

Osteochondral Allograft and Autograft Transplantation for Femoral Head Defects: A Multicenter Study with a Mean 5-Year Follow-Up

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INTRODUCTION:

Osteochondral allograft and autograft transplantation for femoral head defects have emerged as promising treatments for concomitant cartilage and subchondral bone injuries in young patients. The purpose of this study was to evaluate the clinical and radiological outcomes of patients who underwent osteochondral allograft or autograft transplantation for femoral head defects and assess any risk factors that may lead to conversion to THA.

METHODS:

All patients who underwent osteochondral allograft or autograft transplantation for femoral head defects across two academic institutions were analyzed. Clinical outcomes were assessed at final follow-up with the modified Harris Hip Score (mHHS), Hip Outcome Score – Activities of Daily Living (HOS-ADL), Hip Outcome Score – Sport-Specific Subscale (HOS-SSS), and International Hip Outcome Tool (iHOT-12). Complications and reoperations were also recorded. Additionally, patients were assessed radiographically preoperatively and at a final postoperative visit using anteroposterior and lateral radiographs for osteoarthritis using Tönnis grading.

RESULTS:

A total of 27 patients were included in this study (19 osteochondral allograft transplantation, 8 osteochondral autograft transplantation). The overall mean follow-up was 4.7 years. The average defect size for patients who underwent allograft and autograft transplantation was 2.8 x 2.1 cm and 1.6 x 1.0 cm, respectively. The average mHHS, HOS-ADL, HOS-SSS, and iHOT-12 for the allograft cohort were 86.7, 92.8, 81.4, and 79.0, respectively, while for the autograft cohort it was 87.6, 92.7, 83.1, and 82.0, respectively. There was no significant difference in outcomes for patients who underwent femoral head allograft versus non-orthotopic femoral condyle allograft transplantation. For the allograft cohort, there were a total of 5 reoperations (26.3%) consisting of 4 THA at a mean of 1.9 years and 1 trochanteric osteotomy nonunion at 0.7 year. For the remaining allograft patients who did not undergo treatment failure, only one (6.7%) had radiographic osteoarthritis progression. None of the patients in the autograft cohort underwent THA. Overall, conversion to THA was 14.8%.

DISCUSSION AND CONCLUSION:

Osteochondral allograft and autograft transplantation for femoral head defects demonstrated overall favorable clinical outcomes and conversion to THA at mean 5-year follow-up and should be considered for patients with focal femoral head defects.

