

## Diagnostic performance of magnetic resonance imaging and targeted biopsy results in men with indwelling urinary catheters A propensity score-matched study

Tomer Bashi<sup>1</sup>, Adi Kidron<sup>1</sup>, Ziv Savin<sup>1</sup>, Amihay Nevo<sup>1</sup>, Sophie Barnes<sup>2</sup>, Ofer Yossepowitch<sup>1</sup>, Roy Mano<sup>1</sup>, Snir Dekalo<sup>1</sup>

<sup>1</sup>Department of Urology, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; <sup>2</sup>Department of Radiology, Tel Aviv Sourasky Medical Center, Faculty of Medical & Health Sciences, Tel-Aviv University, Tel Aviv-Yafo, Israel

Cite as: Bashi T, Kidron A, Savin Z, et al. Diagnostic performance of magnetic resonance imaging and targeted biopsy results in men with indwelling urinary catheters: A propensity score-matched study. *Can Urol Assoc J* 2025;19(11):E392-7. <http://dx.doi.org/10.5489/cuaj.9194>

Published online July 28, 2025

Appendix available at [cuaj.ca](http://cuaj.ca)

### ABSTRACT

**INTRODUCTION:** We sought to evaluate multiparametric magnetic resonance imaging (mpMRI) findings and biopsy results in men with an indwelling catheter undergoing prostate cancer screening. mpMRI is central to the evaluation of prostate cancer. Little is known about the effect of an indwelling urinary catheter on prostate mpMRI findings and the results of subsequent biopsies.

**METHODS:** We retrospectively reviewed 5820 mpMRI exams performed from 2017–2023. Forty-eight patients underwent mpMRI with an indwelling urinary catheter. Using propensity score matching, patients were matched 1:1 for age, pre-biopsy prostate-specific antigen (PSA), and prostate volume. Clinical characteristics, mpMRI findings, and targeted biopsy results were compared between the groups.

**RESULTS:** After propensity score matching, clinical characteristics of the study groups did not differ significantly. Prostate Imaging-Reporting & Data System (PI-RADS) distribution did not show a significant difference ( $p=0.51$ ); PI-RADS  $\geq 3$  lesions were identified in 20/48 (42%) patients with indwelling catheters and in 18/50 (36%) patients without catheters. Among patients with a PI-RADS score  $\geq 3$ , clinically significant prostate cancer (csPCa) was identified in 5/20 patients carrying catheters and 6/18 patients without catheters ( $p=0.152$ ). A higher rate of any cancer was identified in patients without a catheter (67% vs. 35%,  $p=0.049$ ). PSA  $>9.79$  ng/ml predicted the finding of csPCa in patients carrying urinary catheters with PI-RADS  $\geq 3$  lesions.

**CONCLUSIONS:** Our findings suggest no significant difference in mpMRI findings and csPCa rates for patients with and without indwelling urinary catheters. Patients carrying urinary catheters suspected to harbor csPCa based on an elevated PSA level should undergo further evaluation, including mpMRI and biopsies when necessary before benign prostatic hyperplasia treatment.

### INTRODUCTION

Patients experiencing urinary retention, especially in the presence of obstructive uropathy, are required to carry a urinary catheter until the surgical treatment of their enlarged prostate. The presence of a urinary catheter significantly affects the quality of life, introducing discomfort, inconvenience, and potential complications such as infections.<sup>1,2</sup> One of the main concerns when treating patients with urinary obstruction in certain age groups is whether to screen for prostate cancer (PCa) prior to treating the enlarged prostate.<sup>3</sup> This question becomes even more crucial when blood levels of prostate-specific antigen (PSA) are obtained immediately after the insertion of the urethral catheter in the absence of documented pre-obstruction PSA levels. In these cases, elevated PSA levels may not truly represent a higher risk for PCa, complicating the process of PCa screening.<sup>4,5</sup>

Multiparametric magnetic resonance imaging (mpMRI) has become an integral part of the diagnostic process for prostate cancer and is recommended before prostate biopsy.<sup>6</sup> Suspicious prostatic lesions on mpMRI are stratified according to the Prostate Imaging-Reporting & Data System, version 2 (PI-RADS v2), and targeted biopsies are recommended for lesions scored as PI-RADS  $\geq 3$ .<sup>7</sup> Data are lacking regarding the effects of an indwelling catheter on the evaluation of prostate mpMRI and scoring of suspicious lesions. Furthermore, the association

between mpMRI findings and biopsy results in the presence of a urinary catheter is unknown.

