

# Surgery of the Ankle

**Policy Number:** SURGERY 121.9

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 [Instructions for Use](#)

Table of Contents	Page
<a href="#">Coverage Rationale</a>	1
<a href="#">Medical Records Documentation Used for Reviews</a>	1
<a href="#">Applicable Codes</a>	1
<a href="#">Description of Services</a>	2
<a href="#">Clinical Evidence</a>	2
<a href="#">U.S. Food and Drug Administration</a>	7
<a href="#">References</a>	7
<a href="#">Policy History/Revision Information</a>	8
<a href="#">Instructions for Use</a>	8

## Related Policy

- [Omnibus Codes](#)

## Coverage Rationale

**Surgery of the ankle is proven and medically necessary in certain circumstances.** For medical necessity clinical coverage criteria, refer to the:

- InterQual® CP: Procedures:
  - Arthrodesis, Ankle (Talotibial Joint)
  - Arthroscopy, Surgical, Ankle
  - Arthrotomy, Ankle
  - Total Joint Replacement (TJR), Ankle
- InterQual® Client Defined, CP: Procedures:
  - Arthroplasty, Ankle (Without Implant) (Custom) - UHG
  - Arthroplasty, Removal or Revision, Ankle (Custom) - UHG

[Click here to view the InterQual® criteria.](#)

**Osteochondral allograft or autograft transplantation is unproven and not medically necessary for treating cartilage defects of the ankle due to insufficient evidence of efficacy.**

## Medical Records Documentation Used for Reviews

Benefit coverage for health services is determined by the member specific benefit plan document and applicable laws that may require coverage for a specific service. Medical records documentation may be required to assess whether the member meets the clinical criteria for coverage but does not guarantee coverage of the service requested; refer to the protocol titled [Medical Records Documentation Used for Reviews](#).

## Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by the member specific benefit plan document and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CPT Code	Description
<b>Arthrodesis, Ankle (Talotibial Joint)</b>	
29899	Arthroscopy, ankle (tibiotalar and fibulotalar joints), surgical; with ankle arthrodesis
<b>Arthroscopy, Surgical, Ankle</b>	
29891	Arthroscopy, ankle, surgical, excision of osteochondral defect of talus and/or tibia, including drilling of the defect
29892	Arthroscopically aided repair of large osteochondritis dissecans lesion, talar dome fracture, or tibial plafond fracture, with or without internal fixation (includes arthroscopy)
29894	Arthroscopy, ankle (tibiotalar and fibulotalar joints), surgical; with removal of loose body or foreign body
29895	Arthroscopy, ankle (tibiotalar and fibulotalar joints), surgical; synovectomy, partial
29897	Arthroscopy, ankle (tibiotalar and fibulotalar joints), surgical; debridement, limited
29898	Arthroscopy, ankle (tibiotalar and fibulotalar joints), surgical; debridement, extensive
29899	Arthroscopy, ankle (tibiotalar and fibulotalar joints), surgical; with ankle arthrodesis
<b>Arthrotomy, Ankle</b>	
27685	Lengthening or shortening of tendon, leg or ankle; single tendon (separate procedure)
28446	Open osteochondral autograft, talus (includes obtaining graft[s])
28899	Unlisted procedure, foot or toes
<b>Total Joint Replacement (TJR), Ankle</b>	
27700	Arthroplasty, ankle
27702	Arthroplasty, ankle; with implant (total ankle)
27703	Arthroplasty, ankle; revision, total ankle
27704	Removal of ankle implant

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## Description of Services

Osteoarthritis is also known as degenerative arthritis and common for many people after they reach middle age, however it may occur in younger people as well. In osteoarthritis, the cartilage in the joint gradually wears away. As the cartilage wears away, it becomes frayed and rough, and the protective space between the bones decreases. This can result in bone rubbing on bone and produce painful osteophytes (bone spurs).

Posttraumatic arthritis can develop after an injury to the foot or ankle and dislocations and fractures are the most common injuries that lead to post-traumatic arthritis. Like osteoarthritis, posttraumatic arthritis causes the cartilage between the joints to wear away and can develop many years after the initial injury.

