



Arthroscopic Treatment Of Hip Pain in Adolescent Patients with Borderline Dysplasia of the Hip: Minimum Two-year Follow-Up

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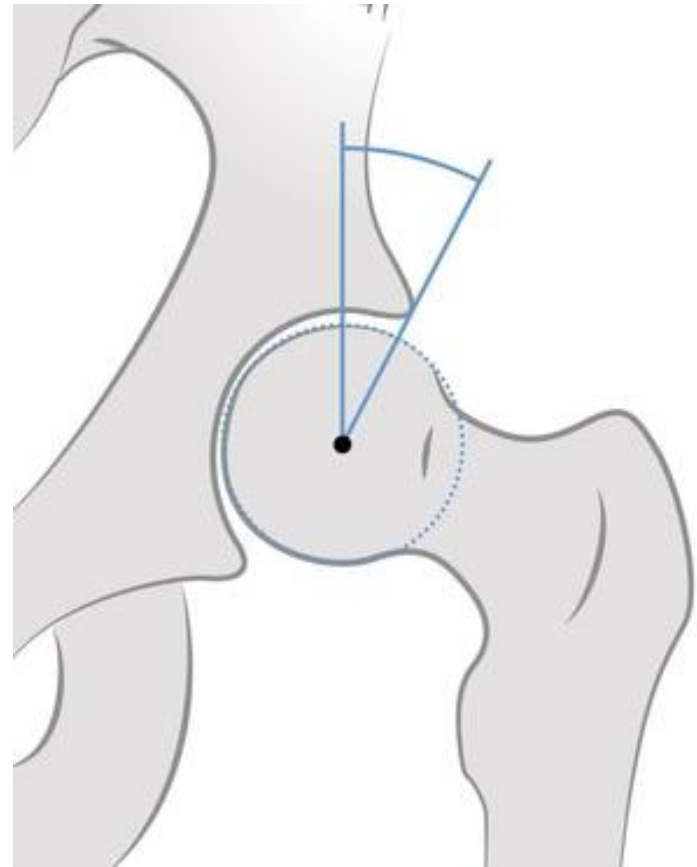
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Disclosures

- American Hip Institute^a, AANA Learning Center Committee^a, Amplitude^c, Arthrex^{b,c,d}, ATI^b, Breg^b, DJO Global^d, Orthomerica^d, Pacira^{b,c}, Stryker^{b,c}
- a – boardmember; b – research support; c – consulting; d – royalty; e - stockholder

Borderline Dysplasia

- Shallow acetabulum with mild under-coverage of the femoral head
- Radiographically defined as LCEA between 20° - 25°
- Favorable outcomes after arthroscopic labral preservation and capsular plication^{1,2}
- Results in strictly adolescent cohorts are not reported



Purpose

- To compare the outcomes after the arthroscopic treatment of hip pain in adolescents with borderline dysplasia to a matched cohort of adolescents with hip pain and normal acetabular coverage.

Methods

•Inclusion criteria

- Cases between 2008 to 2013
- Signs and symptoms of FAI who failed conservative treatment for 3 months
- Plain radiographs, MRI/MRI arthrogram confirming FAI and labral pathology
- LCEA between 20° and 25°
- Age at surgery < 18 years

•Exclusion criteria

- Revision hip arthroscopy
- Tönnis grade ≥ 2
- Previous hip conditions (Legg-Calves-Perthes disease, AVN, prior surgical intervention)

Methods

- **Matching criteria:**

- Age \pm 2 years
- Gender
- Femoroplasty
- Capsular treatment
- Labral treatment

- **Outcomes:**

- mHHS
- NAHS
- HOS-SSS
- HOS-ADL
- VAS
- Patient Satisfaction

Results - Demographics

- 168 patients < 18 years old underwent arthroscopy between 2008 and 2013
- 21 met criteria and were matched to 21 without borderline dysplasia

