



**BlueCross BlueShield
of Vermont**

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Osteochondral Allograft Transplantation and Autograft Transfer System (OATS/mosaicplasty) in the Treatment of Articular Cartilage Lesions Corporate Medical Policy

File Name: Osteochondral Allograft Transplantation and Autograft Transfer System (OATS/Mosaicplasty in the Treatment of Articular Cartilage Lesions)

File Code: UM.SPSVC.16

Origination: 2006

Last Review: 06/2018

Next Review: 06/2019

Effective Date: 10/01/2018

Description

Focal chondral defects of the knee, either due to trauma or other conditions such as osteochondritis dissecans, often fail to heal on their own or may be associated with pain, loss of function, disability, and the long-term complication of osteoarthritis. The ideal resurfacing technique would eliminate symptoms, restore normal biomechanics of the knee joint, and prevent the long-term emergence of osteoarthritis and the necessity for total knee arthroplasty. Various methods of cartilage resurfacing have been investigated including marrow-stimulation techniques such as subchondral drilling, microfracture, and abrasion arthroplasty, all of which are considered standard therapies and all of which attempt to restore the articular surface by inducing the growth of fibrocartilage into the chondral defect. However, fibrocartilage does not share the same biomechanical properties as hyaline cartilage, and thus various strategies for chondral resurfacing with hyaline cartilage have been investigated. Autologous chondrocyte implantation involves the harvesting of normal chondrocytes from normal non-weight-bearing articular surfaces, which are then cultured and expanded in vitro and then transplanted back into the patient.

Osteochondral grafts have also been investigated. Both fresh and cryopreserved allogenic osteochondral grafts have been used with some success, although cryopreservation decreases the viability of cartilage cells, and fresh allografts may be difficult to obtain and create concerns regarding infectious diseases. For these reasons, autologous osteochondral grafts have been investigated as an option to increase the survival rate of the grafted cartilage and to eliminate the risk of disease transmission. Autologous grafts are limited by the small number of donor sites; thus allografts are typically used for larger lesions. In an effort to extend the amount of the available donor tissue, investigators have used multiple, small osteochondral cores harvested from non-weight-bearing sites in the knee, for treatment of full-thickness chondral defects. Several systems are available for performing this procedure, the Mosaicplasty System (Smith and Nephew), the Osteochondral Autograft Transfer System (OATS, Arthrex, Inc.), and the COR and COR2 systems (DePuy-Mitek).

Although mosaicplasty and OATS may use different instrumentation, the underlying principle is similar; i.e., the use of multiple osteochondral cores harvested from a non-weight-bearing region of the femoral condyle and autografted into the chondral defect. These terms have been used interchangeably to describe the procedure. In contrast to autologous chondrocyte implantation (ACI), in which separate surgical procedures are required to harvest and then transplant the cultured chondrocytes, with osteochondral autografting the harvesting and transplantation can be performed during the same surgical procedure.

Preparation of the chondral lesion involves debridement and preparation of recipient tunnels. Multiple individual osteochondral cores are harvested from the donor site, typically from a peripheral non-weight-bearing area of the femoral condyle. Donor plugs range from 6 mm to 10 mm in diameter. The grafts are press fit into the lesion in a mosaic-like fashion into the same-sized tunnels. The resultant surface consists of transplanted hyaline articular cartilage and fibrocartilage, which is thought to provide “grouting” between the individual autografts. Mosaicplasty may be performed with either an open approach or arthroscopically. Osteochondral autografting has also been investigated as a treatment of unstable osteochondritis dissecans lesions using multiple dowel grafts to secure the fragment. While osteochondral autografting is primarily performed on the femoral condyles of the knee, osteochondral grafts have also been used to repair chondral defects of the patella, tibia, and ankle.

Policy

Coding Information

Click the links below for attachments, coding tables & instructions.

