

## Osteochondral Grafting

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### Definitions

Autografts	<p>Grafts of bone and cartilage harvested from either the patient's non-weight bearing surfaces (or surfaces that bear less weight), which is then implanted in the defect. Autografting is typically used to repair smaller defects.</p> <p>The advantages of using autograft material include graft availability, the absence of possible disease transmission risk, and that the procedure is a single-stage procedure. Disadvantages include donor site morbidity and limited available graft volume. In addition, tissue may have to be harvested from two different donor sites in order to provide enough material for a large defect without compromising the donor site.</p> <p>The COR and COR2 systems (DePuy-Mitek) can be utilized for autograft or allograft transplantation.</p>
Allografts	<p>Grafts of bone and cartilage harvested from a cadaver joint (may be fresh or cryopreserved), which is then implanted in the defect. Allografting is typically used to repair larger defects of the knee (e.g., 10 cm<sup>2</sup>).</p> <p>The use of allograft cartilage has the advantage of providing osteochondral segments that are must be implanted within 72 hours of donor death, may be difficult to obtain (due to scarcity) and may also entail a concern of disease transmission.</p> <p>Application of osteochondral allografting is limited because cryopreserved allografts do not contain an acceptable level of cartilage viability, and cryopreservation may decrease the viability of the cartilage cells.</p> <p>A minimally processed osteochondral allograft (e.g., Chondrofix® [Zimmer]) is composed of decellularized hyaline cartilage and cancellous bone, which can be used "off the shelf" with precut cylinders of 7–15 mm. Multiple cylinders may be used to fill larger defects. The Osteochondral Autograft Transfer System (OATS) involves use of larger plugs usually filling the entire defect with a single plug.</p>

Mosaicplasty	The COR and COR2 systems can be utilized for autograft or allograft transplantation. A technique of creating an osteochondral autograft by harvesting and transplanting multiple small cylindrical osteochondral plugs from the less weight-bearing periphery of the patellofemoral area and inserting them into drilled tunnels in the defective section of cartilage. (E.g., Mosaicplasty System)
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## Related Medical Guidelines

### [Autologous Chondrocyte Implantation](#)

#### Guideline

Osteochondral autografting and allografting have been investigated for full-thickness cartilage defects of weight bearing surfaces secondary to trauma or conditions such as osteochondritis dissecans. The goal of grafting is to re-establish the cartilage matrix with chondrocytes and support bone in order to improve joint function and decrease pain.

Osteochondral autografting and allografting with one or more cores of osteochondral tissue is considered medically necessary for the treatment of cartilaginous defects caused by acute or repetitive trauma in the knee or ankle when all of the following criteria are met:

1. Presence of disabling, localized knee or ankle pain of  $\geq 6$  months duration that is refractory to conservative treatment, as well as abrasion arthroplasty and/or microfracture techniques
2. Mature skeletal growth achieved, or not a suitable candidate, for total joint replacement
3. Cartilage defect  $\geq 1\text{cm}^2$
4. Focal, full thickness isolated defect of the weight bearing surface of any of the following areas:
  - a. Talus
  - b. Medial or lateral femoral condyles
  - c. Trochlear region of the knee
5. Defect is unipolar
6. Lesion is largely contained with near-normal surrounding articular cartilage and articulating cartilage (grades 0, 1, 2)
7. In the knee; meniscus is intact or has stable partial tears. (Partial meniscectomy may be indicated and does not preclude osteochondral grafting)
8. Normal or near-normal joint space with no  $> 15\%$  joint space narrowing
9. No presence of active infection
10. No inflammation or osteoarthritis in the joint
11. Joint is stable with normal alignment. (A procedure to correct alignment may be performed in combination with, or prior to, grafting)
12. Member is willing and able to comply with post-operative weight-bearing restrictions and rehabilitation
13. No history of cancer in the bones, cartilage, fat or muscle of the affected limb.

