

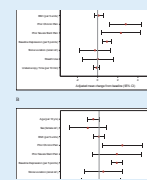


AUA at Urological Society of India 2023

Gopal Badlani, MD, FACS, FRCS



INSIDE THIS ISSUE



Risk Factors for Increased Stent-associated Symptoms Following Ureteroscopy for Urinary Stones



A Urine-based DNA Methylation Marker Test to Detect Upper Tract Urothelial Carcinoma



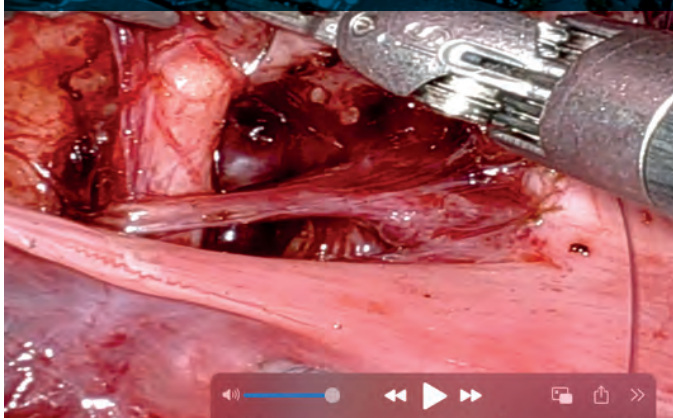
Effects of In-office Dispensing by Single-specialty Urology Practices on Management of Advanced Prostate Cancer

American Urological Association Participation in the 2023 Urological Society of India National Congress

Jaspreet S. Sandhu, MD

Urological Society of India Congress Presentation Summary

Aseem Shukla, MD

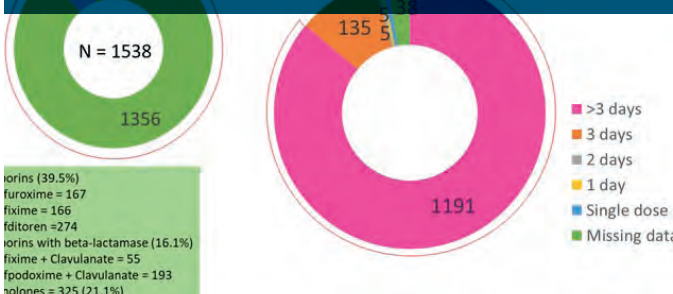


Brazilian Society of Urology Recommendations on Perioperative Procedures of Prostate, Bladder, and Kidney Cancer Surgery

Marcus Vinicius Sadi, MD
Ubirajara Ferreira, MD

Current Antibiotic Practice for Endourological Surgery and Postoperative Urinary Tract Infection

Rishi Nayyar, MCh
Shritosh Kumar, MS



CLINICAL NEWS

Health-related Quality of Life After Robotic-assisted vs Open Radical Cystectomy

Clinical Impact of a Rapid Genetic Testing Model for Advanced Prostate Cancer Patients

Phase I Trial of Vascular-targeted Photodynamic Therapy for Upper Tract Urothelial Carcinoma

Bladder Neck Contractures Stabilize After Placement of the Artificial Urinary Sphincter

Merit-based Incentive Payment System Quality Reporting in Urology Practices

Non-race-based Glomerular Filtration Rates to Estimate Renal Functional Outcomes Following Nephrectomy

Biomarker Surrogate for Nutritional Status to Predict Overall Survival in Patients Post-radical Cystectomy

Impact of Maximal Transurethral Resection on Pathological Outcomes at Cystectomy

Bladder Mucosal Cystitis Cystica Correlates With Recurrent UTI in Postmenopausal Women

Deep Learning of Videourodynamics to Classify Bladder Dysfunction Severity in Patients With Spina Bifida

Efficacy of TAR-200 in Patients With Muscle-invasive Bladder Cancer

AUANews^{Extra}

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SPECIALTY SOCIETIES

AUA at Urological Society of India 2023

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The bond of friendship between the AUA and the Urological Society of India (USI) was established many years ago. Since 2011, the AUA has been holding a joint session at the annual meeting of the USI in addition to the resident course. Dr Aseem Shukla, Assistant Secretary for Asia, led the delegation at the meeting in New Delhi this year (see Figure). Lori Agbonkheshe, the tireless International Education Lead at the AUA, puts it all together.

Dr Jaspreet Sandhu from Memorial Sloan Kettering and Guidelines Chair, Dr Pramod Reddy from Cincinnati Children's Hospital, Dr Ashok Hemal, and I were part of the team this year.

Dr R. Sabnis, USI President, and Dr R. Keshavamurthy, USI Secretary, chaired the session along with Dr Shukla.

A panel discussion on managing

difficult cases of urinary tract infection was led by Dr Rishi Nayyar, and the panelists were Dr Nitin Kekre, Dr S. K. Singh, and Dr Jaspreet Sandhu. The AUA White Paper on antibiotic stewardship was highlighted along with need for antibiotics stewardship.

Dr Shukla and Dr Hemal presented keynote lectures on hypospadias and renal cancer, respectively, that were well received based on the audience participation. A session on male incontinence was led by Dr Sandhu, who not only presented the AUA Male Incontinence Guidelines, but also provided the technical nuances of artificial urinary sphincter as it is not commonly done in India due to cost. Dr S. Kulkarni provided a specialist view of incontinence in patients with urethral stricture.

The female incontinence session was led by Dr Sanjay Sinha, a key opinion leader in the field from India. I presented a urological perspective of anterior compartment

repair as well as philosophical view of the future of stress urinary incontinence management.

The field of stress urinary incontinence has seen transformational changes from tissue-based suspension procedures and bulking to mesh-based mid urethral sling. The mesh controversy, despite long-term data and support from all societies, has led to a ban in certain countries. The resurgence of a new bulking agent was discussed. The holy grail of cell-based therapy and the evolving field of regenerative pharmacology were also discussed.

Each year this session builds on mutual respect and education need. Dr Arun Chawla, the Education Director, is a visionary leader, and in the era of tele-education is planning on year-round education sessions to be supplemented by the resident course and the annual meeting.

