

Clinically Meaningful Improvements Following Hip Arthroscopy for Femoroacetabular Impingement in Pediatric Patients Regardless of Gender

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Introduction and Purpose

- Hip arthroscopy for pediatric and adolescent patients with symptomatic femoroacetabular impingement (FAI)
 - Small retrospective series with short-term follow-up suggest improved patient reported outcome scores.
- *Prior studies have not assessed whether these patients achieve clinically meaningful differences following hip arthroscopy.*
- **Purpose:** The objective of this study was to determine if pediatric and adolescent patient undergoing hip arthroscopy for symptomatic FAI experience clinically meaningful improvements in functional outcome scores.

Patient Selection

- Consecutive patients undergoing hip arthroscopy for FAI were identified using our institutional hip registry between 1/26/2012 and 7/19/2013.
- **Inclusion criteria:**
 - Clinical and radiographic diagnosis of FAI
 - Failure of conservative management
 - Age 18 or younger at time of surgery
- **Exclusion criteria:**
 - History of prior ipsilateral hip or knee surgery
 - History of DDH, SCFE, and Perthes disease
 - Hip arthroscopy for indications other than FAI

Data Collection

- **Patient demographics:** sex, age, BMI, and sports participation.
- **Radiographic measurements:** lateral center edge angle (LCEA), alpha angle, and proximal femoral physeal maturity.
- **Intraoperative data:** procedures performed and findings.
- **Preoperative and minimum 2-year postoperative hip-specific functional outcome scores.**
 - Modified Harris Hip Score (MHHS).
 - Hip Outcome Score Sport-Specific and Activities of Daily Living subscales (HOS-SS and HOS-ADL).
- **Complications and reoperations.**