[Attachment I- CPT® Code Table & Instructions](#)

[Attachment II- ICD-10-CM Code Table](#)

When service or procedure is considered medically necessary

Osteochondral allografting may be considered **medically necessary** as a technique to repair:

- Full-thickness chondral defects of the knee caused by acute or repetitive trauma when other cartilage repair techniques (eg, microfracture, osteochondral autografting or autologous chondrocyte implantation) would be inadequate due to lesion size, location, or depth.
- Large (area $>1.5 \text{ cm}^2$) or cystic (volume $>3.0 \text{ cm}^3$) osteochondral lesions of the talus when autografting would be inadequate due to lesion size, depth, or location.
- Revision surgery after failed prior marrow stimulation for large (area $>1.5 \text{ cm}^2$) or cystic (volume $>3.0 \text{ cm}^3$) osteochondral lesions of the talus when autografting would be inadequate due to lesion size, depth or location.

Osteochondral autografting, using one or more cores of osteochondral tissue, may be considered **medically necessary**:

- For the treatment of symptomatic full-thickness cartilage defects of the knee caused by acute or repetitive trauma in patients who have had an inadequate response to a prior surgical procedure, when all of the following have been met:
 - Adolescent patients should be skeletally mature with documented closure of

- growth plates (eg, ≥ 15 years). Adult patients should be too young to be considered an appropriate candidate for total knee arthroplasty or other reconstructive knee surgery (eg, ≤ 55 years)
- Focal, full-thickness (grade III or IV) unipolar lesions on the weight-bearing surface of the femoral condyles, trochlea, or patella that are between 1 and 2.5 cm² in size
 - Documented minimal to absent degenerative changes in the surrounding articular cartilage (Outerbridge grade II or less), and normal-appearing hyaline cartilage surrounding the border of the defect
 - Normal knee biomechanics or alignment and stability achieved concurrently with osteochondral grafting.
- Large (area > 1.5 cm²) or cystic (volume > 3.0 cm³) osteochondral lesions of the talus.
 - Revision surgery after failed marrow stimulation for osteochondral lesion of the talus.

When service or procedure is considered investigational

- Osteochondral allografting or autografting for all other joints and any indications other than those listed above, is considered **investigational**.
- Treatment of focal articular cartilage lesions with autologous minced or particulated cartilage is considered **investigational**.
- Treatment of focal articular cartilage lesions with allogeneic minced or particulated cartilage is considered **investigational**.
- Treatment of focal articular cartilage lesions with decellularized osteochondral allograft plugs (eg, Chondrofix) is considered **investigational**.
- Treatment of focal articular cartilage lesions with reduced osteochondral allograft discs (eg, ProChondrix, Cartiform) is considered **investigational**.

Policy Guidelines

If debridement is the only prior surgical treatment, consideration should be given to marrow-stimulating techniques before osteochondral grafting is performed. Severe obesity (eg, body mass index > 35 kg/m²) may affect outcomes due to the increased stress on weight-bearing surfaces of the joint.

Misalignment and instability of the joint are contraindications. Therefore additional procedures, such as repair of ligaments or tendons or creation of an osteotomy for realignment of the joint, may be performed at the same time. In addition, meniscal allograft transplantation may be performed in combination, either concurrently or sequentially, with osteochondral allografting or osteochondral autografting.

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Document Precedence

Blue Cross and Blue Shield of Vermont (BCBSVT) Medical Policies are developed to provide clinical guidance and are based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. The applicable group/individual contract and member certificate language, or employer's benefit plan if an ASO group, determines benefits that are in effect at the time of service. Since medical practices and knowledge are constantly evolving, BCBSVT reserves the right to review and revise its medical policies periodically. To the extent that there may be any conflict between medical policy and contract/employer benefit plan language, the member's contract/employer benefit plan language takes precedence.

Audit Information

BCBSVT reserves the right to conduct audits on any provider and/or facility to ensure compliance with the guidelines stated in the medical policy. If an audit identifies instances of non-compliance with this medical policy, BCBSVT reserves the right to recoup all non-compliant payments.

Administrative and Contractual Guidance

Benefit Determination Guidance

Prior approval is required and benefits are subject to all terms, limitations and conditions of the subscriber contract.

