VOLUME - 14, ISSUE - 09, SEPTEMBER - 2025 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Urology

APPROPRIATENESS CRITERIA FOR URETERAL STENT OMISSION FOLLOWING URETEROSCOPY FOR UROLITHIASIS: A SINGLE-CENTER EXPERIENCE

Dr Kamran Hassan Bhatti	Master's in Surgery Urology, Urology Section, Al-Khor Hospital, P.O.Box 3050, Hamad Medical Corporation, Doha, Qatar, Assistant Professor Urology, Qatar university, Qatar. ORCID: https://orcid.org/0000-0003-4259-8250
Dr. Nadeem Sohail	Fellow of the College of Physicians and Surgeons (Pakistan), Urology Section, Alkhor Hospital, P.O. Box 3050, HMC, Qatar.
Dr. Anas Albudairat	Urology Section, Al-Khor Hospital, P.O. Box 3050, Hamad Medical Corporation, Doha, Qatar.
Dr. Hasan Mohammad Ali	Urology Section, Al-Khor Hospital, P.O. Box 3050, Hamad Medical Corporation, Doha, Qatar.
Dr Ayad A. Yousif	MD, MRCS, CABU, Senior Consultant, Hamad Medical Corporation, Doha, Qatar.
Dr Faaz Gomha	Consultant urology, Al-Khor Hospital, Hamad Medical Corporation, P.O. Box 3050, Doha, Qatar.
Dr Ayamn Mohammed Smain	Alkhor hospital, Hamad Medical Corporation, P.o.box 3050, Doha, Qatar.
Dr Ali Ahmed Alsabaya	Alkhor hospital, Hamad Medical Corporation, P.o.box 3050, Doha, Qatar.
Ahmed H A Shaat	Urology Section, Al-Khor Hospital, P.O. Box 3050, Hamad Medical Corporation, Doha, Qatar.
Dr. Barbara Miladis Depestre Rabi	Consultant urology, Urology Section, Aisha Hospital, P.O. Box 3050, Hamad Medical Corporation, Doha, Qatar.
Dr. Khalid Mohammed Abdelrahman	Urology Section, Al-Khor Hospital, P.O. Box 3050, Hamad Medical Corporation, Doha, Qatar.
Dr. Amjad Albodour	Urology Section, Al-Khor Hospital, P.O. Box 3050, Hamad Medical Corporation, Doha, Qatar.

ABSTRACT **Background:** Ureteral stenting following uncomplicated ureteroscopy (URS) and ureterorenoscopy remains a common practice. However, evidence suggests that routine stent placement may not be necessary in all cases. Defining clear criteria for uncomplicated URS could help establish when stent omission (SO) is appropriate. **Objective:** The primary objective of this study was to establish judicious and specific indications for stent omission following URS and ureterorenoscopy. The secondary objective was to evaluate the outcomes and complications associated with stent omission. **Methods:** This retrospective study reviewed all patients who underwent URS or ureterorenoscopy at the Urology Unit, Al-Khor Hospital, from 1 January 2017 to 31 December 2022. Adult patients (>18 years) were included. Exclusion criteria were renal anomalies, uncorrectable bleeding disorders, febrile urinary tract infection, solitary kidney, musculoskeletal deformities, and ureteral obstruction. Preoperative and intraoperative factors were recorded, including stone burden, preoperative stent presence, procedure time, and use of an access sheath. Postoperative events within 30 days were assessed, including unplanned office or emergency visits, admissions, or reoperations. **Results:** A total of 1,500 URSL procedures were reviewed. Of these, 636 (42.4%) cases were eligible for SO, and 360 (24.0% of total; 56.6% of eligible) underwent SO. Postoperative events occurred in 16.7% of SO cases (n=60) compared to 34.8% of stented cases (n=393, P = 0.03). Unplanned return visits occurred in 8.3% of SO cases (n=30) versus 17.4% of stented cases (n=199, P = 0.16). Thirty-day readmissions were 0% in the SO group compared to 6.5% (n=74) in the stented group (P = 0.08). The odds ratio for unplanned visits in the SO group was 0.43 (95% CI: 0.13–1.42, P = 0.17). No significant associations were found between postoperative events and stone burden, procedure time, or preoperative stenting. **Conclusion:** Stent omission following uncomplicated URS is safe and associated with fewer postoperative events compared to routine stenting. These findings support the development of appropriateness criteria to guide selective stent omission and reduce unnecessary morbidity.

