



# Distal ureter and bladder cuff excision using the “Keyhole Technique” during Robotic Radical Nephroureterectomy

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## ABSTRACT

**Introduction:** Upper tract urothelial carcinoma (UTUC) accounts for 5-10% of all urothelial tumors (1). Radical nephroureterectomy (RNU) remains the standard treatment for high, and low-grade UTUC (2). Although the open approach has been considered the gold standard, robotic techniques have shown comparable oncological outcomes with potential advantages in terms of peri-operative morbidity (3).

**Materials and Methods:** We present a novel “Keyhole” technique for management of distal ureter and bladder cuff during robotic RNU. This technique allows the surgeon to directly visualize the ureteric orifices, delineate resection borders, and maintain oncologic principles of en-bloc excision without necessitating secondary cystostomy incision or concomitant endoscopic procedure. Descriptive demographic characteristics, surgical, pathological, and oncological outcomes were analyzed. Complications were reported using the Clavien–Dindo classification system.

**Results:** Between 2015 and 2020, ten patients underwent robotic RNU with bladder cuff excision using the Keyhole technique (single-dock, single-position). Median age was 75 years. Eight patients underwent surgery for right-sided tumors. Median operative time, estimated blood loss, and length of hospital stay were 287 min, 100 mL, and 3 days, respectively. No intraoperative complications occurred, and one grade II complication occurred during the 90-day postoperative period. All patients had high-grade UTUC, being 90% pure urothelial. Bladder recurrences occurred in 30% of patients with an overall median follow-up of 11.2 months.

**Conclusions:** Keyhole technique for the management of distal ureter and bladder cuff during RNU represents a feasible approach with minimal 90-day complications and low bladder recurrence rate at centers of experience.

## CONFLICT OF INTEREST

None declared.

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