Dr Denstedt and Dr Shukla have done a wonderful job in maintaining the bond despite the COVID interruption. ■



Figure. AUA stars shine bright at USI 2023.

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SPECIALTY SOCIETIES

American Urological Association Participation in the 2023 Urological Society of India National Congress

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 New York, New York

The Urological Society of India National Congress (USICON) was held February 2-5, 2023, in Gurugram, India, just outside New Delhi. USICON is an annual regional showcase focused primarily on India but also including many other countries from the region. The AUA participated in many meaningful ways and as part of the AUA delegation, I had the opportunity to take part in named lectures, panel discussions, and courses for trainees and attendees which I will highlight below.

The AUA lecture was titled Male Urinary Incontinence: Current State of the Art. This was an overview of the current state of management and prevention of male incontinence and largely sourced from the recent AUA/Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction clinical practice guideline titled Incontinence After Prostate Treatment.¹ The natural history of urinary function recovery after prostatectomy, risk factors for urinary incontinence, as well as management of persistent stress and urgency urinary incontinence were some of topics addressed. Formal urinary function rehabilitation and prehabilitation as part of prostate cancer treatment programs were also topics that generated interest, as was the impact of adjuvant or salvage radiotherapy—namely, that it arrests urinary function recovery.

A separate AUA/Urological Society of India (USI) session was also held at the meeting, which included a panel of experts that discussed practical evidence-based



guidelines for specific urology scenarios. Male and female lower urinary tract symptoms, prostate cancer screening, and urethral strictures were just some of the topics that were presented. Specific differences between the Indian and American populations were also addressed, including the differences in rates of prostate cancer in men with elevated PSA and differences in rates and presentation of urethral stricture between the two populations.

Male Incontinence-Management Issues was also a part of the AUA/USI session. I was asked to give a presentation on incontinence post-transurethral prostatectomy/

“The natural history of urinary function recovery after prostatectomy, risk factors for urinary incontinence, as well as management of persistent stress and urgency urinary incontinence were some of topics addressed.”

post-radical prostatectomy—evaluation, imaging, and urodynamics (UDS). This presentation focused on the important role of history and timing and degree of incontinence in the evaluation of patients suffering from urinary incontinence. Imaging plays a minor role and UDS is considered optional, but specific scenarios where it can be helpful such as in radiated patients were illustrated. Another talk on Management—Artificial Urinary Sphincter detailed the preoperative issues, operative technique, and postoperative complications related to implantation of an artificial urinary sphincter. In addition to step-by-step technique, management of device failure via an algorithmic approach was highlighted.

I also took part in multiple other panel discussions and courses. Specifically, the Masterclass in Benign Prostatic Hyperplasia was a case-based panel discussion with panelists from the UK, US, India, and other regional countries. We focused on diagnostic dilemmas within male lower urinary tract symptoms/benign prostatic hyperplasia and differences in patients from various parts of the world. Multiple techniques including transurethral prostatectomy, laser vaporization, laser enucleation, and robotic simple prostatectomy were discussed along with indications and cautions with each of the modalities.

A course on Urodynamics Made Easy was tailored toward

“A course on Urodynamics Made Easy was tailored toward trainees, and I spoke about voiding cystometrograms, electromyogram, video UDS, and urethral pressure profile.”

trainees, and I spoke about voiding cystometrograms, electromyogram, video UDS, and urethral pressure profile. This was an excellent course that went over basics of a UDS procedure as well as definitions of various UDS parameters. Abnormal values were defined along with corresponding clinical scenarios. Case-based discussion was held at the end of this course and audience questions were answered.

In addition to the scientific sessions, there was a large exhibit hall with local medical device and pharmaceutical companies. Social sessions were also held as part of USICON, including multiple faculty dinners where international faculty were recognized. The USI leadership did a tremendous job in hosting this meeting, and it was an excellent opportunity for the AUA participants to meet old friends and make new ones. I will remember my time at USICON fondly for years to come! ■

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SPECIALTY SOCIETIES

Urological Society of India Congress Presentation Summary

Aseem Shukla, MD

Children's Hospital of Philadelphia, Pennsylvania

A perusal of my practice calendar at the Children's Hospital of Philadelphia will consistently display a 2-week block extending from late January into early February. It has been so for nearly a decade, though at an elevated level of importance over the last 4 years. Why so?

The end of January means that the International Bladder Exstrophy Collaboration that the late Richard Grady and I initiated at the Civil Hospital in Ahmedabad, India, gathers, as it has for 15 years. Operative surgeons from 4 major children's hospitals, dozens of observer surgeons seeking an immersive learning experience in bladder exstrophy, and a team of anesthesiologists, orthopedic surgeons, geneticists, nurses, and researchers join hands in a bid to address the global surgical burden of that rare disease.

As the 10 days in Ahmedabad end, our team journeys to the host city of the annual Urological Society of India Conference (USICON). For 2023, the venue was the contemporary designed, spacious A-Dot Convention Center in met-

ropolitan Delhi—a venue where a scientifically rigorous, meticulously organized, and comprehensive schedule encompassing all urological specialties awaited.

I was asked to address 2 areas, both of which comprise an area of my specialty interest: hypospadias and the robot-assisted ureteral reimplantation to address vesicoureteral reflux.

Tasked to provide “My 2 cents” on hypospadias complications, I began with a simple accounting of the genealogy of hypospadias repairs (Figure 1). I explained that while there are many options for a hypospadias repair, it is important that pediatric urologists limit their armamentarium to certain repairs for which they can demonstrate reproducible results. For me, this means that I utilize the Thiersch-Duplay primarily, and island onlay and simple meatal advancements occasionally, for distal repairs and the 2-stage approach for proximal hypospadias with severe chordee.

