Osteochondral Allograft Transplantation of the Knee: Analysis of Failures at 5 Years

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Summary:
This study suggests that patients who undergo osteochondral allograft transplantation also have high reoperation rates and relatively low failure rates, and provides data to stratify patients based on risk factors for failure, including patients with high BMIs and history of prior surgery.

Abstract:
Background: Osteochondral allograft transplantation (OAT) is being performed with increasing frequency, and the need for reoperations is not uncommon. The purpose of this study was to quantify survival for OAT and report findings at reoperation.

Methods: A review of prospectively collected data of 224 consecutive patients who underwent OAT by a single surgeon with a minimum follow-up of 2 years was conducted. The reoperation rate, timing of reoperation, procedure performed, and findings at surgery were reviewed. Failure was defined by revision OAT, conversion to knee arthroplasty, or gross appearance of graft failure at 2nd look arthroscopy.

Results: 180 patients (average age 33±10 years; 52% male) who underwent OAT with an average follow-up of 5.0±2.6 years met the inclusion criteria (80% follow-up). 172 patients (96%) underwent an average of 2.6±1.6 prior surgical procedures on the ipsilateral knee prior to OAT. 48% of OATs were isolated, while 52% were performed with concomitant procedures including meniscus allograft transplantation (MAT) in 65 (36%). 65 patients (36%) underwent reoperation at an average 2.5±2.5 years, with 32% (21/66) undergoing additional reoperations (range, 1-3). Arthroscopic debridement was performed in 91% of the initial reoperations, with 83% showing evidence of an intact graft; of these, 9 ultimately progressed to failure at an average 4.1±1.9 years. A total of 24 patients (16.8%) were considered failures at an average 3.6±2.6 years following index OAT, either due to revision OAT (N=7), conversion to arthroplasty (N=12), or appearance of poorly incorporated allograft at arthroscopy (N=5). The number of previous surgeries was independently predictive of reoperation and failure; BMI was independently predictive of failure. Excluding the failed patients, statistically and clinically significant improvements were found in the Lysholm, IKDC, KOOS, and SF-12 physical outcomes assessments at final follow-up (P<0.001 for all), with inferior outcomes (albeit overall improved) in patients who underwent reoperation.

Conclusions: In this series, there was a 37% reoperation rate and an 86% allograft survival rate at average of 5 years following OAT. The number of previous ipsilateral knee surgeries was predictive of reoperation and failure. Of the patients who underwent arthroscopic debridement with an intact graft at the time of arthroscopy, 82% experienced significantly improved outcomes, while 18% ultimately progressed to failure. This information can be used to counsel patients on the implications of reoperation following OAT.