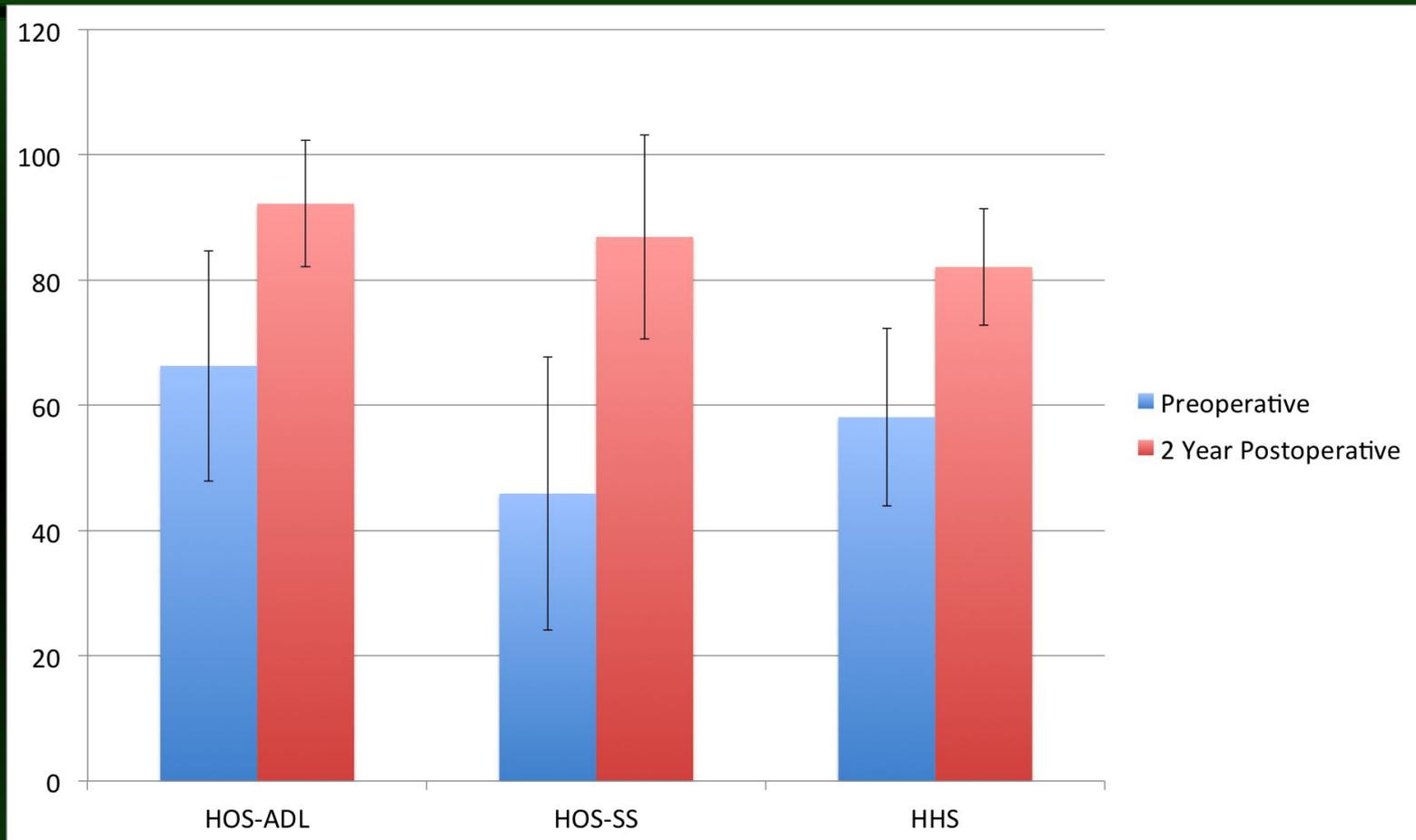
Data Analysis

- Paired t-tests to compare preoperative and postoperative values
- Unpaired t-tests and Pearson's correlation coefficients to assess relationships between demographic predictor variables and outcomes.
- **Minimum clinically important difference (MCID) and patient acceptable symptom state (PASS)**
 - Compared to published values of MHHS, HOS-SS, and HOS-ADL for hip arthroscopy for FAI (Kemp et al AJSM 2013, Martin et al Arthroscopy 2008, Chahal et al AJSM 2015).

Patient Demographics

- 408 hip arthroscopies were performed during the study period
 - 54 for patients age 18 or younger.
 - 11 excluded (5 revision, 3 history SCFE, 2 diagnosis other than FAI, 1 prior knee surgery).
 - Of the remaining 43 patients, 37 (86%) had minimum 2 year follow-up (average 28+/- 6.2 months).
- Age 17+/-1.4 years.
- BMI 21.9+/-2.5 kg/m². Alpha angle 59.4+/-7.5 degrees.
- LCEA 32.2+/-4.8 degrees.
- 26/37 (70%) female.
- 3/37 (8.1%) open proximal femoral physis.

Functional Outcomes



$P < 0.0001$ in all cases

Lower BMI associated with greater improvement in MHHS ($p = 0.03$)

Did Patients Achieve MCID and PASS?

- **MHHS**
 - 84% achieved MCID.
 - 81% achieved PASS.
- **HOS-ADL**
 - 81% achieved MCID.
 - 76% achieved PASS.
- **HOS-SS**
 - 97% achieved MCID.
 - 79% achieved PASS.

Return to Sports

- 30/37 (81%) of patients involved in sports.
 - 27 high school.
 - 3 varsity intercollegiate.
- 100% of athletes returned to their sport by final follow-up.
 - 27/30 (90%) returned to sport by 6 months.
 - Remaining 3 returned to sport by final follow-up.

Complications

- **Two minor complications resolved by 6 weeks postoperatively.**
 - 1 case of pudendal neuropraxia.
 - 1 case of portal site wound dehiscence treated with oral antibiotics.
- **No major complications and no reoperations.**

Discussion and Limitations

- **Retrospective design and lack of a control group.**
 - High rate of follow-up (over 80%).
- **Minimum 2-year follow-up is longer than most hip arthroscopy series in pediatric and adolescent patients.**
 - Longer-term studies are needed to help determine if hip arthroscopy has potential to delay or prevent osteoarthritis.
- **Procedures performed in a uniform fashion by a single high-volume hip arthroscopy surgeon.**
 - Unable to analyze impact of different techniques.
- **MCID and PASS values were defined in adult populations**
 - Values have not been defined in pediatric and adolescent patients.

Conclusions

- Pediatric and adolescent patients experienced statistically significant improvements in functional outcomes 2 years after hip arthroscopy for FAI.
- There was a high rate of return to sport and low complication rate.
- Approximately 80% of patients achieved clinically meaningful improvements based on MCID and PASS criteria.
- Lower preoperative BMI correlated with greater MHHS improvements.