7.01.80	Hip Resurfacing		
Original Policy Date:	December 7, 2006	**Effective Date:**	June 1, 2024
Section:	7.0 Surgery	**Page:**	Page 1 of 18

Policy Statement

I. Metal-on-metal total hip resurfacing with a device system approved by the U.S. Food and Drug Administration (FDA) may be considered **medically necessary** as an alternative to total hip replacement when the individual has **all** of the following criteria:
   A. Is a candidate for total hip replacement
   B. Is likely to outlive a traditional prosthesis
   C. Does not have a contraindication for total hip resurfacing (see Policy Guidelines section)

II. Partial hip resurfacing with an FDA approved device may be considered **medically necessary** in individuals with osteonecrosis of the femoral head who have one or more contraindications for metal-on-metal implants and meet **all** of the following criteria:
   A. The individual is a candidate for total hip replacement
   B. Is likely to outlive a traditional prosthesis
   C. The individual has known or suspected metal sensitivity or concern about potential effects of metal ions
   D. There is no more than 50% involvement of the femoral head
   E. There is minimal change in acetabular cartilage or articular cartilage space identified on radiography

III. All other types and applications of hip resurfacing are considered **investigational**.

NOTE: Refer to Appendix A to see the policy statement changes (if any) from the previous version.

Policy Guidelines

The U.S. Food and Drug Administration (FDA) lists several contraindications for total hip resurfacing. These contraindications include, but are not limited to, the following:

- Bone stock is inadequate to support the device due to:
  - Severe osteopenia or a family history of severe osteoporosis or severe osteopenia
  - Osteonecrosis or avascular necrosis with more than 50% involvement of the femoral head
  - Multiple cysts of the femoral head (greater than 1 cm)
- Skeletal immaturity
- Vascular insufficiency, muscular atrophy, or neuromuscular disease severe enough to compromise implant stability or postoperative recovery
- Known moderate-to-severe renal insufficiency
- Severely overweight
- Known or suspected metal sensitivity
- Immunosuppressed or receiving high doses of corticosteroids
- Individuals with childbearing potential of childbearing age due to unknown effects on the fetus of metal ion release

A 2012 FDA advisory panel of experts identified young males with larger femoral heads as the best candidates for hip resurfacing systems. The FDA has advised that a metal-on-metal hip implant should be selected only after determining that the benefit-risk profile of using a metal-on-metal hip implant outweighs that of using an alternative hip system. Factors to consider include the individual's age, sex, weight, diagnosis, and activity level. Individuals should be informed about the benefits and

risks of metal-on-metal hip implants, including the risk that the hip implant may need to be replaced. Individual expectations and the potential complications of surgery with a metal-on-metal hip implant should be discussed

Total hip resurfacing should be performed by surgeons adequately trained and experienced in the specific techniques and devices used.

Coding
See the Codes table for details.

Description

Hip resurfacing is an alternative to total hip arthroplasty (also known as hip replacement) for patients with advanced arthritis of the hip. Total hip resurfacing describes the placement of a shell that covers the femoral head together with implantation of an acetabular cup in patients with painful hip joints. Partial hip resurfacing is considered a treatment option for avascular necrosis with collapse of the femoral head. Available prostheses are metal-on-metal devices.

Related Policies

- Surgical Treatment of Femoroacetabular Impingement

Benefit Application

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

Regulatory Status

In 2006, the Birmingham Hip Resurfacing System (Smith & Nephew Orthopaedics), a metal-on-metal resurfacing system, was approved by the U.S. Food and Drug Administration (FDA) through the premarket approval process for use in patients requiring primary hip resurfacing arthroplasty for noninflammatory or inflammatory arthritis. This decision was primarily based on a series of 2203 patients (2385 hips) who received this device by a single surgeon in England. A number of post-approval conditions were required, including the following items:

- Study longer-term safety and effectiveness through 10-year follow-up of the first consecutive 350 cases in the 2385 hip case cohort that was part of the premarket approval.
- Study the "learning curve" and the longer-term safety and effectiveness of the Birmingham Hip Resurfacing system in the United States by studying 350 patients at up to 8 sites where clinical and radiographic data will be assessed annually through 5 years and at 10 years. Also, determine cobalt and chromium serum concentration and renal function in these patients at 1, 4, and 10 years.
- Implement a training program to provide clinical updates to investigators.

Two additional metal-on-metal hip resurfacing systems have been approved: in 2007, the Cormet™ Hip Resurfacing System (Corin) and, in 2009, the Conserve® Plus Total Hip Resurfacing System (MicroPort Orthopedics). Both implants were approved for skeletally mature patients with either: noninflammatory degenerative arthritis (e.g., osteoarthritis and avascular necrosis); or inflammatory arthritis (e.g., rheumatoid arthritis). (Note: patients with the latter arthritis might be individuals who, due to younger age or increased activity level, may not be suitable for traditional THA because it would increase the possibility of requiring ipsilateral hip joint revision.)

Various devices have been cleared for marketing by the FDA through the 510(k) process for partial hip (femoral) resurfacing. Some surgeons may be using a femoral resurfacing component together with an acetabular cup (total arthroplasty component) as an off-label application.

FDA product code: NXT.

Rationale

Background

Total Hip Resurfacing

Hip resurfacing is an alternative to total hip arthroplasty (THA; also known as total hip replacement) for patients with advanced arthritis of the hip. Total hip resurfacing describes the placement of a shell that covers the femoral head together with implantation of an acetabular cup. Partial hip resurfacing is considered a treatment option for avascular necrosis with collapse of the femoral head.

Total hip resurfacing has been investigated in patients with osteoarthritis, rheumatoid arthritis, and advanced avascular necrosis as an alternative to THA, particularly in young active patients who would potentially outlive a total hip prosthesis. Therefore, hip resurfacing could be viewed as a time-buying procedure to delay the need for a THA. Proposed advantages of total hip resurfacing compared with THA include preservation of the femoral neck and femoral canal, thus facilitating revision or conversion to total hip resurfacing, if required. In addition, the resurfaced head is more similar in size to the normal femoral head, thus increasing the stability and decreasing the risk of dislocation compared with THA.

Total hip resurfacing has undergone various evolutions, with modifications in prosthetic design and composition and implantation techniques. For example, similar to total hip prostheses, the acetabular components of total hip resurfacing have been composed of polyethylene. However, over time it became apparent that device failure was frequently related to the inflammatory osteolytic reaction to polyethylene debris wear particles. Metal acetabular components have since been designed to improve implant longevity. Sensitivity to wear particles from metal-on-metal chromium and cobalt implant components are of increasing concern.

Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life, and ability to function-including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.
To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, 2 domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent 1 or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; RCTs are

rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

Promotion of greater diversity and inclusion in clinical research of historically marginalized groups (e.g., People of Color [African-American, Asian, Black, Latino and Native American]; LGBTQIA (Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual); Women; and People with Disabilities [Physical and Invisible]) allows policy populations to be more reflective of and findings more applicable to our diverse members. While we also strive to use inclusive language related to these groups in our policies, use of gender-specific nouns (e.g., women, men, sisters, etc.) will continue when reflective of language used in publications describing study populations.

Literature Review
Total Hip Resurfacing

Clinical Context and Therapy Purpose
The purpose of total hip resurfacing is to provide a treatment option that is an alternative to or an improvement on existing therapies, such as conventional surgical methods, in individuals with an indication for hip replacement who are undergoing total hip arthroplasty (THA) and would potentially outlive the prosthesis.

The following PICO was used to select literature to inform this review.

Populations
The relevant population of interest is individuals with an indication for hip replacement who would outlive a traditional prosthesis and who have no contraindication for hip resurfacing. Younger, physically active individuals are the most suitable candidates for total hip resurfacing.

Interventions
The therapy being considered is total hip resurfacing. Total hip resurfacing describes the placement of a shell that covers the femoral head together with implantation of an acetabular cup. The procedure has evolved since its inception, with modifications in prosthetic design and composition, and implantation techniques.

Comparators
Comparators of interest include conventional THA.

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

The existing literature evaluating total hip resurfacing has varying lengths of follow-up, up to 10 years.

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

1. To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs.
2. In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
3. To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
4. Studies with duplicative or overlapping populations were excluded.

Review of Evidence

Technology Assessment

This review was informed by a TEC Assessment (2007) that evaluated studies of patients with advanced degenerative joint disease of the hip who received a total hip resurfacing device and who reported data on short- and long-term clinical outcomes, including benefits and harms, as an alternative to THA. [1,] The Assessment included an RCT[2,] and 12 uncontrolled series, along with U.S. Food and Drug Administration (FDA) premarket application submission data,[3,] and information from the Australian Orthopedic Association National Joint Replacement Registry.[4,] The aggregate data suggested that total hip resurfacing treated patients who do not require a revision have substantial symptomatic reductions in pain and improvements in hip function over presurgical status.

Patient Selection Criteria

Nunley et al (2009) reviewed 207 publications, most of which had little or no description of the patient population, small sample sizes, poor study designs, limited control of bias, and inadequate statistical analysis.[5,] The literature showed no clear consensus on the upper age limit for male patients, but the most commonly used criterion was age (<65 years). Nine articles suggested that female patients should be cautiously evaluated before performing hip resurfacing, especially if they are postmenopausal or have decreased bone mineral density. Some data reviewed was from the Australian Joint Replacement Registry, in which women 65 or older were observed to have a revision rate of 11% at 4 years. [4,] This was compared with men younger than 55 years of age who had a revision rate of less than 2%. Both of these cohorts (older women and younger men) have revision rates of 2% after THA. The Nunley et al (2009) review also indicated that obesity, defined as body mass index (BMI) greater than 35 kg/m2, can be viewed as a relative contraindication to total hip resurfacing but not THA. Femoral head cysts, head-neck junction abnormalities, and poor bone density may also be considered risk factors for implant failure. At the time of this review, the literature on metal sensitivity and the presence of aseptic lymphocytic vasculitis-associated lesions was evolving, and the potential for transplacental transfer of metal ions was a concern for young female patients with the potential to become pregnant in the future. Reviewers concluded that the best candidates for hip resurfacing were men younger than age 65 with osteoarthritis and relatively normal bony morphology.

Total Hip Resurfacing Versus Standard Total Hip Arthroplasty

Systematic Reviews

Multiple qualitative systematic reviews have been published comparing total hip resurfacing to standard THA with short- to mid-term follow-up. Quesada et al (2008) reported that advantages of total hip resurfacing may include possible bone conservation on the femoral side, lower dislocation rates, more range of motion, more normal gait pattern, increased activity levels, increased ease of insertion with proximal femoral deformities or retained hardware, and straightforward revision.[6,] Possible disadvantages of resurfacing were reported to be increased difficulty performing the procedure, increased acetabular bone stock loss, femoral neck fractures, and the effects of metal ions. In their systematic review, Marker et al (2009) described 7 comparative studies that assessed "return to sports and activity" which revealed either similar outcomes for total hip resurfacing and THA procedures or advantages for the total hip resurfacing group.[7,] An additional 4 studies, 3 assessing gait and 1 assessing postural balance, revealed similar or better outcomes for total hip resurfacing than THA. In a review focused on metal-on-metal total hip resurfacing versus THA in individuals younger than 65 years (Jiang et al [2011]; 4 RCTs; N=968), hip function scores were similar between groups, although the resurfacing group showed higher activity levels.[8,]. Another systematic review (18 RCTs; N=776 patients) aimed at comparing resurfacing hip arthroplasty and THA in younger patients (less than 65 years old) found that there were no statistically significant differences between hip resurfacing and THA in terms of functional outcomes, complication rates, and revision rates. [9,]

Randomized Controlled Trials

Haddad et al (2015) published an RCT that was intended to evaluate clinical and functional outcomes of total hip resurfacing using the Birmingham system and to compare it to a cementless hip arthroplasty in patients under the age of 55 years.[10] Between 1999 and 2002, 80 patients were enrolled in the trial; however, only 24 consented to random allocation to treatment (11 to total hip resurfacing, 13 to THA). Eighteen patients refused total hip resurfacing and chose to undergo THA with a 32-mm bearing; 38 patients selected total hip resurfacing. The mean follow-up for all patients was about 12 years (range, 10 to 14 years). Patients were assessed clinically and radiologically at 1 year, 5 years, and 10 years. Outcome measures included Oxford Hip Score, Harris Hip Score, University of California Los Angeles (UCLA), and University College Hospital functional scores. No differences were observed between the 2 groups in the Oxford Hip Score, Harris Hip Score, or in the quality-of-life scores. At 10 years, more patients who underwent total hip resurfacing than those who underwent THA were able to run (53% vs. 19%; p=.1), to participate in sports activities (86% vs. 52%; p=.09) and perform heavy manual labor (20% vs. 13%; p=.19), respectively, although these outcomes were not statistically significant. Patients who had undergone total hip resurfacing exhibited significantly higher functional status scores than those who received a cementless THA at 10 years. Blood levels of cobalt and chromium ions were reported for 72 patients (49 THA, 23 total hip resurfacing); at 5- and 10-year follow-ups, all remained below a 7 parts per billion threshold for toxicity.