Incomplete authorization requests may result in a delay of decision pending submission of missing information. To be considered complete, see policy guidelines above.

An approved referral authorization for members of the New England Health Plan (NEHP) is required. A prior approval for Access Blue New England (ABNE) members is required. NEHP/ABNE members may have different benefits for services listed in this policy. To confirm benefits, please contact the customer service department at the member's health plan.

Federal Employee Program (FEP): Members may have different benefits that apply. For further information please contact FEP customer service or refer to the FEP Service Benefit Plan Brochure. It is important to verify the member's benefits prior to providing the service to determine if benefits are available or if there is a specific exclusion in the member's benefit.

Coverage varies according to the member's group or individual contract. Not all groups are required to follow the Vermont legislative mandates. Member Contract language takes precedence over medical policy when there is a conflict.

If the member receives benefits through an Administrative Services Only (ASO) group, benefits may vary or not apply. To verify benefit information, please refer to the member's employer benefit plan documents or contact the customer service department. Language in the employer benefit plan documents takes precedence over medical policy when there is a conflict.

Policy Implementation/Update Information:

2006	New Policy
2007	Minor wording changes; Reviewed by the CAC July 2007
2008	Policy completely revised to correspond to BCBS of Massachusetts Medical Policy for benefit consistency with the New England Health Plan and the Vermont legal definition of medical necessity, based upon expert medical opinion and generally accepted practice parameters in New England. Reviewed by CAC 09/2008.
2009	Policy revised to follow Blue Cross and Blue Shield Association Medical Policy guidelines and rationale, which previously considered OATS as investigational, but now has established medical necessity criteria. BCBSVT developed specific criteria was changed to those of the BCBSA, which are less restrictive. Reviewed by CAC 09/15/2009.
2011	Minor wording changes made, 05/2011
2015	ICD-10-CM Remediation only. 02/04/15 RLG.
04/2017	Aligned medical policy with BCBSA MPRM 7.01.78, updated criteria under osteochondral grafting to remove age criteria. Updated general headers, removed ICD 9&10 PCS Table, Removed ICD 9 table, Updated ICD10 Table.
06/2018	Updated and aligned with BCBSA MPRM 7.01.78. Updated criteria for clarity. No changes to policy statement.

Eligible Providers:

Qualified healthcare professionals practicing within the scope of their license(s).

Approved by BCBSVT Medical Director(s) **Date Approved**

Joshua Plavin, MD, MPH, MBA
Chief Medical Officer

Attachment I
CPT® Code Table & Instructions

Code Type	Number	Description	Policy Instructions
The following codes will be considered as medically necessary when applicable criteria have been met.			
CPT®	27415	Osteochondral allograft, knee, open	Prior Approval Required
CPT®	27416	Osteochondral autograft(s), knee, open (eg, mosaicplasty) (includes harvesting of autograft[s])	Prior Approval Required
CPT®	28446	Open osteochondral autograft, talus (includes obtaining graft[s])	Prior Approval Required
CPT®	29866	Arthroscopy, knee, surgical; osteochondral autograft(s) (e.g., mosaicplasty) (includes harvesting of the autograft[s])	Prior Approval Required
CPT®	29867	Arthroscopy, knee, surgical; osteochondral allograft (e.g., mosaicplasty)	Prior Approval Required

Attachment II
ICD-10-CM-CM Code Table

Code Type	Number	Description	Code Type	Number	Description
The following diagnosis codes are applicable to this medical policy.					
ICD-10-CM	M12.561	Traumatic arthropathy, right knee	ICD-10-CM	M25.369	Other instability, unspecified knee
ICD-10-CM	M12.562	Traumatic arthropathy, left knee	ICD-10-CM	M25.861	Other specified joint disorders, right knee
ICD-10-CM	M12.569	Traumatic arthropathy, unspecified knee	ICD-10-CM	M25.862	Other specified joint disorders, left knee
ICD-10-CM	M17.0	Bilateral primary osteoarthritis of knee	ICD-10-CM	M25.869	Other specified joint disorders, unspecified knee

