Outcomes Following Hip Arthroscopy in Patients with Femoral Head Cartilage Damage: A Matched Cohort Study

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INTRODUCTION: Femoral head cartilage lesions are frequently observed during hip arthroscopy for symptomatic labral tears, yet its impact on patient-reported outcome measures and need for secondary procedures remains unclear. This study aims to determine whether preoperative femoral head cartilage lesions affect functional outcomes and secondary surgery rates following hip arthroscopy.

METHODS: Patients who underwent hip arthroscopy for symptomatic labral tears were prospectively enrolled. Femoral head cartilage damage was assessed using pre-operative MRI reports based on ICRS classification, with patients separated into damage and no damage cohorts. Patient-reported outcome measures (PROMs), including mHHS, NAHS, iHOT-12, and LEFS were collected at multiple timepoints from before surgery to 5 years postoperatively. Revision surgery rates, time to revision, and revision types were analyzed. Propensity score matching was performed in a 1:1 ratio to control for age, sex, BMI, and Kellgren-Lawrence grade. Statistical analyses were performed with t-tests for continuous variables, chi-square analysis for categorical variables, and Kaplan-Meier survival analyses. An a priori power analysis was performed prospectively using G*Power which required 35 patients per cohort to detect the minimal clinically important difference (MCID) in mHHS at 5-years. This study was approved by the institutional review board with all patients providing consent.

RESULTS: 298 patients who underwent hip arthroscopy were included, with 271 having adequate pre-operative data. Forty nine patients (18.1%) had evidence of femoral head cartilage lesions, and 38 patients with femoral head damage were successfully matched 1:1 to 38 patients without femoral head damage. There were 29 males and 9 females in each cohort, and there were no significant differences in demographic characteristics. Both cohorts demonstrated significant improvements in functional outcomes following surgery, with both cohorts achieving MCID for modified Harris Hip Score (mHHS), Non-Arthritic Hip Score (NAHS), The International Hip Outcome Tool 12 (iHOT-12) and Lower Extremity Functional Scale (LEFS) at 5-years following surgery. There were no differences in mean improvement in mHHS (40.2 vs 22.5, p=0.151), NAHS (50.3 vs 24.6, p=0.063), and LEFS (50.8 vs 21.3, p=0.061) for the healthy and femoral head cartilage damage cohorts, respectively. However, patients without femoral head cartilage damage had significantly greater improvement in iHOT-12 scores compared to patients with femoral head cartilage damage (62.8 vs 34.8, p=0.024). Kaplan-Meier survival analysis demonstrated no difference in conversion to total hip arthroplasty for up to 5 years following surgery (p=0.74).

DISCUSSION: Patients with MRI evidence of femoral head cartilage damage had relatively similar functional outcomes at 5-years following surgery, demonstrated significant improvement from baseline, and met MCID threshold values, although they showed lower improvement for iHOT-12 scores compared to a matched cohort without cartilage damage. There was also no difference in revision surgeries and conversion to total hip arthroplasty.

SIGNIFICANCE/CLINICAL RELEVANCE: Patients with femoral head cartilage damage demonstrated significant improvements from their pre-operative baseline. Additionally, there was no difference in conversion to total hip arthroplasty for patients with femoral head cartilage damage.

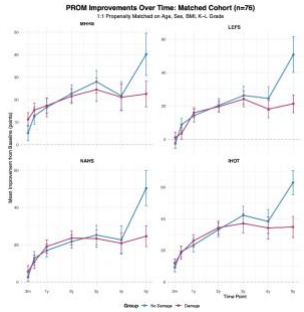

Figure 1. Mean improvement from baseline scores for mHHS, LEFS, NAHS, and iHOT-12.

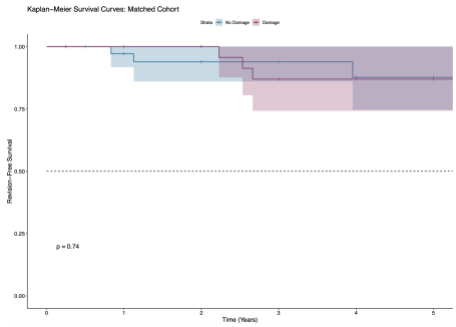

Figure 2. Kaplan-Meier Survival Curve for conversion to total hip arthroplasty following hip arthroscopy.