What's Hip with Hip Dysplasia?

Mid-term Outcomes of Peri-acetabular Osteotomy vs. Hip Arthroscopy

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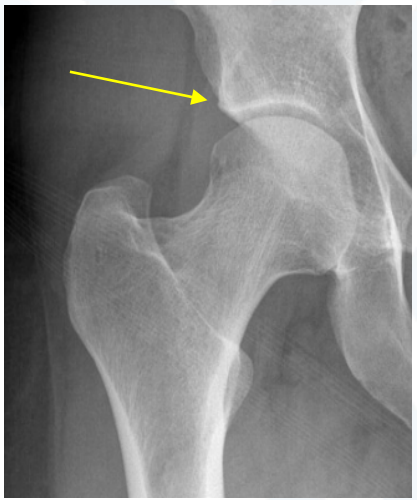
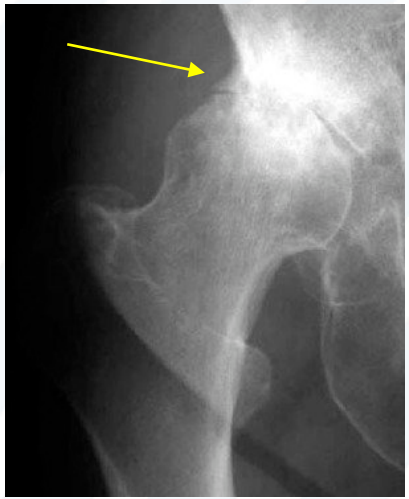
Disclosures

I have nothing to disclose.

Hip Dysplasia

- **Instability** → osteoarthritis (**OA**)
- **20-40%** of patients with OA[1]
- Younger → joint preservation?





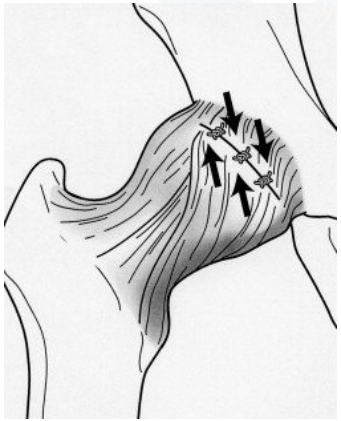
1. Gala *et al.* J Bone Joint Surg Am. 2016

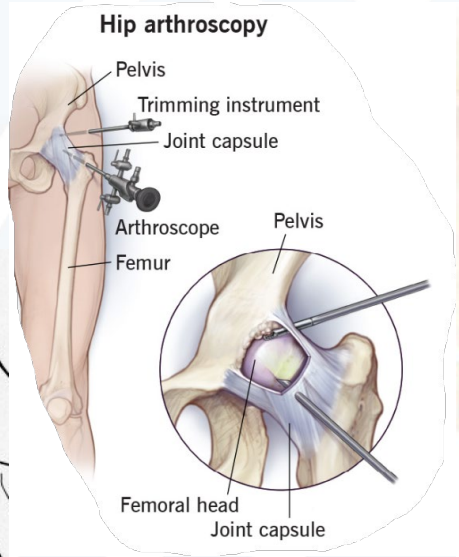
“Borderline” Dysplasia: Treatment Controversy

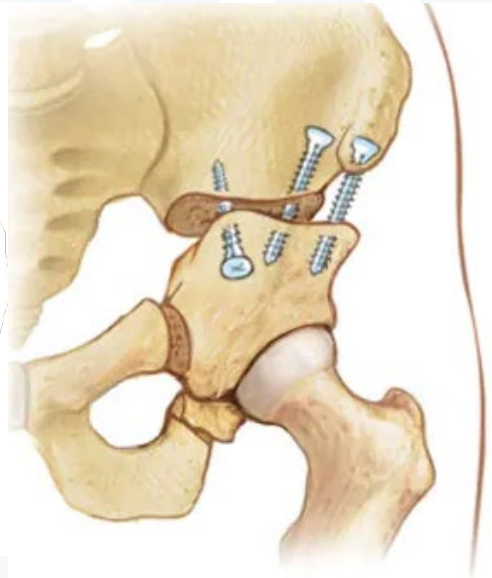
Hip Arthroscopy (**HA**)[2-4] → **<u>avoid in frank dysplasia</u>**

Peri-acetabular osteotomy (**PAO**)[5,6]

End stage OA → Total joint arthroplasty (**TJA**)







2. Haynes *et al*. J Hip Preservation Surg. 2018

3. Domb *et al*. Arthroscopy. 2015

4. Beals *et al*. Am J Sports Med. 2022

5. Sierra *et al*. Journal of Hip Surgery. 2017

6. Shon *et al*. Arch Orthop Trauma Surg. 2021

Purpose and Hypothesis

Purpose:

To compare the multi-center minimum five-year outcomes of **HA vs. PAO** for patients with radiographically defined **borderline hip dysplasia (BHD)**

Hypothesis:

Patients undergoing HA or PAO would demonstrate **similar** and **significant improvements** in **patient-reported outcomes** (PROs) from pre-operatively to minimum five-year follow up.

