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

Madeleine Powers¹, Laura Sanzari², Dorothy Wakefield³, Matthew Grosso²

¹University of New England College of Osteopathic Medicine, Biddeford, ME, ²Saint Francis Hospital and Medical Center, Hartford, CT

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 underling comorbidities have been documented to increase the risk for POUR in certain patient populations ¹

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 and 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 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

POUR rate, using POUR3, was 28% for this population that received TJA. 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.

![Figure 1. Comparing Percentage Rates of POUR by Definition](image)

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

![Figure 2. Differences In Patient Characteristics by POUR](image)

- 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 likely 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

1. Sloan, Matthew MD, MS1,a; Premkumar, Ajay MD, MPH2; Sheth, Neil P. MD3. Projected Volume of Primary Total Joint Arthroplasty in the U.S., 2014 to 2030. The Journal of Bone and Joint Surgery 100(17):p 1455-1460, <0.01