## Limitations/Exclusions

Osteochondral grafting is not considered medically necessary for any of the following due to insufficient evidence of therapeutic value:

1. Use in joints other than the knee and ankle (e.g., shoulder, elbow, hip)
2. Use of minced articular cartilage (autologous or allogeneic) (e.g., Cartilage Autograft Implantation System [CAIS], BioCartilage® [Arthrex], DeNovo NT Graft [natural tissue graft; ISTO Technologies])
3. Decellularized osteochondral allograft plugs (e.g., Chondrofix)
4. Reduced allograft discs (e.g., ProChondrix, Cartiform)

## Revision History

Jan. 11, 2019 — added decellularized osteochondral allograft plugs (e.g., Chondrofix) and reduced allograft discs (e.g., ProChondrix, Cartiform) to Limitations/Exclusions section as investigational.

## Applicable Procedure Codes

27415	Osteochondral allograft, knee, open
27416	Osteochondral autograft(s), knee, open (eg, mosaicplasty) (includes harvesting of autograft[s])
28446	Open osteochondral autograft, talus (includes obtaining graft[s])
29866	Arthroscopy, knee, surgical; osteochondral autograft(s) (eg, mosaicplasty) (includes harvesting of the autograft[s])
29867	Arthroscopy, knee, surgical; osteochondral allograft (eg, mosaicplasty)

## Applicable Diagnosis Codes

M22.40	Chondromalacia patellae, unspecified knee
M22.41	Chondromalacia patellae, right knee
M22.42	Chondromalacia patellae, left knee
M23.000	Cystic meniscus, unspecified lateral meniscus, right knee
M23.001	Cystic meniscus, unspecified lateral meniscus, left knee
M23.002	Cystic meniscus, unspecified lateral meniscus, unspecified knee
M23.003	Cystic meniscus, unspecified medial meniscus, right knee
M23.004	Cystic meniscus, unspecified medial meniscus, left knee
M23.005	Cystic meniscus, unspecified medial meniscus, unspecified knee
M23.006	Cystic meniscus, unspecified meniscus, right knee
M23.007	Cystic meniscus, unspecified meniscus, left knee
M23.009	Cystic meniscus, unspecified meniscus, unspecified knee
M23.011	Cystic meniscus, anterior horn of medial meniscus, right knee
M23.012	Cystic meniscus, anterior horn of medial meniscus, left knee
M23.019	Cystic meniscus, anterior horn of medial meniscus, unspecified knee
M23.021	Cystic meniscus, posterior horn of medial meniscus, right knee
M23.022	Cystic meniscus, posterior horn of medial meniscus, left knee
M23.029	Cystic meniscus, posterior horn of medial meniscus, unspecified knee

