

Editorial Commentary: Knee Lateral Femoral Osteochondral Allografts Are Not Recommended for Medial Femoral Condylar Defects: If the Shoe Doesn't Fit, Don't Wear It!



Gilbert Moatshe, M.D., Ph.D., Editorial Board, and Robert F. LaPrade, M.D., Ph.D.

Abstract: Treatment of large articular cartilage defects of the knee is challenging, particularly in young, high-demand patients. Osteochondral allograft (OCA) transplantation is a viable treatment option, providing fully mature articular cartilage during a single operation while avoiding donor site morbidity. Indications are symptomatic, full-thickness articular cartilage defects $>3\text{ cm}^2$. Contraindications include a “kissing” lesion of the corresponding articular cartilage surface, uncorrected ligamentous instability, malalignment, peripheral osteophytes, joint-space narrowing, or absence of $>50\%$ of the meniscus in the affected compartment. Matching for size and contour is crucial; therefore, we use medial femoral condyle (MFC) allografts for MFC lesions and lateral femoral condyle (LFC) allografts for LFC lesions, and do not recommend LFC grafts for the MFC. Survival rates are 78.7% and 72.8% at 10 and 15 years, respectively.

See related article on page 2900

Treatment of large articular cartilage defects of the knee is challenging, particularly in young, high-demand patients. Osteochondral allograft (OCA) transplantation is a viable treatment option, providing fully mature articular cartilage during a single operation while avoiding donor site morbidity. Although it has been shown that chondrocytes maintain their viability for ≤ 44 days,¹ other studies have shown a substantial decrease in chondrocyte viability after 28 days of storage.² Clinical studies have also demonstrated that refrigerated osteoarticular allografts stored for 15 to 28 days provide functional and clinical improvement in patients treated for a full-thickness osteochondral defect of the femoral condyle, with outcomes similar to those of historical reports of patients with fresh allograft implants.³

Improved patient-reported outcomes can be expected after OCA transplantation,^{4,5} with a survival rate of 78.7% and 72.8% at 10 and 15 years, respectively.⁶ Revision cases, patellar lesions, and bipolar lesions are associated with worse survival rates.

We were pleased to review the article by Urita, Redondo, Christian, Huddleston, Inoue, Cole, and Yanke, titled “Topographic Analysis of Lateral Versus Medial Femoral Condyle Donor Sites for Oblong Medial Femoral Condyle Lesions.”⁷ The authors found that medial femoral condyle (MFC) donor grafts matched well with MFC lesions, with articular cartilage surface mismatch and peripheral step-off of $<0.5\text{ mm}$, which is clinically acceptable. However, lateral femoral condyle (LFC) grafts had a greater mismatch and step-off to the MFC contours on the same knee and from a different donor compared with MFC donor grafts. Although the use of LFC grafts for a MFC osteochondral or chondral defect has been advocated by some and driven by the industry, we do not agree that this treatment is in the best interests of the patient. The shape and curvature of the LFC and MFC are different. It is important to match the contour and size of the condyles and location of harvest to optimize the fit of the OCA by press-fitting and avoid the graft being proud or too deep. Failure to obtain a good press-fit can lead to loosening and failure; and a proud or

Edina, Minnesota (R.F.L.)

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deep graft will ultimately change contact mechanics and potentially progress to graft failure or further osteoarthritis.

It is worth noting that fresh or refrigerated osteochondral allografts are not readily available and are expensive. There are not enough OCAs, so examining the use of resources is appropriate. Failure to optimize patient selection and surgical technique will waste these resources and increase the economic burden on the patient and society. A failed OCA is difficult to revise with good results. Studies have demonstrated that bipolar lesions and revision surgeries have poorer outcomes and survival rates compared with smaller lesions and primary surgeries.⁶ Therefore, use of the most appropriate index cartilage restoration procedure and proper patient selection are key to improving results.

Our indication for allograft resurfacing is the presence of a symptomatic, full-thickness articular cartilage defect $>3\text{ cm}^2$. Contraindications to allograft resurfacing include a “kissing” lesion of the corresponding articular cartilage surface, ligamentous instability, malalignment, more than minor peripheral osteophytes, joint-space narrowing, or absence of $>50\%$ of the meniscus in the affected compartment. Matching for size and contour is crucial; therefore, we use MFC allografts for MFC lesions and LFC allografts for LFC lesions. Nonmatching grafts should be considered only in certain cases such as trochlea dysplasia and trochlea cartilage lesions.⁸

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