

# Clinical Policy: Articular Cartilage Defect Repairs

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[Coding Implications](#)

[Revision Log](#)

See [Important Reminder](#) at the end of this policy for important regulatory and legal information.

## Description

Cartilage transfer procedures include autologous chondrocyte implantation, osteochondral allograft transplantation (OAG or OCA) [i.e., including repair of anterior cruciate ligament and meniscus], and osteochondral autograft transplantation [mosaicplasty, Osteochondral Autograft Transplantation System (OATS)]. They are techniques for repairing articular cartilage that has been damaged by trauma or degenerative processes. This policy outlines the medical necessity criteria for each of these procedures.

## Policy/Criteria

- I. It is the policy of health plans affiliated with Centene Corporation<sup>®</sup> that autologous chondrocyte implantation (ACI) is **medically necessary** when *all* of the following criteria are met:
  - A. Age 15 – 55 years, or documented skeletal maturity if < 18;
  - B. BMI < 35 cm/M<sup>2</sup>;
  - C. Focal, full-thickness (grade III or IV) articular cartilage defect involving the femoral condyle (medial, lateral, or trochlear);
  - D. Femoral condyle defect size 1–10 cm<sup>2</sup>;
  - E. Disabling symptoms such as locking, swelling, or knee pain that is unresponsive to conservative treatment for a minimum of 2 months (e.g., medication, physical therapy) AND arthroscopic or other surgical repair;
  - F. Knee is stable with intact menisci and ligaments, has normal joint space by X-ray, and is in good alignment (a corrective procedure to stabilize the knee may be performed in combination with or prior to autologous chondrocyte implantation [ACI]);
  - G. Surgery is not intended to treat osteoarthritis of the knee;
  - H. Patient is willing and able to comply with prescribed postoperative rehabilitative program.
  
- II. It is the policy of health plans affiliated with Centene Corporation that osteochondral allograft transplant OR osteochondral autograft transplant of the knee is considered **medically necessary** when *all* of the following criteria are met:
  - A. Focal, full-thickness (grade III or IV) articular cartilage defect of the lateral or medial femoral condyle, or trochlear region of the knee;
  - B. For osteochondral autograft transplant (e.g., OATS/Mosaicplasty), lesion is  $\leq 2$  cm<sup>2</sup>; or for osteochondral allograft transplant (e.g., OCA), lesion is  $> 2$ cm<sup>2</sup>;
  - C. Disabling symptoms such as locking, swelling, or knee pain that is unresponsive to conservative treatment for a minimum of two months (medication, physical therapy);
  - D. No evidence of arthritis on the corresponding tibial surface;
  - E. Normal appearing hyaline cartilage surrounding the border of the defect;
  - F. Normal knee alignment;

## CLINICAL POLICY

### Articular Cartilage Defect Repairs

G. Not currently a candidate for total or partial knee replacement.

**III.** It is the policy of health plans affiliated with Centene Corporation that meniscal allograft transplant is considered **medically necessary** when all of the following criteria are met:

- A. Physically active and physiologically young, under age 55;
- B. Documented mild to moderate articular damage (Outerbridge grade II or less);
- C. Missing > 50% of a meniscus as a result of previous surgery or injury, or a meniscus tear that cannot be repaired;
- D. Disabling knee pain refractory to conservative treatment;
- E. Normal alignment without varus or valgus deformities;
- F. None of the following contraindications to meniscal allograft transplant:
  1. Systemic metabolic degenerative disease; (i.e., gout);
  2. Arthritis of the knees or rheumatoid arthritis;
  3. Flattening of the femoral condyles or severe degenerative changes (greater than 50% joint space narrowing, bone on bone, or erosion to subchondral bone);
  4. Patients who have undergone partial or total meniscectomy and do not presently have symptoms or problems with their knee.

**IV.** It is the policy of health plans affiliated with Centene Corporation that minced articular cartilage repair (allograft or autograft) is considered investigational because effectiveness has not been established.

**V.** It is the policy of health plans affiliated with Centene Corporation that ACI, osteochondral allograft transplant, or osteochondral autograft transplant for any other indication or any other joint surface not listed above is considered **experimental/investigational** because effectiveness has not been established.

