Title: Total Hip Arthroplasty Outcomes in Patients with Psoriatic Arthritis, Osteoarthritis with Cutaneous Psoriasis, and Osteoarthritis

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Background: Outcomes of total hip arthroplasty (THA) in psoriatic arthritis (PsA) patients are poorly studied. Previous studies are conflicting, and importantly did not rigorously define inflammatory PsA as a separate group from patients with concurrent cutaneous psoriasis (PsC) and osteoarthritis (OA).

Objective: To evaluate THR outcomes in PsA compared to both patients with PsC and OA, and those with OA alone.

Methods: This study utilized data from a high volume single institution THR registry. Potential PsA cases were identified by ICD-9 code (696.0 and 696.1) and matched 4:1 on age, primary vs. revision procedure, and date of surgery, with OA TKR cases who had 2-year self-report data. PsA/PsC cases without follow-up were sent at least three additional requests for post-operative data. Patients with ICD-9 codes for other rheumatic diseases or fracture were excluded. Diagnoses of PsA/PsC were validated by chart review. Differences between groups were compared using ANOVA, and multivariate regressions were performed controlling for multiple potential confounders to identify independent predictors of poor post-operative pain and function. This study was IRB approved.

Results: 289 potential PsA cases and 931 OA controls were identified between 5/2007 and 12/2011. 69 PsA and 167 PsC cases were validated. Post-operative self-report data were available on 62% of PsA, 55% of PsC and 99% of OA. 19.7% of PsA/PsC reported outcomes between 3 and 5 years post-operatively. 52% PsA and 55% PsS were male compared to 45% OA (p-value=0.04). BMI was higher for PsA (p-value<0.001). There was no difference in race or education between groups. PsA and PsC had more co-morbidities and worse ASA class (0 Deyo co-morbidities: PsA 61% vs PsC 68% vs OA 80%; p-value=0.004). More PsA were current smokers (9% PsA vs 2% PsC vs 4% OA; p-value=0.005) and more PsA/PsC were previous smokers (60% PsA vs PsC 61% vs OA 46%; p-value=0.005). Topical steroids were used by 6% of PsA and 29% of PsS (p-value=0.001). 82% of PsA were on biologic or non-biologic DMARDs compared to 6% of PsS. There was no statistically significant difference in pre-or post-operative WOMAC pain or function or SF-12 PCS scores between groups. SF-12 MCS scores were significantly better in OA both pre- and post-operatively (p-values=0.003 and <0.001 respectively). Similarly, EQ5D scores were significantly worse both pre- and post-operatively for PsA and PsC (p-value=0.006 and p-value<0.001). Overall satisfaction with THA was equally high for all groups, with all > 80% of each group being very satisfied, (p-value=0.82). In a multivariable regression controlling for multiple potential cofounders, a diagnosis of PsA or PsC did not statistically significant increase the odds of poor post-operative pain or function. Revision TKR had much high odds of poor post-op pain, and worse pre-operative pain and function were statistically associated with poor post-operative pain and function, respectively.

Conclusion: Patients with PsA undergoing THR have equally good post-operative results compared to PsC and OA patients, despite worse pre-operative health status. These results should be communicated to PsA patients contemplating THR.

	PsA (N=69)	PsC (N=167)	OA (N=771)	P-Value
Age, years (SD)	60.6 (11.2)	63.6 (11.9)	63.2 (11.0)	0.14
BMI (SD)	29.6 (5.1)	29.3 (6.5)	27.6 (5.2)	**<0.001**
Pre-operative SF-12 MCS (SD)	47.9 (13.8)	46.9 (12.9)	51.2 (12.3)	**0.003**
2 Year SF-12 MCS (SD)	50.8 (10.9)	49.4 (11.6)	53.5 (9.5)	**<0.001**
Length of Stay, days (SD)	5.0 (1.4)	4.7 (1.8)	4.6 (1.1)	**0.05**
Pre-operative EQ Score (SD)	0.6 (0.2)	0.6 (0.2)	0.7 (0.2)	**0.006**
2 Year EQ Score (SD)	0.6 (0.3)	0.7 (0.2)	0.8 (0.2)	**<0.001**
Male, n (%)	36 (52%)	92 (55%)	343 (45%)	**0.035**
ASA Class, n(%)				**<0.001**
Class 1	0 (0%)	12 (7%)	70 (9%)	
Class 2	47 (68%)	116 (69%)	590 (77%)	
Class 3	22 (32%)	36 (22%)	110 (14%)	
Class 4	0 (0%)	3 (2%)	1 (0%)	
Caucasian, n (%)	43 (93%)	93 (98%)	715 (94%)	0.26
Do you currently smoke?				**0.005**
Yes	4 (9%)	2 (2%)	29 (4%)	
No, but I smoked previously	26 (60%)	58 (61%)	345 (46%)	
Never	13 (30%)	35 (37%)	371 (50%)	
Predictors of Having Poor Post-Operative Pain or Function (WOMAC <60) AfterTHR*				

	Poor Post-operative WOMAC Pain (<60) Odds Ratio (95% CI)	Poor Post-operative WOMAC Function (<60) Odds Ratio (95% CI)
PsS vs OA	0.93 (0.42, 2.03)	0.98 (0.48, 2.02)
PsA vs OA	0.80 (0.28, 2.26)	0.80 (0.28, 2.25)
25<BMI<30 vs. 18.5<BMI<25	0.94 (0.58, 1.54)	1.15 (0.72, 1.86)
30<BMI<35 vs. 18.5<BMI<25	1.24 (0.70, 2.20)	1.46 (0.83, 2.54)
35<BMI<40 vs. 18.5<BMI<25	0.84 (0.37, 1.95)	1.21 (0.57, 2.58)
BMI>40 vs. 18.5<BMI<25	1.41 (0.47, 4.23)	1.21 (0.41, 3.59)
ASA Class 1 and 2 vs ASA Class 3 and 4	0.78 (0.43, 1.41)	0.91 (0.53, 1.57)
0-1 Deyo Comorbidities vs 2+ Comorbidities	0.88 (0.53, 1.46)	0.88 (0.55, 1.40)
Primary vs Revision	**0.41 (0.20, 0.85)**	0.75 (0.36, 1.58)
Pre-operative WOMAC Pain	**0.95 (0.93, 0.97)**	1.01 (0.99, 1.03)
Pre-operative WOMAC Function	1.00 (0.98, 1.02)	**0.95 (0.93, 0.97)**

	0.99 (0.97, 1.01)	1.01 (0.99, 1.02)	
Pre-operative MCS			
Pre-operative EQ Score	3.04 (0.71, 13.05)	2.97 (0.74, 11.90)	

*Multivariate regression controlling for gender, diagnosis, BMI, ASA class, number of comorbidities, primary vs revision surgery, pre-operative WOMAC pain and function, pre-operative MCS, Pre-operative EQ Score.