In this study, we sought to determine the effects of an indwelling urethral catheter on the interpretation of prostate mpMRI and on the detection rates of clinically significant prostate cancer (csPCa) using mpMRI-targeted and systematic biopsies.

## METHODS

### Patients

After obtaining institutional review board approval, we conducted a retrospective study that included all consecutive patients who underwent mpMRI of the prostate for PCa screening in our institute between January 2017 and June 2023. We identified 53 patients who had MRI while carrying a urinary catheter. Two patients with suspected pelvic lesions, two patients on active surveillance for low-risk PCa, and one patient who was lost to followup were excluded. Propensity score matching (PSM) was performed, and patients were matched 1:1 for the preoperative parameters: PSA, prostate volume, and age. Matching tolerance was set at 0.0009, yielding a total of 98 propensity score-matched patients. Clinical and demographic characteristics, including PI-RADS score and targeted prostate biopsy results, were compared between the groups (Supplementary Figure 1; available at [cuaj.ca](#)).

### mpMRI protocol and targeted biopsies

The mpMRI scans were performed on a 3Tesla scanner with a 16-channel surface coil. According to PI-RADS v2 guidelines, all scans included T2 Echo sequences on three scan planes, T1 volumetric interpolated examination before and after administration of contrast medium, and diffusion-weighted imaging sequences in the axial plane with calculation of the relative apparent diffusion coefficient (ADC) map. According to the mpMRI characteristics, a PI-RADS score was assigned to each detected lesion. Biopsies were performed transperineally using a 5 mm grid and a spring-loaded biopsy gun with an 18 G needle. All procedures were performed using the BioJet MRI/transrectal ultrasound (TRUS) fusion biopsy system. After sampling all suspicious lesions, systematic biopsies were obtained.

### Study outcomes

Primary outcomes were PI-RADS scores and identification of csPCa from the targeted prostate biopsies. The secondary outcome was identification of insignificant prostate cancer. Clinically significant PCa was defined

as International Society of Urological Pathology (ISUP) grade  $\geq 2$ .

### Statistical analysis

Statistical comparisons between groups were performed by means of the Chi-square, Fisher-exact, and Mann-Whitney U tests. Univariate and multivariate logistic regressions were performed to evaluate the association between prostate biopsy results and predicting factors — PSA, prostate volume, and age. A receiver operating characteristic (ROC) curve was created to evaluate the identification of csPCa based on PSA levels in patients with indwelling catheters, and the PSA threshold was assessed using the Youden index. All analyses were two-sided, and statistical significance was defined as  $p < 0.05$ . The statistical analyses were done with SPSS v. 29 (IBM, U.S.), and graphical items were created using RAW Graphs v. 2.0 (DensityDesign, Calibro and Inmagik) and SPSS v.29.

## RESULTS

### Study population

The cohort was comprised of 5820 MRI exams conducted on 4990 unique patients between January 2017 and June 2023. From this cohort, 48 patients with indwelling urinary catheters who were not excluded from the study formed the catheter group. Propensity score matching was conducted using PSA, prostate volume, and age as predictors. This process created a matched control group, allowing for a comparison of PI-RADS scores and biopsy outcomes between the original catheter group and the matched group (Supplementary Figure 1; available at [cuaj.ca](#)).