Cohort Studies

Mont et al (2007) compared gait analysis in 15 patients after successful total hip resurfacing versus 15 patients who had a successful THA using a small femoral head, and with 10 patients who had osteoarthritis and 30 age and sex-matched controls from a normative database.[11] Walking speed (1.3 m/s) was faster in the total hip resurfacing group than in the THA group (1.0 m/s) or osteoarthritis group (1.0 m/s). Measurement of abductor and extension moments found that the gait of patients following total hip resurfacing was closer to normal than the gait of patients who had undergone THA.

Total Hip Resurfacing Versus Large-Head Total Hip Arthroplasty

Randomized Controlled Trials

Two controlled trials randomized patients to total hip resurfacing or THA with a large diameter metal-on-metal implant.[12,13] Lavigne et al (2010) tested the hypothesis that the observed improvement in activity with total hip resurfacing is due to patient selection bias or to the larger femoral head with total hip resurfacing. [12] To test this hypothesis, 48 patients were randomized to total hip resurfacing or large-head THA. The patients and evaluators at the gait laboratory were kept blinded to the type of arthroplasty until 1 year after surgery. There were no differences between groups for most of the measures at 3, 6, and 12 months postsurgery. Specifically, similar results were observed for normal and fast walking, postural evaluations, Timed Up & Go test, hop test, and hip flexor and abductor strength ratio. The total hip resurfacing group performed better during the Functional Reach Test, and the THA group completed the step test 3 seconds faster than the total hip resurfacing group. The Western Ontario and McMaster Universities Osteoarthritis Index, 36-Item Short-Form Health Survey, Merle D'Aubigne, and UCLA Activity Scores were similar in both groups. Garbuz et al (2010) randomized 107 patients to total hip resurfacing or large-head metal-on-metal THA.[13] There were no differences in the Western Ontario and McMaster Universities Osteoarthritis Index or 36-Item Short-Form Health Survey scores for the 73 patients who had been followed for at least 1 year. However, for the subset of patients who had been tested for serum levels of cobalt and chromium, cobalt was 10-fold higher and chromium was 2.6-fold higher in the large-head metal-on-metal THA group than in the total hip resurfacing group. This was a 46-fold increase from baseline in serum cobalt and a 10-fold increase from baseline in serum chromium for the large diameter head THA group, possibly related to particulate wear at the head-neck junction. Both studies supported the hypothesis that the improved activity observed in total hip resurfacing patients is due to the larger diameter components used in resurfacing.

Revision Rates

Systematic Reviews

Jiang et al (2011) published a systematic review comparing revision rates for metal-on-metal total hip resurfacing with those for THA from 4 randomized or controlled trials with 968 patients younger than 65 years.[8,] Analysis found increased rates of revision with total hip resurfacing at 1 to 10-year follow-ups; the relative risk was 2.60. However, this analysis did not evaluate the effect of age, bearing head size, or sex on revision rates.

Another systematic review by Kumar et al (2022) compared mid- to long-term outcomes for hip resurfacing (n=304 hips) versus THA (n=308 hips) from 6 RCTs.[14,] Follow-up period of the studies ranged from 5 to 14 years. There was a lower overall complication rate in the total hip resurfacing group compared to THA (odds ratio [OR], 2.17; 95% confidence interval [CI], 1.21 to 3.88; p=.009). There was no significant difference in terms of revision rates found between the 2 groups (OR, 1.06; 95% CI, 0.57 to 1.99; p=.85). The overall risk of bias for included studies was deemed moderate.

A systematic review by Davey et al (2023) evaluated long-term outcomes for Birmingham hip resurfacing from 12 studies (N=7132 hips). [15,] The minimum follow-up period was 10 years, with a mean follow-up of 11.5 years (range, 10 to 15.3 years). The overall surgical revision rate was 4.7% at final follow-up (n=334 hips); the most commonly reported complication following the hip resurfacing procedure was peri-prosthetic fracture (0.9%; n=65).

Cohort Studies

Azam et al (2016) published a study that evaluated long-term (minimum, 10-year follow-up) survivorship and functional outcomes of Birmingham total hip resurfacing performed by a single surgeon between 1999 and 2004 in patients with hip osteoarthritis.[16,] In this retrospective cohort study, revision surgery was considered the endpoint of survivorship. A total of 222 patients (244 hips) included 153 men and 69 women. At a mean follow-up of 12 years, 94% of implants were intact. In males, implant survival was 95% while in females, it was 90%. Failure was seen in 14 patients (16 hips), which included 7 (10%) female and 7 (5%) male patients. Femoral components failed due to aseptic loosening and varus collapse in 8 patients after a mean of 9.6 years. Metal allergy was reported in 3 patients (5 hips), all of whom were female; 2 of the latter had bilateral resurfacing. Other complications included femoral neck stress fractures in 2 patients and acetabular component loosening in 1 patient. The failure rate was higher in patients who received a total hip resurfacing femoral component size of 46 mm or less (10/16 hips revised).

Daniel et al (2014) reported results of a prospective cohort study on long-term implant survival from a single-surgeon series of Birmingham total hip resurfacing.[17,] The earliest 1000 consecutive total hip resurfacing implants comprised 335 hips (288 women) and 665 hips (598 men) of all ages and diagnoses without exclusions, who were prospectively followed with mailed questionnaires; the first 402 hips (350 patients) also had a clinical and radiologic review. The mean follow-up was nearly 14 years (range, 12 to 15 years). In total, 59 patients (68 hips) died 0.7 to 12.6 years postsurgery from unrelated causes. Thirty-eight revisions were required at 0.1 to 14 years (median, 9 years) following the operation. These included 17 femoral failures (2%) and 7 each due to infections, soft-tissue reactions, and other causes. With revision for any reason as the endpoint, Kaplan-Meier survival analysis showed 97% (95% CI, 97% to 98%) and 96% (95% CI, 95% to 96%) survival rates at 10 and 15 years, respectively. Radiologic assessment showed 11 (4%) femoral and 13 (4%) acetabular radiolucencies, and 1 (0.3%) radiologic femoral failure. Men appeared to have better implant survival rates (98%; 95% CI, 97% to 99%) at 15 years than women (92%; 95% CI, 90% to 93%); women younger than 60 years had the poorest implant survival rate (90%; 95% CI, 88% to 93%). Patients younger than 50 years with osteoarthritis had the best results (99% survival at 15 years; 95% CI, 99% to 100%), with no failures in men in this group.

