



# Surgical Repair of Cartilage, Ligament and Meniscal Defects of the Knee

Last Revision/Review Date: March 18, 2020

P&P # C.5.33

## Policy

The Medical Management Department reviews referral requests for authorization of Surgical Repair of Cartilage, Ligament and Meniscal Defects of the Knee.

This Medical Policy does not constitute medical advice. When deciding coverage, the enrollee's specific plan document must be referenced. The terms of an enrollee's plan document (Certificate of Coverage (COC) or Summary Plan Description (SPD)) may differ from this Medical Policy. In the event of a conflict, the enrollee's specific benefit plan document supersedes this Medical Policy. All reviewers must first identify enrollee eligibility, any federal or state regulatory requirements, and the plan benefit coverage prior to use of this Medical Policy. Other Policies and Coverage Determination Guidelines may apply. Quartz reserves the right, in its sole discretion, to modify its Policies and Guidelines as necessary.

## Procedure

### A. Documentation Required:

To facilitate the authorization process referral requests must include **ALL** the following:

1. Documentation from an Orthopedic Surgeon that indicates the type and extent of osteochondral knee injury.
2. Documentation of patient symptoms and degree of functional impairment.
3. Documentation of failed conservative measures and alternative treatment including previous surgical procedures.
4. Documentation of autograft failure or inadequate autograft availability for allograft procedure request.

### B. Criteria for Medical Necessity:

1. **Osteochondral Autograft Transplantation (OATS or mosaicplasty)** of the knee is considered medically necessary when **ALL** the following are met:
  - a. The member is skeletally mature with documented closure of growth plates; **AND**
  - b. Is age 55 years or younger and not considered a candidate for total knee replacement; **AND**
  - c. Has localized knee pain limiting ambulation and activities of daily living that has been unresponsive to a minimum of three (3) months of conservative treatment (e.g., analgesics, physical therapy, bracing, intraarticular injection) that includes at least two (2) months of physical therapy; **AND**
  - d. Has a small (< 1.5 cm<sup>2</sup>) focal, full thickness (Outerbridge grade III or IV) unipolar lesion on the weight bearing surface of the femoral condyles or trochlea; **AND**
  - e. Has stable or correctable ligaments, meniscus and alignment of the knee with a planned corrective procedure in combination with, or prior to the osteochondral autograft.

- 2. Osteochondral Allograft Transplantation** of the knee is considered medically necessary when **ALL** the following are met:
- The member is skeletally mature with documented closure of growth plates; **AND**
  - Is age 55 years or younger and not considered a candidate for total knee replacement; **AND**
  - Has a Body Mass Index (BMI) of  $\leq 35$ ; **AND**
  - Is otherwise healthy and physically active, has either failed previous surgical procedures (e.g., microfracture, osteochondral autograft, ACI) or is not a candidate for such procedures because of the size, shape, or location of the lesion **OR** has **ONE** of the following conditions:
    - Avascular necrosis lesions of the femoral condyle; **OR**
    - Non-repairable stage 3 or 4 osteochondritis dissecans; **AND**
  - Has a focal lesion that meets **ALL** the following criteria:
    - Full-thickness depth (Outerbridge grade III or IV) lesion greater than 2 cm<sup>2</sup> by MRI or arthroscopy; **AND**
    - Has localized knee pain limiting ambulation and activities of daily living that has been unresponsive to a minimum of three (3) months of conservative treatment (e.g., analgesics, physical therapy, bracing, intraarticular injection) that includes at least two (2) months of physical therapy; **AND**
    - Has stable or correctable ligaments, meniscus and alignment of the knee with a planned corrective procedure in combination with, or prior to the osteochondral allograft; **AND**
    - The opposing articular surface is free of disease or injury.
- 3. Autologous Chondrocyte Implantation (ACI)** of the knee (using Carticel® or MACI®) is medically necessary when **ALL** the following are met:
- The member is 18 to 55 years of age or, if younger than 18, has documented skeletal maturity; **AND**
  - Has a Body Mass Index (BMI)  $\leq 35$ ; **AND**
  - Has disabling localized knee pain limiting ambulation and activities of daily living that has been unresponsive to a minimum of three (3) months of conservative treatment (e.g., analgesics, physical therapy, bracing, intraarticular injection) that includes at least two (2) months of physical therapy; **AND**
  - Has failed established surgical interventions (i.e., microfracture, drilling, abrasion, or osteochondral autograft/allograft) in lesions  $\leq 2$  cm<sup>2</sup>; **AND**
  - Has a unipolar, focal, full thickness articular cartilage defect down to but not through the subchondral bone (Outerbridge grade IV) on a weight bearing surface of the femoral condyle or the patella caused by acute or repetitive trauma; **AND**
  - Has no active inflammatory disease clinically and confirmed by X-ray; **AND**
  - The procedure is not being done for treatment of osteoarthritis; **AND**
  - The size of defect measures less than 7 mm in depth, less than 6.0 cm in length, and  $\leq 10$  cm<sup>2</sup>; **AND**
  - Has stable ligaments (e.g., intact or reconstructed ACL) or a planned corrective procedure in combination with or prior to the ACI that will stabilize the joint; an intact meniscus, and normal or correctable alignment of the knee.
- 4. Allograft transplantation of the Anterior Cruciate Ligament (ACL), Posterior Cruciate Ligament (PCL), Medial Collateral Ligament, (MCL), and Lateral Collateral Ligament (LCL)** is medically necessary when **ONE** of the following are met:
- Members with ligament deficiency who are not candidates for autogenous transplantation (e.g., individuals whose autogenous tissues have been compromised by previous surgery or previous injury), **OR**
  - Failed reconstruction or revision of a previous knee surgery; **OR**

