

# Perioperative Instrumentation and Factors that Impact Intravesical Urothelial Carcinoma Recurrence After Nephroureterectomy

Joseph Kaefer

Indiana University School of Medicine

<https://orcid.org/0009-0001-1794-4556>

Daniel Sidhom

Department of Urology, Indiana University School of Medicine

Chandru Sundaram

Department of Urology, Indiana University School of Medicine

## **Abstract**

**Background:** Urothelial carcinoma of the ureter and renal pelvis has a tendency to recur following surgical intervention. A leading theory attributes this pattern to tumor seeding occurring during diagnostic or surgical procedures. Instruments commonly used during diagnostic and surgical intervention, such as ureteral stents, may influence recurrence rates.

**Methods:** Electronic medical records of 201 patients with a history of upper tract urothelial carcinoma and nephroureterectomy were reviewed. Seventy clinical factors were recorded and organized into pre-, peri-, and post-surgical categories. Of these variables pre-procedural ureteroscopy, access sheath use, stent placement, and biopsy were analyzed in connection to recurrence. Perioperative factors analyzed included the presence of a stent during the nephroureterectomy and the surgical approach (open vs. minimally invasive). Odds ratios (OR) and statistical significance (p-value) were used to determine potential correlation.

**Results:** Of the 201 patients, 105 (52.2%) experienced recurrence. Pre-procedural biopsy (OR 0.87,  $p=0.67$ ), pre-procedural ureteroscopy (OR 0.96,  $p = 0.90$ ), and surgical approach (OR 1.04,  $p=0.90$ ) demonstrated no significant impact on recurrence. Use of an access sheath during the diagnostic procedure (OR 1.22,  $p=0.53$ ) and pre-procedural stent placement (OR 1.26,  $p=0.45$ ) suggested an increase in recurrence, although not statistically significant. The presence of a stent during nephroureterectomy demonstrated a higher risk of recurrence (OR 1.8) and neared statistical significance ( $p=0.05$ ).

**Conclusion:** These findings suggest that certain perioperative factors such as the presence of a stent during nephroureterectomy may contribute to increased recurrence rates through mechanisms such as tumor seeding. Our study approaches statistical significance. Analysis of a larger cohort is anticipated to strengthen this association.