Multiple other studies have found similar conclusions in large patient cohorts. For example, 10-year or greater implant survival rate was greater in male hips than in female hips, across multiple age

groups.[18,19,20,21,22,] Additionally, decreasing femoral head size was significantly associated with an increased risk of revision in multiple studies.[20,23,] Another study (Kim et al [2008]) found that most failures were related to early acetablular loosening.[24,]

Gross et al (2012) reported that in 373 hips from the first multicenter FDA regulated trial on hip resurfacing with the Cormet prosthesis, the learning curve was at least 200 cases, with survival at 11 years of 93% for the first 100 cases, 93% for the second 100 cases, and 98% for the last 73 cases.[25,26,] Nunley et al (2010) suggested that, for experienced hip surgeons, the learning curve for avoiding early complications (e.g., early femoral fracture) is 25 or fewer cases, but the learning curve for achieving the desired component positioning is 75 to 100 or more cases.[27,]

Total Hip Resurfacing to Total Hip Arthroplasty Conversion

Systematic Reviews

Marker et al (2009) published a systematic review that included 2 studies comparing the outcomes of hip resurfacing versus conventional THA.[7,]McGrath et al (2009) published 1 of the studies, which compared outcomes of 39 patients whose resurfacing was converted to THA with a group of primary THA patients matched by sex, age, BMI, and preoperative Harris Hip Score; all procedures had been performed by the same surgeon.[28,] Perioperative measures were similar except for the mean operating time, which was 19 minutes longer for the revision group. At an average of 45 months of follow-up, the mean Harris Hip Scores were similar for both groups (92 for conversion to THA vs. 94 for primary THA).

Cohort Studies

De Steiger et al (2010) reported on outcomes for revised total hip resurfacing from the Australian Joint Replacement Registry.[29,] A total of 437 revisions were reported (of 12,093 primary total hip resurfacing; ~4%) between 1999 and 2008. After excluding 39 revisions for infection, the major reason for revision of primary total hip resurfacing was fracture of the femoral neck (43%), followed by loosening/lysis (32%), metal sensitivity (7%), and pain (6%). A femoral-only revision, which converts the joint to a conventional total hip resurfacing, was performed in 247 (62%) of the 397 revisions undertaken for reasons other than infection. At 3 years, the rate of re-revised total hip resurfacing THA was 7%, compared with 2.8% of primary conventional THA. Reasons for re-revision included loosening/lysis (n=6), infection (n=4), dislocation of prosthesis (n=1), and fracture (n=2). At 5 years, femoral-only re-revision (7%) was similar to re-revision of both the acetabular and femoral components (5%) but the rate of acetabular-only re-revision was 20%. A more relevant outcome for this evidence review, one that the investigators did not assess, would be a comparison of the revision rates for total hip resurfacing versus conventional THA.

Stoney et al (2020) reported on outcomes for revised total hip resurfacing from the same Australian Joint Replacement Registry between 1999 and 2018.[30,] This study specifically looked at male patients younger than 65 years old and compared Birmingham hip resurfacing (n=4790 procedures) to 3 conventional THA prostheses (n=2696 procedures). Birmingham hip resurfacing prostheses had a higher statistically significant rate of all-cause revision at 17 years than THA prostheses (hazard ratio [HR] 2.77; 95% CI, 1.78 to 4.32; p<.001); revisions occurred in 4.5% of primary Birmingham hip resurfacing procedures and all revisions were major revisions (e.g., removal or exchange of femoral or acetabular components). The study authors concluded that the design and bearing surface of the Birmingham hip resurfacing prostheses could impact the increase in revision rate compared to THA prostheses since the Birmingham hip resurfacing prostheses had a higher rate of septic loosening, fracture, lysis, and metal-related pathology.

Su et al (2021) evaluated the 10-year survivorship of Birmingham total hip resurfacing to assess the safety and efficacy of this device.[31,] Between 2006 to 2009, there were 280 hip procedures performed at 5 different sites. Outcome measures assessed were Kaplan-Meier survivorship, Harris hip scores, radiographic component stability and osteolysis, reasons for revision, and metal levels including cobalt and chromium. At 10-year follow-up, using all-cause component revision as an endpoint, the

10-year survivorship for all-cause component revisions for all hips was 92.9% (95% CI, 89.8% to 96.1%). Male patients had significantly better survivorship of (95.6%; 95% CI, 92.7% to 98.6%) compared to females (85.5%; 95% CI, 77.1% to 93.8%). Younger males (less than 65 years old at the time of procedure) had a slightly better survivorship of 96.0% (95% CI, 93.1% to 98.9%). Twenty hips (out of the 280 included) underwent revision; reasons for revision were for femoral loosening (n=5), femoral neck fracture (n=3), pseudotumor (n=3), osteolysis (n=2), acetabular loosening (n=1), and a combination of pain, noise, or metal levels (n=6); mean time to revision was 5.4 years. Among patients with unrevised hips, the Harris hip score improved from the preoperative phase to 1 year postoperatively and continued to remain stable 10 years postoperatively.

Adverse Events

Reito et al (2014) intended to evaluate 10-year survivorship of Birmingham total hip resurfacing, to investigate whole blood metal ion levels, to assess the prevalence of adverse events to metal debris, and to assess the relationship between blood metal ion levels plus symptoms of adverse events and metal debris among patients who underwent total hip resurfacing at a single institution.[32,] Between 2001 and 2004, 219 patients received 261 total hip resurfacing implants. All patients with intact devices underwent systematic screening comprising clinical examination, whole blood cobalt and chromium measurements, and targeted cross-sectional imaging; any implant revision was the key study endpoint. At 10 year follow-up, device survival for the entire cohort was 91%, with revision required in 10 (6%) men and 13 (20%) women. The prevalence of adverse events to metal debris was 7% in male and 9% in female patients; it was associated with revision in 3 (2%) men and 8 (9%) women. Pseudotumors were observed most commonly in symptomatic patients who had elevated metal ion levels (63%) than in asymptomatic patients who had elevated metal ion levels (42%) and symptomatic patients who had nonelevated metal ions (11%).

Williams et al (2011) assessed the prevalence of pseudotumor formation by ultrasound in asymptomatic patients with metal-on-metal THA (n=31) or metal-on-metal total hip resurfacing (n=21).[33,] Results were compared with 24 asymptomatic patients with a metal-on-polyethylene THA. At a minimum of 2 years after surgery (mean, not reported), 10 (32%) patients in the metal-on-metal THA group had a solid (n=7) or cystic mass (n=3), 5 (25%) patients in the total hip resurfacing group had a solid (n=3) or cystic mass (n=2), and 1 (4%) patient in the metal-on-polyethylene THA group had a cystic mass. Isolated fluid collection was similar across the 3 groups (10%, 5%, and 8%, respectively). Serum chromium and cobalt ion levels in patients with metal-on-metal prostheses ranged from 2 to 720 times the upper limit of normal. There was no correlation between the serum metal ion levels and the size of pseudotumor abnormality and no significant difference in serum metal ion levels in patients with pseudotumor formation than in patients without pseudotumors in this small study. The high percentage of patients diagnosed with a pseudotumor in this study is due in part to a definition of pseudotumor that included cystic without solid mass.

