Mid-term Follow-up of Patellofemoral Osteochondral Allograft Transplantation

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INTRODUCTION: Osteochondral allograft (OCA) transplantation is an effective treatment method for articular cartilage damage in the knee. The mid- and long-term outcomes of patellofemoral OCA transplantation has been less frequently reported compared to those of the medial and lateral compartments of the knee, and these grafts often show lower survival rates and worse patient-reported outcomes. The unique morphology and biomechanics of the patellofemoral compartment leads to different pathologies than other areas of the knee. The purpose of this study was to assess graft survivorship and patient-reported outcomes following patellofemoral OCA transplantation at mid-term follow-up.

METHODS: Our institution's OCA registry was used to identify 127 patients undergoing OCA transplantation in the patellofemoral compartment (51 patella, 47 trochlea, 29 bipolar patella and trochlea). Mean age was 33.4 (range, 12-64) and 58.3% were male. Indications for OCA included degenerative chondral lesion (47%), traumatic chondral injury (25%), osteochondritis dissecans (15%), osteoarthritis (9%), fracture (4%), and avascular necrosis (1%). Median total graft area was 6.2 cm². Of the 127 knees, 43 (34%) had a concomitant procedure at time of OCA, of which 5 (4%) included a tibial tubercle osteotomy. All patients had a minimum follow-up of 2 years. Reoperations were documented, and OCA failure was defined as any reoperation that involved removal of the allograft. Patient-reported outcomes were assessed preoperatively and postoperatively using International Knee Documentation Committee (IKDC) scores, Knee Injury and Osteoarthritis Outcome Scores (KOOS), and satisfaction.

RESULTS:

Reoperations occurred in 49 of 127 knees (39%), and rates were not statistically different among patella (47%), trochlea (30%), and bipolar (38%) grafts (p=0.214). OCA failures occurred in 20 of 127 knees (16%) at a median of 4.4 years following the OCA (9 total knee arthroplasty, 7 patellofemoral arthroplasty, 3 OCA revisions, and 1 patellectomy). Although not statistically significant, trochlear grafts had a lower failure rate (9%) compared to patellar (20%) and bipolar grafts (21%) (p=0.227). Overall graft survivorship at 5 and 10 years was 91% and 82% respectively (85% and 78% for patellar grafts, 100% and 93% for trochlear grafts, 87% and 68% for bipolar grafts; p=0.120; Figure 1). Among grafts in situ at latest follow-up, the mean follow-up duration was 7.5 years (range, 2-19 years). Patients with patellar, trochlear, and bipolar grafts had significant improvements in IKDS and KOOS scores from preoperatively to latest follow-up (all p<0.05), and no statistically significant differences were observed among groups. Overall, 77% of patients reported being satisfied with the results of the OCA transplantation (80% patella, 78% trochlea, and 68% bipolar; p=0.555).

DISCUSSION AND CONCLUSION: Patients undergoing osteochondral allografts of the patella and/or trochlea exhibit high survival rates at 5 and 10 years, along with improved and sustained patient-reported outcomes. Isolated OCA transplantation of the trochlea may yield better outcomes than isolated patellar or bipolar patellofemoral lesions. Figure 1. Survivorship of patellofemoral OCA grafts

