

Cam Deformities in Borderline Hip Dysplasia Negatively Affect Hip Arthroscopy Outcomes in the Management of Femoroacetabular Impingement Syndrome

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INTRODUCTION: Patients with borderline hip dysplasia (BHD), defined as a lateral center edge angle (LCEA) 20-25°, who undergo arthroscopic surgery for femoroacetabular impingement syndrome (FAIS) have generally demonstrated good outcomes but there remains controversy as to whether their outcomes are non-inferior to their non-dysplastic counterparts. The purpose of our study was to report on 2-year outcomes after hip arthroscopy for FAIS in the setting of BHD.

METHODS: We performed a retrospective review of a prospectively collected database. Inclusion criteria were adults with LCEA 20-25° diagnosed with FAIS who underwent primary hip arthroscopy with minimum 2-year follow-up. A control FAIS cohort was generated by matching controls to cases by age, BMI, and baseline modified Harris Hip Score (mHHS) at a >3:2 ratio. Patient reported outcomes (PROs) including mHHS and Non-Arthritic Hip Score (NAHS) were compared from baseline to follow-up using analysis of variance and multivariable linear and logistic regression. Achievement of minimal clinically important difference (MCID) and patient acceptable symptomatic state (PASS) on mHHS were also compared between groups.

RESULTS: Forty-one patients (71% female; mean age 37.0 years; mean LCEA 23.2°) underwent hip arthroscopy for FAIS with BHD versus 68 FAIS controls (60% female; mean age 38.0 years; mean LCEA 32.6°). Both groups demonstrated pre-to-postoperative improvement in mean mHHS (BHD 44.7 to 81.0, $p<0.001$; control 45.3 to 84.9, $p<0.001$) and NAHS (BHD 46.8 to 82.7, $p<0.001$; control 48.1 to 86.4, $p<0.001$). There was no significant difference in revision rate between groups (BHD 9.8% vs control 17.6%, $p=0.77$). Increasing pre-operative alpha angle (mHHS $p=0.002$; NAHS $p=0.001$) and increasing age (mHHS $p=0.002$; NAHS $p=0.001$) were negatively associated with outcomes while cam resections (mHHS $p=0.03$; NAHS $p=0.02$) were positively associated with outcomes. There was no difference in MCID (BHD 78% vs 85%, $p=0.33$) or PASS (BHD 68% vs control 71%, $p=0.80$) achievement rates. Increasing pre-operative alpha angle was associated with lower PASS achievement rate (OR 0.94, $p=0.03$).

DISCUSSION AND CONCLUSION: Patients undergoing hip arthroscopy with BHD and concomitant FAIS demonstrate acceptable outcomes at the 2-year timepoint. Concomitant pre-operative cam deformities may negatively affect outcomes though revision surgery rates remain low throughout.