The crux of my discussion thereafter focused on emerging data from my institution and many others about the importance of greater transparency in reporting

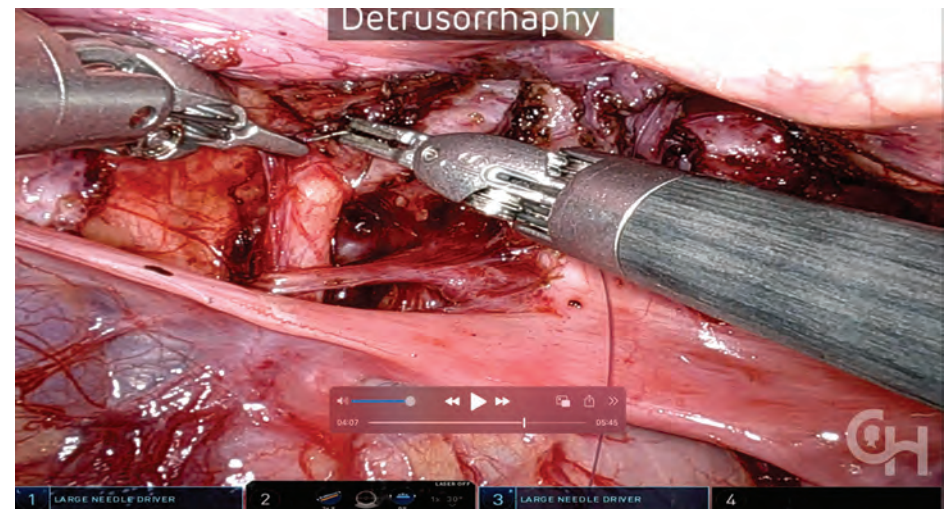


Figure 2. Still shot from video demonstrating robot-assisted extravesical ureteral reimplantation.

results after hypospadias repair.¹ This greater commitment to accuracy in data reporting has led to a significant insight: most complications after hypospadias repairs do not appear soon after surgery. Indeed, at the Children's Hospital of Philadelphia, we've found that 53% of all complications after hypospadias surgery were detected only after the first postoperative year, with

the median time to complication after distal hypospadias repairs a surprising 83 months. At USICON, I asserted that any surgical outcomes report after hypospadias repair should be considered very preliminary and nonconclusive until 5 or 6 years have elapsed after surgery.

→ Continued on page 5

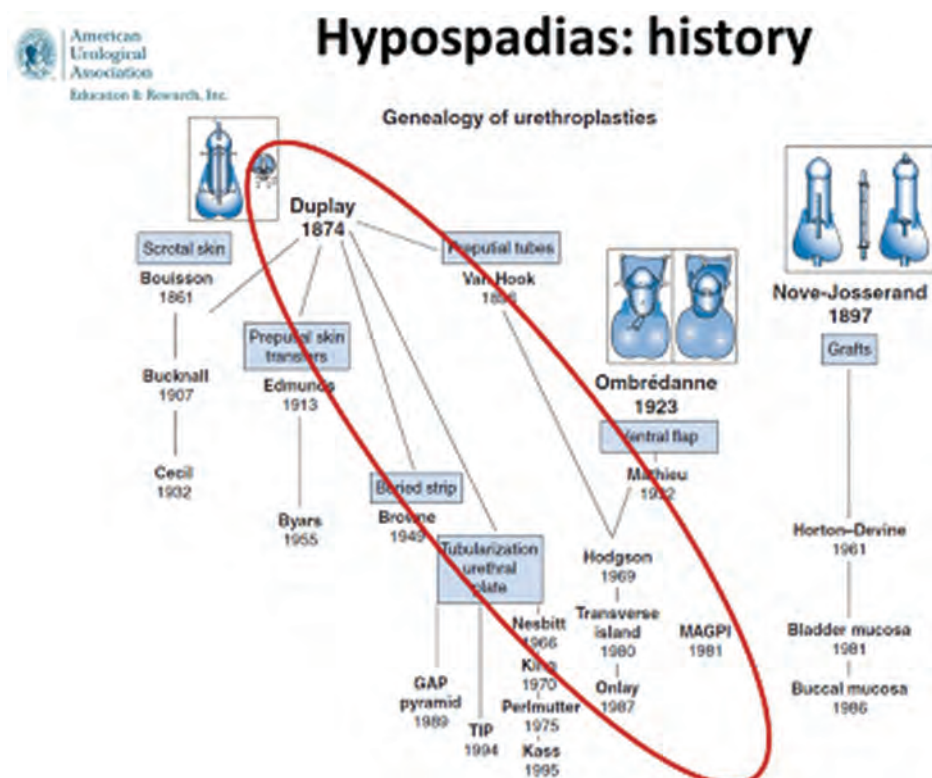


Figure 1. Genealogy of hypospadias repairs (credit: Douglas A. Canning).



Figure 3. Part of the AUA delegation to Urological Society of India Conference—Delhi. Left to right: Jaspreet Sandhu, Karl Godlewski, Pramod Reddy, and Aseem Shukla.

UROLOGICAL SOCIETY OF INDIA CONGRESS PRESENTATION SUMMARY

→ Continued from page 4

“I asserted that any surgical outcomes report after hypospadias repair should be considered very preliminary and nonconclusive until 5 or 6 years have elapsed after surgery.”

My next presentation was a video-assisted discussion of the technical nuances of the robot-assisted laparoscopic extravesical ureteral reimplantation. This procedure continues to polarize pediatric urologists due to its perceived technical challenges and potential for adverse outcomes if done incorrectly. As I've reported individual and multi-institutional experiences confirming that the procedure is safe, reproducible, and successful, I was asked to present a step-by-step approach to the procedure.²

During a video presentation curated by my colleague, Karl Godlewski, I outlined how the ureter

is accessed posterior to the broad ligament in girls, the ureter is safely mobilized, and then a detrusor trough is created. I then offered some experiential insights into how the bladder detrusor muscle may be safely approximated over the ureter (Figure 2). We discussed how a 5:1 detrusor tunnel-to-ureteral diameter reimplant can be completed, consonant with what Leadbetter and Politano discussed decades ago as the gold standard.

The USICON continues to evolve into a premier gathering of urologists from all over South Asia, and I interacted with urologists from India, Bangladesh, Nepal, Sri Lan-

ka, Maldives, and other countries in the region. Accompanied by other US-based faculty urologists, such as Dr Jaspreet Sandhu from Sloan Kettering and Dr Pramod Reddy from Cincinnati Children's Hospital, our entire AUA delegation appreciated the incredible hospitality, spirited discussions, and bidirectional learning—in the best tradition of robust scientific meetings—that we experienced (Figure 3). ■

1. Long CJ, Chu DI, Tenney RW, et al. Intermediate-term followup of proximal hypospadias repair reveals high complication rate. *J Urol.* 2017;197(3 Pt 2):852-858.
2. Sahadev R, Spencer K, Srinivasan AK, Long CJ, Shukla AR. The robot-assisted extravesical anti-reflux surgery: how we overcame the learning curve. *Front Pediatr.* 2019;7:93.