	Borderline Dysplasia	Control	P-Value
Count	21	21	
Gender: n (%)			
Male	4 (19%)	4 (19%)	1
Female	17 (81%)	17 (81%)	
Size: median, mean (confidence interval)			
Height (inches)	67, 67.2 (66.6-67.7)	65, 65.9 (65-65.8)	0.22
Weight (pounds)	131, 134.6 (130.7-138.5)	127, 134.6 (131.1-138.2)	0.99
BMI	20.98, 21.1 (20.5-21.7)	21.30, 22.1 (21.6-22.6)	0.35
Laterality: n (%)			
Right	12 (57%)	14 (67%)	
Left	9 (43%)	7 (33%)	
Age (years): median, mean (confidence interval)	15.5, 15.7 (15.5-15.9)	16.03, 16 (15.9-16.2)	0.21
Max	17.5	17.91	
Min	13.08	13.85	
Traction Time (minutes): median, mean (confidence interval)	32.5, 36.2 (33.7-38.6)	34.5, 37.9 (35.7-40.2)	0.62
Follow-Up Time (months): median, mean (confidence interval)	26.3, 28.6 (27.4-29.8)	25.9, 27.2 (26.7-27.8)	0.49
Pre-measurment CEA (lateral): median, mean (confidence interval)	22, 22.33 (22.11-22.55)	30.5, 31.2 (30.63-31.77)	
Pre-measurment Alpha Angle: median, mean (confidence interval)	55, 78 (53.38-56.17)	56, 53.6 (52.2-55)	
Follow-Up (%)	81%	81%	

Results: Procedures

Intraoperative Procedures	Total	Borderline Dysplasia	Control	P-Value	
Loose Body Removal	0	0	0	1	
Acetabular Chondroplasty	3 (7%)	0	3 (14%)	0.07	
Ligamentum Teres Debridement	8 (19%)	3 (14%)	5 (24%)	0.43	
Iliopsoas Release	34 (81%)	15 (71%)	19 (90%)	0.11	
Iliopsoas Bursectomy	7 (17%)	3 (14%)	4 (19%)	0.68	
Synovectomy	5 (12%)	3 (14%)	2 (10%)	0.63	
Femoroplasty	30 (71%)	15 (71%)	15 (71%)	1	
Capsular Treatment					
	Plication	42 (100%)	21 (100%)	21 (100%)	1
	Stitches, median, mean (confidence interval)		3, 3.15 (3-3.31)	4, 3.23 (3.03-3.44)	0.83
Labral Treatment					
	Repair	26 (62%)	13 (62%)	13 (62%)	1
	Debridement	16 (38%)	8 (38%)	8 (38%)	1
	Stitches, median, mean (confidence interval)		3, 2.63 (2.5-2.75)	3, 2.8 (2.61-2.99)	0.72

Results: Outcomes

Pre-Op Scores (median, mean, confidence interval)	Borderline Dysplasia	Control	P-Value
mHHS	63, 59.71 (57-62.41)	63, 59.05 (56.99-61.1)	0.9
HOS-ADLS	65, 62.91 (59.73-62.08)	60, 58.51 (54.59-60.49)	0.38
HOS-SSS	44, 42.13 (38.62-45.63)	42, 39.97 (36.33-42.65)	0.73
NAHS	60, 62.75 (60.13-65.37)	60, 57.99 (55.49-60.49)	0.37
VAS	6, 6.29 (5.98-6.59)	7, 6.59 (6.27-6.87)	0.63

Post-Op Scores (median, mean, confidence interval)	Borderline Dysplasia	Control	P-Value
mHHS	91, 88.04 (86.15-89.94)	85, 85.48 (83.89-87.08)	0.49
HOS-ADLS	98.53, 94.74 (93.01-96.46)	94.88, 93.94 (92.44-95.43)	0.82
HOS-SSS	88.89, 81.59 (77.24-85.94)	75, 71.98 (68.18-75.78)	0.27
NAHS	96.25, 91.94 (90.38-93.50)	91.3, 89.64 (88.33-90.94)	0.45
VAS	0, 1.31 (0.92-1.7)	1.61, 1.9 (1.63-2.16)	0.41
Patient satisfaction	9.5, 7.89 (7.37-8.41)	9, 8.47 (8.20-8.74)	0.54

No revisions reported for either group

Conclusions

- Positive surgical outcomes for patients < age 18 being treated for borderline hip dysplasia
- Outcomes comparable to a similar group of adolescents with normal bony coverage

References

- 1) Domb BG, Stake CE, Lindner D, El-bitar Y, Jackson TJ. Arthroscopic capsular plication and labral preservation in borderline hip dysplasia: two-year clinical outcomes of a surgical approach to a challenging problem. Am J Sports Med. 2013;41(11):2591-8.
- 2) Larson CM, Ross JR, Stone RM, et al. Arthroscopic Management of Dysplastic Hip Deformities: Predictors of Success and Failures With Comparison to an Arthroscopic FAI Cohort. Am J Sports Med. 2016;44(2):447-53.



Thank you