Osteochondral and Subchondral Defects Surgery

INDEPENDENT CARE HEALTH PLAN

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Medicare Advantage Medical Coverage Policy

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Related Medicare Advantage Medical/Pharmacy Coverage Policies

None

Related Documents

Please refer to CMS website for the most current applicable CMS Online Manual System (IOMs)/National Coverage Determination (NCD)/ Local Coverage Determination (LCD)/Local Coverage Article (LCA)/ Transmittals.

There are no NCDs and/or LCDs for osteochondral and subchondral defects surgery.

Description

Osteochondral Defect

An osteochondral defect is any type of damage to articular cartilage and underlying subchondral bone due to traumatic injury or degenerative changes (eg, osteochondritis dissecans (OCD), osteonecrosis or osteoarthritis). Due to the inability of the articular cartilage to heal itself efficiently, surgical procedures have been developed to stimulate new cartilage growth.

Autologous chondrocyte transplantation (ACT) or **autologous chondrocyte implantation (ACI)** is a two-step procedure utilized to repair traumatic cartilage defects of the knee joint. First, autologous chondrocytes are collected during a cartilage biopsy performed as an arthroscopic procedure. The chondrocytes are then replicated in a cell culture and seeded on a porcine cellular membrane (eg, MACI) at a cell processing facility. After approximately 6 weeks, an arthrotomy is performed to debride the defect, trim the membrane to the size of the defect for complete coverage and then secure the membrane over the damaged area using a fibrin sealant.

Osteochondral allograft transplant refers to the replacement of damaged articular cartilage and bone with tissue from a cadaveric donor. These allografts can either be fresh or frozen. Osteochondral allograft transplantation is used predominantly in the treatment of large and deep osteochondral lesions resulting from conditions such as osteochondritis dissecans (OCD), osteonecrosis or traumatic osteochondral fractures.

Osteochondral autograft transplant (OAT) involves the transplantation of small plugs of healthy bone and hyaline cartilage from joint areas with less weight bearing. The most common donor sites are the areas of the knee or ankle (on the same side). Small holes are drilled through the lesion and the newly harvested plugs are inserted into the holes. The two most commonly performed types of OAT procedures are:

- **Mosaicplasty** – A technique that consists of removing small osteochondral cylinders from low weight bearing surfaces of the affected joint or another joint in the same individual and transplanting them in a mosaic-like formation into focal chondral or osteochondral defects in the knee. It is usually utilized to treat larger defects.

- **Osteochondral Autograft Transfer System (OATS) procedure** – This procedure is similar to mosaicplasty; however, it involves the use of a larger, single plug that usually fills an entire defect (eg, those associated with anterior cruciate ligament [ACL] tears).

Cryopreserved viable osteochondral allograft product (eg, Cartiform, CartiMax) is made of full-thickness articular cartilage and a thin layer of subchondral bone, harvested from a human cadaver, which maintains intact native cartilage architecture with viable chondrocytes, growth factors and extracellular matrix proteins to promote articular cartilage repair. The wafer thin, disc shaped graft is often used in conjunction with marrow stimulation (eg, microfracture) purportedly allowing the host mesenchymal stem cells to infiltrate the graft from the underlying bone marrow after stimulation to promote chondrogenesis or cartilage formation.

Hybrid ACI performed with an OAT transfer system (hybrid ACI/OATS) provides an osteochondral core to immediately restore the condylar contour and mechanical function, while implanted chondrocytes have time to mature over several years. ACI is an established procedure for treating large defects, but the new cells may take several years to mature and produce native hyaline cartilage. OAT involves transfer of native

hyaline cartilage, but the procedure cannot cover large defects without risking complications at the donor site.

Juvenile cartilage allograft tissue implantation (eg, DeNovo NT natural tissue graft, DeNovo ET engineered tissue graft) was developed to repair damaged articular cartilage. The living articular cartilage is obtained from juvenile donors and minced into small particles. The particles are then surgically implanted into the damaged cartilage defect and secured using a fibrin glue. Purportedly, transplanted juvenile cartilage cells can migrate, multiply and form new cartilage that combines with the host tissue.