Brazilian Society of Urology Recommendations on Perioperative Procedures of Prostate, Bladder, and Kidney Cancer Surgery

Marcus Vinicius Sadi, MD

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Urologic oncologic surgeries are complex procedures that require careful planning in order to minimize the risk of complications and ensure a successful outcome. One of the most important tools for achieving this goal is a comprehensive manual that outlines the proper care and management of patients before, during, and after surgery. A review from the Brazilian Society of Urology (SBU) manual for prostate, bladder, and kidney tumors is summarized.

Prostate Cancer Surgery

In laparoscopic or robotic prostatectomy with the DaVinci SI system, the patient should be positioned with the lower limbs in a lithotomy position with padded boots. A slight flexion of the hips decreases the possibility of obturator and femoral nerve lesion. With the Xi, a supine position is preferred with slightly abducted legs. Brachial plexus lesions can be prevented

with careful use of protection on the acromioclavicular joint.^{1,2}

The surgery is performed with the patient under general anesthesia. The greatest difficulties are associated with the use of pneumoperitoneum with the patient in the Trendelenburg position. Epidural block promotes better postoperative pain control, especially in obese patients. Intravenous hydration should be judicious and kept to a minimum, as it reduces the occurrence of facial, larynx, and cerebral edema.²

Postoperative care includes a liquid diet in the immediate postoperative period and a normal diet on the first postoperative day. A closed suction drain may be used and should be removed when drainage output is ≥ 50 mL/d. This recommendation is valid for cystectomies and nephrectomies, as well.

The Foley catheter is removed 7-10 days postoperatively in most situations. In patients with exaggerated discomfort due to the urethral catheter, anticholinergics may help relieve the symptoms.

The concept of penile rehabilitation emerged several years ago. According to the guidelines of the 2015 International Consultation

for Sexual Medicine, in which SBU members were actively involved in the recommendations, existing data are inadequate to support any ideal specific regimen (drug, concentration, and time interval).³ Currently, the SBU has no specific recommendations on penile rehabilitation after radical prostatectomy.⁴

Bladder Cancer Surgery

The SBU appreciates the resurgence of greater scrutiny related to the quality of transurethral resection of bladder tumor performed by urologists, mainly due to the potential use of new drugs from the clinical oncology community. So training will be of utmost importance. Whether bipolar energy or new approaches such as en bloc resection have the potential to improve the quality of tissue for histopathology remains to be evaluated due to the conflicting results available.⁵

Several clinical guidelines for antibiotic prophylaxis and bowel preparation for radical cystectomies exist but results are inconsistent.⁶ The SBU recommends the

use of first- or second-generation cephalosporins until all the stents are removed.

Patient positioning for radical cystectomy, either open or minimally invasive, uses a similar approach to that recommended for prostate surgery. In women, the surgeon should have access to the vagina.

Total intravenous anesthesia may promote better oncological results compared to inhalational anesthesia. However, the combined use of epidural anesthesia seems to increase the risk of complications, but data are not clear.^{7,8}

Enhanced Recovery After Surgery protocol is recommended, but not enforced by SBU. Measures for the early recovery of intestinal motility involve chewing gum, avoiding opioids, early ambulation, early introduction of clear liquid diet, and use of prokinetic medications.

A perioperative prophylaxis with unfractionated or low molecular weight heparin is indicated for all cancer patients who will undergo major surgical interventions. The recommended scheme is enoxaparin (low molecular weight

→ Continued on page 6

BRAZILIAN SOCIETY OF UROLOGY RECOMMENDATIONS

→ Continued from page 5

“Enhanced Recovery After Surgery protocol is recommended, but not enforced by SBU. Measures for the early recovery of intestinal motility involve chewing gum, avoiding opioids, early ambulation, early introduction of clear liquid diet, and use of prokinetic medications.”

heparin) at a dosage of 40 mg for patients around 200 lbs with normal renal function, subcutaneously, in the immediate preoperative period and a single daily dose, for 10 days or up to 30 days, in higher-risk cases.

When Bricker is performed, a Foley catheter left for up to 7 days

inside the ileostomy may be useful to prevent mucus accumulation.

For neobladders, a large cystostomy tube can be used to prevent mucous obstruction. Ureteral catheters should be maintained for a period of 1-2 weeks. The urethral Foley catheter is kept for up to 48 hours after cystostomy tube removal. For these patients with neobladder, there may be a need for early intermittent catheterization after hospital discharge.

In cases of cutaneous ureterostomies, a procedure with a recent sharp increase in some centers in Brazil, Double-J stents are maintained and changed periodically. Usually, after 3 months the ureteral orifices are well preserved; the stents can then be removed and the ureteral orifices are periodically dilated.

The interposition of intestinal segments in the urinary tract is associated with metabolic disorders. Hyperchloremic acidosis is common and especially important in patients with liver insufficiency, as there may be impairment of the ammonium cycle, with early onset of hepatic encephalopathy. This disorder can be corrected easily with oral alkalizing agents.

Kidney Cancer Surgery

In minimally invasive surgery,

the patient is in a modified lateral decubitus. Pressure points should be padded to avoid nerve damage, ulcers, and rhabdomyolysis. This risk is increased in the presence of overweight patients and prolonged surgeries.⁹ Care should be taken with the height of the patient arm, so that the robot arm does not collide with that of the patient. A nasogastric tube is recommended to minimize the risk of viscera perforation at the beginning of the laparoscopic access. The choice of anesthetic technique should prioritize patient safety, optimization of the surgical condition, and patient choice. Several common anesthetic practices still lack good scientific evidence.¹⁰

The Foley catheter is usually removed in the first postoperative period. Laboratory tests are used to assess the severity of eventual bleeding in the immediate postoperative period. Creatinine dosage of the drainage fluid may be useful in confirming possible urinary fistula in partial nephrectomies.