No significant differences were identified when comparing the clinical characteristics of the two groups, including age, PSA levels, PI-RADS score, and prostate volume (Table 1). No significant differences were observed in any parameters included in the propensity score matching.

### mpMRI suspicious findings

The distribution of PI-RADS scores did not show a significant difference between the groups ( $p = 0.51$ ). In patients with catheters, the distribution was as follows: PI-RADS 0/1: 15 (31%); PI-RADS 2: 13 (27%); PI-RADS 3: 6 (12.5%); PI-RADS 4: 8 (16.7%); and PI-RADS 5: 6 (12.5%). For patients without catheters, findings included: PI-RADS 0/1: 22 (44%); PI-RADS 2: 10 (20%); PI-RADS 3: 8 (16%); PI-RADS 4: 4 (8%); and PI-RADS 5: 6 (12%) (Table 1; Supplementary Figure 2; available at [cuaj.ca](#)). PI-RADS

**Table 1. Patient characteristics**

Variable	Patients with urinary catheter (n=48)	Patients without urinary catheter (n=50)	p
Age (years)	68.72 [64.64, 70.9]	68.52 [63.05, 72.63]	0.68
PSA (ng/ml)	10.85 [7, 17.42]	8.55 [5.72, 13.21]	0.63
Prostate volume (ml)	115.1 [83.8, 150]	92.3 [63.2, 159.5]	0.24
PI-RADS score			0.51
0/1	15 (31.2%)	22 (44%)	
2	13 (27.1%)	10 (20%)	
3	6 (12.5%)	8 (16%)	
4	8 (16.7%)	4 (8%)	
5	6 (12.5%)	6 (12%)	
PI-RADS distribution			0.71
PI-RADS 0/1+2	28 (58.3%)	32 (64%)	
PI-RADS 3+4+5	20 (41.6%)	18 (36%)	

PI-RADS: Prostate Imaging-Reporting & Data System; PSA: prostate-specific antigen.

≥3 lesions were identified in 20 (41.6%) patients with indwelling catheters and in 18 (36%) patients without catheters. There was no significant difference between the groups (p= 0.71) (Table 1).

**Biopsy results**

All patients with suspicious lesions on mpMRI (PI-RADS ≥3) underwent MRI-targeted fusion biopsies. Among the 20 patients with indwelling catheters and suspected lesions, biopsy results included: 2/20 patients (10%) with ISUP 1; 4/20 patients (20%) with ISUP 2; and 1/20 patient (5%) with ISUP 4. Among the 18 patients without catheters, findings included 6/18 patients (33%) with ISUP 1; 3/18 patients (17%) with ISUP 2; 1/18 patient (6%) with ISUP 3; and 2/18 patients (11%) with ISUP 4 (Tables 2A, 2B). Men without an indwelling catheter had a significantly higher rate of any cancer on biopsy (12/18, 67% vs. 7/20, 35%, p=0.049); however, rates of csPCa did not differ significantly (6/18, 33% vs. 5/20, 25%, p=0.152) between the groups (Figure 1).

Among 11 patients with csPCa: average PSA levels were 26 ng/mL for the five patients within the catheter group and 16.25 ng/mL for the six patients within the non-catheter group (p=0.34). The average age was 68.5 years for the catheter group and 74.8 years for the non-catheter group (p=0.064). The average prostate volume was 126 cc for the catheter group and 53.8 cc for the non-catheter group (p=0.089). The average PSA density was 0.22 for the catheter group and 0.4 for the non-catheter group (p=0.34).

**Table 2A. MRI fusion prostate biopsy results based on the PI-RADS scores in patients with urinary catheters**

Variable	PI-RADS 3 (n=6)	PI-RADS 4 (n=8)	PI-RADS 5 (n=6)	Suspicious lesions (n=20)
Benign	5	5	3	13/20 (65%)
ISUP 1	0	2	0	2/20 (10%)
ISUP 2	1	1	2	4/20 (20%)
ISUP 3	0	0	0	0/20 (0%)
ISUP 4	0	0	1	1/20 (5%)
ISUP 5	0	0	0	0/20 (0%)

ISUP: International Society of Urological Pathology. MRI: magnetic resonance imaging; PI-RADS: Prostate Imaging-Reporting & Data System.

