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Research Week 2024

Immediate Unrestricted Weight-Bearing Following Osteochondral Allograft Transplantation to the Distal Femur Appears Non-Inferior to Restricted Protocols Based on Patient-Reported Outcomes.

Brian Prigmore¹, BA; Erik Haneberg², BS; Tristan Elias², BA; Jack Wiedrick¹, MS; Brian Cole², MD, MBA; Adam Yanke², MD, PhD; Dennis Crawford¹, MD, PhD

¹ Oregon Health & Science University, Portland, OR, USA

² RUSH University, Chicago, IL, USA

Keywords

osteochondral allograft, weight-bearing, rehabilitation, knee

Abstract

Background

No standardized rehabilitation protocol is recommended post-operatively for osteochondral allograft (OCA) transplantation surgery.

Purpose

Compare outcomes of unrestricted weight-bearing as tolerated (WBAT) with restricted toe-touch weight-bearing (TTWB) after OCA transplantation to the distal femur.

Materials & Methods

Seventy-four patients who underwent uncomplicated press-fit OCA transplantation to femoral condyle(s) for ICRS grade III-IV lesions were identified in the MOCA (Metrics of Osteochondral Allograft) prospective database: 36 (18F/18M) in a control cohort (TTWB) and 38 (21F/17M) in a test cohort (WBAT). Baseline demographic characteristics were not different, with exceptions of larger grafts in test subjects (3.4 cm² vs. 2.7 cm², p=0.004) and higher BMIs in control subjects (27.8 kg/m² vs. 24.9 kg/m², p=0.01). Failure rates (defined as needing additional surgery to re-treat the index condition), final PRO (Patient-Reported Outcome) scores, and PRO score changes from baseline were compared between cohorts. Multiple regression was used to control for potential confounders and investigate non-inferiority using minimally clinically important differences (MCID).

Results

Mean follow-up was 2y (range, 1–5y) in both cohorts. Both cohorts showed significant improvement in all PRO scores, with neither cohort having significantly greater failure rates, final PRO scores, or PRO changes from baseline compared to the other. Regression analysis showed that adjusted differences in final PRO scores based on weight-bearing protocol were minor and less than MCIDs when controlling for age, sex, graft size, BMI, and allograft location (MFC or LFC). Analysis of MCIDs in relation to the lower bounds of the confidence intervals concludes that WBAT is non-inferior to TTWB with a reasonable degree of confidence.

Conclusions

Results indicate that unrestricted weight-bearing following OCA transplantation to the distal femur may be equally safe and effective compared to more restricted WB protocols. Future studies with larger cohorts, imaging data, and additional assessments are planned and may allow for further development of rehabilitation recommendations.