Factors Influencing Long-Term Outcomes of Ureteral Reimplantation

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Abstract

Purpose: To examine the impact of pre-determined patient and operative factors on ureteral reimplantation surgical outcomes using a rigorous, patient-centric definition of success.

Materials and Methods: This was a retrospective single-institution study utilizing a prospectively maintained database of ureteral reimplantation cases (2003–2024). Pre-defined independent variables included age, frailty index (5-Factor ACG), pelvic radiation history, operative approach (robotic vs. non-robotic), and revision status. Outcome measures included surgical success **(**defined as asymptomatic, freedom from stent/nephrostomy tube, no further interventions, and no obstruction on imaging), hospital length of stay (LOS), and 30-day complications. Statistical analyses included linear modeling and logistic regression.

Results: One hundred nine patients (median age: 51 years) were identified. Overall surgical success was 86%. Pelvic radiation history was inversely correlated with surgical success (64% for radiated vs. 91% for non-radiated; p=0.02). Higher frailty index scores predicted 30 day complications (Odds Ratio [OR]: 1.67, 95% CI: 1.11-2.64). Both frailty index score (estimate: 1.39 ± 0.48 days added per point, p=0.005) and increasing age (estimate: 0.08 ± 0.04 days added per year, p=0.04) significantly

predicted a longer hospital LOS. The robotic and open approaches had comparable success rates (88% vs. 81%, p=0.38).

Conclusions: Patients undergoing ureteral reimplantation with a history of pelvic radiation demonstrate significantly decreased surgical success, underscoring the challenge of managing radiation-induced strictures. Higher frailty index scores and increasing age are critical preoperative risk factors predicting prolonged hospital stay and increased 30-day complication rates. These findings can improve patient counseling and guide perioperative optimization strategies.

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