#### **Background**

Articular cartilage is a highly resilient, viscoelastic material that plays an essential role in reducing stress on subchondral bone and minimizing friction within the joint. Articular cartilage is hyaline cartilage, which consists primarily of matrix, water and only a small number of chondrocytes (cartilage cells). Hyaline cartilage has a low capacity for regeneration because of its avascular and relatively acellular composition.

Osteochondral (OC) surfaces that are damaged by trauma or degenerative process usually fill in with fibrocartilage which is less suitable for absorbing stress than is hyaline cartilage. In younger adults, trauma is the most frequent cause of articular cartilage damage. Indications for OC repair include tears, chondral flaps, and loose bodies. All of these defects can result in joint pain, swelling, locking, and giving way.

Other causes of articular defects include degenerative conditions such as osteonecrosis, osteochondritis dissecans, and osteoarthritis. Osteonecrosis is the death of bone en masse and may arise spontaneously or can result from chronic steroid use. The etiology of this condition is uncertain, although it is thought to result from loss of the blood supply to an area of the subchondral bone. Osteoarthritis, or degenerative arthritis, is the most common form of arthritis

## CLINICAL POLICY

### Articular Cartilage Defect Repairs

in the United States and is characterized by the erosion of articular cartilage (NIAMS, 2001; Hangody et al., 2004; Koulalis et al., 2004).

ACI is a two-stage process in which, first, the healthy cartilage cells are harvested and cultured and then, reimplanted into the defect under a membranous patch at a later date. Allograft transplant involves the transplant of a cadaveric graft consisting of viable articular cartilage and underlying subchondral bone to cover large ( $> 2 \text{ cm}^2$ ), full-thickness cartilage defects of the knee. Autograft procedures consist of removing small osteochondral cylinders from low weight-bearing surfaces of the affected joint or another joint in the same patient and inserting them into the affected area to create a mosaic of islands of hyaline cartilage in an area that would otherwise remain without cartilage or fill with only fibrocartilage.

Meniscal allograft transplantation is a surgical procedure that involves grafting a donor meniscus into the knee of a recipient. The goal of meniscal transplant surgery is to replace the meniscus cushion before the articular cartilage is damaged. The donor cartilage supports and stabilizes the knee joint, and therefore relieves knee pain.

Nonsurgical treatment options for damage to articular cartilage include weight reduction, physical therapy, braces and orthotics, intra-articular injection of hyaluronic acid derivatives, and non-steroidal anti-inflammatory agents. A realignment osteotomy (i.e., proximal tibial, distal femoral) is a surgical option to reduce the compressive stress on the damaged articular cartilage in the medial or lateral compartments of the knee. This can be performed instead of, or in addition to, a cartilage replacement procedure listed above. Total joint replacement provides a surgical option but is not advised for younger patients because implants might not withstand the higher levels of physical activity for an extended period of time. A 2003 National Institutes of Health (NIH) Consensus Conference advised that other options should be considered for patients under the age of 55 (Hand et al).<sup>8</sup>

The American Academy of Orthopaedic Surgeons (AAOS) believes that for appropriate patients musculoskeletal allografts represent a therapeutic alternative. These tissues should be acquired from facilities that demonstrate compliance, use well-accepted banking methodology, and follow Food and Drug Administration Good Tissue Practices. The AAOS urges all tissue banks to follow rigorous national guidelines and standards and recommends the use of tissue from banks that are accredited by the American Association of Tissue Banks.<sup>3</sup>

The AAOS has information on meniscal transplant surgery and notes that patient eligibility for this procedure includes missing more than half of a meniscus as a result of previous surgery or injury, or a meniscus tear that cannot be repaired.<sup>3</sup>

In summary, there have been a number of randomized controlled studies as well as non-comparative studies that have noted improvement in repairing articular cartilage that has been damaged by trauma or degenerative processes, through the procedures noted within this policy.