**Table 2B. MRI fusion prostate biopsy results based on the PI-RADS scores in patients without urinary catheters**

Variable	PI-RADS 3 (n=8)	PI-RADS 4 (n=4)	PI-RADS 5 (n=6)	Suspicious lesions (n=18)
Benign	5	1	0	6/18 (33%)
ISUP 1	2	2	2	6/18 (33%)
ISUP 2	1	0	2	3/18 (17%)
ISUP 3	0	1	0	1/18 (5.5%)
ISUP 4	0	0	2	2/18 (11%)
ISUP 5	0	0	0	0/20 (0%)

ISUP: International Society of Urological Pathology. MRI: magnetic resonance imaging; PI-RADS: Prostate Imaging-Reporting & Data System.

Among patients diagnosed with any grade of PCa: the average PSA level was 23.57 ng/mL for the catheter group and 16.96 ng/mL for the non-catheter group (p=0.36). The average age was 68.39 years for the catheter group and 71.97 years for the non-catheter group (p=0.157). The average prostate size was 119.4 cc for the catheter group and 90.89 cc for the non-catheter group (p=0.33). Average PSA density was 0.2 for the catheter group and 0.27 for the non-catheter group (p=0.5).

It is important to note that the ISUP grade reported per patient reflects the highest grade identified in any of the sampled cores. In more than 80% of cases, this highest-grade tumor was found in the targeted biopsy cores.

Analysis of tumor location revealed that approximately 10% of the PCa-positive samples were located

in the transition zone (TZ), while the majority of lesions were identified in the peripheral zone (PZ).

### Predicting factors for csPCa

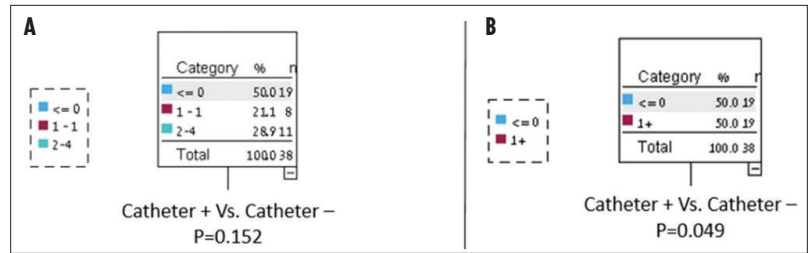
When evaluating predicting factors for csPCa in patients with urinary catheters, higher PSA was found to be the only significant predictor of a positive biopsy (Supplementary Table 1; available at *cuaj.ca*). Using the Youden index, we identified a PSA threshold of 9.79 ng/ml (specificity 0.488, sensitivity 1, positive predictive value [PPV] 0.185, negative predictive value [NPV] 1) for csPCa (area under the curve [AUC] 0.77, confidence interval [CI] 0.549–0.99,  $p=0.009$ ), under which no patient was diagnosed with csPCa (Figure 2).

