Title: Do Outcomes of Osteochondral Allograft Transplantation Differ Based on Age: A Comparative Matched Group Analysis of Patients Under versus Over 40 Years Old

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Objectives: Osteochondral allograft transplantation (OAT) is being performed with increasing frequency, though to date, the impact of patient age on outcomes and failure rates has not been assessed. The purpose of this study was to determine clinical outcomes for patients over 40 years of age undergoing OAT compared to a cohort of patients under 40.

Methods: A review of prospectively collected data of patients who underwent OAT by a single surgeon with a minimum follow-up of 2 years was conducted. Patients <40 or ≥40 years were grouped. The reoperation rate, failure rate, timing of reoperation, procedures performed, findings at surgery, and patient reported outcome scores were reviewed. Failure was defined by revision OAT, conversion to knee arthroplasty, or gross appearance of graft failure at 2nd look arthroscopy. Descriptive statistics, fisher’s exact or chi-square testing, and Mann-Whitney U testing were performed, with P<0.05 set as significant.

Results: A total of 170 patients who underwent OAT with an average follow-up of 5.0±2.7 years (range, 2.0-15.1) were included; 115 patients <40 years (average age 27.6±7.31 years, 58 males, 57 females) and 55 patients ≥40 years (average age 44.9±4.0 years, 33 males, 22 females). There were no differences detected in the number of pre-OAT surgeries between the groups (<40: 2.70±1.91; ≥40: 2.13±1.04; P=0.085). The ≥40 patients demonstrated significantly higher BMI (<40: 25.94±5.02 kg/m²; ≥40: 28.11±5.22 kg/m²; P=0.018), higher prevalence of workers’ compensation patients (<40: 17%; ≥40: 33%; P=0.028), and lower prevalence of concomitant distal femoral osteotomy (<40: 8%; ≥40: 0%; P=0.028). There were no differences detected in reoperation rate (<40: 38%; ≥40: 36%; P=0.867), time to reoperation (<40: 2.12±1.90; ≥40: 3.43±3.43; P=0.126), or failure rate (<40: 13%; ≥40: 16%; P=0.639) between each group. Patients in both groups demonstrated significant improvement in Lysholm, IKCD, KOOS, WOMAC, and SF-12 physical subscale as compared to preoperative values (P>0.05 for all for both groups). The SF-12 mental subscale was not significantly improved at final follow-up for either group. The older group demonstrated significantly higher Lysholm (P=0.045) and KOOS-sport (P=0.015) scores compared to the younger group at final recent follow-up. There were no other significant differences in patient reported outcomes scores, other concomitant surgeries, or defect sizes.

Conclusion: Patients ≥40 years of age undergoing OAT have similar survival and reoperation rates at 5 years following surgery compared to younger patients. The <40 patients demonstrated lower Lysholm and KOOS-sport scores, potentially attributable to higher expectations of return to function post-operatively as compared to older patients. This information can be used to counsel patients when being offered OAT as part of a knee joint preservation strategy.