M23.031	Cystic meniscus, other medial meniscus, right knee
M23.032	Cystic meniscus, other medial meniscus, left knee
M23.039	Cystic meniscus, other medial meniscus, unspecified knee
M23.041	Cystic meniscus, anterior horn of lateral meniscus, right knee
M23.042	Cystic meniscus, anterior horn of lateral meniscus, left knee
M23.049	Cystic meniscus, anterior horn of lateral meniscus, unspecified knee
M23.051	Cystic meniscus, posterior horn of lateral meniscus, right knee
M23.052	Cystic meniscus, posterior horn of lateral meniscus, left knee
M23.059	Cystic meniscus, posterior horn of lateral meniscus, unspecified knee
M23.061	Cystic meniscus, other lateral meniscus, right knee
M23.062	Cystic meniscus, other lateral meniscus, left knee
M23.069	Cystic meniscus, other lateral meniscus, unspecified knee
M23.2	Derangement of meniscus due to old tear or injury
M23.200	Derangement of unspecified lateral meniscus due to old tear or injury, right knee
M23.201	Derangement of unspecified lateral meniscus due to old tear or injury, left knee
M23.202	Derangement of unspecified lateral meniscus due to old tear or injury, unspecified knee
M23.203	Derangement of unspecified medial meniscus due to old tear or injury, right knee
M23.204	Derangement of unspecified medial meniscus due to old tear or injury, left knee
M23.205	Derangement of unspecified medial meniscus due to old tear or injury, unspecified knee
M23.206	Derangement of unspecified meniscus due to old tear or injury, right knee
M23.207	Derangement of unspecified meniscus due to old tear or injury, left knee
M23.209	Derangement of unspecified meniscus due to old tear or injury, unspecified knee
M23.211	Derangement of anterior horn of medial meniscus due to old tear or injury, right knee
M23.212	Derangement of anterior horn of medial meniscus due to old tear or injury, left knee
M23.219	Derangement of anterior horn of medial meniscus due to old tear or injury, unspecified knee
M23.221	Derangement of posterior horn of medial meniscus due to old tear or injury, right knee
M23.222	Derangement of posterior horn of medial meniscus due to old tear or injury, left knee
M23.229	Derangement of posterior horn of medial meniscus due to old tear or injury, unspecified knee
M23.231	Derangement of other medial meniscus due to old tear or injury, right knee
M23.232	Derangement of other medial meniscus due to old tear or injury, left knee
M23.239	Derangement of other medial meniscus due to old tear or injury, unspecified knee
M23.241	Derangement of anterior horn of lateral meniscus due to old tear or injury, right knee
M23.242	Derangement of anterior horn of lateral meniscus due to old tear or injury, left knee
M23.249	Derangement of anterior horn of lateral meniscus due to old tear or injury, unspecified knee
M23.251	Derangement of posterior horn of lateral meniscus due to old tear or injury, right knee
M23.252	Derangement of posterior horn of lateral meniscus due to old tear or injury, left knee
M23.259	Derangement of posterior horn of lateral meniscus due to old tear or injury, unspecified knee
M23.261	Derangement of other lateral meniscus due to old tear or injury, right knee
M23.262	Derangement of other lateral meniscus due to old tear or injury, left knee
M23.269	Derangement of other lateral meniscus due to old tear or injury, unspecified knee
M23.300	Other meniscus derangements, unspecified lateral meniscus, right knee
M23.301	Other meniscus derangements, unspecified lateral meniscus, left knee

M23.302	Other meniscus derangements, unspecified lateral meniscus, unspecified knee
M23.303	Other meniscus derangements, unspecified medial meniscus, right knee
M23.304	Other meniscus derangements, unspecified medial meniscus, left knee
M23.305	Other meniscus derangements, unspecified medial meniscus, unspecified knee
M23.306	Other meniscus derangements, unspecified meniscus, right knee
M23.307	Other meniscus derangements, unspecified meniscus, left knee
M23.309	Other meniscus derangements, unspecified meniscus, unspecified knee
M23.311	Other meniscus derangements, anterior horn of medial meniscus, right knee
M23.312	Other meniscus derangements, anterior horn of medial meniscus, left knee
M23.319	Other meniscus derangements, anterior horn of medial meniscus, unspecified knee
M23.321	Other meniscus derangements, posterior horn of medial meniscus, right knee
M23.322	Other meniscus derangements, posterior horn of medial meniscus, left knee
M23.329	Other meniscus derangements, posterior horn of medial meniscus, unspecified knee
M23.331	Other meniscus derangements, other medial meniscus, right knee
M23.332	Other meniscus derangements, other medial meniscus, left knee
M23.339	Other meniscus derangements, other medial meniscus, unspecified knee
M23.341	Other meniscus derangements, anterior horn of lateral meniscus, right knee
M23.342	Other meniscus derangements, anterior horn of lateral meniscus, left knee
M23.349	Other meniscus derangements, anterior horn of lateral meniscus, unspecified knee
M23.351	Other meniscus derangements, posterior horn of lateral meniscus, right knee
M23.352	Other meniscus derangements, posterior horn of lateral meniscus, left knee
M23.359	Other meniscus derangements, posterior horn of lateral meniscus, unspecified knee
M23.361	Other meniscus derangements, other lateral meniscus, right knee
M23.362	Other meniscus derangements, other lateral meniscus, left knee
M23.369	Other meniscus derangements, other lateral meniscus, unspecified knee
M23.40	Loose body in knee, unspecified knee
M23.41	Loose body in knee, right knee
M23.42	Loose body in knee, left knee
M23.50	Chronic instability of knee, unspecified knee
M23.51	Chronic instability of knee, right knee
M23.52	Chronic instability of knee, left knee
M23.601	Other spontaneous disruption of unspecified ligament of right knee
M23.602	Other spontaneous disruption of unspecified ligament of left knee
M23.609	Other spontaneous disruption of unspecified ligament of unspecified knee
M23.611	Other spontaneous disruption of anterior cruciate ligament of right knee
M23.612	Other spontaneous disruption of anterior cruciate ligament of left knee
M23.619	Other spontaneous disruption of anterior cruciate ligament of unspecified knee
M23.621	Other spontaneous disruption of posterior cruciate ligament of right knee
M23.622	Other spontaneous disruption of posterior cruciate ligament of left knee
M23.629	Other spontaneous disruption of posterior cruciate ligament of unspecified knee
M23.631	Other spontaneous disruption of medial collateral ligament of right knee
M23.632	Other spontaneous disruption of medial collateral ligament of left knee