- c. Multiple ligament reconstruction; **OR**
- d. Members with any other contraindications to using their own tissue such as collagen disease or generalized ligamentous laxity.

- 5. Meniscus allograft** is considered medically necessary when **ONE** of the following are met:
- a. Degenerative changes must be absent or minimal (Outerbridge grade II or less), **AND**
  - b. Has stable ligaments (e.g., intact or reconstructed ACL) and a normal or correctable alignment of the knee; **AND**
  - c. The members must be 50 years or younger; **AND**
  - d. Has a Body Mass Index (BMI)  $\leq 35$ ; **AND**
  - e. Pre-operative studies (MRI or previous arthroscopy) reveal absence or near-absence of the meniscus; **AND**
  - f. Patient has disabling localized knee pain that has been unresponsive to a minimum of three (3) months of conservative treatment (e.g., analgesics, physical therapy, bracing, intraarticular injection) that includes at least two (2) months of physical therapy.

**C. Indications Considered Experimental, Investigational or not Medical Necessity (Not an all-inclusive list):**

1. Osteochondral autograft/allograft transplantation of the patella;
2. Osteochondral autograft/allograft transplantation of joints other than knee (e.g., ankle, elbow, hip, shoulder, jaw);
3. Autologous chondrocyte implantation performed with a hybrid osteochondral autograft transfer system (Hybrid ACI/OATS) technique for the treatment of osteochondral defects;
4. Use of minced or particulated articular cartilage (synthetic, allograft or autograft) to repair osteochondral defects of any joint (e.g., DeNovo® NT).
5. Use of synthetic resorbable polymers (e.g., PolyGraft BGS, TruFit cylindrical plugs or granules) to repair osteochondral articular cartilage defects of any joint;
6. Osteochondral allograft transplantation of the knee in members who have had a previous total meniscectomy;
7. Osteochondral allograft transplantation of the knee in members who have a cartilaginous defect associated with osteoarthritis or inflammatory diseases or where an osteoarthritic or inflammatory process significantly and adversely affects the quality of the perilesional cartilage;
8. Autologous chondrocyte implantation as the first line of surgical therapy for lesions  $\leq 2\text{cm}^2$ ;
9. Autologous chondrocyte implantation for lesions of joints other than knee or patella; Autologous chondrocyte implantation in individuals who have had a previous total meniscectomy;
10. Autologous chondrocyte implantation for individuals with osteochondritis dissecans (OCD) lesions;
11. Combined autologous chondrocyte implantation and osteochondral autograft transfer system for surgical repair of cartilage defects of any joint.

