High Pelvic Incidence Predicts Inferior Outcomes Following Hip Arthroscopy for Femoroacetabular Impingement and Acetabular Labral Tears

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INTRODUCTION: In the setting of femoroacetabular impingement (FAI), decompression osteoplasties can reconcile deleterious loading patterns caused by cam and pincer lesions. However, native variations of spinopelvic sagittal alignment may continue to perpetuate detrimental effects on the labrum, chondrolabral junction, and articular cartilage following hip arthroscopy. The purpose of this study was to evaluate the impact of pelvic incidence (PI) on postoperative outcomes following hip arthroscopy for acetabular labral tears in the setting of FAI.
METHODS: A retrospective query of prospectively collected data identified patients ≥18 years of age who underwent primary hip arthroscopy for FAI and symptomatic labral tears with 3-, 6-, 12-, and 24-month follow-ups. Measurements for PI, pelvic tilt (PT), sacral slope (SS), and acetabular version were obtained via advanced imaging. Patients were stratified into low (PI<45°), moderate (45°≤PI≤60°), and high (PI>60°) PI cohorts. Patient-reported outcome measures (PROMs), clinically meaningful outcomes, visual analog scale (VAS) pain scores, and patient satisfaction were compared across cohorts.
RESULTS: A total of 74 patients undergoing primary hip arthroscopy for FAI and acetabular labral tears met eligibility criteria and were stratified into low (<45°; n=28), moderate (45°≤PI≤60°; n=31), and high (>60°; n=15) PI cohorts. Correspondingly, patients with high PI displayed significantly larger mean values for PT (p=.001), SS (p<.001), acetabular version (p<.001), and acetabular inclination (p=.049). By 12- and 24-month follow-ups, the high PI cohort was found to have significantly inferior PROMs, VAS pain scores, rates of achieving clinically meaningful thresholds, and patient satisfaction relative to patients with moderate and/or low PI. No significant differences were found between cohorts regarding rates of revision hip arthroscopy, subsequent spine surgery, or conversion to total hip arthroplasty.
DISCUSSION: Following acetabular labral repair and decompression osteoplasties, patients with high PI exhibited significantly inferior PROMs relative to those with moderate or low PI.
SIGNIFICANCE/CLINICAL RELEVANCE: Our findings highlight the critical importance of analyzing pelvic alignment in order to prognosticate outcomes following hip arthroscopy for acetabular labral tears in the setting of FAI.

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TABLE I
Weighted Difference in PROM Averages Between PI Groups Across the Study Period with Time as a Continuous Variable*

PROM	Weighted Difference in Average Scores (95% CI)†	P Value
mHHS		
Low PI	-0.98 (-5.74, 3.78)	0.69
High PI	-12.65 (-18.50, -6.79)	**<0.001**‡
HOS-ADL		
Low PI	-1.92 (-7.35, 3.51)	0.49
High PI	-15.00 (-21.62, -8.37)	**<0.001**‡
HOS-SS		
Low PI	-3.52 (-13.02, 5.98)	0.47
High PI	-23.25 (-34.83, -11.67)	**<0.001**‡
NAHS		
Low PI	-2.19 (-7.84, 3.46)	0.45
High PI	-12.63 (-19.61, -5.65)	**<0.001**‡
iHOT-33		
Low PI	-3.93 (-10.96, 3.11)	0.28
High PI	-14.80 (-23.43, -6.18)	**0.0013**‡
VAS Pain		
Low PI	+ 0.45 (-0.25, 1.15)	0.21
High PI	+ 1.65 (0.79, 2.52)	**<0.001**‡

***Abbreviations**: PROM, patient-reported outcome measure; PI, pelvic incidence, CI, confidence interval; mHHS, modified Harris Hip Score; HOS-ADL, Hip Outcome Score–Activities of Daily Living; HOS-SS, Hip Outcome Score–Sports Subscale; NAHS, Non-Arthritic Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.*
**Patient-reported outcome scores are reported as mean (95% confidence interval); †Reference: Moderate PI group; ‡A significant difference between groups.*

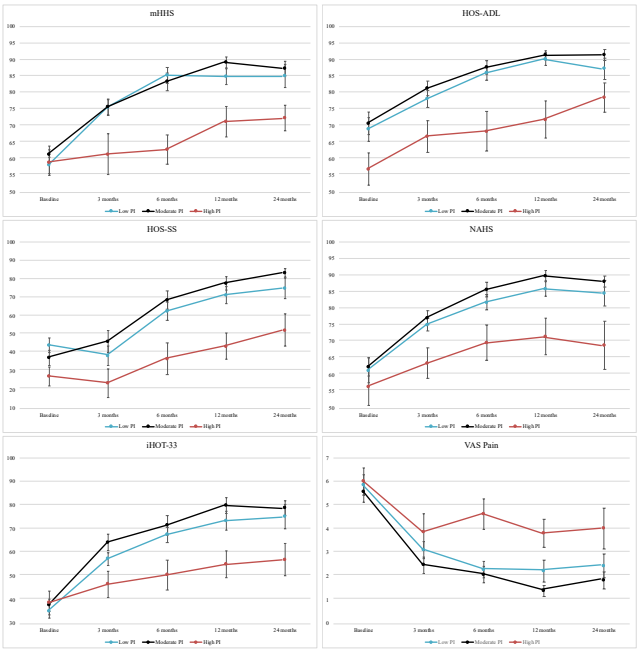

Figure 1. Mean patient-reported outcome measures with standard error over time.