

Adolescents Achieve More Durable 10-Year Patient-Reported Outcome Improvements After Contemporary Hip Arthroscopy for Femoroacetabular Impingement Syndrome: A Propensity-Matched Analysis

Michael Joseph Vogel, Omair Kazi, Richard Michael Danilkowicz¹, Eric J Cotter, Shane Jay Nho²

¹Midwest Orthopedics At Rush, ²Midwest Orthopaedics at Rush

INTRODUCTION:

Prior studies show adolescent patients achieve more favorable outcomes after hip arthroscopy (HA) for femoroacetabular impingement syndrome (FAIS) compared to adult patients at short-term and mid-term follow-up, yet limited studies compare these groups at minimum 10-year follow-up. The purpose of this study is to compare patient-reported outcomes (PROs), achievement of clinically significant outcomes (CSOs), and reoperation-free survivorship between adolescent and adult patients after HA for FAIS at minimum 10-year follow-up.

METHODS:

Retrospective evaluation of prospectively collected data was performed on patients who underwent primary contemporary HA for FAIS, including chondrolabral preservation, surgical correction of FAIS, and capsular repair, between January 2012 and November 2013 with minimum 10-year follow-up. Adolescent patients (age 10-19 years) were propensity matched 1:1 to adult patients (age ≥ 20 years) controlling for sex, body mass index (BMI), Tönnis grade, pain duration, activity status, and back pain. PROs were collected preoperatively and at 10-year follow-up, including Hip Outcome Score Activities of Daily Living (HOS-ADL), HOS-Sports Subscale (HOS-SS), modified Harris Hip Score (mHHS), Visual Analog Scale for Pain (VAS Pain) and VAS Satisfaction (VAS Sat). Cohort-specific minimal clinically important difference (MCID), patient acceptable symptom state (PASS), and substantial clinical benefit (SCB) were calculated and compared between groups. Reoperation-free survivorship was compared.

RESULTS:

Fifty adolescent patients (age 17.0 ± 1.7 years) were matched to 50 adult patients (33.0 ± 9.3 years) with follow-up duration 10.4 ± 0.4 years. No differences in preoperative PROs were shown. Adolescents achieved greater 10-year HOS-ADL, HOS-SS, mHHS, iHOT-12, VAS Pain, and Satisfaction scores compared to adults ($P < 0.05$ for all). Adolescents showed superior PASS (98% vs. 79%, $P = 0.015$) and SCB (88% vs. 67%, $P = 0.035$) achievement for any PRO. No differences in THA-free survivorship (100% vs. 94%, $P = 0.083$) or revision-free survivorship were shown (90% vs. 94%, $P = 0.473$).

DISCUSSION AND CONCLUSION:

An initial trial of nonoperative management in patients with FAIS remains paramount regardless of patient age. While the treatment algorithm remains largely consistent for indicating adolescent and adult patients for surgical correction of FAIS deformity, published outcomes on adolescent patients following hip arthroscopy for FAIS remain sparse. Propensity-matching of adolescent and adult patient groups in our study was controlled for sex, BMI, Tönnis grade, preoperative pain duration ≥ 2 years, endorsement of regular physical activity ≥ 1 time per week, and presence of preoperative back pain. After controlling for many potential confounders, our study demonstrated that adolescent patients achieved superior 10-year PRO scores and achievement of PASS and SCB compared to the propensity-matched group of adult patients. The superior outcomes observed in adolescents compared to adults following hip arthroscopy warrants careful consideration. Namely, although many known contributors to inferior post-operative outcomes were controlled for via propensity matching, these were based on preoperative patient characteristics. By 10 years post-operatively the adult population may have had more comorbidities or concurrent musculoskeletal conditions, adversely affecting their outcome measures. Nevertheless, our study supports that modern hip arthroscopy techniques for FAIS in adolescent and adult patients allows for successful outcomes at 10-year follow-up and that adolescent patients can be counseled on the potential for achieving more durable clinical improvement compared to their adult counterparts a decade after their hip arthroscopy. Our study further demonstrated that the adolescent group achieved a 90% revision-free survivorship at minimum 10-year follow-up with no cases of conversion to THA. Subsequent revision arthroscopy is of particular concern when managing adolescent patients with hip arthroscopy. The high reoperation free survivorship may be further explained by use of modern hip arthroscopy techniques, including labral repair, surgical correction of FAIS deformity, and capsular repair in all of our studied patients.

In conclusion, adolescent patients treated with contemporary HA for FAIS, including chondrolabral preservation, surgical correction of FAIS, and capsular repair, showed superior 10-year PROs and achievement of PASS and SCB compared to a propensity-matched group of adult patients, despite comparable short-term and mid-term PROs.