Kwon et al (2011) determined the prevalence of asymptomatic pseudotumors after metal-on-metal total hip resurfacing in 201 hips.[34,] All patients who had surgery at least 3 years previously (N=228) were invited to participate. The 158 patients who agreed to participate underwent evaluation by ultrasound, followed by biopsy and magnetic resonance imaging (MRI) if a tumor was identified on ultrasound. Mean follow-up was 61 months (range, 36 to 88 months). Pseudotumors that contained both cystic and solid components were identified in 4.4% of patients (6 female, 1 male) and 6.5% of resurfaced hips. Histologic examination of the pseudotumors showed extensive necrosis of connective tissue and scattered aggregates of metal particles within necrotic macrophages in extracellular tissue. The pseudotumors were associated with significantly higher cobalt and chromium levels from serum and hip aspirate.

Steffen et al (2008) published a retrospective study of 610 consecutive hip resurfacings (120 with >5-year follow-up) that attributed failure to metal debris in 0.5% of total hip resurfacings.[35,]Ollivere et al (2009), however, examined histologic samples taken at the time of revision and concluded that the rate of metallosis-related revision in their series of 463 consecutive patients was 3% at 5 years.[36,] All

patients in this series had been recruited into the local arthroplasty follow-up program at the time of the primary surgery; 437 (94%) returned for clinical and radiologic follow-up at a mean follow-up of 43 months (range, 6 to 90 months). Case notes, radiographs, and MRI scans were available for the 13 revisions (2.8%, 12 patients). Histologic findings were available for 12 cases and were re-reviewed by a histopathologist with experience in metal wear and debris. In 7 cases, the histologic findings were consistent with a response to metal wear debris. Survivorship analysis gave an overall survival rate of 95.8% at 5 years, with an endpoint survival of 96.9% at 5 years for metallosis requiring revision. The relative risk for female sex in the metallosis group was 4.94. Also associated with metallosis were a smaller femoral component, greater abduction angle, and a higher BMI.

Mont et al (2007) described the results of the FDA-regulated investigational device exemption prospective, multicenter trial of the Conserve Plus hip resurfacing system in 2007.[37,] The investigators identified a number of risk factors for complications after the first 292 procedures; they included the presence of cysts, poor bone quality, leaving reamed bone uncovered, minimizing the size of the femoral component to conserve acetabular bone, and malpositioning of the acetabular shell. Modification of inclusion criteria and surgical technique in the next 906 patients (1016 hips) resulted in a decreased rate of femoral neck fracture (from 7% to <1%). A trend was reported suggesting a reduction in other types of complications (e.g., nerve palsy was reduced from 4.1% to 2.2%, loosening of the acetabular cup from 3.4% to 1.9%). No differences between the 2 cohorts were observed in the Harris Hip Score (93 vs. 93) or the 12-Item Short-Form Health Survey (e.g., Physical Component Summary score, 50 vs. 50).

Section Summary: Total Hip Resurfacing

The evidence on total hip resurfacing includes RCTs, numerous large observational studies, large registry studies, and systematic reviews. The efficacy of total hip resurfacing performed with current techniques is similar to that for THA over the short-to-medium term, and total hip resurfacing may permit easier conversion to a THA for younger patients expected to outlive their prosthesis. Based on the potential ease of revision of total hip resurfacing compared with THA, current evidence supports conclusions that hip resurfacing presents a reasonable alternative for active patients who are considered too young for THA. The literature on adverse events (e.g., metallosis, pseudotumor formation, implant failure) is evolving as longer follow-up becomes available.

Partial Hip Resurfacing

Clinical Context and Therapy Purpose

The purpose of partial hip resurfacing is to provide a treatment option that is an alternative to or an improvement on existing therapies, such as conventional surgical methods, in individuals with avascular necrosis with collapse of the femoral head who are undergoing THA and would potentially outlive the prosthesis.

The following PICO was used to select literature to inform this review.

Populations

The relevant population of interest is individuals with avascular necrosis of the femoral head with no greater than 50% involvement of the femoral head. Younger, physically active individuals are the most suitable candidates for partial hip resurfacing.

Interventions

The therapy being considered is partial hip resurfacing.

Comparators

Comparators of interest include conventional THA.

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

Based upon what little literature exists about partial hip resurfacing, follow-up of a minimum of 10 years would be appropriate.

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

1. To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs.
2. In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
3. To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
4. Studies with duplicative or overlapping populations were excluded.

Review of Evidence
Comparative Study
A search of the literature on resurfacing for osteonecrosis identified a number of articles. Grecula (2005)[38,] and Stulberg et al (2009)[39,] both discussed comparisons of partial hip resurfacing to total hip resurfacing, referencing a single comparative study by Beaule et al (2004).[40,] This literature showed that total resurfacing/replacement provided more consistent and better initial pain relief than partial resurfacing.

Section Summary: Partial Hip Resurfacing
The literature on partial hip surfacing for osteonecrosis includes a comparative study. There is an increase in poor outcomes with partial hip resurfacing compared with total hip resurfacing, which is believed to be related to continued abrasion and possible misfit of the femoral component against the native acetabular cartilage. Therefore, for younger patients who do not have contraindications for the metal-on-metal prosthesis, total hip resurfacing (femoral and acetabular implant) would be preferred over a femoral component alone. Partial hip resurfacing would be appropriate in patients with osteonecrosis who have contraindications for a metal-on-metal prosthesis.

Supplemental Information
The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the evidence review conclusions.

Clinical Input from Physician Specialty Societies and Academic Medical Centers
While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.

2013 Input
In response to requests, input was received from 1 physician specialty society and 1 academic medical center while this policy was under review in 2013. Input was mixed, although both reviewers agreed that evidence is not sufficient to conclude that the potential for harm with metal-on-metal hip resurfacing outweighs the benefit for all patients. One reviewer noted that current cross-linked polyethylene total hip components may last 20 to 30 years, limiting the number of patients who would outlive a total hip prosthesis and be considered an appropriate candidate for total hip resurfacing.

