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Paper #6

## Preoperative Predictors of Severe Cartilage Damage on Femoral Head and Acetabulum During Hip Arthroscopic Surgery- An Analysis of 2544 Cases

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## Summary:

Advanced age (>= 34.0 year-old), male, borderline dysplasia (center edge angle <= 25.0 degrees or weight bearing surface angle >= 10.0 degrees), narrow joint space (<= 3.0 mm) were identified as predictors of severe cartilage damage on both the femoral head and on the acetabulum.

## Abstract:

Background: Femoroacetabular Impingement (FAI) plays a significant role in the pathogenesis of hip chondral lesions, because of abnormal shearing forces that are created on the chondral surface.

Purpose: The purpose of this study was to determine the predictors of severe cartilage damage in patients that underwent hip arthroscopy due to FAI in a high volume center.

Methods: We retrospectively reviewed prospectively collected data from the electronic database of our institute. Two thousand five hundred and forty-four patients who underwent primary hip arthroscopic surgery by one experienced hip surgeon from December 2005 to April 2016 were enrolled in this study. The prevalence of cartilage damage on femoral head (FH) and acetabulum (ACT) were recorded during hip arthroscopy. Outerbridge grade III and IV cartilage lesions were defined as severe cartilage damage. We defined the preoperative factor as a predictor of severe cartilage damage when the area under the curve (AUC) of that factor was at least 0.650 using receiver operating characteristic (ROC) curve analysis. The cut-off value was decided at the point of the highest Youden index. Chi-square tests were conducted and the odds ratios (OR) with 95% confidence intervals of each predictor were calculated.

Results: Severe cartilage damage was found in 1186 out of 2544 hips (47%). Severe cartilage damage on the FH was recorded in 291 hips, and on the ACT in 1103 hips. Both FH and ACT cartilage damage of grade III or IV were identified in 208 hips. Severe cartilage damage was found more frequently in male subjects than in female (58% v 33%, p < 0.001). Advanced age (>= 34.0 years, OR 3.4, 95%CI, 2.5 to 4.4), smaller center edge (CE) angle (<= 25.0 degrees, OR 9.6, 95%CI, 7.3 to 12.7) and larger weight bearing surface (WBS) angle (>= 10.0 degrees, OR 3.9, 95%CI, 3.1 to 5.2) were identified as predictors of FH cartilage damage. Regarding ACT cartilage damage, only male gender (OR 3.1, 95%CI, 2.7 to 3.7) was a predictor. Further, advanced age (OR 4.0, 95%CI, 2.8 to 5.5), smaller CE angle (OR 8.4, 95%CI, 6.2 to 11.5), larger WBS (OR 3.9, 95%CI, 2.9 to 5.2) and narrower lateral joint space (LJS) (<= 3.0 mm, OR 4.8, 95%CI, 3.6 to 6.6) were identified as the predictors of the patient having both FH and ACT cartilage damage. The OR of the combination of older age (>= 34.0 years) and borderline dysplasia (<= 25.0 degrees) was 15.3 (95%CI: 10.8 to 21.7) regarding FH cartilage damage and 12.1 (95% CI: 8.4 to 17.4) regarding both FH and ACT cartilage damage.



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Conclusion: The most important finding of this study was that advanced age (>= 34.0 year-old), male, borderline dysplasia (CE angle <= 25.0 degrees or WBS angle >= 10.0 degrees) and narrow joint space (<= 3.0 mm) were identified as predictors of severe cartilage damage on both the femoral head and on the acetabulum.