0-3/5 on the strength scale) or paralysis with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images — immediate surgical evaluation is indicated[1]; **OR**
- When **ALL the following** criteria are met:
  - 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[2, 3]

- Imaging studies confirm spinal curvature and demonstrate at least one of the following[4]:
  - 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

- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) or lower extremity weakness (0-3/5 on the strength scale) or paralysis with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images — immediate surgical evaluation is indicated[5, 6]; **OR**
- When **ALL the following** criteria are met:
  - 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[2, 3]
  - Imaging studies that correspond to clinical findings and show at least one of the following[7, 8]:
    - 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**

- Documented failure of **at least twelve (12)** consecutive weeks in the past year of **any 2** of the following physician-directed conservative treatments[2, 3]:
  - 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).[9, 10]
- **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.[11, 12]

- **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.[12]
- **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.[11-13]

BACKGROUND

This guideline covers the surgical indications for adult spinal deformity. The criteria for spine surgery for deformity are organized by the involved region of the spine. Whenever possible, spinal deformity in adults is treated non-operatively. Individuals often experience significant pain relief from non-operative measures including:

- Pain medication such as non-steroidal anti-inflammatory drugs or mild narcotic medications
- Physical therapy aimed at increasing core muscle strength
- Postural training
- Ideal weight maintenance or appropriate weight loss
- Activity modification
- Braces can provide symptomatic relief
- Individuals who fail initial conservative therapy may benefit from steroidal epidural injections, facet joint blocks.

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. April 2023

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POLICY HISTORY

Date	Summary
May 2023	Added References
May 2022	Replaced “patient” with “individual” where appropriate

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
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** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_308	**Implementation Date: January 2024**

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.

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.[1, 2] Symptoms may include any of the following:
  - 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[1, 2]

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, 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]
- **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[6-9]

- **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]

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.

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POLICY HISTORY

Date	Summary
May 2023	Added references
May 2022	No changes

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*National Imaging Associates, Inc.	
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** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_309	**Implementation Date: January 2024**

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.

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.[1-4] 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 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[5-7]

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.[1, 2] 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.

BACKGROUND

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

FUSION SURGERY (ANY REGION) FOR THE TREATMENT OF SPINAL NEOPLASM, LESION, OR INFECTION: Significant spinal cord or nerve root compression due to tumor or infection may require decompression of the cord/roots and fusion of the involved levels. Fusion is reserved for cases wherein the structural integrity of the spine has been compromised by the disease process or the surgical intervention needed to address the disease process.

DECOMPRESSION SURGERY (ANY REGION) FOR THE TREATMENT OF SPINAL NEOPLASM, LESION, OR INFECTION: Significant spinal cord or nerve root compression due to tumor or infection may require decompression of the spinal cord or nerve roots.

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POLICY HISTORY

Date	Summary
May 2023	Updated references
May 2022	Replaced “patients” with “individuals” where appropriate

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
Clinical guidelines: **LUMBAR ARTIFICIAL DISC REPLACEMENT**	**Original Date: June 2021**
CPT Codes:** - **Lumbar Artificial Disc Replacement - Single Level: 22857, 22862, 22865** - **Lumbar Artificial Disc Replacement - Multiple Levels: 22860, 0164T, 0165T** *See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_304-1	**Implementation Date: January 2024**

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.

Due to variable outcomes with lumbar artificial disc replacement surgery, individuals should be actively involved in the decision-making process and provided appropriate decision-support materials when considering this intervention.

Lumbar total disc arthroplasty (artificial disc replacement) may be considered **medically necessary** when **ALL** of the following indications are met[1-6]:

- 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 (see ***Note**)
- 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
- There are no contraindications to lumbar artificial disc replacement, including but not limited to (see ****Note**):
    - 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.

***NOTE**: 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.

****NOTE**: Contraindications are related to the levels being considered for surgery.

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

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OVERVIEW

- All operative interventions must be based upon positive correlation of clinical findings, clinical course, and diagnostic tests and must be performed by surgeons with appropriate training (neurosurgery, orthopedic surgery). A comprehensive assimilation of these factors must lead to a specific diagnosis with positive identification of pathologic condition(s). A failure of accurate correlation may be an indication for denial of cases. It is imperative to rule out non-physiologic modifiers of pain presentation or non-operative conditions (e.g., peripheral neuropathy, piriformis syndrome, myofascial pain, sympathetically mediated pain syndromes, psychological conditions, etc.) prior to consideration of elective 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.
    - Individuals being considered for surgical intervention should first undergo a comprehensive neuro-musculoskeletal examination to identify mechanical pain generators that may respond to non-surgical techniques or may be refractory to surgical intervention
    - 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

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POLICY HISTORY

Date	Summary
May 2023	Updated References
November 2022	CPT code revision – removed 0163T, added 22860
May 2022	No changes

Reviewed / Approved by NIA Clinical Guideline Committee

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*National Imaging Associates, Inc.	
Clinical guidelines: **SACROILIAC JOINT FUSION**	**Original Date: June 2021**
CPT Codes:** - **Percutaneous Sacroiliac Joint (SIJ) Fusion: 27279** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2023**
Guideline Number: NIA_CG_407	**Implementation Date: January 2024**

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.

Percutaneous Sacroiliac Joint (SIJ) Fusion (all SIJ fusion surgeries will be reviewed on a case-by-case basis):

Because of variable outcomes with fusion surgery, individuals should be actively involved in the decision-making process and provided appropriate decision-support materials when considering this intervention.

- When **ALL of the following** are present[1-4]:
  - 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; **AND**
    - 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)

NOTE: 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.

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.[8-13]
- **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.[14-17] These cases will be reviewed on a case-by-case basis and may be denied given the risk of failure.

OVERVIEW

- All operative interventions must be based upon positive correlation of clinical findings, clinical course, and diagnostic tests and must be performed by surgeons with appropriate training (neurosurgery, orthopedic surgery). A comprehensive assimilation of these factors must lead to a specific diagnosis with positive identification of pathologic condition(s). A failure of accurate correlation may be an indication for denial of cases. It is imperative to rule out non-physiologic modifiers of pain presentation or non-operative conditions (e.g., peripheral neuropathy, piriformis syndrome, myofascial pain, sympathetically mediated pain syndromes, psychological conditions, etc.) prior to consideration of elective 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 individuals being considered for surgical intervention should first undergo a comprehensive neuro-musculoskeletal examination to identify mechanical pain generators that may respond to non-surgical techniques or may be refractory to surgical intervention
    - 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

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POLICY HISTORY

Date	Summary
May 2023	Updated references
May 2022	Replaced “patients” with “individuals” where appropriate

Reviewed / Approved by NIA Clinical Guideline Committee

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