### DISCUSSION

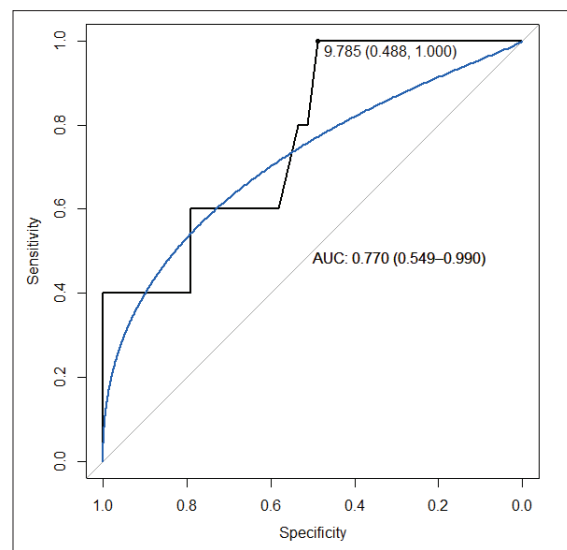
Screening for PCa in patients carrying urinary catheters presents a unique challenge. In the current study, we evaluated the impact of the presence of an indwelling urinary catheter when performing mpMRI, its influence on PI-RADS scoring, and targeted biopsy results. Our findings suggest mpMRI maintains its accuracy in patients with a urinary catheter. We found no significant difference in the distribution of PI-RADS scores between patients with and without a urinary catheter. Moreover, no significant difference was found in the rate of csPCa between the two groups. These findings support the use of mpMRI as a reliable diagnostic tool in patients with indwelling urinary catheters.

PCa evaluation has evolved substantially with the advent of prostate mpMRI. Traditionally, PCa diagnosis relied on PSA levels and digital rectal examinations (DRE), followed by TRUS. TRUS-guided systematic biopsy has a diagnostic yield of 40–50%, but it may miss clinically significant cancers, especially in patients with persistently elevated PSA levels despite a negative initial biopsy.<sup>8,9</sup> In contrast, MRI fusion targeted biopsy uses mpMRI to identify suspicious lesions and guide targeted biopsies, enhancing the detection of csPCa. Studies show that MRI fusion targeted biopsy has a higher accuracy and sensitivity for detecting csPCa, reducing the likelihood of missing aggressive cancers,<sup>8–11</sup> as well as unnecessary biopsies and the diagnosis of indolent tumors.<sup>12,13</sup>

Many patients with urinary catheters are eager to undergo benign prostatic hyperplasia (BPH) surgery as soon as possible to remove the catheter and alleviate their symptoms.<sup>2</sup> BPH surgeries, such as transurethral resection of the prostate (TURP) and holmium laser enucleation of the prostate (HoLEP), target the TZ of the prostate. Prostate cancer isolated exclusively in the TZ accounts for 20–25% of all prostate can-



**Figure 1.** (A) Subgroup analysis of the prostate biopsy results into 0=benign, 1=clinically insignificant prostate cancer (ISUP 1), and 2–4=clinically significant prostate cancer (csPCa) (ISUP 2–4). (B) Subgroup analysis of the prostate biopsy results into 0=benign, 1(+)=clinically significant and insignificant prostate cancer (ISUP 1–4). ISUP: International Society of Urological Pathology.



**Figure 2.** Receiver operating characteristics of prostate-specific antigen (PSA) threshold for clinically significant prostate cancer (csPCa), in patients with urinary catheters. AUC: area under the curve.

cers.<sup>14–16</sup> Several studies have reported that cancer arising from the TZ has a more favorable prognosis than tumors that arise in the PZ.<sup>15,16</sup>

Incidental prostate cancer (iPCa) is often detected during the microscopic evaluation of resected tissue from BPH surgeries. The likelihood of detecting PCa pathology during BPH surgery varies, with iPCa found in approximately 3–16% of cases. The detection rate of iPCa varies depending on the type of surgical procedure; TURP has the highest rate at approximately 1.4%, while robot-assisted simple prostatectomy has the lowest at 1.18%. The most common pathologic findings in these incidental cases include low-grade cancers, typically classified as Gleason score 6, which are often considered clinically insignificant.<sup>3</sup> Identifying a clinically significant tumor before BPH surgery is important, as it may alter the surgical treatment and justify performing robotic-assisted radical prostatectomy, which may treat both the cancer and the enlarged prostate.<sup>17,18</sup>

Patients with acute urinary retention often arrive at counseling with high PSA levels from a blood test obtained after the catheter insertion. Although studies demonstrate that PSA elevation after catheterization is minimal,<sup>19</sup> this finding often leads to further evaluation, including performing an mpMRI of the prostate, aimed at identifying lesions suspicious for PCa. Data regarding the accuracy of mpMRI in this scenario are scarce.<sup>20</sup>