Practice Guidelines and Position Statements

Guidelines or position statements will be considered for inclusion in 'Supplemental Information' if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

American Academy of Orthopaedic Surgeons

In 2010, the American Academy of Orthopaedic Surgeons published a technology overview on metal-on-metal hip resurfacing.[41,] To compare revision rates between metal-on-metal hip resurfacing and total hip arthroplasty (THA), the Academy analyzed 3 joint registries, which indicated that patients who received total hip resurfacing were at greater risk for revision than patients who received THA. One registry suggested that younger men may have a lower revision rate after total hip resurfacing than THA, although the available data were not found to clearly establish an advantage for this subgroup. There was no conclusive evidence on predictors of successful or unsuccessful outcomes.

Hip Society

In 2012, the Hip Society published an algorithmic approach to the diagnosis and management of metal-on-metal arthroplasty.[42,] The review indicated that adverse local tissue reactions to metal debris are escalating and that all arthroplasty patients returning for follow-up should be queried for pain, discomfort, or compromise of function. Symptomatic patients should be evaluated for all intra-articular and extra-articular causes of pain, including aseptic loosening, sepsis, component malposition, or fluid collections and/or masses about the hip. The Hip Society stated that there is still a role for metal-on-metal resurfacing arthroplasty in select patient groups. The ideal candidate is a man younger than age 55 with osteoarthritis and a femoral head size larger than 50 mm. Another relative indication is the need or desire to return to a very high activity level at work or in recreation. Contraindications to metal-on-metal resurfacing include known or suspected metal sensitivity; moderate or worse renal function; women who may become pregnant; osteoporosis; large cysts; and avascular necrosis of more than 50%.

National Institute for Health and Care Excellence

In 2014, NICE updated its guidance on THA and total hip resurfacing for end-stage arthritis of the hip.[43,] NICE concluded that both THA and total hip resurfacing were options for treating end-stage arthritis of the hip, although clinicians may be more likely to offer resurfacing arthroplasty to men than to women because of higher revision rates observed in women. NICE concluded that THA was more effective and less costly than total hip resurfacing in all analyses, that the revision rate was the most important key driver of costs and quality-adjusted life years, and that because the predicted revision rate of THA was less than 5% at 10 years in the population for whom both THA and total hip resurfacing were suitable, the revision rate standard for total hip resurfacing should be the same as that for THA. NICE recommended specific prostheses for THA and total hip resurfacing only if the prostheses have revision rates of 5% or less at 10 years.

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

Ongoing and Unpublished Clinical Trials

Some currently ongoing and unpublished trials that might influence this review are listed in Table 1.

Table 1. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
Ongoing			
NCT00611585[a]	Birmingham Hip Resurfacing System (BHR) Post Approval Study: A Prospective, Multi-Centered Study of the Birmingham Hip Resurfacing System	360	Dec 2026

NCT: national clinical trial.
[a]Denotes an industry-sponsored or cosponsored study

References

1. Blue Cross and Blue Shield Association Technology Evaluation Center. Metal-on-metal total hip resurfacing. TEC Assessments. 2007;Vol 22:Tab 3.
2. Vendittoli PA, Lavigne M, Roy AG, et al. A prospective randomized clinical trial comparing metal-on-metal total hip arthroplasty and metal-on-metal total hip resurfacing in patients less than 65 years old. Hip Int. 2006; 16 Suppl 4: 73-81. PMID 19219833
3. Food and Drug Administration. P040033: Birmingham Hip Resurfacing (BHR) System. 2006; http://www.accessdata.fda.gov/cdrh_docs/pdf4/p040033a.pdf. Accessed March 4, 2024.
4. Australian Orthopedic Association. National Joint Replacement Registry Annual Report. Adelaide, Australia: AOA; 2006.
5. Nunley RM, Della Valle CJ, Barrack RL. Is patient selection important for hip resurfacing?. Clin Orthop Relat Res. Jan 2009; 467(1): 56-65. PMID 18941859
6. Quesada MJ, Marker DR, Mont MA. Metal-on-metal hip resurfacing: advantages and disadvantages. J Arthroplasty. Oct 2008; 23(7 Suppl): 69-73. PMID 18922377
7. Marker DR, Strimbu K, McGrath MS, et al. Resurfacing versus conventional total hip arthroplasty - review of comparative clinical and basic science studies. Bull NYU Hosp Jt Dis. 2009; 67(2): 120-7. PMID 19583538
8. Jiang Y, Zhang K, Die J, et al. A systematic review of modern metal-on-metal total hip resurfacing vs standard total hip arthroplasty in active young patients. J Arthroplasty. Apr 2011; 26(3): 419-26. PMID 20851564
9. Palazzuolo M, Bensa A, Bauer S, et al. Resurfacing Hip Arthroplasty Is a Safe and Effective Alternative to Total Hip Arthroplasty in Young Patients: A Systematic Review and Meta-Analysis. J Clin Med. Mar 07 2023; 12(6). PMID 36983096
10. Haddad FS, Konan S, Tahmassebi J. A prospective comparative study of cementless total hip arthroplasty and hip resurfacing in patients under the age of 55 years: a ten-year follow-up. Bone Joint J. May 2015; 97-B(5): 617-22. PMID 25922454
11. Mont MA, Seyler TM, Ragland PS, et al. Gait analysis of patients with resurfacing hip arthroplasty compared with hip osteoarthritis and standard total hip arthroplasty. J Arthroplasty. Jan 2007; 22(1): 100-8. PMID 17197316
12. Lavigne M, Therrien M, Nantel J, et al. The John Charnley Award: The functional outcome of hip resurfacing and large-head THA is the same: a randomized, double-blind study. Clin Orthop Relat Res. Feb 2010; 468(2): 326-36. PMID 19543863
13. Garbuz DS, Tanzer M, Greidanus NV, et al. The John Charnley Award: Metal-on-metal hip resurfacing versus large-diameter head metal-on-metal total hip arthroplasty: a randomized clinical trial. Clin Orthop Relat Res. Feb 2010; 468(2): 318-25. PMID 19697090
14. Kumar P, Ksheersagar V, Aggarwal S, et al. Complications and mid to long term outcomes for hip resurfacing versus total hip replacement: a systematic review and meta-analysis. Eur J Orthop Surg Traumatol. Jul 2023; 33(5): 1495-1504. PMID 36006506
15. Davey MS, Mohan K, Gavin E, et al. Birmingham hip resurfacing: a systematic review of outcomes at minimum 10-years follow-up. Acta Orthop Belg. Dec 2023; 89(4): 581-586. PMID 38205745

