INTRODUCTION:

This guideline outlines the indications for four hip arthroplasty categories: total hip, partial/hemi-arthroplasty, resurfacing, and revision/conversion. Arthroplasty describes the surgical replacement or reconstruction of a joint with implanted devices when the joint has been damaged by an arthritic, traumatic, or malignant process.

This guideline is structured with clinical indications outlined for each of the following hip arthroplasty applications:

a) Total Hip Arthroplasty (THA)/Hip Resurfacing
   
   THA describes the reconstruction of the entire joint articular surfaces, including the femoral head and acetabular sides.
   
   Hip resurfacing arthroplasty replaces the articular surface of the femoral head with limited removal of femoral bone and the entire surface of the acetabulum.

b) Revision/Conversion Arthroplasty
   
   Revision/Conversion hip arthroplasty describes surgical reconstruction due to failure or complication of a previous arthroplasty or reconstruction.

c) Hemiarthroplasty (Partial Arthroplasty)
   
   Hemiarthroplasty is reconstruction of the femoral head but not the acetabulum and is indicated for the treatment of trauma (no additional clinical guidelines included)

Elective arthroplasty surgery may be considered when pain and documented loss of function (deviation from normal hip function which may include painful weight bearing; painful or inadequate range of motion to accomplish activities of daily living (ADLs) and/or employment; and mechanical catching, locking, popping):

1. Cause a diminished quality of life
2. Symptoms have been present for at least 6 months and have not responded to non-operative care, including rest, activity modification, weight reduction, oral anti-inflammatory medications, physical therapy, gait aides (cane, walking stick, walker, crutches), and injections (corticosteroid, viscosupplementation, PRP [platelet-rich plasma]).
3. Are associated with typical objective findings on physical exam, including reduced hip flexion and rotation, positive impingement testing, crepitus, hip flexion contracture, antalgic gait limp.
4. Are associated with radiographic or chondral changes consistent with significant arthritis, including joint space narrowing, subchondral sclerosis, subchondral cysts, and osteophytes (radiographs); joint space narrowing, subchondral bone marrow edema, loss of articular cartilage, effusion, subchondral and paralabral cysts, and osteophytes (MRI).

**CLINICAL INDICATIONS:**

A. **Total Hip Arthroplasty (THA)/Resurfacing**
This guideline breaks out the criteria for total hip arthroplasty (THA) and hip resurfacing procedures.

**Total Hip Arthroplasty (THA):**
THA may be considered medically necessary when the following criteria are met:
- Hip pathology is due to rheumatoid arthritis, femoral neck fracture in the setting of pre-existing arthritis, malignancy, or failure of previous surgery, dysplasia, or avascular necrosis with collapse, confirmed by imaging.

**OR**

- When ALL of the following criteria are met:
  - Pain and documented loss of function (deviation from normal hip function which may include painful weight bearing; painful or inadequate range of motion to accomplish activities of daily living (ADLs) and/or employment; and mechanical catching, locking, popping); are present for at least 6 months; AND
  - 6 months of non-operative treatment* have failed to improve symptoms; AND
  - 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, or
    - Contracture, or
    - Crepitus, or
    - Leg length difference; AND
  - Imaging demonstrates advanced hip joint arthritis of at least *Kellgren-Lawrence grade 3-4 or **Tönnis grade 2 or 3;**

- Relative Contraindications:
  - Metal allergy (dependent upon implant choice)
  - Chronic renal insufficiency (due to metal ions circulating and potential renal toxicity)

- Absolute Contraindications:
  - Local or remove active infection
  - Female of child-bearing age (due to metal ions circulating in blood with potential risk to fetus) (metal on metal replacements)

**Kellgren-Lawrence Grading System:**
Grade 0: No radiographic features of osteoarthritis
Grade I: Possible joint space narrowing and osteophyte formation
Grade II: Definite osteophyte formation with possible joint space narrowing
Grade III: Moderate multiple osteophytes, definite narrowing of joint space, some sclerosis and possible deformity of bone contour (*some sclerosis and cyst formation and deformity of femoral head and acetabulum*)
Grade IV: Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour (*increased deformity of the femoral head and acetabulum*)