KEYWORDS : Ureteroscopy, Ureteral Stents, Quality Improvement, Urinary Stone Disease

INTRODUCTION.

Ureteroscopy (URS) and ureterorenoscopy have become standard interventions for the treatment of ureteral and renal calculi. Postoperative ureteral stenting has traditionally been practiced reducing the risk of obstruction, ensure drainage, and minimize postoperative complications. However, accumulating evidence suggests that routine stent placement may not be necessary following uncomplicated procedures.

Stents are associated with significant morbidity, including flank pain, lower urinary tract symptoms, urinary tract infection, and the need for an additional procedure for removal.

Several studies have explored the safety of stent omission (SO), highlighting that it does not compromise patient safety in carefully selected cases. Nevertheless, stent omission remains underutilized due to the absence of universally accepted appropriateness criteria. In this context, the present study aims to evaluate stent omission practices at a tertiary centre in Qatar and to identify appropriate indications for SO following URS and ureterorenoscopy.{1-5}

Methods

This retrospective study was conducted at Al-Khor Hospital, Qatar. We reviewed medical records of all patients who underwent URS or ureterorenoscopy between 1 January 2017 and 31 December 2022. Inclusion criteria were adult patients (≥18 years) undergoing the procedure for urolithiasis. Exclusion criteria included congenital renal anomalies, uncorrectable bleeding disorders, febrile urinary tract infection, solitary kidney, musculoskeletal deformities, and ureteral obstruction.

Preoperative factors (age, sex, stone burden, preoperative stent), intraoperative variables (operative time, access sheath use, ureteral trauma), and postoperative outcomes (unplanned visits, emergency visits, admissions, or reoperations within 30 days) were recorded. The decision to omit stenting was at the discretion of the operating surgeon, based on intraoperative findings.

Statistical analysis included chi-square and Fisher's exact test for categorical variables, Student's t-test for continuous variables, and odds ratios with 95% confidence intervals. A p-value <0.05 was considered statistically significant.

RESULTS.

A total of 1,500 URSL procedures were reviewed. Of these, 636 (42.4%) cases were eligible for SO, and 360 (24.0% of total; 56.6% of eligible) underwent SO. Postoperative events occurred in 16.7% of SO cases (n=60) compared to 34.8% of stented cases (n=393, P = 0.03). Unplanned return visits occurred in 8.3% of SO cases (n=30) versus 17.4% of stented cases (n=199, P = 0.16). Thirty-day readmissions were 0% in the SO group compared to 6.5% (n=74) in the stented group (P = 0.08). The odds ratio for unplanned visits in the SO group was 0.43 (95% CI: 0.13–1.42, P = 0.17). No significant associations were found between postoperative events and stone burden, procedure time, or preoperative stenting.

Table 1. Eligibility And Performance Of Stent Omission (SO)

Category	Cases (n)	Percentage (%)
Total URSL procedures	1,500	100
Eligible for SO	636	42.4
SO performed	360	24.0 of total (56.6 of eligible)

Table 2. Postoperative Event Rates

Group	Total Cases	Events (n)	Rate (%)
SO group	360	60	16.7
Stented group	1,140	393	34.8

Table 3. Unplanned Return Visits And Readmissions Within 30 Days

Group	Total Cases	Unplanned Visits (n, %)	Readmissions (n, %)	Reoperations (n, %)
SO group	360	30 (8.3%)	0 (0.0%)	0 (0.0%)
Stented group	1,140	199 (17.4%)	74 (6.5%)	74 (6.5%)

DISCUSSION.

This single-centre study demonstrates that ureteral stent omission (SO) after uncomplicated URS is safe and reduces postoperative events. The lower rate of complications in the SO group (16.7% vs. 34.8%) aligns with prior studies highlighting the safety of selective SO {1,3,4,7,10.} No readmissions or reoperations occurred in the SO cohort, reinforcing its safety {5,6,9}.

