Congenitally Narrow Joint Space Does Not Portend Inferior Outcomes After Hip Arthroscopy

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Disclosures

I (and/or my co-authors) have something to disclose.

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Introduction

- Hip preservation surgery is often contraindicated in the setting of radiographic osteoarthritis and decreased joint space.

- Patients with a congenitally narrow joint space without radiographic or MRI evidence of significant osteoarthritic changes may benefit from hip preservation surgery.[1]

Purpose:

- (1) To evaluate the outcomes of hip preservation surgery in patients with a symmetric congenitally narrowed hip joint space without radiographic evidence of degenerative changes.
- (2) To compare outcomes in a propensity matched group of patients with normal joint space

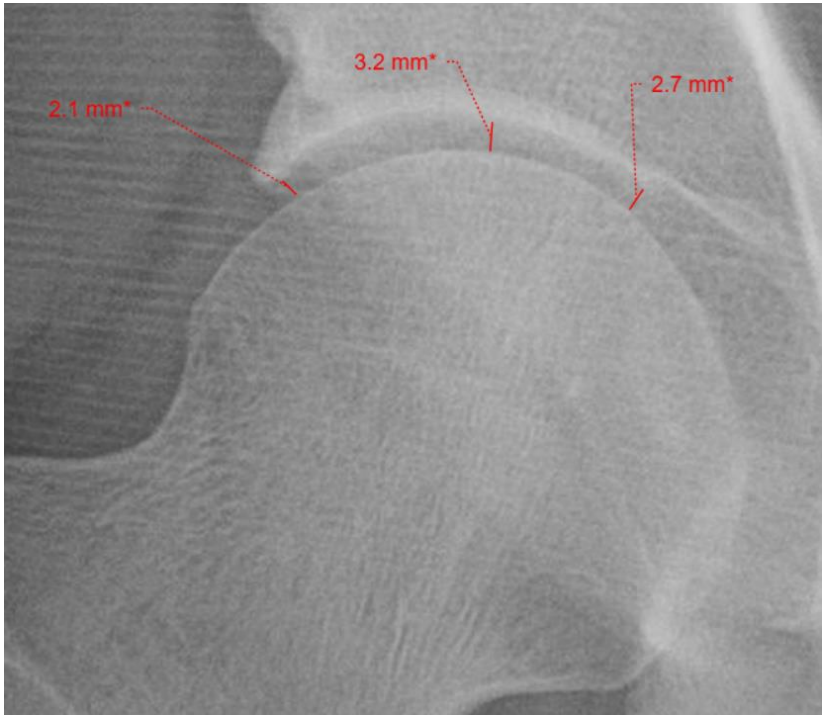
Methods

- Patient inclusion: Subjects undergoing hip arthroscopy for FAI with labral repair or reconstruction between 2009-2018 and bilateral congenitally narrow joint spaces defined as an average joint space width (JSW) < 3mm. Radiographic joint space was measured in 3 locations according to previously validated methodology.[2-3] Minimum 5 year postoperative outcomes were required for study inclusion.

- Patient exclusion: Tonnis grade >0, JSW > 3mm, LCEA <18, congenital hip deformity, prior hip surgery

- Propensity Matching: Included patients were propensity matched 1:1 in a population of patients with JSW >4mm and Tonnis grade 0. Matching criteria included age, sex, BMI, follow up time, LCEA, labral treatment (debridement, repair, or reconstruction) and capsular treatment (release vs. closure)

- Patient Outcomes: Reoperations including revision arthroscopy and conversion to arthroplasty as well as complication rates were recorded. Preoperative and postoperative patient reported outcome measures including the modified Harris Hip Score (mHHS), Non-Arthritic Hip Score (NAHS), International Hip Outcome Tool (iHOT-12), and Visual Analog Scale for Pain (VAS) were collected preoperatively and at the minimum 5 year time point



Results: Patient Demographics and Radiographic Variables

- 78 subjects in the narrow joint cohort matched to 78 subjects in the intact joint space cohort
- No differences in age, sex, or BMI between groups ($p>0.05$)
- No differences in LCEA, ACAE, or alpha angle between groups ($p>0.05$)

Radiographic Variables	Control	Narrow Joint	p
LCEA	32.5 ± 5.5	31.7 ± 4.7	0.32
ACEA	33.4 ± 6.3	32.3 ± 5.7	0.15
Tonnis Angle	3.9 ± 4.2	3.8 ± 5.1	0.77
Medial JSW	4.5 ± 1.0	2.5 ± 0.4	**<0.001**
Central JSW	4.6 ± 0.7	2.7 ± 0.4	**<0.001**
Lateral JSW	5.2 ± 0.7	3.0 ± 0.5	**<0.001**
Average JSW	4.7 ± 0.5	2.7 ± 0.2	**<0.001**
Alpha Angle	61.3 ± 13.0	58.4 ± 11.1	0.15

Results: Intraoperative findings

- No differences in rates of severe acetabular chondral damage between narrow joint and control groups
- Lower rates of femoral head severe chondral damage in the narrow joint cohort.
- Higher rates of iliopsoas bursitis and loose bodies found in the control group.