## Clinical Evidence

### Ankle Arthroplasty

Capece et al. (2025) conducted a systematic review evaluating the treatment options of prosthetic joint infections (PJI) following total ankle arthroplasty (TAA). Studies were included if they were designed as case reports, case series, or randomized controlled trials (RCTs) and focused on the surgical treatment options of ankle PJI. There were 15 studies included in the review which consisted of 162 participants who developed infection after TAA. The analysis revealed common comorbidities such as cardiovascular disease, diabetes, and a history of smoking among participants who developed ankle prosthesis infections. Where it could be identified, microbiological samples were taken from biopsies or synovial fluid adjacent to the components of the ankle prosthesis. Debridement, antibiotic, and implant retention (DAIR) was the primary strategy employed in 72 participants (48.8%) and 33 of those participants experienced a procedure failure possibly due to pathogen factors, patient clinical conditions, or delayed execution. Total revision of the ankle arthroplasty was completed in 64 participants and was described as three different treatment types: one-stage, two-stage, and three-stage. The one-stage treatment was completed in two participants and showed a failure rate of 0%, likely attributed to the small sample size. The two-stage treatment was adopted in 60 patients (34%) with a failure rate of 20%. The three-stage procedure was adopted in two participants with a 50% failure rate. Primary arthrodesis was completed in 14 participants with a 7.14% complication rate. Additional procedures reserved for the failure of other treatment strategies

for ankle prosthesis infections included definitive treatment with antibiotic spacers used in eight participants (4.5%) with a failure rate of 25%, and primary below-knee amputation (BKA) performed in seven participants (3.9%). The authors note the importance of tailored treatment approaches based on individual participants profiles and microbiological findings. Those participants with chronic infections may require more intensive treatment strategies including prolonged antibiotic regimens and potentially more invasive surgical approaches such as two-stage revision, given the difficulty of eradicating infection in the presence of biofilm and tissue damage. The authors agree with findings regarding the efficacy of two-stage revision as a widely adopted and secure option for managing challenging ankle prosthesis infections. Limitations of the study include small number of included studies especially in the assessment of outcomes, treatment types, and results during follow-up. Additionally, the majority of the studies were retrospective which inherently limits the ability to draw definitive conclusions due to potential bias. The authors note it is imperative to acknowledge the weak quality of evidence, characterized by biases in reporting and selection processes. High-quality RCTs are imperative to compare different treatments and establish an evidence-based treatment protocol.

Kunutsor et al. (2020) conducted a systematic review and meta-analysis to compare the clinical effectiveness of various treatment approaches for infected ankle prostheses. A systematic electronic search was conducted in Medline, Embase, and the Cochrane Library from inception to December 2018. The authors included longitudinal observational studies and RCTs in individuals with infected ankles that evaluated the clinical impact of any of the following six strategies: long-term suppressive antibiotic treatment without surgical intervention, debridement, and implant retention with or without polyethylene exchange, 1-stage revision surgery, 2-stage revision surgery, prostheses removal with implantation of cement spacer, and arthrodesis. The authors found arthrodesis and DAIR with or without polyethylene exchange to be the most common in treating infected ankle prosthesis but associated with poor infection control. Limitations included limited data availability, which identified applied principles of infected total hip arthroplasty (THA) and total knee arthroplasty (TKA) to that of TAA, but because PJI of ankles seems to originate from exogenous sources, infection is difficult to diagnose, and therefore, no consensus on the definition of PJI following TAR, thus differences on how to treat the condition.

In Hutchinson and Schweitzer (2020) the authors identify a revision of the ankle as an indication of periprosthetic infection. Following confirmation of infection, there are several options to consider, but antibiotic therapy which includes removal of the implant, and addition of an antibiotic spacer followed by reimplantation in 6 months to 12 months, is usually the first option; other options include grafting or amputation.