**CPT/ HCPCS CODES:**

27416	Osteochondral autograft (s), knee, open (e.g., mosaicplasty) (includes harvesting of autograft[s]) [except to repair chondral defects of the patella] [excludes synthetic resorbable polymers]
29866	Arthroscopy, knee, surgical; implantation of osteochondral autograft(s) (e.g., mosaicplasty) (includes harvesting of autografts) [except to repair chondral defects of the patella] [excludes synthetic resorbable polymers]
27412	Autologous chondrocyte implantation, knee
29867	Osteochondral allograft transplantation, arthroscopic
27415	Osteochondral allograft transplantation of the knee, open

J7330	Autologous cultured chondrocytes, implant [except minced articular cartilage (whether synthetic, allograft or autograft)]
S2112	Arthroscopy, knee, surgical, for harvesting of cartilage (chondrocyte cells)
27412	Autologous chondrocyte implantation, knee
J7330	Autologous cultured chondrocytes, implant
29868	Arthroscopy, knee, surgical; meniscal transplantation (includes arthrotomy for meniscal insertion), medial or lateral

## References

American Academy of Orthopaedic Surgeons (AAOS). Guideline and Evidence Report. The diagnosis and treatment of osteochondritis dissecans. <http://www.aaos.org>. Published December 4, 2010.

<http://adrianokarpstein.lib.med.br/index.pl/DIAGNOSIS+AND+TREATMENT+OF+OSTEOCHONDRITIS+DISSECA+11894.pdf>

Cameron ML, Briggs KK, Steadman JR. Reproducibility and Reliability of the Outerbridge Classification for Grading Chondral Lesions of the Knee Arthroscopically. *Am J Sports Med.* 2003;31(1):83-86.

Canadian Agency for Drugs and Technologies in Health (CADTH) Rapid Response Reports. The Use of Osteochondral Allograft for the Ankle, Knee, and Shoulder: Clinical Effectiveness and Cost-Effectiveness. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health Copyright (c) 2017 Canadian Agency for Drugs and Technologies in Health.; 2017. Accessed February 11, 2019

Dunkin BS, Lattermann C. New and Emerging Techniques in Cartilage Repair: MACI. *Oper Tech Sports Med.* 2013 Jun 1;21(2):100-107.

Fanelli D, Mercurio M, Gasparini G, Galasso O. Predictors of Meniscal Allograft Transplantation Outcome: A Systematic Review. *J Knee Surg.* Published online 2019. DOI: 10.1055/s-0039-1695043.

Gabriele P, Umberto C, Federica R, et al. Large Osteochondral Allografts of the Knee: Surgical Technique and Indications. *Joints.* 2018;6(1):42-53.

Godin J, Frangiamore S, Chahla J, et al. Tibial Allograft Transfer for Medial Tibial Plateau Resurfacing. *Arthroscopy Techniques.* 2017;6(3):e661-e665.

Gracitelli GC, Moraes VY, Franciozi CE, Luzo MV, Belloti JC. Surgical interventions (microfracture, drilling, mosaicplasty, and allograft transplantation) for treating isolated cartilage defects of the knee in adults. *The Cochrane Database of Systematic Reviews.* 2016, Issue 9. Art. No.: CD010675. DOI: 10.1002/14651858.CD010675.pub2.

Hayes, Inc. Health Technology Assessment

- DeNovo Natural Tissue Graft (Zimmer, Inc.) for Articular Cartilage Repair, Published December 15, 2016. Annual review December 23, 2019. Accessed February 10, 2020

Hayes, Inc. Medical Technology Directory.

- Comparative Effectiveness Review of Mosaicplasty for Treatment of Articular Cartilage Injuries. Published May 4, 2017. Annual review May 31, 2019. Accessed February 10, 2020.
- Comparative Effectiveness Review of Second and Third-Generation Autologous Chondrocyte Implantation of the Knee. Published July 13, 2017. Annual review September 5, 2019. Accessed February 10, 2020.

- Comparative Effectiveness Review of First-Generation Autologous Chondrocyte Implantation of the Knee. Published July 13, 2017. Annual review August 30, 2019. Accessed February 10, 2020.
- Irradiated Allograft for Primary Anterior Cruciate Ligament Reconstruction. Published March 6, 2018. Accessed March 1, 2019.