Postoperative imaging, usually a contrast CT, may be required in the presence of above normal bleeding, suspected pseudoaneurysms, urinary fistula, and, more rarely, adjacent organ lesions. ■

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SPECIALTY SOCIETIES

Current Antibiotic Practice for Endourological Surgery and Postoperative Urinary Tract Infection

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Shritosh Kumar, MS

All India Institute of Medical Sciences, New Delhi

Collaborative Working Group on Use of Antibiotics in Endourology

Study Need and Importance

There are many available guidelines based on high-quality data recommending only single dose or <1 day lower-spectrum antibiotic as prophylaxis.¹⁻⁴ Antibiotic usage



during endourological procedures is believed to be highly discrepant from the guideline recommendations. Potential risks of urinary tract infections (UTIs) and antibiotic resistance are key concerns leading to lack of standardization among practicing urologists. This national level multicenter cross-sectional prospective audit was done with support from Urological Society of India and its collaborative research committee to assess the prevailing

→ Continued on page 7

CURRENT ANTIBIOTIC PRACTICE FOR ENDOUROLOGICAL SURGERY

→ Continued from page 6

“Potential risks of urinary tract infections (UTIs) and antibiotic resistance are key concerns leading to lack of standardization among practicing urologists.”

practice patterns and evaluate the factors for variation in usage of antibiotics along with its impact on perioperative infections.

What We Found

In this nationwide audit conducted across 20 centers in India, data were prospectively entered on a customized online portal for 1,538 patients undergoing various endourological procedures over 4 months. The procedures included cystoscopy (n=109), transurethral resection of prostate (n=239), transurethral resection of bladder tumor (n=183), ureteroscopy (n=473), and percutaneous nephrolithotomy (n=529). Overall, postoperative UTI/sepsis as defined by use of additional antibiotic(s) within 1 month of surgery, occurred in 98 (6.4%) cases. There was no difference in any comorbidities or predisposing factors between those who developed postoperative UTI vs those who did not, except chronic kidney disease, which was significantly associated with development of UTI. It was found that urine culture within 1 week of surgery showed significant (13%), insignificant (1.8%), or mixed growth (3.2%), or was not done before surgery (19.3%) in 37.3% cases. Of the cases 17.8% were given preoperative antibiotics within 1 week prior to surgery, of which only 9% had significant bacterial counts. Post-operative UTI rates were significantly higher in patients who received preoperative antibiotics (18.2% vs 3.8%, $P = .000$; Figure 1), and the rates still remained significantly higher after excluding patients who grew strongly uropathogenic bacteria.⁵ This trend was identified to be

significant independently among all procedure types individually as well.

Single-dose perioperative antibiotic was used in only 20.7% patients, while the remainder received multiday prophylaxis including >3 days in 10.9% (Figure 2). Two different antibiotics were used as prophylaxis in 51.2% cases. This second antibiotic was also continued for >1 day in 35.8% of cases. High-end antibiotics were being used for primary prophylaxis in >62% cases, including beta-lactamase inhibitors and carbapenems. UTI rates were significantly better when patients received a short course of antibiotics than >3 days of prophylaxis ($P = .583$ single vs >3 days). Postoperative prophylaxis at discharge was prescribed for 88.2%, with 77.4% of these cases receiving such prophylaxis for >3 days (Figure 3). Surgeons were asked the reasons for using antibiotics if they varied from guideline recommendation of single dose or <1 day prophylaxis. Surgeon or institution protocol was the sole reason for such use in 75.4% of instances, while presence of stent or nephrostomy was considered as the reason in 12.4%, with multiple other factors in the remaining patients.

In this study, we found that antibiotics were overused in every 3 out of 4 patients, regardless of any scientific evidence to support such usage. Moreover, a trend toward an increase in postoperative UTIs was noted rather than the contrary belief that such extended use would prevent UTIs. More definitive focused studies are needed to confirm this finding. Overall, there is a large gap between the recommendations and the actual practice patterns of antibiotic use, with more than 75% of such decisions based only on surgeon or institute’s protocol.

Limitations

Data regarding repeat urine culture prior to procedure in those treated with antibiotics were not available. Further, side effects and cost of antibiotic use were not evaluated. Direct relation of postoperative UTI with antibiotic prophylaxis could not be established due to multiple factors, and

| | Urine culture | | | | | Total |
|--|----------------|-----------------|---------------|----------------------|--------------------|-----------------|
| | Not available | Sterile | Mixed growth | Insignificant growth | Significant growth | |
| Antibiotic used before procedure (n) | 15 | 71 | 27 | 22 | 139 | 274 |
| | - | - | [UP-1] | [UP-4] | [UP-44] | [UP-49] |
| | [UTI-2, 13.3%] | [UTI-14, 19.7%] | [UTI-10, 37%] | [UTI-5, 22.7%] | [UTI-19, 13.7%] | [UTI-50, 18.2%] |
| Antibiotic not used before procedure (n) | 282 | 893 | 22 | 6 | 61 | 1264 |
| | - | - | [UP-0] | [UP-0] | [UP-17] | [UP-17] |
| | [UTI-9, 3.2%] | [UTI-37, 4.1%] | [UTI-0, 0%] | [UTI-0, 0%] | [UTI-2, 3.3%] | [UTI-48, 3.8%] |
| Total | 297 | 964 | 49 | 28 | 200 | 1538 |

P = 0.000

Figure 1. Practice pattern of antibiotic use for endourological surgeries in India based on preoperative urine culture and corresponding urinary tract infection (UTI) rates. UP indicates uropathogens (*Pseudomonas*, *Klebsiella*, and *Proteus* species). This figure, by Nayyar and Kumar, *Indian J Urol.* 2023 (unpublished data),⁵ is used under CC BY 4.0 (<http://creativecommons.org/licenses/by/4.0/>).