In an updated document on PJI, Beam and Osmon (2018) ascertain that the presence of a sinus tract on its own can be a definitive diagnosis of PJI. The most curative surgical approach for PJI involves a two-stage exchange (TSE), which starts with debridement of the infected tissue, removal of existing prosthesis and cement, culture collection, and placement of antibiotic-loaded cement spacer into the joint space to deliver high-dose local antimicrobial therapy and provide structural support.

Known complications of joint replacement continue to require revisional surgery. Steck et al. (2017) list intraoperative and postoperative complications that may require revision for TAA. Intraoperative complications include superficial/deep joint infection, fractures, implant dislocation, and aseptic loosening. Deep periprosthetic infection (DPI) is one of the most common reasons that lead to TAA failure and occurs more than 50% of the time. The authors also maintain that the following factors should be considered when assessing for joint failure: patient symptoms, pain, subsidence, alignment, infection, and implant integrity.

In the Foot and Ankle Clinic Journal, Alrashidi et al. (2017) identify key points for diagnosing and treating infection for TAA. Accurate and complete patient history is imperative to identify clues that raise suspicion for an acute or chronic infection. Physical examination should include the following: general appearance of the ankle and hindfoot, signs of swelling, joint effusion, erythema, excessive warmth, and/or wound healing issues. Range of motion (ROM) should be measured clinically using a goniometer and noted if associated with pain. Conventional radiographs should be conducted; however, CT may provide additional information regarding periprosthetic osteolysis in patients with TAA. Blood tests such as CRP and ESR are easy to perform and cost-effective screening tools and if elevated, validate the need to perform joint aspiration and synovial fluid analysis and then send on for culture. Treatment options for infected prostheses include antimicrobial therapy, irrigation, debridement, prosthesis removal with implant replacement, or ankle arthrodesis.

Posttraumatic arthritis is common in the ankle joint. In an article titled "The Concept of Ankle Joint Preserving Surgery," Tanaka (2012) discusses joint-preserving surgical techniques, including arthroscopic debridement, ligament reconstruction, distraction arthroplasty, and osteotomy. The author states that indications for supramalleolar osteotomy are limited but have been used to treat individuals with osteoarthritis of the ankle due to posttraumatic malunion. In addition, because a TAA is not always an indication of an ankle with severe malalignment, realignment surgery may be necessary before arthroplasty.

## Osteochondral Allograft or Autograft Transplant (OAT)

There is insufficient quality evidence regarding the safety and efficacy of osteochondral allograft or autograft transplant. Future studies including RCTs with comparison groups are needed along with long-term results.

Correia Cardoso et al. (2024) conducted a systematic review evaluating the operative treatment of nonprimary osteochondral lesions of the talus. The review included 50 studies involving 806 ankles from 794 participants. The majority of the studies were retrospective in design and only 14% included a comparison group. Using the Oxford Centre for Evidence-Based Medicine, 86% of the studies were classified as level 4 evidence. All studies exhibited a high risk of bias in at least one domain with 64% demonstrating a high risk across 4 domains. Cartilage substitution was the most common treatment including 30% osteochondral autograft (OAT) and 11% osteochondral allograft (OCA). Cartilage regeneration, comprising 37%, included 9% autologous chondrocyte implantation (ACI), 8% matrix-assisted autologous chondrocyte transplantation (MACT), 2% bone marrow-derived cell transplantation (BMDCT), and 17% autologous matrix-induced chondrogenesis (AMIC). Rescue procedures/HemiCAP and cartilage repair/BMS accounted for 14% and 9%, respectively. The American Orthopaedic Foot and Ankle Society (AOFAS) Score was reported in 54% of the studies and the mean improvement ranged from 13 to 57.8 with OAT showing the most and least pronounced mean change. The pre-to-postoperative meta-analysis revealed significant improvements across all treatments ( $p < 0.05$ ), except for OCA, which showed no significant improvement. The highest success rates were seen with ACI and OAT, whereas HemiCAP had the lowest. The visual analog scale (VAS)/numeric rating scale (NRS) for pain score was reported in 48% of studies and showed mean improvements ranging from 1.5 to 8 with OAT displaying the most pronounced mean change and HemiCAP the lowest. The pre-to-postoperative meta-analysis revealed significant improvements across most treatments ( $p < 0.05$ ), with ACI demonstrating a large effect size, while OCA and HemiCAP showed no significant improvements. The highest success rates were seen with ACI and OAT while HemiCAP had the lowest. The postoperative subjective satisfaction was reported in 46% of the studies with a high rate of success across all operative treatments with AMIC and HemiCAP having the lowest rates. HemiCAP had the highest incidence of postoperative complications and clinical failures were more frequent with AMIC (27%), OAT (22%), OCA (19%), and HemiCAP (28%). While ACI and OAT showed improvements and higher success rates compared with HemiCAP and OCA, the authors note that despite the promising potential, the high risk of bias across the included studies warrants a cautious interpretation of these results. Limitations of the study include high risk of selection and detection bias, retrospective nature and the predominance of case series, variability in study designs and outcomes measures, lack of comparison groups, use of non-validated outcome measures, and insufficient reporting of demographic variations and lesion characteristics.

