

Osteochondral allograft storage time linked to graft survival

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Video Abstract

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Abstract

Osteochondral allograft transplantation is well established for the treatment of large cartilage defects. But despite advancements in this transplantation method, the factors that influence graft survival remain poorly understood—including how long grafts are stored before they're implanted. In a new study reported in the American Journal of Sports Medicine, researchers examined the effect of storage time on allograft survival in patients undergoing transplantation for symptomatic cartilage defects. Their findings suggest that prioritizing early transplantation could improve the survival rates of osteochondral allografts. The team analyzed data gathered for 132 patients who underwent osteochondral allograft transplantation by a single surgeon with at least 2-year follow-up. The 111 patients who met the study's inclusion criteria fell into two groups: an early-transplant group who received allografts stored for 19 to 24 days; and a late-transplant group receiving grafts stored for 25 to 28 days. The data revealed a significant difference in the rates of graft survival between the two groups of patients. While approximately 93% of the grafts in the early-transplant group had survived to 5 years post-transplantation, only about 70% of grafts in the late-transplant group had survived that long. When correcting for patient age and defect size—which are known to affect transplantation outcomes—a multivariable regression analysis showed that grafts stored for 25 to 27 days were nearly 3.4 times more likely to fail than grafts stored for 19 to 24 days. Further analysis identified 24.5 days as the optimum cut-off time for storing allografts with respect to graft failure at 5 years. While patients were not directly case-matched for factors such as age, sex, body mass index, or lesion location and size, there were no statistically significant differences in these attributes between the early- and late-transplant groups. While logistical challenges can certainly affect the timing of graft storage and implantation, the findings stress the importance of prioritizing early transplantation of osteochondral allografts whenever possible.