***Tönnis Classification of Osteoarthritis by Radiographic Changes***

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No signs of osteoarthritis</td>
</tr>
<tr>
<td>1</td>
<td>Mild: Increased sclerosis, slight narrowing of the joint space, no or slight loss of head sphericity</td>
</tr>
<tr>
<td>2</td>
<td>Moderate: Small cysts, moderate narrowing of the joint space, moderate loss of head sphericity</td>
</tr>
<tr>
<td>3</td>
<td>Severe: Large cysts, severe narrowing or obliteration of the joint space, severe deformity of the head</td>
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</tbody>
</table>

**Hip Resurfacing Arthroplasty:**

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

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

- Pain and documented loss of function (deviation from normal hip function which may include painful weight bearing; painful or inadequate range of motion to accomplish activities of daily living (ADLs) and/or employment; and mechanical catching, locking, popping); are present for at least 6 months; AND
- 6 months of non-operative treatment* have failed to improve symptoms; AND
- 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, or
  - Contracture, or
  - Crepitus, or
  - Leg length difference; AND
- Imaging demonstrates advanced hip joint pathology of at least **Kellgren-Lawrence grade 3-4 or ***Tönnis grade 2 or 3 or avascular necrosis involving less than 50% of the femoral head; AND
- Male patient is less than 65 years old, or female patient is less than 55 years old; AND
- BMI less than 40; AND
- Patient does not have evidence of any of the following contraindications:
  - Osteoporosis or osteopenia (DEXA scan bone mineral density evaluation)
  - Other co-morbidity (including medications that contribute to decreased bone mineral density (glucocorticoid steroids, heparin, aromatase inhibitors, thiazolidinediones, proton pump inhibitors,
loop diuretics, cyclosporine, anti-retrovirals, anti-psychotics, anti-seizures, certain breast cancer drugs, certain prostate cancer drugs, depo-provera, aluminum-containing antacids) that may contribute to active bone demineralization

- Cystic degeneration at the junction of the femoral head and neck on radiographs or MRI or CT
- Malignancy at the proximal femur
- Current or recent hip infection, or sepsis
- Female of child-bearing age (due to metal ions circulating in blood with potential risk to fetus)
- Chronic renal insufficiency (due to metal ions circulating and potential renal toxicity)
- Metal allergy

- Relative Contraindications:
  - Osteoporosis or osteopenia (DEXA scan bone mineral density evaluation)

- Absolute Contraindications:
  - Local or remove active infection
  - Female of child-bearing age (due to metal ions circulating in blood with potential risk to fetus)

**Kellgren-Lawrence Grading System:**
- Grade 0: No radiographic features of osteoarthritis
- Grade I: Possible joint space narrowing and osteophyte formation
- Grade II: Definite osteophyte formation with possible joint space narrowing
- Grade III: Moderate multiple osteophytes, definite narrowing of joint space, some sclerosis and possible deformity of bone contour (some sclerosis and cyst formation and deformity of femoral head and acetabulum)
- Grade IV: Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour (increased deformity of the femoral head and acetabulum)

***Tönnis Classification of Osteoarthritis by Radiographic Changes***
- 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

B. Hip Revision/Conversion Arthroplasty

Hip Revision/Conversion Arthroplasty may be considered medically necessary when a previous hip reconstruction meets the following criteria:
• Extensive disease or damage due to fracture, malignancy, osteolysis, or other bone or soft-tissue reactive or destructive process confirmed by MRI or other advanced imaging. **NOTE: MRI is used less often in these circumstances unless it is a metal-on-metal and looking for soft-tissue lesions; x-ray, CT, nuclear studies are used more frequently; OR**

• Infected joint confirmed by synovial fluid aspiration (cell count and/or culture); OR

• When all of the following are present:
  ○ Symptomatic hip arthroplasty where patient has persistent, severe disabling pain and loss of function for > 6 months; AND
  ○ Unstable joint upon physical exam; AND
  ○ Aseptic loosening, osteolysis, other bone or soft-tissue reactive or destructive process, inappropriate positioning of components, or other failure of fixation of components confirmed on imaging

**Additional Information:**

*Non-operative management may include one or more of the following modalities:*

  ○ Rest or activity modifications/limitations;
  ○ Weight reduction for patient with elevated BMI;
  ○ Protected weight-bearing with cane, walker or crutches;
  ○ Physical therapy modalities;
  ○ Supervised home exercise;
  ○ Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics;
  ○ Injections: cortisone, viscosupplementation, PRP (platelet-rich plasma)
REFERENCES


Hawker, Gillian A., et al. "Which patients are most likely to benefit from total joint arthroplasty?." *Arthritis & Rheumatism* 65.5 (2013): 1243-1252.


