Revision Osteochondral Allograft Transplantation after Failed Autologous Chondrocyte Implantation of the Knee: A Matched Cohort Analysis

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INTRODUCTION: Osteochondral allograft transplantation (OCA) is a well-established procedure to treat deep and larger osteochondral lesions of the knee. Revision OCA after failed prior cartilage restoration procedures have demonstrated similar improvements in patient-related outcomes as compared to primary OCA. Outcomes following revision OCA after failed autologous chondrocyte implantation (ACI) have been minimally reported in the current literature. The present study aimed to evaluate the clinical outcomes associated with revision OCA after failed ACI as compared with a matched cohort of patients undergoing primary OCA.

METHODS: A retrospective matched cohort analysis was conducted on twenty-two patients who underwent revision OCA following failed ACI between January 2001 and January 2021, with a minimum 2-year clinical follow up. Patients were included regardless of concomitant procedures. These patients were matched by age, sex, body mass index, defect location, and defect size to a control group of patients who underwent primary OCA with a similar 2-year clinical follow up. Patient-reported outcomes (PROs), defect characteristics, reoperations, and failure rates were analyzed individually and compared between the two groups.

RESULTS: Twenty-two patients (100% follow up) were included in the study group with an average follow up of 5.72 ± 4.2 years (range: 2.0-14.5). The average age was 31.2 ± 6.4 years at the time of revision OCA surgery. Sixteen patients were female (73%) and 6 were male (27%). Patients did not differ in the number of previous surgeries, preoperative baseline PROs, or types of concomitant procedures between the study group and the matched cohort. Both cohorts demonstrated statistically significant postoperative improvements for all PROs including Lysholm, IKDC, and KOOS subscales ($P < 0.05$). There was no statistical difference between both groups when comparing improvements in PROs, number of reoperations, and failure rates ($P > 0.05$). Ten patients (45%) in the study group required a reoperation. Four patients (18%) failed revision OCA due to significant graft delamination and disease progression at an average 2.4 ± 2.1 years. Two patients required further revision OCA and two received significant chondral debridement. All four patients were clinically asymptomatic at a final follow up of 5.9 years.

DISCUSSION AND CONCLUSION: Revision OCA is an excellent option for patients after prior failed ACI. Revision OCA demonstrates favorable clinical outcomes, comparable reoperation rates, and low rate of failure as compared to primary OCA. This study expands on prior studies showing analogous results in smaller patient cohorts.