

Corporate Medical Policy

Osteochondral Grafting in the Treatment of Articular Cartilage Lesions

File Name: osteochondral_grafting_in_the_treatment_of_articular_lesions

Origination: 5/2002

Last CAP Review: 7/2011

Next CAP Review: 7/2012

Last Review: 7/2011

Description of Procedure or Service

Osteochondral autografts and allografts are used in repair of full-thickness chondral defects involving the joint. In the case of autografts, one or more small osteochondral plugs are harvested from non-weight-bearing sites in the knee and press fit into a prepared site in the lesion. Allografts are typically used for larger lesions to reduce donor site morbidity. 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.

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.

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

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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.

Autologous chondrocyte implantation (ACI) is another method of cartilage repair involving the harvesting of normal chondrocytes from normal non-weight-bearing articular surfaces, which are then cultured and expanded in vitro and implanted back into the chondral defect. ACI is considered separately in the BCBSNC Medical Policy titled, “Autologous Chondrocyte Implantation.” In contrast to 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. Technical limitations of osteochondral autografting are difficulty in restoring concave or convex articular surfaces, incongruity of articular surfaces that can alter joint contact pressures, short-term fixation strength and load-bearing capacity, donor site morbidity, and lack of peripheral integration with peripheral chondrocyte death associated with graft harvesting and insertion. Filling defects with minced articular cartilage (autologous or allogeneic) is another single-stage procedure that is being investigated for cartilage repair; this technique is discussed in the BCBSNC Medical Policy titled, “Autologous Chondrocyte Implantation.”

*****Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.**

Policy

BCBSNC will provide coverage for Osteochondral Autografts or Allografts in the Treatment of Articular Cartilage Lesions of the knee when it is determined to be medically necessary because the criteria and guidelines shown below have been met.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When Osteochondral Grafting in the Treatment of Articular Cartilage is covered

Osteochondral allografting may be considered medically necessary as a technique to repair large (e.g., 10cm²) full thickness chondral defects of the knee caused by acute or repetitive trauma.

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:

- The patient is skeletally mature and not considered an appropriate candidate for total knee arthroplasty or other reconstructive knee surgery (e.g., age greater than 15 and less than 55),

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- Focal, full thickness (grade III or IV) uni-polar lesions on the weight bearing surface of the femoral condyles or trochlea 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,

When Osteochondral Grafting in the Treatment of Articular Cartilage is not covered

Osteochondral allografting or autografting for all other joints, including patellar and talar, and any indications other than those listed above, 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, e.g., body mass index (BMI) greater than 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.

Evidence is sufficient to consider osteochondral allografting medically necessary as a technique to repair large (e.g., 10 cm²) full-thickness chondral defects of the knee caused by acute or repetitive trauma. Use of allografts for large defects of the talus has been reported in small case series. Evidence is insufficient to evaluate the effect of osteochondral allografting of the talus, or other joints, on health outcomes. Therefore, osteochondral allografts for joints other than the knee are considered investigational.

For osteochondral autografting, only 2 relatively small randomized controlled trials from Europe have demonstrated improved clinical outcomes with osteochondral autografting of the knee when compared with microfracture. Data regarding the long-term viability of the transplanted osteochondral hyaline cartilage is also limited. However, controlled studies demonstrate similar benefit to other cartilage resurfacing procedures in appropriately selected patients, and a number of uncontrolled studies indicate that osteochondral autografts can improve symptoms in some patients with lesions of the femoral condyle who have failed prior surgical treatment. These patients have limited options. Therefore, based on the clinical input received and additional literature reviewed, it is concluded that osteochondral autografts may be considered an option for symptomatic full-thickness chondral lesions of the femoral condyle or trochlea caused by acute or repetitive trauma, in patients who have had an inadequate response to a prior arthroscopic or other surgical repair procedure. Recent evidence indicates that osteochondral grafting combined with meniscal allograft results in outcomes similar to either procedure performed alone; therefore combined procedures may be considered medically necessary. Evidence is currently insufficient to evaluate the efficacy

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of osteochondral autografts for joints other than the knee, or to evaluate the efficacy of osteochondral autografts in comparison with other surgical repair procedures as a primary treatment of small lesions. Questions also remain about the natural history of asymptomatic lesions found incidentally during other surgical procedures. Controlled trials with longer follow-up are needed to demonstrate that use of osteochondral autografts as a primary treatment results in improved clinical outcomes in comparison with traditional marrow-stimulating procedures.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: 27415, 27416, 28446, 29866, 29867

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources

BCBSA Medical Policy Reference Manual, 2/15/2002; 7.01.78

Specialty Matched Consultant Advisory Panel - 8/2002

BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.78, 4/29/03.

Specialty Matched Consultant Advisory Panel - 7/2004

BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.78, 11/9/04

BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.78, 08/17/05

ECRI Custom Hotline Response (December 2005). Osteochondral Allograft Transplantation in the Knee. Retrieved April 20, 2006 from

http://www.ta.ecri.org/Hotline/Prod/summary/detail.aspx?e=6&doc_id=7555

ECRI Custom Hotline Response (February 2006). Osteochondral Autograft Transplantation in the Knee. Retrieved April 20, 2006 from

http://www.ta.ecri.org/Hotline/Prod/summary/detail.aspx?e=6&doc_id=9116

NICE Interventional Procedure Guidance 162 (March 2006). Mosaicplasty for knee cartilage defects. Retrieved April 20, 2006 from <http://www.nice.org.uk/page.aspx?o=297715>.

BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.78, 5/08/08

BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.78, 11/13/08

Zengerink M, Struijs PA, Tol JL, and Niek van Dijk C. (February 2010) Treatment of osteochondral lesions of the talus: a systematic review. *Knee Surg Sports Traumatol Arthrosc.* 18(2): 238–246. Retrieved on May 28, 2010 from

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2809940/?tool=pubmed>

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BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.78, 12/10/09

Gortz S, De Young AJ, Bugbee WD. Fresh osteochondral allografting for osteochondral lesions of the talus. *Foot Ankle Int* 2010; 31(4):283-90.

American Academy of Orthopaedic Surgeons. Clinical practice guideline on the diagnosis and treatment of osteochondritis dissecans. 2010. Retrieved on June 22, 2011 from http://www.aaos.org/research/guidelines/OCD_guideline.pdf

BCBSA Medical Policy Reference Manual [Electronic Version]. 7.01.78, 6/9/11

Specialty Matched Consultant Advisory Panel review 7/2011

Policy Implementation/Update Information

5/2002 Original Policy Issued.

8/2002 Specialty Matched Consultant Advisory Panel meeting 8/14/2002. No changes.

5/04 Benefits Application and Billing/Coding sections updated for consistency.

8/26/04 Specialty Matched Consultant Advisory Panel review on 7/15/2004 with no changes made to policy criteria. Title changed from "Osteochondral Autografts in the Treatment of Articular Cartilage" to "Osteochondral Autografts and Allografts in the Treatment of Articular Cartilage Lesions." CPT code 0013T added. References added. Medical term, allograft and definition added.

9/9/04 Title changed from "Osteochondral Autografts and Allografts in the Treatment of Articular Cartilage Lesions" to "Osteochondral Grafting in the Treatment of Articular Cartilage Lesions" for the purpose of reducing characters.

1/6/05 Codes 27415, 29866, 29867 added to Billing/Coding section of policy.

6/16/2005 SUR6493 added as key word. Reference added. CPT 0012T and 0013T removed as deleted codes. Statement added to Policy Guideline section regarding investigational services for consistent policy language. Osteochondral allografting added as a key word. Allografting added to the policy statement as being considered noncovered as investigational. Covered and noncovered section titles changed to indicate when osteochondral grafting is covered or not covered.

8/21/06 Rationale supporting investigational status of policy added to Policy Guidelines section. References updated. Specialty Matched Consultant Advisory Panel review 7/24/06. No changes to policy criteria. (adn)

12/31/07 Coding update. Added CPT codes 27416 and 28446 to Billing/Coding section. (adn)

8/25/08 The following statement was added to the Policy Guidelines section: "An updated literature review (through March 2008) identified a number of small case series describing use of osteochondral autografts for cartilage defects of the knee, elbows and ankle. Longer-term controlled studies on larger patient populations are needed. Evidence remains insufficient to determine whether osteochondral transplantation improves the net health outcomes." Definitions of Mosaicplasty and OATS added to Medical Term Definitions. Specialty Matched Consultant Advisory Panel review 7/14/08. No change to policy statement. (adn)

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3/30/09 Policy statement changed to read, "BCBSNC will provide coverage for Osteochondral Autografts or Allografts in the Treatment of Articular Cartilage Lesions when it is determined to be medically necessary because the criteria and guidelines shown below have been met."

Osteochondral allografting may be considered medically necessary as a technique to repair large (e.g., 10cm²) full thickness chondral defects caused by acute or repetitive trauma. Osteochondral autografting, using one or more cores of osteochondral tissue, may be considered medically necessary for the treatment of symptomatic full thickness cartilage defects 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: The patient is skeletally mature and not considered an appropriate candidate for total knee arthroplasty or other reconstructive knee surgery (e.g., age greater than 15 and less than 55), Focal, full thickness (grade III or IV) uni-polar lesions on the weight bearing surface of the femoral condyles or trochlea 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, Absence of meniscal pathology. The following statement added to the When Not Covered section: Osteochondral allografting or autografting for all other joints, including patellar and talar, and any indications other than those listed above, is considered investigational. Rationale for coverage added to the Policy Guidelines section. (adn)

8/17/10 Specialty Matched Consultant Advisory Panel review 7/2010. Medical Policy number removed. References updated. Description section updated. Policy Guidelines updated to state: "If debridement is the only prior surgical treatment, consideration should be given to marrow-stimulating techniques before osteochondral grafting is performed. Severe obesity, e.g., body mass index (BMI) greater than 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."(mco)

8/16/11 Revised Policy Statement as follows: "BCBSNC will provide coverage for Osteochondral Autografts or Allografts in the Treatment of Articular Cartilage Lesions *of the knee* when it is determined to be medically necessary because the criteria and guidelines shown below have been met." Revised "When Covered" section to state: "Osteochondral allografting may be considered medically necessary as a technique to repair large (e.g., 10cm²) full thickness chondral defects *of the knee* caused by acute or repetitive trauma." Removed the following criterion from the "When Covered" section: "Absence of meniscal pathology." Added the following statement to the "Policy Guidelines" section: "In addition, meniscal allograft transplantation may be performed in combination, either concurrently or sequentially, with osteochondral allografting or osteochondral autografting." References updated. Specialty Matched Consultant Advisory Panel review 7/2011. (mco)

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.