Methods

Inclusion criteria

15-40 years old

Borderline dysplasia (lateral center-edge angle 18°-25°)

PAO or HA for femoroacetabular impingement (FAI)

Tönnis osteoarthritis grade < 2

Documented PROs (pre-op and 5+ years post-op)

Exclusion Criteria

Moderate/severe dysplasia (LCEA < 18°)

Prior hip surgery

Avascular necrosis

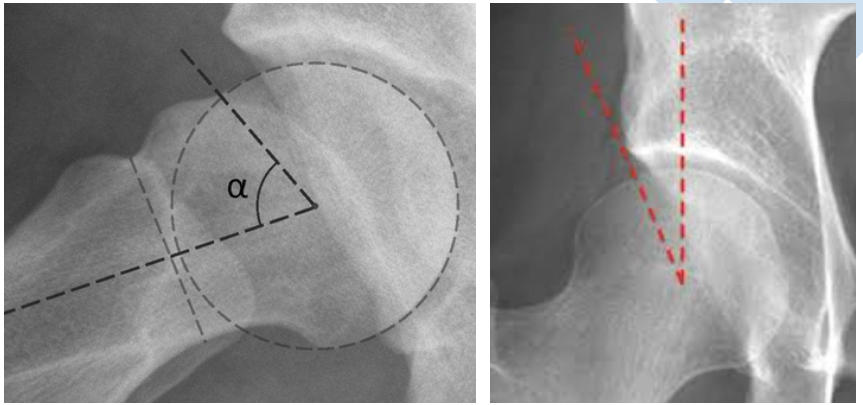
Slipped capital femoral epiphysis

Inflammatory arthritides

Worker's Compensation

Microfracture

Data Collection



Retrospective review of prospectively collected data

- **Demographics:** age, sex, BMI
- **Radiographs: alpha angle**, **LCEA**, OA grade
- **PROs:** Modified Harris Hip Score (mHHS, 0-100), minimal clinically important difference (MCID)
- **Future surgeries** (hardware removal, revision, TJA)

Statistical Analysis

A priori

power analysis:

25 patients in each group = 80% power

R Software:

propensity matching (age, sex, BMI)

Normality:

Shapiro-Wilk test

Parametric, continuous:

Two-tailed

unpaired t-test

Non-parametric, continuous:

Mann-Whitney U-test, Welch modification

Categorical:

Chi-Square and Fisher's Exact tests

Results: Demographics

Table 1	PAO (n = 28)	HA (n = 49)	p-value
Hip laterality (n, %)			0.49
Left	12 (42.9)	25 (51.0)	
Right	16 (57.1)	24 (49.0)	
Sex (n, %)			0.275
Female	25 (89.3)	39 (79.6)	
Male	3 (10.7)	10 (20.4)	
Age at surgery, years (mean, SD)	25.6 ± 6.8	25.6 ± 6.8	1
BMI, kg/m^2 (mean, SD)	22.4 ± 2.1	22.9 ± 2.8	0.562
Follow-up time, months (mean, SD)	95.8 ± 19.7	81.3 ± 25.8	0.001

Results: Radiographs

Table 2	PAO	HA	p-value
LCEA (mean, SD, range)			
Preoperative	21.1 ± 1.9 (18.0-24.0)	22.6 ± 1.9 (18.0-24.0)	0.002
Latest	36.4 ± 4.8 (29.2-46.9)	23.0 ± 3.7 (14.0-32.0)	< 0.001
p-value	< 0.001	0.347	
Alpha Angle (mean, SD, range)			
Preoperative	47.1 ± 7.4 (35.9-65.9)	58.0 ± 11.7 (37.0-90.0)	<0.001
Latest	37.4 ± 4.6 (30.7-44.3)	42.6 ± 5.1 (34.0-58.0)	<0.001
p-value	< 0.001	< 0.001	
Tönnis OA Grade (n, %)			0.241
0	21 (75.0)	42 (85.7)	
1	7 (25.0)	7 (14.3)	

Results: PROs

Table 3	PAO	HA	p-value
mHHS (mean ± SD)			
Preoperative	72.6 ± 10.4	69.7 ± 12.7	0.26
Latest	89.4 ± 16.1	93.4 ± 10.2	0.32
p-value	< 0.001	< 0.001	
Delta mHHS (mean ± SD, range)	14.9 ± 15.4	22.5 ± 16.6	0.06
MCID (n, %)	26 (78.8%)	40 (83.3%)	0.605

Results:
Future Surgeries

Table 4	PAO	HA	p-value
Future surgeries (n, %)	8 (28.6)	4 (8.2)	0.024
Hardware removal	8 (28.6)	0	
Revision (PAO + Scope)	0	3 (6.1)	0.297
THA	0	1 (2.1)	1
Time to future surgery, months	16.5 ± 2.9 (12.2-20.9)	33.4 ± 16.6 (11.2-50.7)	0.134
Time to THA conversion, months	N/A	98.8	-

PAO vs. HA for BHD: Summary

PAO and HA → similar improvements for **BHD** at mean of **7.5 years** post-operatively

PAO → Higher **re-operation** rate (hardware removal)

HA → Higher **revision** rate (recurrent instability)

References

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Questions?

Thank you for this opportunity!