Migliorini et al. (2022) conducted a systematic review to evaluate the efficacy of surgical management techniques for osteochondral defects (OCD). Surgical management techniques included OAT, mosaicplasty, MACT and AMIC. There were 13 articles included in the review with a total of 521 procedures with a median length follow-up of 47.8 months (31.7 - 66.8 months). The authors noted there was no difference between the treatment groups at baseline in terms of mean age, body mass index, patient sex, defect size, and VAS and AOFAS scores. AMIC demonstrated the lowest rates of failure (LOR, 0.94) and revision (LOR, 0.94) while OAT evidenced the highest rates of failure (LOR, 3.48) and revision (LOR, 4.60). Limitations included overall poor quality of many studies with high selection bias due to large number (10 of the 13 included studies) of retrospective comparative studies. Additionally, there were variances in the surgical approach, nature of the membrane, fixation methods, and the location of the lesion.

Lambers et al. (2017) conducted a systematic review to identify the most effective surgical treatment for talar OCD after failed primary surgery. There were 21 studies included in the review with a total of 299 patients with 301 talar OCDs. Of those studies, 8 were retrospective case series, 12 were prospective case series, and 1 was a randomized controlled trial. Treatment strategies were divided into four groups: bone marrow stimulating (BMS), (debridement and/or drilling), osteochondral transplantation (autograft transfer, allograft transfer and mosaicplasty), cartilage implantation (MACI and ACI) and chondrogenesis-inducing techniques (AMIC). BMS success percentages were 75% (debridement alone) and 69% (debridement and microfracture) with confidence intervals of 47-91% and 42-87%. Osteochondral transplantation was the most common procedure, however, a calculated success rate for all osteochondral transplantation techniques combined was not possible since study designs varied for all studies. The authors were able to use a simplified pooling method which resulted in a mean success rate of 90% (CI 82-95%) for the osteochondral autograft transfer procedure, 65% (CI 46.2-80.6%) for mosaicplasty and 55% (CI 39.7-69.9%) for osteochondral allograft transfer procedure. There was no significant difference between MACI and ACI and the calculated success rate was 72% (CI 56-85%) and 59% (CI 39-77%). The success rates for AMIC were 67% (CI 30-90.3%) and 57% (CI 32.6-78.6%). Limitations of this study include low methodological quality of studies included and nearly half of the extracted data that were acquired through the direct approach of the authors limited the ability to collect all of the variables desired including complications, lesion size, and classification systems used. The authors noted that due to the low level of evidence and the limited number of patients, a methodologically proper meta-analysis could not be completed, and it would be inappropriate to draw firm conclusions from the collected results. Further prospective investigations in a randomized comparative clinical setting are needed.