Manipulated (decellularized) human tissue graft products (eg, Chondrofix osteochondral allograft) are made of bone and cartilage tissue that is harvested from a cadaveric donor that has been processed to remove blood, cells and fat from the tissue. It is sterilized to kill bacteria and other microorganisms while purportedly promoting bone integration and remodeling to reduce the risk of inflammation in repair of Outerbridge Grade 3 and Grade 4 osteochondral lesions.

Minced cartilage or biopaste extracellular matrix products (eg, BioCartilage) are dehydrated micronized cartilage developed from allograft articular cartilage that when injected into an osteochondral defect, during a microfracture surgical procedure repair, provides a scaffold over the defect stimulating cartilage regrowth.

Synthetic resorbable polymers (eg, Agili-C, PolyGraft, TruGraft granules, and TruFit plugs) are polymer scaffolds that are being proposed for the repair of osteochondral articular cartilage defects. The implant functions as a scaffold for chondral and osteogenic cells with the synthetic polymer being resorbed as the cells produce their normal matrices.

Xenograft transplantation is being proposed as a future alternative to osteochondral allografts or autografts for chondral defects in articular cartilage. Currently, xenogenic porcine chondrocytes are in the early stage of investigation to genetically engineer the cells to prevent an immune response or host rejection.

Subchondral Defect

Subchondroplasty is a minimally invasive procedure developed to treat chronic, nonhealing subchondral defects known as bone marrow lesions (BMLs) or bone marrow edema (BMEs). The procedure involves percutaneously injecting a flowable calcium phosphate bone substitute into the region of the bone marrow lesion under fluoroscopic guidance. Subchondral bone refers to the epiphyseal bone directly underneath the area of articular cartilage.

Coverage Determination

iCare follows the CMS requirements that only allows coverage and payment for services that are reasonable and necessary for the diagnosis and treatment of illness or injury or to improve the functioning of a malformed body member except as specifically allowed by Medicare.

In interpreting or supplementing the criteria above and in order to determine medical necessity consistently, iCare may consider the following criteria:

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The use of the criteria in this Medicare Advantage Medical Coverage Policy provides clinical benefits highly likely to outweigh any clinical harms. Services that do not meet the criteria above are not medically necessary and thus do not provide a clinical benefit. Medically unnecessary services carry risks of adverse outcomes and may interfere with the pursuit of other treatments which have demonstrated efficacy.

Coverage Limitations

US Government Publishing Office. Electronic code of federal regulations: part 411 – 42 CFR § 411.15 - Particular services excluded from coverage

Coding Information

Any codes listed on this policy are for informational purposes only. Do not rely on the accuracy and inclusion of specific codes. Inclusion of a code does not guarantee coverage and/or reimbursement for a service or procedure.

CPT® Code(s)	Description	Comments
23929	Unlisted procedure, shoulder	
24999	Unlisted procedure, humerus or elbow	
25999	Unlisted procedure, forearm or wrist	
26989	Unlisted procedure, hands or fingers	
27299	Unlisted procedure, pelvis or hip joint	
27412	Autologous chondrocyte implantation, knee	
27415	Osteochondral allograft, knee, open	
27416	Osteochondral autograft(s), knee, open (eg, mosaicplasty) (includes harvesting of autograft[s])	
27599	Unlisted procedure, femur or knee	
27899	Unlisted procedure, leg or ankle	
28446	Open osteochondral autograft, talus (includes obtaining graft[s])	
28899	Unlisted procedure, foot or toes	
29866	Arthroscopy, knee, surgical; osteochondral autograft(s) (eg, mosaicplasty) (includes harvesting of the autograft[s])	
29867	Arthroscopy, knee, surgical; osteochondral allograft (eg, mosaicplasty)	

CPT® Category III Code(s)	Description	Comments
0707T	Injection(s), bone-substitute material (eg, calcium phosphate) into subchondral bone defect (ie, bone marrow lesion, bone bruise, stress injury, microtrabecular fracture), including imaging guidance and arthroscopic assistance for joint visualization	
0737T	Xenograft implantation into the articular surface	
HCPCS Code(s)	**Description**	**Comments**
C1734	Orthopedic/device/drug matrix for opposing bone-to-bone or soft tissue-to bone (implantable)	
C1763	Connective tissue, nonhuman (includes synthetic)	
C1889	Implantable/insertable device, not otherwise classified	
J7330	Autologous cultured chondrocytes, implant	
L8699	Prosthetic implant, not otherwise specified	

Change Summary

- 01/01/2024 New Policy.