ICD-10-CM	M17.10	Unilateral primary osteoarthritis, unspecified knee	ICD-10-CM	M85.9	Disorder of bone density and structure, unspecified
ICD-10-CM	M17.11	Unilateral primary osteoarthritis, right knee	ICD-10-CM	M89.9	Disorder of bone, unspecified
ICD-10-CM	M17.12	Unilateral primary osteoarthritis, left knee	ICD-10-CM	M93.261	Osteochondritis dissecans, right knee
ICD-10-CM	M17.2	Bilateral post-traumatic osteoarthritis of knee	ICD-10-CM	M93.262	Osteochondritis dissecans, left knee
ICD-10-CM	M17.30	Unilateral post-traumatic osteoarthritis, unspecified knee	ICD-10-CM	M93.269	Osteochondritis dissecans, unspecified knee
ICD-10-CM	M17.31	Unilateral post-traumatic osteoarthritis, right knee	ICD-10-CM	M94.9	Disorder of cartilage, unspecified
ICD-10-CM	M17.32	Unilateral post-traumatic osteoarthritis, left knee	ICD-10-CM	S89.80XA	Other specified injuries of unspecified lower leg, initial encounter
ICD-10-CM	M17.4	Other bilateral secondary osteoarthritis of knee	ICD-10-CM	S89.80XD	Other specified injuries of unspecified lower leg, subsequent encounter
ICD-10-CM	M17.5	Other unilateral secondary osteoarthritis of knee	ICD-10-CM	S89.80XS	Other specified injuries of unspecified lower leg, sequela
ICD-10-CM	M17.9	Osteoarthritis of knee, unspecified	ICD-10-CM	S89.81XA	Other specified injuries of right lower leg, initial encounter
ICD-10-CM	M23.50	Chronic instability of knee, unspecified knee	ICD-10-CM	S89.81XD	Other specified injuries of right lower leg, subsequent encounter
ICD-10-CM	M23.51	Chronic instability of knee, right knee	ICD-10-CM	S89.81XS	Other specified injuries of right lower leg, sequela
ICD-10-CM	M23.52	Chronic instability of knee, left knee	ICD-10-CM	S89.82XA	Other specified injuries of left lower leg, initial encounter
ICD-10-CM	M23.8X1	Other internal derangements of right knee	ICD-10-CM	S89.82XD	Other specified injuries of left lower leg, subsequent encounter

ICD-10-CM	M23.8X2	Other internal derangements of left knee	ICD-10-CM	S89.82XS	Other specified injuries of left lower leg, sequela
ICD-10-CM	M23.8X9	Other internal derangements of unspecified knee	ICD-10-CM	S89.90XA	Unspecified injury of unspecified lower leg, initial encounter
ICD-10-CM	M25.161	Fistula, right knee	ICD-10-CM	S89.90xD	Unspecified injury of unspecified lower leg, subsequent encounter
ICD-10-CM	M25.162	Fistula, left knee	ICD-10-CM	S89.90XS	Unspecified injury of unspecified lower leg, sequela
ICD-10-CM	M25.169	Fistula, unspecified knee	ICD-10-CM	S89.91XA	Unspecified injury of right lower leg, initial encounter
ICD-10-CM	M25.261	Flail joint, right knee	ICD-10-CM	S89.91XD	Unspecified injury of right lower leg, subsequent encounter
ICD-10-CM	M25.262	Flail joint, left knee	ICD-10-CM	S89.91XS	Unspecified injury of right lower leg, sequela
ICD-10-CM	M25.269	Flail joint, unspecified knee	ICD-10-CM	S89.92XA	Unspecified injury of left lower leg, initial encounter
ICD-10-CM	M25.361	Other instability, right knee	ICD-10-CM	S89.92XD	Unspecified injury of left lower leg, subsequent encounter
ICD-10-CM	M25.362	Other instability, left knee	ICD-10-CM	S89.92xS	Unspecified injury of left lower leg, sequela