Hayes, Inc. Evidence Analysis Brief

- Matrix-Induced Autologous Chondrocyte Implantation (MACI) for Repair of Articular Cartilage of the Knee. Published May 9, 2019. Accessed February 10, 2020.
- Hybrid Procedure for Osteochondral Defects of the Knee: Autologous Chondrocyte Implantation (ACI) AND Osteochondral Autograft Transfer System (OATS). Published October 28, 2019. Accessed February 10, 2020.

Hinkel B, Pratte E, Baumann C, et al. Patellofemoral Cartilage Restoration: A Systematic Review and Meta-analysis of Clinical Outcomes. *The American Journal of Sports Medicine*. Published online January 3, 2020. <https://doi.org/10.1177/0363546519886853>.

Krych A, Pareek A, King A, et al. Return to sport after the surgical management of articular cartilage lesions in the knee: a meta-analysis. *Return to sport after the surgical management of articular cartilage lesions in the knee: a meta-analysis. Knee Surg Sports Traumatol Arthrosc.* 2017;25(10):3186–3196.

Mestriner A, Ackerman J, Gomoll A. Patellofemoral Cartilage Repair. *Curr Rev Musculoskelet Med.* 2018;11(2):188–200.

NICE. Autologous chondrocyte implantation for treating symptomatic articular cartilage defects of the knee. Technology appraisal guidance [TA477] Published October 4, 2017. Accessed February 10, 2020.

Pareek A, Mask T, Reardon P, et al. Long-term Outcomes After Osteochondral Autograft Transfer: A Systematic Review at Mean Follow-up of 10.2 Years. *Arthroscopy The Journal of Arthroscopic and Related Surgery.* 2016;32(6):1174-1184.

Richter DL, Schenck RC Jr, Wascher DC, Treme G. Knee Articular Cartilage Repair and Restoration Techniques: A Review of the Literature. *Sports Health.* 2016;8(2):153-160.

Salzmann G, Niemeyer P, Hochrein A, et al. Articular Cartilage Repair of the Knee in Children and Adolescents. *Orthopaedic Journal of Sports Medicine.* 2018;6(3):1-12.

Skelly AC, Brodt ED, Winter C. Osteochondral Allograft/Autograft Transplantation (OAT): Assessing signals for update. Prepared by Aggregate Analytics, Inc. for the Washington State Health Care Authority, Health Technology Assessment Program. Olympia, WA: Washington State Health Care Authority; January 31, 2018. Available at [https://www.hca.wa.gov/assets/program/OATS-signals-search-aggregate-20180131\\_0.pdf](https://www.hca.wa.gov/assets/program/OATS-signals-search-aggregate-20180131_0.pdf) Accessed March 8, 2019.

Takahiro O, Bryant T, Minas T, Biological Knee Reconstruction with Concomitant Autologous Chondrocyte Implantation and Meniscal Allograft Transplantation. *Orthopaedic Journal of Sports Medicine.* 2016;4(10):1-9. <https://doi.org/10.1177/2325967116668490>

UpToDate®: Overview of Surgical Therapy of Knee and Hip Osteoarthritis Published October 2016. Updated August 13, 2018. Accessed March 1, 2019

U.S. Department of Health and Human Services, Food and Drug Administration (FDA). 510(k) summary: Mosaicplasty system. Rockville, MD: FDA; August 9, 1996. Accessed February 18, 2019.

U.S. Department of Health and Human Services, Food and Drug Administration (FDA) Vaccines, Blood & Biologicals, Approval Letter-Cartigel August 22, 1997. Accessed February 18, 2019.

U.S. Department of Health and Human Services, Food and Drug Administration (FDA), BLA Approval MACI, December 13, 2016. Accessed February 18, 2019.

<https://www.fda.gov/downloads/BiologicsBloodVaccines/CellularGeneTherapyProducts/ApprovedProducts/UCM536121.pdf>

Verhaegen J, Clockaerts S, Van Osch GJ, et al. TruFit Plug for Repair of Osteochondral Defects-Where is the Evidence? Systematic Review of Literature. *Cartilage*. 2015;6(1):12-19.

von Keudell A, Han R, Bryant T, et al. Autologous Chondrocyte Implantation to Isolated Patella Cartilage Defects: Two- to 15-Year Follow-up. *Cartilage*. 2017;8(2):146-154.