In a 2013 (updated 2015) health technology assessment, Hayes evaluated the osteochondral allograft transplantation for articular disorders of the ankle. There were seven small uncontrolled clinical studies that evaluated the safety and efficacy of osteochondral allografting for the treatment of osteochondral lesions of the talus or severe tibiotalar arthritis. Most of the studies were small, only one had a prospective design, and there were no randomized controlled trials identified. Four studies included patients with OLT and two studies included patients with ankle arthritis. Mean age range was 30-44 years and follow-up times ranged from a mean of approximately two years to five years. Most studies showed a significant improvement in the mean scores on standardized instruments for pain and function following allografting with an overall improvement rate in 52% - 89% of patients, however, a considerable number of the allografts failed, requiring repeat allografting, arthrodesis, or arthroplasty (range 11% - 48%). The authors note that the available evidence is insufficient to draw definitive conclusions regarding the safety, efficacy, and durability of osteochondral allograft transplantation for articular ankle disorders. The overall quality of the evidence is low with the existing studies having small numbers of patients and being uncontrolled with the majority being retrospective which is prone to bias. Other limitations included differences in allograft preparation, surgical protocols, inconsistent reporting of radiological outcomes, variability in outcomes measures and follow-up times. Additional studies are needed that are controlled and that compare the long-term effectiveness and safety with other methods of restoring the articular cartilage.

In a 2012 (updated 2014) health technology assessment, Hayes evaluated the OAT or mosaicplasty for lesions of the talus. There were 10 available studies which included one randomized comparative trial, one nonrandomized prospective comparative study, six prospective studies, and two retrospective studies. The authors determined that there was insufficient evidence to support conclusions regarding the efficacy of the OAT or mosaicplasty procedure in patients with osteochondral lesions of the talus (OLT), as well as the relative effectiveness compared with standard procedures. There was an overall low quality of evidence due to poor study design, small patient population, variability in the measures used to assess outcomes, varying follow-up times, and substantial differences in surgical protocols and techniques. Additional well-designed trials with long-term follow-up are needed to evaluate the effectiveness of surgical options for OLT.

## **Clinical Practice Guidelines**

### ***American Academy of Orthopaedic Surgeons (AAOS)***

A 2019 Evidence-Based Clinical Practice Guideline for the diagnosis and prevention of periprosthetic joint infections (PJI) recommends the following:

#### **Blood Tests for Preoperative Diagnosis**

Strong evidence supports the use of the following to aid in the preoperative diagnosis of PJI:

- Serum erythrocyte sedimentation rate (ESR)
- Serum C-reactive protein (CRP)
- Serum interleukin-6

#### **Synovial Fluid Tests**

Moderate strength evidence supports the use of the following to aid in the diagnosis of PJI:

- Synovial fluid leukocyte count and neutrophil percentage
- Synovial fluid aerobic and anaerobic bacterial cultures
- Synovial fluid leukocyte esterase
- Synovial fluid alpha-defensin ( $\alpha$ -defensin)
- Synovial fluid C-reactive protein (CRP)
- Synovial fluid nucleic acid amplification testing [e.g., polymerase chain reaction (PCR)] for bacteria

#### **Intraoperative Tests**

Strong evidence supports the use of histopathology to aid in diagnosing PJI.

Moderate strength evidence supports the use of the following to aid in the diagnosis of PJI:

- Multiple aerobic and anaerobic bacterial periprosthetic tissue cultures
- Implant sonication fluid aerobic and anaerobic bacterial cultures
- Implant sonication fluid nucleic acid amplification testing (e.g., PCR) for bacteria

Limited strength evidence supports that periprosthetic tissue nucleic acid amplification testing for bacteria is not useful in diagnosing PJI.



## Diagnostic Imaging

Limited strength evidence supports the use of the following to aid in the diagnosis of PJI:

- 18F-FDG PET/CT
- 18F-NaF PET/CT
- CT

Limited strength evidence supports the clinical utility of nuclear imaging to aid in diagnosing PJI.

## Gram Stain

Moderate strength evidence supports that the practitioner avoids using intraoperative gram stain to rule out PJI.

## *American Orthopaedic Foot and Ankle Society (AOFAS)*

In a position statement (2022a), the AOFAS supports the use of osteochondral autograft and allograft transplantation for the treatment of OLTs that have failed nonsurgical management, especially for large diameter lesions, cystic lesions, and lesions that have failed previous surgical treatment. The society considers osteochondral transplantation to be a treatment option with demonstrated improved outcomes maintained over long term follow up.