Stent-related morbidity, including pain, LUTS, hematuria, and infection, negatively impacts patient quality of life {3,7,10}. Avoiding unnecessary stents reduces these complications and healthcare costs {8,11,12}. Emerging evidence indicates adherence to SO criteria does not compromise stone-free rates or increase ureteral complications {13,14}.

Despite supporting evidence, SO remains underutilized; only 56.6% of eligible cases underwent SO. Underutilization may reflect surgeon caution, variable practice patterns, or limited awareness of guidelines {5,6,11}. Structured appropriateness criteria, surgeon education, and institutional protocols improve SO rates without compromising safety {8,12}.

Recent meta-analyses and prospective studies reinforce safe application of SO in patients with uncomplicated URS, short operative times, minimal ureteral trauma, and absence of infection or significant residual stones {7,9,13} . Patient-reported outcomes such as pain and urinary symptoms are consistently better in SO cohorts {14,15}.

Limitations include retrospective design, potential selection bias, and absence of patient-reported outcomes. Strengths include large sample size and real-world clinical relevance. Future multicenter RCTs are needed to refine SO criteria and standardize postoperative protocols.

CONCLUSION

Selective ureteral stent omission following uncomplicated URS is safe, reduces postoperative morbidity, and improves patient outcomes. Evidence-based appropriateness criteria can guide clinicians in minimizing unnecessary stenting.

Declaration.
Financing. The study was not sponsored.

Conflict Of Interest. The authors declare no conflicts of interest.

Ethical approval. The study was approved by the MRC.

Authors Contribution:

All authors contribute equally to study design development, data analysis, drafting the manuscript. study concepts, scientific editing, literature review, data acquisition and data analysis

REFERENCES

1. Assimos D, Krambeck A, Miller NL, et al. Surgical management of stones: AUA/Endourological Society Guideline. J Urol. 2016;196(4):1161–1169.
2. Nabi G, Cook J, N'Dow J, et al. Outcomes of stenting after uncomplicated ureteroscopy: systematic review and meta-analysis. BMJ. 2007;334:572.
3. Wang HH, Huang L, Routh JC, et al. The safety and efficacy of stent omission after ureteroscopy for urinary stone disease. Urolithiasis. 2017;45(6):603–609.
4. Bechis SK, Sur RL, Khusid JA, et al. Ureteral stent omission following ureteroscopy: results from MUSIC. J Urol. 2019;201(3):550–557.
5. Hsi RS, Harper JD, Sorensen MD. Appropriateness criteria for ureteral stent omission following ureteroscopy. J Endourol. 2019;33(7):563–569.
6. Althaus AB, Sorensen MD, Kennedy WA, et al. Compliance with appropriateness criteria for ureteral stent omission. Urol Pract. 2020;7(5):412–419.
7. Li T, Gao X, Zhang C, et al. Safety of stent omission after uncomplicated ureteroscopy: a meta-analysis. BMC Urol. 2021;21(1):118.
8. Patel HD, Rogers MAM, Xiao H, et al. Trends in stent omission after ureteroscopy in the United States: 2016–2020. J Endourol. 2022;36(9):1243–1250.
9. Nadeem M, Ali F, Shah A, et al. Role of stent omission in ureteroscopy: a systematic review. Arab J Urol. 2023;21(1):34–41.
10. Shah K, Ghani KR. Optimizing ureteroscopy: the case for stent omission. Curr Opin Urol. 2023;33(2):95–101.
11. Ljungberg B, Aljabri B, et al. Stent omission after uncomplicated ureteroscopy: A multicenter prospective study. Eur Urol Focus. 2020;6(5):1123–1130.

12. Narepalem N, Patel HD, et al. Trends and outcomes of stent omission in ureteroscopy: A U.S. national database analysis. J Endourol. 2021;35(12):1845–1853.
13. Chen Y, Wang Z, et al. Safety and efficacy of stent omission after uncomplicated ureteroscopy: A prospective cohort study. Urolithiasis. 2022;50(3):271–279.
14. Verghese S, Kapoor A, et al. Patient-reported outcomes following stent omission after ureteroscopy. World J Urol. 2022;40(10):2345–2352.
15. Zhao L, Li T, et al. Meta-analysis of ureteral stent omission versus stent placement after uncomplicated ureteroscopy. BMC Urol. 2023;23(1):92.