Our results demonstrate that patients with urinary catheters are at a similar risk of harboring csPCa compared to those without, with higher PSA levels being a significant predictor of PCa. Using the Youden index, we identified a PSA threshold of 9.79, under which no patient with a PI-RADS score  $\geq 3$  prostate mpMRI lesion was diagnosed with csPCa. Following further validation on additional, larger cohorts, this finding may suggest a benefit in using a higher PSA threshold when evaluating for the presence of PCa in patients with an indwelling catheter and a prostate mpMRI finding.

### Limitations

Our study has several limitations that should be acknowledged. The retrospective nature of the study introduces inherent biases and limits the ability to establish causality. While propensity score matching was employed to balance preoperative parameters between the groups, residual confounding variables may still exist. Furthermore, the high prostate volume and PSA levels of patients in acute urinary retention with an indwelling catheter may have created a matched cohort with a higher risk of harboring PCa; nevertheless, rates of csPCa did not differ significantly between the two groups. Additionally, the sample size, particularly of patients with urinary catheters, was relatively small, which may affect the generalizability of the findings.

Another limitation of our study is that only patients with PI-RADS  $\geq 3$  underwent prostate biopsy, limiting our ability to determine the false-negative rate of mpMRI; however, in the catheter group, several patients with PI-RADS  $\leq 2$  lesions subsequently underwent BPH surgery aimed at catheter weaning. Histopathologic examination of the resected tissue in these cases revealed only benign findings, suggesting a low likelihood of undetected csPCa in this subgroup.

Finally, the study focused on patients from a single institution, which may limit the external validity of the findings. Different institutions may have varying protocols and patient demographics, which could influence the outcomes. Future studies with larger cohorts are necessary to validate our results and provide more

robust conclusions regarding the implications of urinary catheters on PCa evaluation.

### CONCLUSIONS

In the current study, mpMRI findings were similar between patients with elevated PSA levels with and without indwelling urinary catheters. Moreover, prostate biopsy results did not show a significantly different rate of csPCa when performing a biopsy on all patients with a PI-RADS  $\geq 3$  lesion.

Our findings suggest that patients carrying urinary catheters who present with elevated PSA levels before BPH surgery should undergo further evaluation with a prostate mpMRI and targeted biopsy when necessary.