16. Azam MQ, McMahon S, Hawdon G, et al. Survivorship and clinical outcome of Birmingham hip resurfacing: a minimum ten years' follow-up. Int Orthop. Jan 2016; 40(1): 1-7. PMID 25820838
17. Daniel J, Pradhan C, Ziaee H, et al. Results of Birmingham hip resurfacing at 12 to 15 years: a single-surgeon series. Bone Joint J. Oct 2014; 96-B(10): 1298-306. PMID 25274912
18. Murray DW, Grammatopoulos G, Pandit H, et al. The ten-year survival of the Birmingham hip resurfacing: an independent series. J Bone Joint Surg Br. Sep 2012; 94(9): 1180-6. PMID 22933488
19. Matharu GS, McBryde CW, Pynsent WB, et al. The outcome of the Birmingham Hip Resurfacing in patients aged 50 years up to 14 years post-operatively. Bone Joint J. Sep 2013; 95-B(9): 1172-7. PMID 23997127
20. Pailhe R, Matharu GS, Sharma A, et al. Survival and functional outcome of the Birmingham Hip Resurfacing system in patients aged 65 and older at up to ten years of follow-up. Int Orthop. Jun 2014; 38(6): 1139-45. PMID 24370976
21. Bourget-Murray J, Watt Kearns SJ, Piroozfar S, et al. Birmingham Hip Resurfacing for osteoarthritis - a Canadian retrospective cohort study with a minimum 10-year follow-up. Can J Surg. 2022; 65(3): E296-E302. PMID 35504661
22. Van Der Straeten C, Gross TP, Amstutz H, et al. Hip resurfacing arthroplasty in young patients: international high-volume centres' report on the outcome of 11,382 metal-on-metal hip resurfacing arthroplasties in patients ⩽50 years at surgery. Hip Int. May 2022; 32(3): 353-362. PMID 32905713
23. Amstutz HC, Le Duff MJ, Campbell PA, et al. Clinical and radiographic results of metal-on-metal hip resurfacing with a minimum ten-year follow-up. J Bone Joint Surg Am. Nov 17 2010; 92(16): 2663-71. PMID 21084576
24. Kim PR, Beaulé PE, Laflamme GY, et al. Causes of early failure in a multicenter clinical trial of hip resurfacing. J Arthroplasty. Sep 2008; 23(6 Suppl 1): 44-9. PMID 18722302
25. Gross TP, Liu F, Webb LA. Clinical outcome of the metal-on-metal hybrid Corin Cormet 2000 hip resurfacing system: an up to 11-year follow-up study. J Arthroplasty. Apr 2012; 27(4): 533-538.e1. PMID 21908168
26. Lass R, Bechler U, Springer B, et al. Midterm results of the Birmingham hip resurfacing: a single-surgeon series. Arch Orthop Trauma Surg. Feb 2023; 143(2): 1041-1048. PMID 35076766
27. Nunley RM, Zhu J, Brooks PJ, et al. The learning curve for adopting hip resurfacing among hip specialists. Clin Orthop Relat Res. Feb 2010; 468(2): 382-91. PMID 19779950
28. McGrath MS, Marker DR, Seyler TM, et al. Surface replacement is comparable to primary total hip arthroplasty. Clin Orthop Relat Res. Jan 2009; 467(1): 94-100. PMID 18797977
29. de Steiger RN, Miller LN, Prosser GH, et al. Poor outcome of revised resurfacing hip arthroplasty. Acta Orthop. Feb 2010; 81(1): 72-6. PMID 20170416
30. Stoney J, Graves SE, de Steiger RN, et al. Is the Survivorship of Birmingham Hip Resurfacing Better Than Selected Conventional Hip Arthroplasties in Men Younger Than 65 Years of Age? A Study from the Australian Orthopaedic Association National Joint Replacement Registry. Clin Orthop Relat Res. Nov 2020; 478(11): 2625-2636. PMID 32898048
31. Su EP, Ho H, Bhal V, et al. Results of the First U.S. FDA-Approved Hip Resurfacing Device at 10-Year Follow-up. J Bone Joint Surg Am. Jul 21 2021; 103(14): 1303-1311. PMID 33999875
32. Reito A, Puolakka T, Elo P, et al. Outcome of Birmingham hip resurfacing at ten years: role of routine whole blood metal ion measurements in screening for pseudotumours. Int Orthop. Nov 2014; 38(11): 2251-7. PMID 25030963
33. Williams DH, Greidanus NV, Masri BA, et al. Prevalence of pseudotumor in asymptomatic patients after metal-on-metal hip arthroplasty. J Bone Joint Surg Am. Dec 07 2011; 93(23): 2164-71. PMID 22159851
34. Kwon YM, Ostlere SJ, McLardy-Smith P, et al. "Asymptomatic" pseudotumors after metal-on-metal hip resurfacing arthroplasty: prevalence and metal ion study. J Arthroplasty. Jun 2011; 26(4): 511-8. PMID 20591612
35. Steffen RT, Pandit HP, Palan J, et al. The five-year results of the Birmingham Hip Resurfacing arthroplasty: an independent series. J Bone Joint Surg Br. Apr 2008; 90(4): 436-41. PMID 18378915

36. Ollivere B, Darrah C, Barker T, et al. Early clinical failure of the Birmingham metal-on-metal hip resurfacing is associated with metallosis and soft-tissue necrosis. J Bone Joint Surg Br. Aug 2009; 91(8): 1025-30. PMID 19651828
37. Mont MA, Seyler TM, Ulrich SD, et al. Effect of changing indications and techniques on total hip resurfacing. Clin Orthop Relat Res. Dec 2007; 465: 63-70. PMID 17891034
38. Grecula MJ. Resurfacing arthroplasty in osteonecrosis of the hip. Orthop Clin North Am. Apr 2005; 36(2): 231-42, x. PMID 15833461
39. Stulberg BN, Fitts SM, Zadzilka JD, et al. Resurfacing arthroplasty for patients with osteonecrosis. Bull NYU Hosp Jt Dis. 2009; 67(2): 138-41. PMID 19583542
40. Beaulé PE, Amstutz HC, Le Duff M, et al. Surface arthroplasty for osteonecrosis of the hip: hemiresurfacing versus metal-on-metal hybrid resurfacing. J Arthroplasty. Dec 2004; 19(8 Suppl 3): 54-8. PMID 15578554
41. McGrory B, Barrack R, Lachiewicz PF, et al. Modern metal-on-metal hip resurfacing. J Am Acad Orthop Surg. May 2010; 18(5): 306-14. PMID 20435881
42. Lombardi AV, Barrack RL, Berend KR, et al. The Hip Society: algorithmic approach to diagnosis and management of metal-on-metal arthroplasty. J Bone Joint Surg Br. Nov 2012; 94(11 Suppl A): 14-8. PMID 23118373
43. National Institute for Health and Care Excellence (NICE). Total hip replacement and resurfacing arthroplasty for end-stage arthritis of the hip [TA304]. 2014; https://www.nice.org.uk/guidance/ta304. Accessed March 5, 2024.