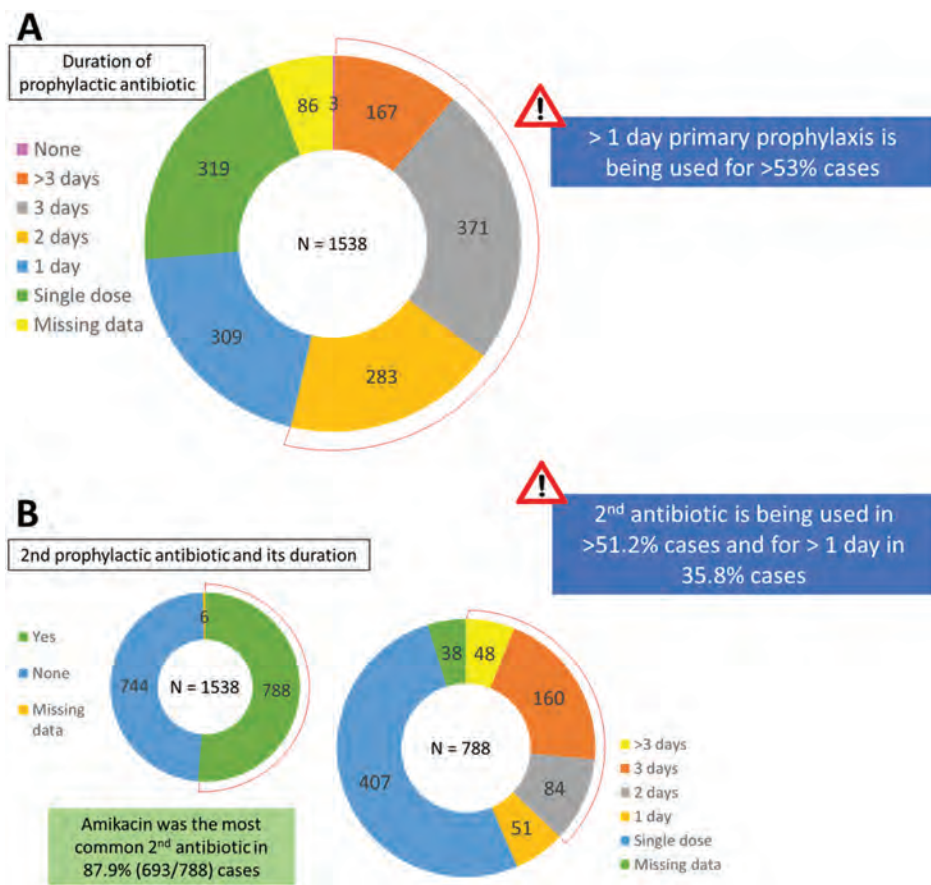


Figure 2. Practice pattern of antibiotic prophylaxis for endourological surgeries for primary antibiotic (A) and second antibiotic in combination (B).

“This audit highlights the disparity between the evidence and actual practice patterns for usage of antibiotics in endourological procedures.”

the rates of such UTIs leading to sepsis and intensive care unit admission remains unknown.

Interpretation for Patient Care

This audit highlights the disparity between the evidence and actual practice patterns for usage of antibiotics in endourological procedures. Such overuse not only adds to the

→ Continued on page 8

CURRENT ANTIBIOTIC PRACTICE FOR ENDOUROLOGICAL SURGERY

→ Continued from page 7

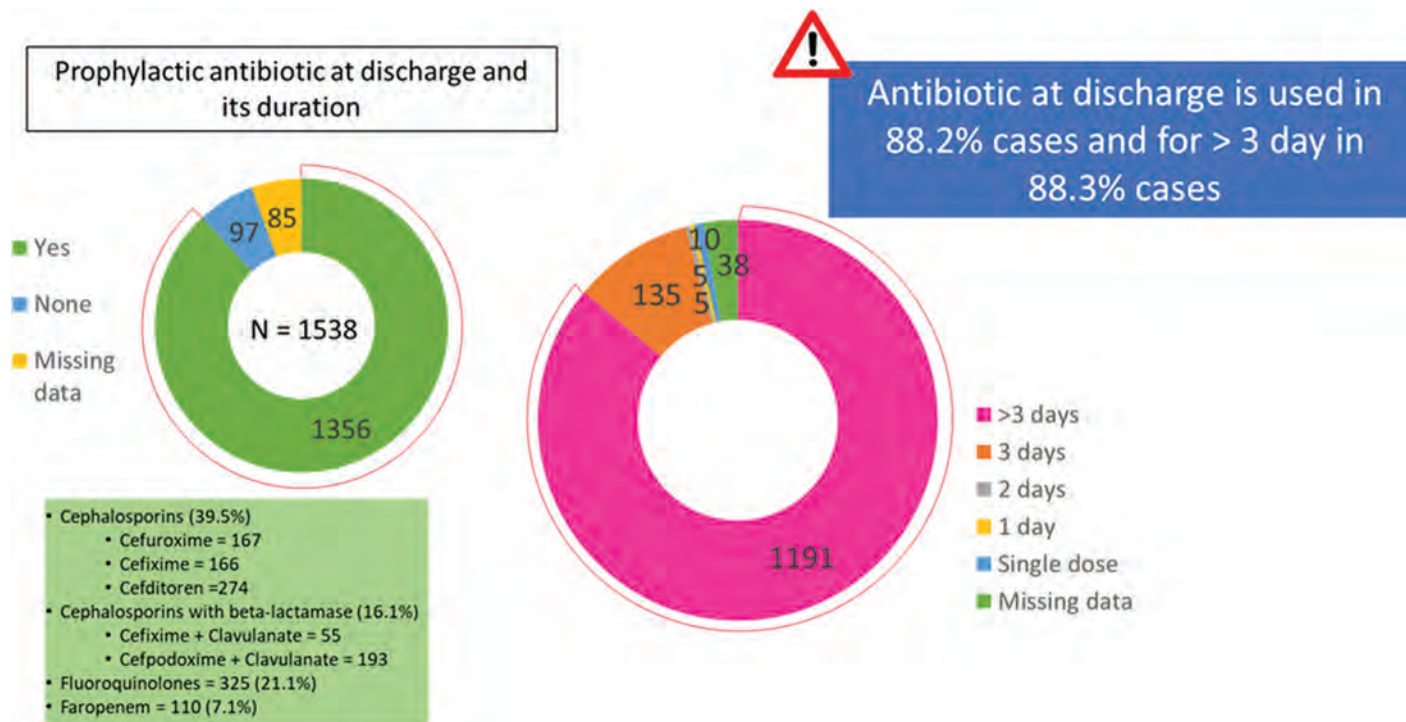


Figure 3. Practice pattern of prescribing antibiotics at discharge after endourological surgeries.

