Defining Post-Operative Urinary Retention (POUR), its associated risk factors and evaluating for post-operative complications following Lower Limb Total Joint Arthroplasty (TJA)

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INTRODUCTION

- Total joint arthroplasty (TJA) is a commonly executed elective surgery, the demand for which is expected to rise.[1]
- Postoperative urinary retention (POUR) is a well-documented complication in both Total Hip (THA) and Total Knee Arthroplasty (TKA) with a reported incidence that spans from 0% to 75%. [2,3]
- Multiple risk factors such as age, sex, anesthesia type and underlying comorbidities have been documented to increase the risk for POUR in certain patient populations [4]
- POUR and its treatment of catheterization can lead to urinary tract infection (UTI) or urologic injury which can increase postoperative pain and prolong hospital stay.

❖ **The purpose of this study is to evaluate the different rates of POUR, its associated risk factors and compare 90-day complications following TJA in patients with and without POUR**

METHODS

- Retrospective study of a database cohort, examining data from 04/01/2014 to 12/31/2022.
- Male and female patients aged 18 to 89 years who underwent TJA of the knee or hip were included.
- Data was collected prospectively, and retrospectively reviewed.
- 17,272 TJA patients were examined.
- Compared 3 different definitions of POUR:
  - **POUR 1**. Having a bladder scan volume ≥ 500 ml
  - **POUR 2.** Having had a documented catheter (Foley or Straight)
  - **POUR 3**. A bladder scan volume ≥ 500 ml OR a documented catheter
- Patient characteristics and complications were compared for POUR (Y/N) with chi-square analyses. Age and length of stay were compared using t-tests. The primary outcome, any complication, was examined using a multivariable logistic regression.
- Final covariates were POUR (definition 3), sex, age group (<55, 55-64, 65-74, 75-89), ASA class (I-II, III-IV), Charlson comorbidity index (0-2, 3-4, 5+), BMI class (<25, 25-29.99, 30-34.99, 35+), joint replaced (Knee, Hip).

RESULTS

Figure 1. Comparing Percentage Rates of POUR by Definition

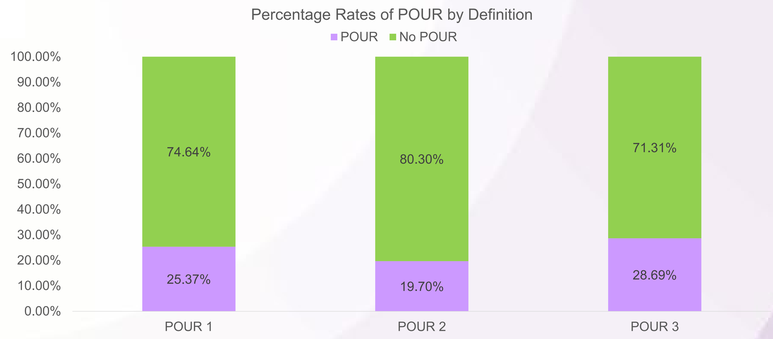
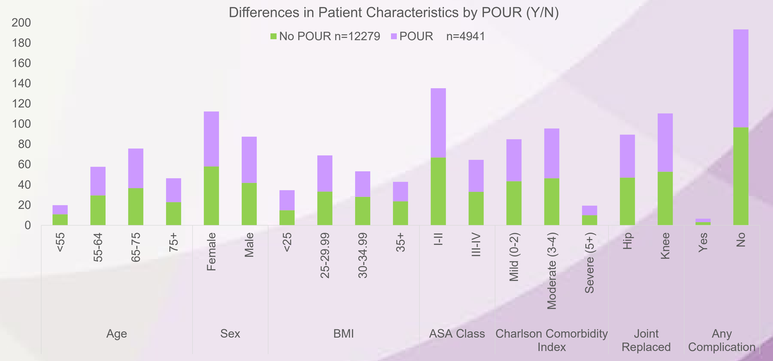


Figure 2. Differences in Patient Characteristics by POUR



- Increasing Age, Male Sex, elevated BMI, multiple comorbidities, and Total Knee Arthroplasty (TKA) were significantly associated with POUR.

Table 1. Risk Factors and Complication Rates between POUR and No POUR

	Documented Catheter OR Bladder Scan ≥ 500 ml		
Patient Characteristics	**No POUR n=12279**	**POUR n=4941**	**P-Value**
Age Group, n (%)			**<0.01**
<55	1332 (10.85)	448 (9.07)	
55-64	3628 (29.55)	1397 (28.27)	
65-75	4507 (36.7)	1931 (39.08)	
75+	2812 (22.9)	1165 (23.58)	
Sex, n (%)			**<0.01**
Female	7136 (58.12)	2684 (54.32)	
Male	5143 (41.88)	2257 (45.68)	
Body Mass Index, n (%)			**<0.01**
<25	1829 (14.9)	977 (19.77)	
25-29.99	4091 (33.32)	1766 (35.74)	
30-34.99	3451 (28.11)	1246 (25.22)	
35+	2907 (23.68)	952 (19.27)	
ASA Class, n (%)			0.06
I-II	8215 (66.94)	3380 (68.43)	
III-IV	4057 (33.06)	1559 (31.57)	
Charlson Comorbidity Index			**<0.01**
Mild (0-2)	5348 (43.55)	2046 (41.41)	
Moderate (3-4)	5710 (46.5)	2425 (49.08)	
Severe (5+)	1221 (9.94)	470 (9.51)	
Joint Replaced, n (%)			**<0.01**
Hip	5780 (47.07)	2098 (42.46)	
Knee	6499 (52.93)	2843 (57.54)	
Any Complication			0.58
Yes	392 (3.19)	166 (3.36)	
No	11887 (96.81)	4775 (96.64)	
UTI within 90 days of surgery			0.99
Yes	62 (0.50)	25 (0.51)	
No	12217 (99.5)	4916 (99.49)	

- Logistic regression analyses did not find a significant relationship between POUR and surgical complications (P = 0.37)
- Lower ASA 29% less likely to have a complication and 40% less like to get a UTI compared to higher ASA groups
- All younger age groups were less likely to get a UTI compared to the 75-89 age group.

CONCLUSIONS

- POUR rate, using POUR3, was 28% for this population that received TJA
- Sex, Age, BMI, Number of Comorbidities, and Surgery Type are significantly associated with POUR as risk factors
- No significant increased risk of 90-day post-operative complications, including UTI, in the POUR population
- Our data suggests that with appropriate management of POUR following a TJA there is no significant increase in post-operative complications

REFERENCES

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