Title: Total Knee Replacement Outcomes in Patients with Psoriatic Arthritis, Osteoarthritis with Cutaneous Psoriasis, and Osteoarthritis

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Background: Outcomes of total knee replacements (TKR) in psoriatic arthritis (PsA) are poorly studied. Previous studies are conflicting, often not separating inflammatory PsA from osteoarthritis (OA) with cutaneous psoriasis (PsC).

Objective: To evaluate TKR outcomes in PsA compared to both PsC+OA and OA alone.

Methods: This study utilized cases from a high volume single institution TKR registry enrolled between 5/2007 and 12/2011. Potential PsA cases were identified by ICD-9 code (696.0-.1) and matched 4:1 (on age (+/- 2.5 years), primary vs. revision and date of surgery) with OA TKR. TKR with other rheumatic diseases or fractures were excluded. Patient reported outcomes were collected at baseline and 2 years; non-responders received an additional questionnaire at 3-5 years. Differences between groups were compared using ANOVA, and multivariate logistic regressions were performed to identify independent predictors of poor post-operative pain and function, (WOMAC < 60).

Results: 253 potential PsA were identified; 76 PsA and 155 PsC+OA were validated by chart review. Post-op. self-report data were available in 76% PsA, 74% PsC+OA and 65% OA. 2% of self-reported outcomes were elicited 3-5 years post-op. PsA were younger than PsC+OA or OA,(p-value=0.009). PsA and PsC+OA had more co-morbidities and worse ASA class. More PsA and PsC+OA were previous smokers, more PsC+OA were current smokers. 71% of PsA were on biologics or non-biologic DMARDs compared to 5% of PsC+OA. There was no statistically significant difference in pre-or post-op WOMAC pain, WOMAC function or SF-12 physical component scores (PCS) scores between groups. Post-op. SF-12 mental component scores (MCS) scores were worse in PsA and PsC+OA (p-values=0.04). EQ-5D scores were worse both pre- and post-op. in PsA. Overall satisfaction with TKA was equally high for all groups, with > 70% being very satisfied (p-value=0.66). In a multivariate regression controlling for multiple potential cofounders, a diagnosis of PsA or PsC+OA did not statistically significantly increase the odds of either poor post-op. pain or function. Primary TKR had much lower odds of poor post-op pain or function, and worse pre-op. function was statistically significantly associated with poor post-op. function. No other variables were significant.

Conclusion: Despite having worse pre-op. health status, patients with PsA and PsC+OA have equally good post-op. pain and function compared with OA, and are equally satisfied. PsA have clinically significantly worse post-op. MCS. This information should be communicated to PsA and PsC+OA patients contemplating TKR.

Table 1: Demographic Data	PsA (N=76)	PsC+OA (N=155)	OA (N=547)*	P-Value
Age, years (SD)	63.5 (10.5)	67.5 (9.7)	67.0 (9.7)	**0.009**
BMI (SD)	29.5 (5.2)	30.5 (6.1)	29.8 (7.5)	0.48
Male, n (%)	35 (46%)	68 (44%)	199 (36%)	0.09
Caucasian, n (%)	72 (95%)	150 (97%)	488 (89%)	**0.007**
≥College Education, n (%)	30 (71%)	60 (67%)	308 (64%)	0.59
Pre-operative WOMAC Pain (SD)	54.3 (18.6)	54.7 (16.0)	55.4 (17.2)	0.89
Post-operative WOMAC Pain (SD)	86.8 (16.1)	88.0 (16.2)	87.6 (15.8)	0.91

Pre-operative WOMAC Function (SD)	50.9 (14.4)	55.4 (15.0)	55.7 (17.5)	0.31
Post-operative WOMAC Function (SD)	84.0 (17.2)	85.7 (19.3)	86.2 (15.8)	0.68
Pre-operative SF-12 PCS (SD)	43.7 (10.3)	45.4 (9.4)	45.7 (9.8)	0.69
Post-operative SF-12 PCS (SD)	43.0 (10.6)	46.3 (9.9)	46.4 (9.9)	0.07
Pre-operative SF-12 MCS (SD)	52.0 (9.2)	48.2 (11.1)	53.1 (9.1)	0.09
Post-operative SF-12 MCS (SD)	51.8 (9.5)	51.9 (9.5)	54.1 (8.7)	**0.04**
Pre-operative EQ-5D Score (SD)	0.6 (0.2)	0.6 (0.2)	0.7 (0.2)	**0.008**
Post-operative EQ-5D Score (SD)	0.7 (0.2)	0.8 (0.2)	0.8 (0.2)	**<0.001**
ASA Class, n (%)				**0.02**
Class 1	0 (0%)	1 (1%)	16 (3%)	
Class 2	52 (68%)	126 (81%)	426 (78%)	
Class 3/4	24 (32%)	28 (18%)	105 (19%)	
Deyo comorbidities, n (%)				**<0.001**
0 comorbidities	38 (50%)	109 (71%)	401 (74%)	
1-2 comorbidities	36 (47%)	40 (26%)	134 (25%)	
3+ comorbidities	2 (3%)	5 (3%)	10 (2%)	
Do you currently smoke?, n (%)				**<0.001**
Yes	0 (0%)	6 (8%)	9 (2%)	
No, but I smoked previously	25 (57%)	50 (66%)	268 (50%)	
Never	19 (43%)	20 (26%)	257 (48%)	
5 (best)	18 (45%)	32 (48%)	████	
* 547/843 cases were available for analysis			████	

Table 2 Predictors of Having Poor Post-Operative Pain or Function (WOMAC <60) After THR*

	Poor Post-Operative Pain WOMAC (<60) Odds Ratio (95% CI)	Poor Post-Operative Function WOMAC (<60) Odds Ratio (95% CI)
PsC+OA vs. OA	0.64 (0.08, 5.24)	1.11 (0.23, 5.54)
PsA vs. OA	0.88 (0.18, 4.26)	0.37 (0.05, 3.07)
Primary vs. Revision	**0.32 (0.11, 0.99)**	**0.20 (0.07, 0.56)**
Pre-operative WOMAC Pain	0.997 (0.96, 1.03)	1.01 (0.98, 1.05)
Pre-operative WOMAC Function	0.98 (0.94, 1.01)	**0.96 (0.93, 0.998)**

*Multivariate regression controlling for gender, diagnosis, BMI, number of comorbidities, primary vs. revision surgery, smoker status, pre-operative WOMAC pain and function, pre-operative MCS,