cost, but also poses a threat in terms of antibiotic resistance and possibly increased UTIs. Standardization of antibiotic regimen to the extent possible is the need of the hour. However, till then, there is considerable scope for reducing the overuse of antibiotics in these procedures. ■

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3. European Association of Urology. EAU Guidelines. Presented at the EAU Annual Congress Amsterdam, The Netherlands, July 1-4, 2022.
4. Bratzler DW, Dellinger EP, Olsen KM, et al. American Society of Health-System Pharmacists; Infectious Disease Society of America; Surgical Infection Society; Society for Healthcare Epidemiology of America. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am J Health Syst Pharm.* 2013;70(3):195-283.
5. Nayyar R, Kumar S, Collaborative Working Group on Use of Antibiotics in Endourology. Peri-operative antibiotic usage during endourological surgery: a multi-institutional, national-level, cross-sectional audit of prevalent practice pattern in India. *Indian J Urol.* 2023;39(2):133-141.

SPECIALTY SOCIETIES

Takeaways, Society of Government Service Urologists Meeting, January 2023

John M. Barry, MD
AUA Past President

Tucson can be cold in January.

It's controversial to biopsy a testis during a microdissection testicular sperm extraction in men with nonobstructive azoospermia.

Now that the world's population is 8 billion, is third-party insurance coverage for assisted reproduction at risk?

In boys less than 10 years of age, there is no difference in testicular volume between the side of a hydrocele and the contralateral side.

Rezūm water vapor thermal therapy for surgical management of benign prostates over 80 gm, the current cutoff, is possible—and successful.

Surgeons are clueless about the costs of disposable surgical items (Third Place, Residents Competition).

Multiparametric MRI may be a substitute for a renal biopsy to diagnosis clear cell renal cell carcinoma in cT1a renal masses.

Microwave ablation is as effective as partial nephrectomy for small renal masses.

Perhaps incidentally discovered cT1a renal masses should be left alone until they grow or become symptomatic.

Sub-cuff urethral atrophy in a patient with an artificial urinary sphincter responds to cuff replacement, usually downsized by 0.5 cm. If this occurs after 3 years, it's best to replace the entire device, not just the cuff.

Near-infrared fluorescence imaging (Firefly technology) allows precise real-time visualization of vascular perfusion during reconstructive surgery.

Don't use a buccal mucosa tube graft to repair a ureteral defect; it will fail.

“Multiparametric MRI may be a substitute for a renal biopsy to diagnosis clear cell renal cell carcinoma in cT1a renal masses.”

When a simple sentence, “Urology or endocrinology consultation recommended,” was added to CT reports of adrenal incidentalomas, it resulted in clinician adherence to the guideline recommendation by the American Association of Clinical Endocrinologists and the American Association of Endocrine Surgeons: Do a biochemical evaluation of incidentally discovered adrenal masses (Second Place,

Residents Competition).

Perhaps a voided urine test, like ExosomeDx Prostate Inteliscore, will allow primary care practitioners to skip the digital rectal exam when screening men for prostate cancer.

A relatively high proportion of men assigned to active surveillance for prostate cancer don't make follow-up appointments. They need to be tracked down and reminded.

Pure microscopic gonadoblastoma is rare in an otherwise normal (XY) male, so rare that treatment guidelines haven't been developed.

Why isn't serum prostatic acid phosphatase used as a biomarker for sipuleucel-T (Provenge) response?

Perhaps 5alpha-reductase inhibitors do prevent the development of significant prostate cancer.

→ Continued on page 9

TAKEAWAYS, SOCIETY OF GOVERNMENT SERVICE UROLOGISTS MEETING, JANUARY 2023

→ Continued from page 8

There seems to be conflicting information about major cardiovascular event risks after treatment with GnRH agonists vs GnRH antagonists.

Are the harms of current androgen deprivation therapy such that we should reexplore the use of low-dose estrogen therapy?

Low-intensity extracorporeal shock wave, stem cell, and platelet-rich plasma therapies for erectile dysfunction: Do they really work? Let's use mercury strain gauge recordings of nocturnal erections—rather than questionnaires—and find out.

Robotic-assisted peritoneal flap pull-through vaginoplasty for male-to-female gender-affirming surgery is best viewed on a video presentation before doing one.

One cannot label the military as “conservative” when the topic is gender-affirming surgery. Well done.

Holmium laser enucleation of the prostate for benign prostatic hyperplasia didn't result in an increase in urinary incontinence or bother in 73 patients.

Prostatectomy via holmium laser enucleation of the prostate started with an early apical release and anterior dissection is a good idea.

When using a gelatin plug for

“Prostatectomy via holmium laser enucleation of the prostate started with an early apical release and anterior dissection is a good idea.”

hemostasis at the conclusion of a percutaneous nephrostolithotomy, dip it in contrast agent for easy identification on concurrent or later x-rays.

If a course in leadership is offered, take it.

The history of male urinary incontinence treatment is fascinating.

Risk-aligned surveillance forms for patients with nonmuscle-invasive bladder cancer are a promising strategy for compliance with AUA guidelines.

Variant histology should result in mentally upstaging a nonmuscle-invasive bladder cancer.

Perhaps split dosing protocols for bacillus Calmette-Guérin are unnecessarily compromised by the requirement that unused product be discarded after 2 hours. Rumor has it that it is viable for 72 hours,

and that one-third of a usual bacillus Calmette-Guérin dose can be effective.

African American men are more likely to undergo radiation treatment for prostate cancer than non-African American men. Why?

Therapeutic radiation cures cancer, but with time, debilitating pelvic organ toxicity can develop. Patient acceptance of palliative surgery is often delayed.

Make friends with a medical oncologist; the -ides, -nibs, and -mabs for our cancers are becoming too numerous to count.

An ERG inhibitor, salt derivative 7b, selectively inhibits ERG-positive prostate cancer cells. The development of ERG inhibitors may benefit patients with ERG-positive prostate cancer (Best of Poster Session).