Documentation for Clinical Review

Please provide the following documentation:

- History and physical and/or consultation report including:
  - Radiological findings including involvement of femoral head and acetabulum including cartilage changes (if applicable)
  - Specific procedure requested (total or partial hip) and reason requested
  - Whether patient is likely to outlive a traditional prosthesis
  - Any known or suspected metal sensitivity
  - Any other known contraindications (e.g., osteopenia, osteonecrosis, bone cysts, skeletal immaturity, vascular, muscular or renal insufficiency, morbid obesity, immunosuppressed state, etc.)
- Applicable radiology or lab report(s)

Post Service (in addition to the above, please include the following):

- Operative report(s)

Coding

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy.

The following codes are included below for informational purposes. Inclusion or exclusion of a code(s) does not constitute or imply member coverage or provider reimbursement policy. Policy Statements are intended to provide member coverage information and may include the use of some codes for clarity. The Policy Guidelines section may also provide additional information for how to interpret the Policy Statements and to provide coding guidance in some cases.

Type	Code	Description
CPT®	27130	Arthroplasty, acetabular and proximal femoral prosthetic replacement (total hip arthroplasty), with or without autograft or allograft

Type	Code	Description
	27299	Unlisted procedure, pelvis or hip joint
HCPCS	S2118	Metal-on-metal total hip resurfacing, including acetabular and femoral components

Policy History

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.

Effective Date	Action
12/07/2006	New Policy Adoption Policy Adopted - BCBSA MPP
04/05/2007	Policy revision with position change
01/11/2008	Policy title change from Total Hip Resurfacing. Policy revision without position change
04/25/2008	Policy revision with coding update
12/18/2009	Policy title change from Total and Partial Hip Resurfacing/Metal on Metal. Policy revision without position change
01/11/2013	Policy revision with position change
06/30/2015	Coding Update
01/01/2016	Policy revision without position change
07/01/2017	Policy revision without position change
10/01/2017	Policy revision without position change
06/01/2018	Policy revision without position change
06/01/2019	Policy revision without position change
06/01/2020	Annual review. No change to policy statement. Literature review updated.
06/01/2021	Annual review. No change to policy statement. Literature review updated.
06/01/2022	Annual review. No change to policy statement. Literature review updated.
06/01/2023	Annual review. Policy statement, guidelines and literature review updated.
06/01/2024	Annual review. No change to policy statement. Policy guidelines and literature review update.

Definitions of Decision Determinations

Medically Necessary: Services that are Medically Necessary include only those which have been established as safe and effective, are furnished under generally accepted professional standards to treat illness, injury or medical condition, and which, as determined by Blue Shield, are: (a) consistent with Blue Shield medical policy; (b) consistent with the symptoms or diagnosis; (c) not furnished primarily for the convenience of the patient, the attending Physician or other provider; (d) furnished at the most appropriate level which can be provided safely and effectively to the patient; and (e) not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of the Member's illness, injury, or disease.

Investigational/Experimental: A treatment, procedure, or drug is investigational when it has not been recognized as safe and effective for use in treating the particular condition in accordance with generally accepted professional medical standards. This includes services where approval by the federal or state governmental is required prior to use, but has not yet been granted.

Split Evaluation: Blue Shield of California/Blue Shield of California Life & Health Insurance Company (Blue Shield) policy review can result in a split evaluation, where a treatment, procedure, or drug will be considered to be investigational for certain indications or conditions, but will be deemed safe and

effective for other indications or conditions, and therefore potentially medically necessary in those instances.

Prior Authorization Requirements and Feedback (as applicable to your plan)

Within five days before the actual date of service, the provider must confirm with Blue Shield that the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an authorization prior to services being rendered based on cancellation of the member's eligibility. Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization Department at (800) 541-6652, or the Transplant Case Management Department at (800) 637-2066 ext. 3507708 or visit the provider portal at www.blueshieldca.com/provider.

We are interested in receiving feedback relative to developing, adopting, and reviewing criteria for medical policy. Any licensed practitioner who is contracted with Blue Shield of California or Blue Shield of California Promise Health Plan is welcome to provide comments, suggestions, or concerns. Our internal policy committees will receive and take your comments into consideration.

For utilization and medical policy feedback, please send comments to: MedPolicy@blueshieldca.com

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over medical policy and must be considered first in determining covered services. Member contracts may differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.

Appendix A

POLICY STATEMENT (No changes)	
BEFORE	**AFTER**
Hip Resurfacing 7.01.80 **Policy Statement:** I. Metal-on-metal total hip resurfacing with a device system approved by the U.S. Food and Drug Administration (FDA) may be considered **medically necessary** as an alternative to total hip replacement when the individual has **all** of the following criteria: A. Is a candidate for total hip replacement B. Is likely to outlive a traditional prosthesis C. Does not have a contraindication for total hip resurfacing (see Policy Guidelines section) II. Partial hip resurfacing with an FDA approved device may be considered **medically necessary** in individuals with osteonecrosis of the femoral head who have one or more contraindications for metal-on-metal implants and meet **all** of the following criteria: A. The individual is a candidate for total hip replacement B. Is likely to outlive a traditional prosthesis C. The individual has known or suspected metal sensitivity or concern about potential effects of metal ions D. There is no more than 50% involvement of the femoral head E. There is minimal change in acetabular cartilage or articular cartilage space identified on radiography III. All other types and applications of hip resurfacing are considered **investigational**.	**Hip Resurfacing 7.01.80** **Policy Statement:** I. Metal-on-metal total hip resurfacing with a device system approved by the U.S. Food and Drug Administration (FDA) may be considered **medically necessary** as an alternative to total hip replacement when the individual has **all** of the following criteria: A. Is a candidate for total hip replacement B. Is likely to outlive a traditional prosthesis C. Does not have a contraindication for total hip resurfacing (see Policy Guidelines section) II. Partial hip resurfacing with an FDA approved device may be considered **medically necessary** in individuals with osteonecrosis of the femoral head who have one or more contraindications for metal-on-metal implants and meet **all** of the following criteria: A. The individual is a candidate for total hip replacement B. Is likely to outlive a traditional prosthesis C. The individual has known or suspected metal sensitivity or concern about potential effects of metal ions D. There is no more than 50% involvement of the femoral head E. There is minimal change in acetabular cartilage or articular cartilage space identified on radiography III. All other types and applications of hip resurfacing are considered **investigational**.