In a 2022b position statement from the AOFAS, the society endorses using TAR surgery to treat arthritic conditions of the ankle in select individuals with this condition who have failed nonoperative treatment. The AOFAS does not consider this procedure to be experimental.

In a 2020 consensus statement (Shibuya et al.), the AOFAS addressed the diagnosis and treatment of ankle arthritis. The panel was unable to reach consensus on the statement: "Resurfacing articular surfaces with biologics/scaffolds is a viable option for treatment of ankle arthritis." Additionally, they were unable to reach consensus on the statement: "Arthroscopic debridement is a viable option for treatment of ankle arthritis."

## *National Institute for Health and Care Excellence (NICE)*

The 2022 NICE guideline on Osteoarthritis diagnosis and management offers the following recommendations regarding referrals for joint replacement:

- Consider referring people with hip, knee, or shoulder osteoarthritis for joint replacement if:
  - Their joint symptoms (such as pain, stiffness, reduced function or progressive joint deformity) are substantially impacting their quality of life; and
  - Non-surgical management (for example, therapeutic exercise, weight loss, pain relief) is ineffective or unsuitable
- Use clinical assessment when deciding to refer someone for joint replacement, instead of systems that numerically score severity of disease
- Do not exclude people with osteoarthritis from referral for joint replacement because of:
  - Age
  - Sex or gender
  - Smoking
  - Comorbidities
  - Overweight or obesity, based on measurements such as body mass index (BMI)
- If discussing referral for joint replacement, explain to the person with osteoarthritis that the risks of joint replacement can vary depending on the factors listed in recommendation above

In an updated osteoarthritis care and management clinical guideline, the NICE recommends a holistic approach to osteoarthritis which includes patient access to self-management strategies such as exercise, weight loss and suitable footwear. Oral analgesics (i.e., acetaminophen), NSAIDs, and topical analgesics should be offered for pain relief; intra-articular corticosteroid injections can be considered in addition to core treatments for relieving moderate to severe pain. The guideline also suggests surgery be considered when the individual has not responded to non-surgical treatment. (NICE, 2014; updated 2020)

The NICE (2015) interventional procedures guideline states that conservative treatments for ankle osteoarthritis include analgesics, corticosteroid injections to relieve pain and inflammation, in addition to PT and prescribed exercise to improve function and mobility. Surgery may be indicated when symptoms are severe, including procedures such as arthroscopic surgery, fusion, or total ankle replacement.

# U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

Surgeries of the ankle are procedures and, therefore, not regulated by the FDA. However, devices and instruments used during the surgery may require FDA approval. Refer to the following website for additional information:  
<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm>. (Accessed February 19, 2025)

## References

The foregoing Oxford policy has been adapted from an existing UnitedHealthcare national policy that was researched, developed and approved by UnitedHealthcare Medical Technology Assessment Committee. [2025T0622K]

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Policy History/Revision Information

Date	Summary of Changes
07/01/2025	<b>Supporting Information</b> <ul style="list-style-type: none"><li>Updated <i>Clinical Evidence</i> and <i>References</i> sections to reflect the most current information</li><li>Archived previous policy version SURGERY 121.8</li></ul>

Instructions for Use

This Clinical Policy provides assistance in interpreting UnitedHealthcare Oxford standard benefit plans. When deciding coverage, the member specific benefit plan document must be referenced as the terms of the member specific benefit plan may differ from the standard plan. In the event of a conflict, the member specific benefit plan document governs. Before using this policy, please check the member specific benefit plan document and any applicable federal or state mandates. UnitedHealthcare Oxford reserves the right to modify its Policies as necessary. This Clinical Policy is provided for informational purposes. It does not constitute medical advice.

The term Oxford includes Oxford Health Plans, LLC and all of its subsidiaries as appropriate for these policies. Unless otherwise stated, Oxford policies do not apply to Medicare Advantage members.

UnitedHealthcare may also use tools developed by third parties, such as the InterQual® criteria, to assist us in administering health benefits. UnitedHealthcare Oxford Clinical Policies are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.