No difference in osseous integration of osteochondral allograft transplants augmented with bone marrow aspirate harvested from the iliac crest compared to the proximal tibia on 6-month postoperative magnetic resonance imaging

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INTRODUCTION: Although osteochondral allograft (OCA) transplants for the treatment of grade IV chondral defects typically have good mid- and long-term outcomes, a subset of patients (20%) experience early graft failure. In recent years, biologic augmentation with bone marrow aspirate (BMA) has been utilized as a means to potentially accelerate graft osteointegration and decrease risk for graft failure. Various harvest sites are being utilized, such as the iliac crest versus the proximal tibia, but potential differences in outcomes have not been investigated. The aim of the present study is to compare the MRI appearance of OCA grafts augmented with iliac crest versus proximal tibia BMA at 6 months postoperatively. We hypothesized that there would be no difference in the MRI appearance of OCA grafts augmented with BMA from the iliac crest compared to the proximal tibia.

METHODS: Patients undergoing OCA transplant for grade IV chondral defects about the distal femur from January 2018 to June 2021 with 6-month (±2 months) knee MRI were included in the study. Patients without knee MRI performed between 4 and 8 months postoperatively, those with multiple plugs about different surfaces of the knee, and those with patellar OCA plugs were excluded from the study. OCAMRISS scores were calculated by a sports medicine fellowship-trained surgeon and compared for patients undergoing OCA transplant with either (1) ipsilateral iliac crest BMA or (2) ipsilateral proximal tibia BMA augmentation.

RESULTS: Fifty-six patients (62 knees) met inclusion criteria, 33 of whom had tibial bone marrow aspirate augmentation and 29 of whom had iliac crest bone marrow aspirate augmentation. The average age was 34.9 ± 10.4 years, median BMI was 25.5 [IQR: 23.6, 28.3], and average time from surgery to MRI was 6.2 ± 0.9 months. The majority of lesions involved the medial femoral condyle (29 lesions, 47%). The average OCAMRISS score was 6.9 ± 2.8. There were no differences between the proximal tibia and iliac crest BMA groups with respect to demographic factors, lesion location, or OCAMRISS score ($p > 0.05$ for all).

DISCUSSION AND CONCLUSION: There is no difference in MRI appearance of distal femoral OCAs augmented with BMA from the iliac crest compared to BMA from the proximal tibia.