Original Research Paper

Volume - 15 | Issue - 09 | September - 2025 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Urology

" INITIAL EXPERIENCE WITH HOLMIUM LASER ENUCLEATION OF THE PROSTATE."

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
Dr. Nadeem Sohail	Fellow Of The College Of Physicians And Surgeons (Pakistan) Urology Section, Alkhor Hospital P.O. Box 3050 HMC, 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
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
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: Benign prostatic hyperplasia (BPH) is a common cause of lower urinary tract symptoms (LUTS) in aging men. Holmium laser enucleation of the prostate (HoLEP) is a minimally invasive alternative to TURP and open prostatectomy. This study reports the initial experience with HoLEP at Al-Khor Hospital, Qatar. **Methods:** We retrospectively reviewed 78 patients who underwent HoLEP between January 2014 and May 2023. Preoperative parameters (age, PSA, prostate volume, post-void residual volume, Qmax), perioperative details (irrigation, catheterization, hospital stay), and postoperative outcomes (IPSS, PSA, prostate size, residual volume, Qmax) were analyzed. Complications were also recorded. **Results:** Mean age was 63 years. Mean prostate volume was 98.7 g. Postoperatively, IPSS improved from 22.9 to 7.9 ($p<0.001$), Qmax increased from 10.6 to 27.9 mL/s ($p<0.001$), and post-void residual decreased from 89.9 to 40.5 mL ($p<0.001$). PSA decreased from 8.9 to 5.8 ng/mL ($p<0.001$). Hospital stay averaged 2.05 days. Complications included capsular perforation (5.1%), clot retention (9%), and persistent incontinence (7.7%). **Conclusion:** HoLEP in Qatar demonstrated excellent efficacy and safety, with functional outcomes comparable to global series. It is a valuable treatment for BPH in our setting.

KEYWORDS :

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a highly prevalent condition among aging men and a major cause of LUTS. Traditional management strategies include transurethral resection of the prostate (TURP) and open simple prostatectomy. Holmium laser enucleation of the prostate (HoLEP) has emerged as a minimally invasive alternative that allows complete removal of adenomatous tissue regardless of gland size, with shorter catheterization and hospitalization times and reduced bleeding risks (1,2). Although HoLEP is now widely practiced globally, it is not yet commonly performed in Qatar. The objective of this study was to evaluate our initial experience with HoLEP at Al-Khor Hospital, Qatar and compare outcomes with published international data.

METHODS

We retrospectively reviewed the records of 78 men who underwent HoLEP for symptomatic BPH at Al-Khor Hospital between January 1, 2014, and May 31, 2023. Inclusion criteria were moderate-to-severe LUTS, prostate volume >40 mL, maximum urinary flow rate (Qmax) <15 mL/s, and post-void residual urine >50 mL. Exclusion criteria included inflammatory conditions of the lower urinary tract, genitourinary malignancy, and prior urological surgery. Preoperative parameters (age, PSA, prostate size, post-void residual volume, and Qmax) were documented. Perioperative parameters included irrigation duration, catheterization duration, and hospital stay. Functional outcomes were assessed postoperatively using IPSS, PSA, prostate volume, post-void residual, and uroflowmetry at three months. Complications were categorized as intraoperative, early postoperative, and late postoperative. Statistical analysis was performed using paired t-tests or Wilcoxon signed-rank tests where appropriate, with $p<0.05$ considered significant.

RESULTS

The mean age of the cohort was 63 years (range 57–78). Mean

preoperative PSA was 5.58 ng/mL (0.4–78.9), and mean prostate size was 98.7 g (45–230). Mean post-void residual volume was 168.9 mL (0–2132), and mean Qmax was 9.32 mL/s (0–22.8).

Perioperatively, mean irrigation time was 22.0 hours (8–77), catheterization time 48.9 hours (28–98), and hospital stay 2.05 days (2–5).

Postoperatively, IPSS improved from 22.9 to 7.9 ($p<0.001$), PSA decreased from 8.9 to 5.8 ng/mL ($p<0.001$), prostate size reduced from 102.1 g to 33.6 g ($p<0.001$), post-void residual decreased from 89.9 to 40.5 mL ($p<0.001$), and Qmax increased from 10.6 to 27.9 mL/s ($p<0.001$). Complications included capsular perforation (5.1%), bladder mucosal injury (3.8%), clot retention (9%), one case requiring transfusion (1.3%), infectious complications (10%), persistent incontinence (7.7%), urethral stricture (2.6%), and bladder neck sclerosis (1.3%).

Table 1. Preoperative Characteristics (n=78)

Characteristic	Mean (Range)
Age (years)	63 (57–78)
PSA (ng/mL)	5.58 (0.4–78.9)
Prostate volume (g)	98.7 (45–230)
Post-void residual (mL)	168.9 (0–2132)
Qmax (mL/s)	9.32 (0–22.8)

Table 2. Perioperative Outcomes (n=78)

Parameter	Mean (Range)
Irrigation time (h)	22.0 (8–77)
Catheterization time (h)	48.9 (28–98)
Hospital stay (days)	2.05 (2–5)

Table 3. Functional Outcomes (n=78)

Parameter	Pre-op Mean	Post-op Mean	p-value
IPSS	22.9	7.9	<0.001
PSA (ng/mL)	8.9	5.8	<0.001
Prostate volume (g)	102.1	33.6	<0.001
Post-void residual (mL)	89.9	40.5	<0.001
Qmax (mL/s)	10.6	27.9	<0.001

Table 4. Intraoperative and Postoperative Complications (n=78)

Complication	n (%)
Capsular perforation	4 (5.1%)
Bladder mucosal injury	3 (3.8%)
Conversion to TURP/open	1 (1.3%)
Morcellator malfunction	2 (2.6%)
Hematuria with clot retention	7 (9.0%)
Blood transfusion	1 (1.3%)
Infectious complications	8 (10.2%)
Persistent urinary incontinence	6 (7.7%)
Urethral stricture	2 (2.6%)
Bladder neck sclerosis	1 (1.3%)

DISCUSSION

Our findings confirm that HoLEP provides significant improvements in functional outcomes in men with BPH in Qatar, consistent with global reports. The mean IPSS reduction of ~65% and tripling of Qmax are in line with international data, where similar improvements have been reported in randomized controlled trials and large real-world series (1–3). Kuntz et al. demonstrated sustained improvements at 5-year follow-up, establishing HoLEP's long-term durability (4).