M23.639	Other spontaneous disruption of medial collateral ligament of unspecified knee
M23.641	Other spontaneous disruption of lateral collateral ligament of right knee
M23.642	Other spontaneous disruption of lateral collateral ligament of left knee
M23.649	Other spontaneous disruption of lateral collateral ligament of unspecified knee
M23.671	Other spontaneous disruption of capsular ligament of right knee
M23.672	Other spontaneous disruption of capsular ligament of left knee
M23.679	Other spontaneous disruption of capsular ligament of unspecified knee
M23.8X1	Other internal derangements of right knee
M23.8X2	Other internal derangements of left knee
M23.8X9	Other internal derangements of unspecified knee
M23.90	Unspecified internal derangement of unspecified knee
M23.91	Unspecified internal derangement of right knee
M23.92	Unspecified internal derangement of left knee
M25.861	Other specified joint disorders, right knee
M25.862	Other specified joint disorders, left knee
M25.869	Other specified joint disorders, unspecified knee
M25.871	Other specified joint disorders, right ankle and foot
M25.872	Other specified joint disorders, left ankle and foot
M25.879	Other specified joint disorders, unspecified ankle and foot
M92.40	Juvenile osteochondrosis of patella, unspecified knee
M92.41	Juvenile osteochondrosis of patella, right knee
M92.42	Juvenile osteochondrosis of patella, left knee
M92.50	Juvenile osteochondrosis of tibia and fibula, unspecified leg
M92.51	Juvenile osteochondrosis of tibia and fibula, right leg
M92.52	Juvenile osteochondrosis of tibia and fibula, left leg
M92.8	Other specified juvenile osteochondrosis
M93.261	Osteochondritis dissecans, right knee
M93.262	Osteochondritis dissecans, left knee
M93.269	Osteochondritis dissecans, unspecified knee
M93.271	Osteochondritis dissecans, right ankle and joints of right foot
M93.272	Osteochondritis dissecans, left ankle and joints of left foot
M93.279	Osteochondritis dissecans, unspecified ankle and joints of foot
M94.261	Chondromalacia, right knee
M94.262	Chondromalacia, left knee
M94.269	Chondromalacia, unspecified knee
M94.271	Chondromalacia, right ankle and joints of right foot
M94.272	Chondromalacia, left ankle and joints of left foot
M94.279	Chondromalacia, unspecified ankle and joints of foot

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