Medical Coverage Policy | Osteochondral Autografts and Allografts in the Treatment of Focal Articular Cartilage Lesions

EFFECTIVE DATE:11|01|2015
POLICY LAST UPDATED: 12|06|2016

OVERVIEW

Osteochondral autografts (a tissue graft transferred from one part of the patient's body to another part) and allografts (a graft of tissue between individuals of the same species but of disparate genotype; types of donors are cadaveric, living related, and living unrelated) 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.

PRIOR AUTHORIZATION

Prior Authorization is not required

POLICY STATEMENT

Blue CHiP and Commercial Products:

Osteochondral grafts are considered medically necessary for the treatment of chondral defects of the knee, for all other indications, osteochondral grafts are considered not medically necessary as there is insufficient peer-reviewed scientific literature that demonstrates that the procedure/service is effective.

MEDICAL CRITERIA

None.

BACKGROUND

Focal chondral defects of the knee, either due to trauma or other conditions such as osteochondritis dissecans, often fail to heal on their own and 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. As a result, 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.

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 6-10 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. 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.

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 when all of the following have been met:

1. Adolescent patients should be skeletally mature with documented closure of growth plates (e.g., 15 years or older). Adult patients should be too young to be considered an appropriate candidate for total knee arthroplasty or other reconstructive knee surgery (e.g., younger than 55 years)
2. Focal, full-thickness (grade III or IV) unipolar lesions on the weight-bearing surface of the femoral condyles or trochlea that are between 1 and 2.5 cm2 in size
3. 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
4. Normal knee biomechanics, or alignment and stability achieved concurrently with osteochondral grafting

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 outcomes. Therefore, osteochondral allografts for joints other than the knee are considered not medically necessary as there is no proven efficacy.

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. 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 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. 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, therefore, osteochondral autografts for joints other than the knee are considered not medically necessary as there is no proven efficacy.

COVERAGE

Benefits may vary between groups/contracts. Please refer to the appropriate Evidence of Coverage, Subscriber Agreement, or Benefit Booklet for applicable not medically necessary or surgery benefits/coverage.

CODING

Blue CHiP and Commercial Products:

The following surgery codes are considered medically necessary when filed with an approved diagnosis.
27415 Osteochondral allograft, knee, open
27416 Osteochondral autograft(s), knee, open (eg, mosaicplasty) (includes harvesting of autograft[s])
29866 Arthroscopy, knee, surgical; osteochondral autograft(s) (eg, mosaicplasty) (includes harvesting of the autograft[s])
29867 Arthroscopy, knee, surgical; osteochondral allograft (eg, mosaicplasty)

The following code is considered not medically necessary:
28446 Open osteochondral autograft, talus (includes obtaining graft[s])

Diagnosis for Approval:
ICD 10 Codes

ICD 10 codes
Osteochondral Autogra

RELATED POLICIES

Not applicable.

PUBLISHED

Provider Update January 2017
Provider Update April 2015
Provider Update Sept 2013
Provider Update June 2012
Provider Update Aug 2010
Provider Update Oct 2009
Provider Update July 2008

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3. Iwasaki N, Kato H, Ishikawa J et al. Autologous osteochondral mosaicplasty for osteochondritis dissecans of the elbow in teenage athletes. J Bone Joint Surg Am 2009; 91(10):2359-66.

4. Yamamoto Y, Ishibashi Y, Tsuda E et al. Osteochondral autograft transplantation for osteochondritis dissecans of the elbow in juvenile baseball players: minimum 2-year follow-up. Am J Sports Med 2006; 34(5):714-20.

5. Ovesen J, Olsen BS, Johannsen HV. The clinical outcomes of mosaicplasty in the treatment of osteochondritis dissecans of the distal humeral capitellum of young athletes. J Shoulder Elbow Surg 2011; 20(5):813-8.

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7. Kircher J, Patzer T, Magosch P et al. Osteochondral autologous transplantation for the treatment of full-thickness cartilage defects of the shoulder: results at nine years. J Bone Joint Surg Br 2009; 91(4):499-503.

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