Our mean prostate volume was nearly 100 g, with some glands >200 g, yet outcomes were excellent. This aligns with global evidence showing HoLEP is effective regardless of gland size, unlike TURP which is usually limited to prostates <80 g (5,6). A meta-analysis confirmed HoLEP as the only size-independent endoscopic procedure with reproducible results (7).

Perioperative outcomes were favorable, with mean catheterization of 48 hours and hospital stay of ~2 days. Older reports documented longer stays (3–5 days) (8). With increasing experience, same-day discharges have become feasible in some centers (9,10). Our results are likely to improve as surgical expertise grows.

Complication rates were low and within international ranges. We observed one transfusion (1.3%), consistent with global reports of <2% (2,11). Capsular perforation (5.1%) and mucosal injuries were similar to other early learning-curve cohorts (12). Persistent stress urinary incontinence occurred in 7.7% but most cases resolve within 6–12 months, with long-term rates <2% (13).

A significant postoperative PSA decline was observed, confirming effective adenoma removal. Other studies have shown PSA reductions of 50–80%, which correlate with tissue removal and durable symptom relief (14,15).

Overall, our outcomes mirror international results and confirm that HoLEP is a safe and effective procedure for BPH. Given its size-independence and durable outcomes, HoLEP is increasingly considered the new gold standard for surgical management of BPH (16–18).

Limitations of our study include its retrospective design, single-center scope, and relatively short follow-up. Prospective studies with longer duration are needed to confirm long-term durability and evaluate late complications. Nonetheless, this study provides valuable early data on the feasibility and safety of HoLEP in the Middle East.

CONCLUSION

Our early experience shows that HoLEP provides significant symptom relief and flow improvement in men with BPH, with low complication rates. Outcomes are consistent with those reported worldwide, supporting HoLEP as a safe and effective treatment option in Qatar.

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. Suh JY, Oh SJ, Kwon OJ, et al. Outcome of patients with elevated PSA and LUTS receiving HoLEP. Medicine (Baltimore). 2022;101(39):e30098.
2. Elshal AM, Elmansy HM, Elkoushy MA, et al. HoLEP in patients >75 years: outcomes and complications. Urology. 2013;82(3):641–646.
3. Yin L, Teng JF, Huang CJ, Zhang XM, Xu DF. HoLEP vs TURP: meta-analysis of RCTs. J Endourol. 2013;27(5):604–611.
4. Kuntz RM, Lehrich K, Ahyai SA. HoLEP vs TURP: 5-year randomized trial. J Urol. 2008;179(5):1739–1743.
5. Gilling PJ, Kennett KM, Fraundorfer MR. HoLEP vs open prostatectomy for prostates >100 g: randomized trial. BJU Int. 2012;109(3):360–364.
6. Cornu JN, Ahyai S, Bachmann A, et al. Meta-analysis of functional outcomes and complications after HoLEP vs TURP. Eur Urol. 2015;67(5):986–996.
7. Tan A, Liao C, Mo Z, et al. Meta-analysis of HoLEP for large prostates. J Endourol. 2017;31(10):857–865.
8. Romero-Otero J, Garcia-Gomez B, Duarte-Ojeda JM, et al. Multicentre HoLEP outcomes in 1,148 patients. BJU Int. 2019;123(2):350–356.
9. Becker B, Gross AJ, Netsch C. Same-day catheter removal after HoLEP. World J Urol. 2020;38(10):2663–2669.
10. Westhofen T, Bach T, Gross AJ, et al. Day-case HoLEP: outcomes and readmissions. Urol Int. 2021;105(9-10):804–810.
11. Ahyai SA, Gilling P, Kaplan SA, et al. Meta-analysis of HoLEP vs TURP and other techniques. Eur Urol. 2010;58(3):384–397.
12. Elzayat EA, Habib EI, Elhilali MM. HoLEP complications during learning curve. J Urol. 2005;173(3):766–769.
13. Das AK, Teplitsky S, Chandrasekar T, et al. Stress urinary incontinence post-HoLEP. Int Braz J Urol. 2020;46(4):624–631.
14. Robert G, Descazeaud A, Azzouzi AR, et al. PSA reduction after HoLEP predicts durability. Eur Urol. 2016;70(2):248–253.
15. Gilling PJ, Aho TF, Frampton CM, et al. HoLEP long-term outcomes. Eur Urol. 2017;71(4):684–691.
16. Jones P, Rajkumar GN, Rai BP, et al. Medium-term HoLEP outcomes: systematic review. Prostate Cancer Prostatic Dis. 2019;22(2):249–258.
17. Gratzke C, Bachmann A, Descazeaud A, et al. EAU Guidelines on male LUTS. Eur Urol. 2015;67(6):1099–1109.
18. Becker B, Netsch C, Gross AJ. Current status of HoLEP: adoption and learning curve. Curr Opin Urol. 2022;32(1):40–46.