The relationship between pre-operative pain characteristics and periacetabular osteotomy outcomes in patients with acetabular dysplasia

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INTRODUCTION

Bernese Periacetabular Osteotomy (PAO) is widely performed for patients with acetabular dysplasia, however the relationship between pre-operative pain characteristics and patient reported outcome measures (PROM) is not well-studied.

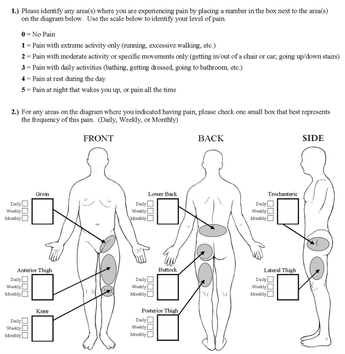
AIMS

(1) Does maximum severity of pain in a location other than the groin that is greater or equal to that of the groin affect PROM? (2) Does the presence of non-groin pain affect PROM? (3) Does the severity of pain affect PROM? (4) Does the number of pain locations affect PROM?

METHOD

- 52 hips (48 patients) treated with PAO for acetabular dysplasia from February 2017 to July 2020 were reviewed.
- Modified Harris Hip Score (mHHS), Hip Outcome Score (HOS), international Hip Outcome Tool (iHOT-12) Score, radiographic analysis, and pain location/severity questionnaires (Fig.1) were used to collect data.
- Descriptive statistics, Analysis of Covariance (ANCOVA), and Spearman partial correlation coefficients were implemented.

Fig. 1



RESULTS

- Twenty-six hips experienced the most severe pre-operative pain in the groin, and 26 hips experienced equal or greater pain in a non-groin location. Outcome scores between these groups were not significantly different (Table 1).
- The presence of pre-operative pain in any non-groin location had no significant relationship with PROM (Table 2).
- The maximum severity of pre-operative pain and number of pain locations showed no significant relationship with PROM (Figures 2 & 3).

Table 1. Patient-reported outcomes by location of maximum pain severity

Post-Operative Outcome Measure	Location of Maximum Severity	Adjusted LSM of Outcome Measure (SE)	P-value (d)
mHHS	Groin	82.09 (3.27)	0.59 (0.15)
	Other	84.59 (3.05)	
HOS	Groin	80.95 (2.95)	0.48 (0.20)
	Other	83.83 (2.47)	
iHOT-12	Groin	71.03 (5.12)	0.99 (0.003)
	Other	70.95 (4.36)	

Note. LSM = Least Squares Mean; SE = Standard Error; P-value = ANCOVA was used to test for the difference of the LSM estimate between groin and other locations on each post-operative outcome. d = Cohen's d. "Other" includes patients with maximum severity of pain in a non-groin location that is equal or greater than the severity of pain in groin.

Fig. 2 Patient Reported Outcome Measures vs Maximum Severity of Pre-Operative Pain

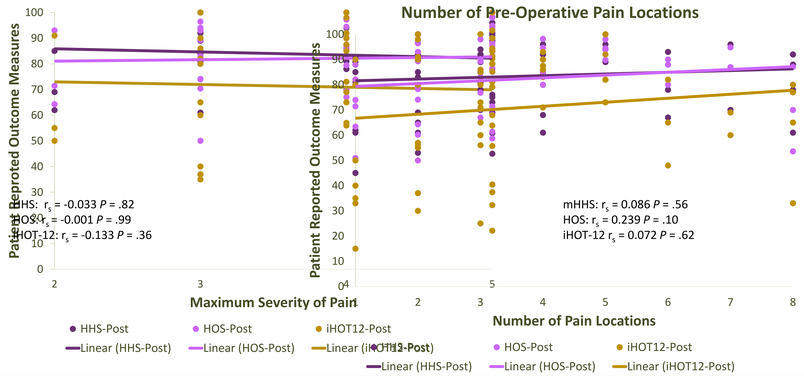


Fig. 3 Patient Reported Outcome Measures vs Number of Pre-Operative Pain Locations

Table 2: Post-operative patient-reported outcomes by presence or absence of pain in non-groin locations

	mHHS		HOS		iHOT-12	
Pain Location	Adjusted LSM (SE)	P-value (d)	Adjusted LSM (SE)	P-value (d)	Adjusted LSM (SE)	P-value (d)
Trochanter						
Yes (n=42)	84.15 (2.37)	0.53 (0.18)	83.71 (2.07)	0.21 (0.36)	74.10 (3.50)	0.14 (0.43)
No (n=10)	79.76 (6.22)		76.86(4.66)		57.94 (9.86)	
Lower Back						
Yes (n=23)	82.32 (2.72)	0.67 (0.12)	84.24 (2.10)	0.40 (0.24)	70.97 (4.41)	0.99 (0.003)
No (n=29)	84.09 (3.07)		80.93 (2.99)		71.01 (5.04)	
Buttock						
Yes (n=19)	85.22 (3.15)	0.48 (0.20)	85.70 (2.75)	0.20 (0.38)	76.02 (5.05)	0.31 (0.29)
No (n=33)	82.21 (2.77)		80.49 (2.52)		68.10 (4.97)	
Anterior Thigh						
Yes (n=16)	84.27 (3.50)	0.75 (0.09)	82.38 (3.35)	0.99 (0.003)	68.56 (4.81)	0.63 (0.14)
No (n=36)	82.88 (2.61)		82.41 (2.12)		72.07 (4.72)	
Knee						
Yes (n=16)	80.37 (4.46)	0.39 (.25)	82.54 (3.42)	0.96 (0.01)	70.52 (5.39)	0.92 (0.03)
No (n=36)	84.61 (2.21)		82.33 (2.16)		71.20 (4.21)	
Lateral Thigh						
Yes (n=12)	87.27 (4.17)	0.29 (0.31)	84.24 (3.75)	0.57 (0.16)	74.51 (6.12)	0.54 (0.17)
No (n=40)	82.12 (2.37)		81.84 (2.04)		69.93 (4.02)	
Posterior Thigh						
Yes (n=7)	80.13 (5.27)	0.52 (0.19)	80.98 (6.15)	0.80 (0.07)	63.40 (7.48)	0.30 (0.30)
No (n=45)	83.80 (2.18)		82.62 (1.88)		72.17 (3.67)	

Note. LSM = least squares mean, SE = standard error, P-value = ANCOVA was used to test for the difference of the LSM estimate between non-groin pain location and each post-operative outcome. d = Cohen's d

CONCLUSIONS

Location of most severe pre-operative pain and the presence of non-groin pain in a patient with acetabular dysplasia does not adversely affect PROM. Additionally, increased pain severity and number of pain locations does not appear to have any significant impact on outcomes. Therefore, a wide array of patients with acetabular dysplasia might expect similar, favorable outcomes from PAO regardless of preoperative pain characteristics.

CONTACT INFORMATION

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