Intra-operative Findings	Control	Narrow Joint	p
Acetabular Outerbridge			0.11
Mild (0 - 2)	55 (72%)	62 (79%)	
Severe (3 – 4)	23 (28%)	16 (21%)	
Femoral Head Outerbridge			**0.02**
Mild (0 - 2)	71 (91%)	78 (100%)	
Severe (3 – 4)	7 (9%)	0 (0%)	
LT Tear Percentile			0.38
0 (No Tear)	46 (59%)	54 (69%)	
1 (<50% tear)	21 (27%)	17 (22%)	
2 (>50% tear)	10 (13%)	5 (6%)	
3 (100% tear)	1 (1%)	2 (3%)	
Trochanteric Bursitis	12 (15%)	8 (10%)	0.34
Iliopsoas Bursitis	51 (65%)	36 (46%)	**0.02**
Loose Bodies	13 (17%)	5 (6%)	**0.045**

Results: Postoperative Outcomes

- Significant postoperative improvement for all PROMS found in both groups
- No differences in rates of achieving clinically relevant outcome thresholds (PASS/MCID)

PROM	Control	Narrow Joint	p
mHHS			
Pre-operative	62.48 ± 16.29	64.31 ± 13.76	0.60
Post-operative	85.27 ± 14.14	87.81 ± 13.26	0.20
Delta	21.73 ± 18.99	23.78 ± 17.24	0.56
NAHS			
Pre-operative	63.28 ± 16.82	62.98 ± 13.66	0.80
Post-operative	84.21 ± 15.66	87.90 ± 12.57	0.38
Delta	19.72 ± 21.10	24.29 ± 17.67	0.17
iHOT			
Pre-operative	38.33 ± 18.09	39.54 ± 18.39	0.77
Post-operative	74.38 ± 22.89	79.23 ± 18.94	0.25
Delta	37.46 ± 25.86	42.45 ± 23.71	0.64
HOS-SSS			
Pre-operative	39.86 ± 22.82	44.40 ± 20.47	0.20
Post-operative	71.85 ± 27.10	78.40 ± 21.34	0.28
Delta	31.68 ± 30.53	34.30 ± 29.81	0.66
VAS			
Pre-operative	4.96 ± 2.45	5.17 ± 2.09	0.63
Post-operative	2.51 ± 2.29	2.15 ± 1.98	0.43
Delta	2.40 ± 2.78	2.94 ± 2.57	0.30
Satisfaction	8.33 ± 2.01	8.27 ± 1.93	0.60

Results: Reoperations

No differences in reoperation rates between groups

Revision Procedure	Control	Narrow Joint	p
Revision Arthroscopy	6 (7.6%)	6 (7.6%)	1.00
Time to Revision (months)	49.7 ± 26.8	29.9 ± 25.3	
Arthroplasty (n, %)	2 (2.5%)	2 (2.5%)	1.00
Time to arthroplasty (months)	60.6 ± 57.7	68.16 ± 46.0	

Conclusions

- Patients with congenitally narrowed hip joint space <3mm without evidence of osteoarthritis have improved outcomes following arthroscopic surgery for femoroacetabular impingement without differences in outcomes or arthroplasty rates compared to a propensity matched cohort.

- Care should be taken to rule out early hip osteoarthritis with advanced imaging or serial radiographs when indicating patients with narrow joint space for hip preservation surgery.

References

- Ruzbarsky JJ, Comfort SM, Lee S, Pierpoint LA, Philippon MJ. The Relationship Between the Joint Space and Outcomes After Hip Arthroscopic Surgery for Femoroacetabular Impingement: Reevaluating the 2-mm Rule. Am J Sports Med. 2023;51(6):1538-1547. doi:10.1177/03635465231161372
- Pidgeon T, Schiller J, Gil J, Evangelista P, Machan J, Tabaddor R. Joint Space Width and Osteoarthritis in Patients Undergoing Hip Arthroscopy. J Hip Surg. 2017;01(02):099-104. doi:10.1055/s-0037-1603963
- Skendzel JG, Philippon MJ, Briggs KK, Goljan P. The effect of joint space on midterm outcomes after arthroscopic hip surgery for femoroacetabular impingement. Am J Sports Medicine. 2014;42(5):1127--1133. doi:10.1177/0363546514526357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