#### **Coding Implications**

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**CLINICAL POLICY**

**Articular Cartilage Defect Repairs**

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<b>CPT® Codes</b>	<b>Description</b>
27407	Repair, primary, torn ligament and or capsule of knee; cruciate
27412	Autologous chondrocyte implantation, knee
27415	Osteochondral allograft, knee, open
27416	Osteochondral autograft(s), knee, open (e.g., mosaicplasty) (includes harvesting of autograft[s])
28446	Open osteochondral autograft, talus (includes obtaining graft[s])
29866	Arthroscopy, knee, surgical; osteochondral autograft(s) (e.g. mosaicplasty) (includes harvesting of the autograft)
29867	Arthroscopy, knee, surgical; osteochondral allograft (eg, mosaicplasty)
29868	Arthroscopy, knee, surgical; meniscal transplantation (includes arthrotomy for meniscal), medial or lateral

<b>HCPCS Codes</b>	<b>Description</b>
J7330	Autologous cultured chondrocytes, implant
S2112	Arthroscopy, knee, surgical, for harvesting of cartilage (chondrocyte cells

**ICD-10-CM Diagnosis Codes that Support Medical Necessity**

<b>ICD-10-CM Code</b>	<b>Description</b>
M17.0- M17.9	Osteoarthritis of knee
M25.561- M25.569	Pain in knee
M25.861- M25.869	Other specified joint disorders, knee
M93.261- M93.269	Osteochondritis dissecans of knee
M94.9	Disorder of cartilage, unspecified
S83.30X (A,D,S)- S83.31X(A,D,S)	Tear of articular cartilage of knee, current
S89.80X (A,D,S)- S89.82X (A,D,S)	Other specified injuries of lower leg

Reviews, Revisions, and Approvals	Date	Approval Date
Clarified description language Added autologous chondrocyte implantation Renamed policy from Mosaicplasty to Articular Cartilage Defect Repairs Specialist review - orthopedic	05/14	05/14
Added criteria in which procedures would be considered medically necessary and clarified when and what procedures would not be medically necessary Specialist review - orthopedic	05/15	05/15
Policy converted to new template Revision history prior to 2014 removed References reviewed and updated Added BMI criteria for ACI and age criteria for OAT	05/16	05/16
Added criteria for meniscal allograft transplant from the American Academy of Orthopedic Surgeons (2014)	08/16	09/16
Added locking and swelling to list of disabling symptoms that could qualify member for procedures in sections I and II. Edited II.B. to correctly label mosaicplasty and OATS as autografts, and OCA as an allograft.	05/17	05/17

**References**

1. American Academy of Orthopaedic Surgeons. 2009 Annual Meeting Podium Presentations. Surgical efficacy of mosaicplasty for capitellar osteoarthrosis.
2. American Academy of Orthopaedic Surgeons. Use of Musculoskeletal Tissue Allografts. 1991. Updated 2001, December 2006, June 2011. Accessed 5/8/2017 at: [http://www.aaos.org/uploadedFiles/PreProduction/About/Opinion\\_Statements/advistmt/1011%20Use%20of%20Musculoskeletal%20Tissue%20Allografts.pdf](http://www.aaos.org/uploadedFiles/PreProduction/About/Opinion_Statements/advistmt/1011%20Use%20of%20Musculoskeletal%20Tissue%20Allografts.pdf)
3. American Academy of Orthopedic Surgeons. Meniscal Transplant Surgery. March 2014. Accessed 5/8/2017 at: <http://orthoinfo.aaos.org/topic.cfm?topic=a00381>
4. Chahal J, et al. Outcomes of osteochondral allograft transplantation in the knee. *Arthroscopy*. 2013 Mar;29(3):575-88.
5. Chui K, Jeys L, Snow M. Knee salvage procedures: The indications, techniques and outcomes of large osteochondral allografts. *World J Orthop*. 2015 April 18;6(3):340-350.
6. Filardo G, et al. Autologous osteochondral transplantation for the treatment of knee lesion results and limitations at two years' follow-up. *Int Orthop*. 2013 Mar 25.
7. Frank RM, et al. Osteochondral allograft transplantation of the knee: Analysis of failures at 5 years. *Am J Sports Med*. 2017 Mar; 45(4):864-874. doi: 10.1177/0363546516676072
8. Gracitelli GC, Moraes VY, Franciozi CES, Luzo MV, Belloti JC. Surgical interventions (microfracture, drilling, mosaicplasty and allograft transplantation) for treating isolated cartilage defects of the knee in adults (Protocol). *Cochrane Database of Systematic Reviews* 2016. DOI: 10.1002/14651858.CD010675.pub2 .
9. Hand CJ, Lobo JJA, White LM, Miniaci A. Osteochondral autograft resurfacing. *Sports Medicine & Arthroscopy Review*. 2003;11(4):245-263.
10. Hangody L, Ráthonyi GK, Duska Z, et al. Autologous osteochondral mosaicplasty surgical technique. *J Bone Joint Surg (Am)*. 2004;86:65-72.