**COMPETING INTERESTS:** The authors do not report any competing personal or financial interests related to this work.

### REFERENCES

- Ikuerowo SO, Ogunade AA, Ogunlowo TO, et al. The burden of prolonged indwelling catheter after acute urinary retention in Ikeja - Lagos, Nigeria. *BMC Urol* 2007;7:16. <https://doi.org/10.1186/1471-2490-7-16>
- Werneburg GT. Catheter-associated urinary tract infections: current challenges and future prospects. *Res Rep Urol* 2022;14:109-133. <https://doi.org/10.2147/RRU.S273663>
- Capogrosso P, Capitano U, Vertosick EA, et al. Temporal trend in incidental prostate cancer detection at surgery for benign prostatic hyperplasia. *Urology* 2018;122:152-7. <https://doi.org/10.1016/j.urol.2018.07.028>
- Izadpanahi MH, Salimi H, Javid A, Eslami S. The effect of urethral catheterization on the level of prostate-specific antigen. *J Res Med Sci* 2017;22:38. <https://doi.org/10.4103/1735-1995.202145>
- Kravchick S, Bunkin I, Peled R, et al. Patients with elevated serum PSA and indwelling catheter after acute urinary retention: prospective study of 63 patients with 7-year follow-up. *J Endourol* 2007;21:1203-6. <https://doi.org/10.1089/end.2007.9907>
- Rawla P. Epidemiology of prostate cancer. *World J Oncol* 2019;10:63-89. <https://doi.org/10.14740/wjon1191>
- Oerther B, Engel H, Bamberg F, et al. Cancer detection rates of the PI-RADSv2.1 assessment categories: systematic review and meta-analysis on lesion level and patient level. *Prostate Cancer Prostatic Dis* 2022;25:256-63. <https://doi.org/10.1038/s41391-021-00417-1>
- Dadpour M, Soltani AM, Ghafoori M, et al. Ultrasound/MRI-targeted biopsy versus saturated trans-rectal ultrasound guided biopsy of prostate in patients with primary negative conventional biopsy and still elevated PSA: a prospective randomized clinical trial. *Am J Clin Exp Urol* 2023;11:312-9.
- Khoo CC, Eldred-Evans D, Peters M, et al. A comparison of prostate cancer detection between visual estimation (cognitive registration) and image fusion (software registration) targeted transperineal prostate biopsy. *J Urol* 2021;205:1075-81. <https://doi.org/10.1097/JU.0000000000001476>
- Jain MA, Leslie SW, Sapra A. Prostate cancer screening. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. <https://www.ncbi.nlm.nih.gov/books/NBK556081>
- Parker C, Castro E, Fizazi K, et al. Prostate cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol* 2020;31:1119-34. <https://doi.org/10.1016/j.annonc.2020.06.011>
- Rouvière O, Puech P, Renard-Penna R, et al. Use of prostate systematic and targeted biopsy on the basis of multiparametric MRI in biopsy-naïve patients (MRI-FIRST): a prospective, multicentre, paired diagnostic study. *Lancet Oncol* 2019;20:100-9. [https://doi.org/10.1016/S1470-2045\(18\)30569-2](https://doi.org/10.1016/S1470-2045(18)30569-2)
- Ahmed HU, El-Shater Bosaily A, Brown LC, et al. Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. *Lancet* 2017;389:815-22. [https://doi.org/10.1016/S0140-6736\(16\)32401-1](https://doi.org/10.1016/S0140-6736(16)32401-1)
- Perera M, Lawrentschuk N, Perera N, et al. Incidental prostate cancer in transurethral resection of prostate specimens in men aged up to 65 years. *Prostate Int* 2016;4:11-4. <https://doi.org/10.1016/j.pmi.2015.10.016>

15. Xu H, Wan X, Gu M, et al. Surgical treatment for benign prostatic hyperplasia: Holmium laser enucleation of the prostate (HoLEP). *J Vis Exp* 2018;133:56683. <https://doi.org/10.3791/56683>
16. Lee JJ, Thomas IC, Nolley R, et al. Biologic differences between peripheral and transition zone prostate cancer. *Prostate* 2015;75:183-90. <https://doi.org/10.1002/pros.22903>
17. Bologna E, Licari LC, Franco A, et al. Incidental prostate cancer in patients treated for benign prostatic hyperplasia: analysis from a contemporary national dataset. *Diagnostics (Basel)* 2024;14:677. <https://doi.org/10.3390/diagnostics14070677>
18. Williams IS, McVey A, Perera S, et al. Modern paradigms for prostate cancer detection and management. *Med J Aust* 2022;217:424-33. <https://doi.org/10.5694/mja2.51722>
19. Izadpanahi MH, Salimi H, Javid A, Eslami S. The effect of urethral catheterization on the level of prostate-specific antigen. *J Res Med Sci* 2017;22:38. <https://doi.org/10.4103/1735-1995.202145>
20. Wenzel M, Welte MN, Grossmann L, et al. Multiparametric MRI may help to identify patients with prostate cancer in a contemporary cohort of patients with clinical bladder outlet obstruction scheduled for holmium laser enucleation of the prostate (HoLEP). *Front Surg* 2021;8:633196. <https://doi.org/10.3389/fsurg.2021.633196>

---

CORRESPONDENCE: Dr. Tomer Bashi, Tel Aviv Sourasky Medical Center, Aviv, Israel; [tomerbashi@gmail.com](mailto:tomerbashi@gmail.com)