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Variation and Risk Factors for Hospitalization following Ureteroscopic Stone Treatment in a Surgical Collaborative

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INTRODUCTION AND OBJECTIVE:

Unplanned hospitalization following ureteroscopy (URS) for urinary stone disease is associated with patient morbidity and increased healthcare costs. While hospitalization rates have been reported at 2-10%, our understanding is based on data from single center studies or claims-based analyses. Using a clinical registry, we assessed the variation in hospitalization rates after URS among practices in Michigan, and identify risk factors for infection-related admissions, including the timing of these events.

METHODS:

Using the Michigan Urological Surgery Improvement Collaborative (MUSIC) clinical registry, we identified patients who underwent unilateral URS to treat urinary stones between 2018-2023. We measured the proportion of patients hospitalized within 30 days and categorized reasons into groups; we used a hierarchy of infection, pain, technical complications, urinary symptoms, and other/unknown. We used Fisher's exact test to evaluate differences in hospitalization rates between practices. A multivariable mixed-effects logistic regression model was performed to determine factors associated with infection-related hospitalization.

RESULTS:

32,065 URS procedures from 37 practices were assessed. Of these, 895 (2.8%) patients were hospitalized within 30 days. There was significant variation among practices from 0% to 5.5% ($p<0.001$, Fig. 1A). Infection-related reasons constituted 63% of all hospitalizations (Fig. 1B). The overall rate of infection-related hospitalization was 1.8%, and of these, 58% occurred within the first 7 days. A post-operative stent (OR 2.08, $p<0.001$), positive pre-operative urine testing for infection (OR 1.84, $p<0.001$), history of recurrent infections (OR 1.80, $p=0.006$), stone located in the kidney (OR 1.39 versus ureter, $p=0.009$), and presence of a pre-operative stent (OR 1.25, $p=0.043$) were disease-specific risk factors significantly associated with infection-related hospitalization.

CONCLUSIONS:

Nearly one in fifty patients are hospitalized after URS for an infection-related complication in Michigan, and most occur within the first 7 days. There is significant variation in hospitalization rates among centers. Efforts examining practice pathways, antibiotic protocols, and technical

aspects are underway to develop statewide interventions to tackle this problem.

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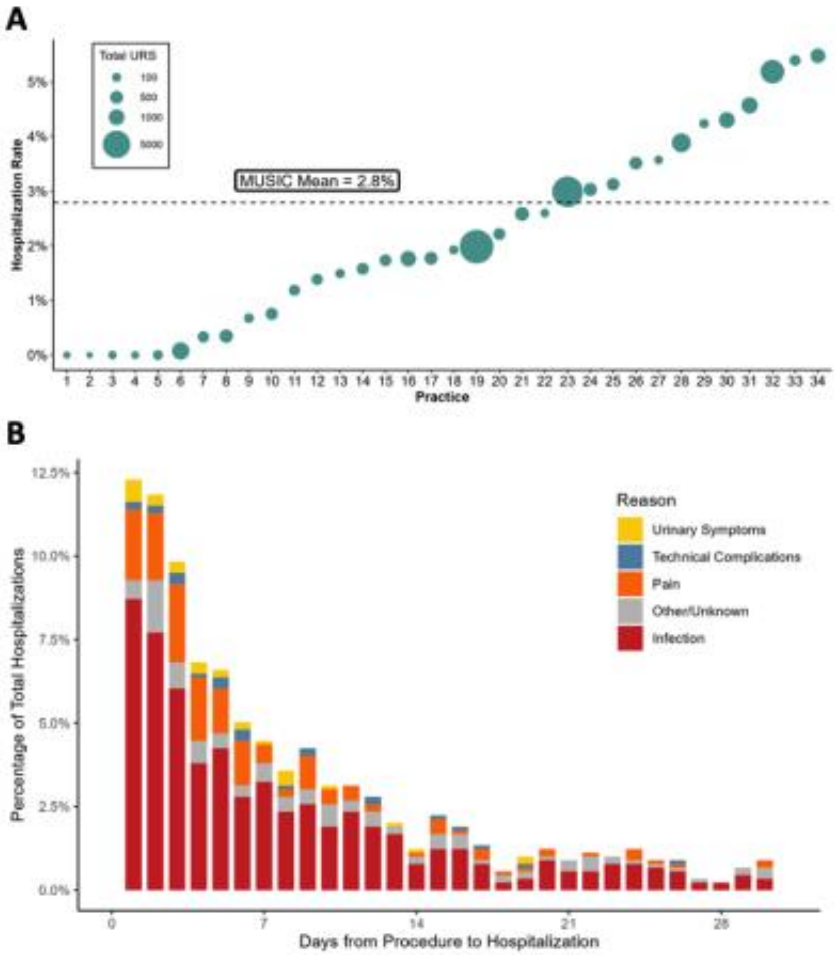
Figure 1: 30-day hospitalization rates following ureteroscopy within MUSIC A) Variation in rates among practices with at least 30 URS in registry. B) Impact of days from procedure on reported diagnoses at time of hospitalization.



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