**CLINICAL POLICY****Articular Cartilage Defect Repairs**

11. Hayes. Medical Technology Director, Autologous chondrocyte implantation of the knee. July 15, 2013. Updated July 19, 2016.
12. Hayes. Health Technology Brief. Osteochondral Allograft Transplantation for Articular Disorders of the Ankle. April 15, 2013. Updated June 26, 2014. Updated May 30, 2015. Archived May 15, 2016.
13. Hayes. Medical Technology Directory, Mosaicplasty. April 2012. Updated May 4, 2017.
14. Hayes. Medical Technology Directory. Meniscal Allograft Transplantation. December 28, 2011. Updated November 5, 2015. Archived Jan 28, 2017.
15. Jaiswal PK, et al. The adverse effect of elevated body mass index on outcome after autologous chondrocyte implantation. *J Bone Joint Surg.* 2012 Oct;94(10):1377-81.
16. Lim HC, et al. Current treatments of isolated articular cartilage lesions of the knee achieve similar outcomes. *Clin Orthop Relat Res.* 2012 Aug;470(8):2261-7.
17. Mandl LA, Martin GM. Overview of surgical therapy of knee and hip osteoarthritis. In: UpToDate, Tugwell P (ed). UpToDate, Waltham, MA. Accessed 05/09/2017.
18. Magnussen RA, et al. Treatment of focal articular cartilage defects in the knee, a systematic review. *Clin Orthop Relat Res.* 2008;466:952-962.
19. Mayo Foundation for Medical Education and Research. Advances in articular cartilage defect management. Accessed 05/09/17 at: <http://www.mayoclinic.org/medical-professionals/clinical-updates/orthopedic-surgery/innovations-managing-articular-cartilage-defects-knee>
20. Mistry H, et al. Autologous chondrocyte implantation in the knee: a systematic review and economic evaluation. *Health Technol Assess.* 2017 Feb;21(6):1-294. doi: 10.3310/hta21060
21. National Institute for Health and Clinical Excellence. Mosaicplasty for knee cartilage defects. *Interventional Procedure Guidance* 162. March 2006. Accessed at: <https://www.nice.org.uk/guidance/ipg162>
22. Nuelle CW, Nuelle JA, Cook JL, Stannard JP. Patient factors, donor age, and graft storage duration affect osteochondral allograft outcomes in knees with or without comorbidities. *J Knee Surg.* 2017 Feb; 30(2):179-184. doi: 10.1055/s-0036-1584183
23. Parkinson B, et al. Factors predicting meniscal allograft transplantation failure. *Orthop J Sports Med.* 2016 Aug 19; 4(8):2325967116663185. doi: 10.1177/2325967116663185
24. Robert H. Chondral repair of the knee joint using mosaicplasty. Review Article. *Orthopaedics & Traumatology: Surgery & Research.* 2011;97:418-729.
25. Vasiliadis HS, Wasiaik J. Autologous chondrocyte implantation for full thickness articular cartilage defects of the knee. *Cochrane Database Syst Rev.* 2010 Oct 6;(10):CD003323. doi: 10.1002/14651858.CD003323.pub3
26. Work Loss Data Institute. Ankle & foot (acute & chronic). Encinitas (CA): Work Loss Data Institute; 2013 Aug 19. Various p.
27. Work Loss Data Institute. Knee & leg (acute & chronic). Encinitas (CA): Work Loss Data Institute; 2013 Nov 29. Various p.
28. Work Loss Data Institute. Shoulder (acute & chronic). Encinitas (CA): Work Loss Data Institute; 2011. Various p.

**Important Reminder**

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional

## CLINICAL POLICY

### Articular Cartilage Defect Repairs

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**CLINICAL POLICY**  
**Articular Cartilage Defect Repairs**



**Note: For Medicare members,** to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at <http://www.cms.gov> for additional information.

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