In a pregnant woman, an absent ureteral flow-related artifact on a T2-weighted, single-shot, fast spin echo MRI will document ureteral obstruction, retroperitoneal edema, and hydronephrosis from a stone when compared with the contralateral side (First Place, Residents Competition).

Genitopelvic dysesthesia in women is a fascinating topic.

Trazadone has caused clitoral priapism.

“In a pregnant woman, an absent ureteral flow-related artifact on a T2-weighted, single-shot, fast spin echo MRI will document ureteral obstruction, retroperitoneal edema, and hydronephrosis from a stone when compared with the contralateral side (First Place, Residents Competition).”

A new urethral stricture scoring system, Length, Location, and Etiology, may help us evaluate treatment options and guide treatment recommendations.

Uroflometry by cellphone app is a good idea.

The GU Bowl is great fun. ■

JU INSIGHT

Risk Factors for Increased Stent-associated Symptoms Following Ureteroscopy for Urinary Stones

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Harper JD, Desai AC, Maalouf NM, et al. Risk factors for increased stent-associated symptoms following ureteroscopy for urinary stones: results from STENTS. *J Urol.* 2023;209(5):971-980.

Study Need and Importance

Ureteral stents are an integral element of the treatment of urinary stones but are often associated with bothersome pain and urinary symptoms. The inability to identify patients at highest risk for increased stent-associated symptoms, and what aspects of care contribute to these symptoms, were key reasons

→ Continued on page 10

RISK FACTORS FOR INCREASED STENT-ASSOCIATED SYMPTOMS

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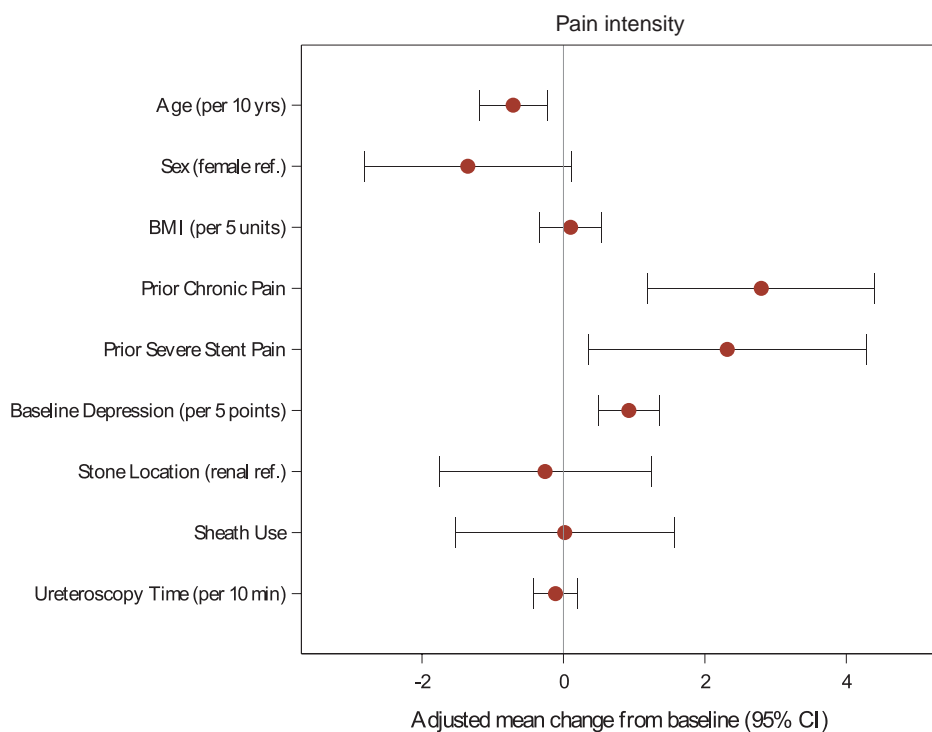


Figure. Risk factors for increased stent-associated pain intensity. Measured using Patient-Reported Outcome Measurement Information System. Multivariable model. BMI indicates body mass index; CI, confidence interval.

for the STudy to Enhance uNderstanding of sTent-associated Symptoms (STENTS). We conducted a

prospective, observational cohort study of individuals undergoing ureteroscopy (URS) and stenting

for treatment of stones. Our specific objectives were to examine the time course of these symptoms and identify factors associated with increased stent-associated symptoms.

What We Found

Participants experienced a marked increase in stent-associated symptoms on postoperative day (POD) 1. While pain intensity decreased ~50% from POD 1 to POD 5, interference due to pain remained persistently elevated. Older age was associated with lower pain intensity. Having chronic pain conditions, prior severe stent pain, and depressive symptoms at baseline were each associated with higher pain intensity (see Figure). Sex, stone location, ureteral access sheath use, and stent characteristics were not associated with stent-associated symptoms.

Limitations

The study was not designed to compare the independent con-

tributions of the stent and URS. Ascertainment of prior stent experience may be subject to recall bias. Ureteroscopic interventions were performed at academic medical centers, and despite the large, prospectively characterized population, these results may not be generalizable to other settings.

Interpretation for Patient Care

Although pain and symptom intensity after URS and stent placement decrease early in the postoperative period, interference of daily activities persists. Patient factors such as age and depression impacted symptom severity, rather than surgical or stone factors. These findings provide a foundation for patient counseling, set the stage for prediction modeling to identify those at risk for the most severe pain, and highlight potential targets for future efforts to mitigate the burden of stent-associated symptoms and improve the overall patient experience. ■

JU INSIGHT

A Urine-based DNA Methylation Marker Test to Detect Upper Tract Urothelial Carcinoma

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Ghoreifi A, Ladi-Seyedian SS, Piatti P, et al. A urine-based DNA methylation marker test to detect upper tract urothelial carcinoma: a prospective cohort study. *J Urol.* 2023;209(5):854-862.

Study Need and Importance

Diagnosis and preoperative risk

stratification of patients with upper tract urothelial carcinoma (UTUC) present distinct challenges given the limitations of currently available tools, such as urine cytology, cross-sectional imaging, and endoscopic biopsy. DNA methylation has emerged as a potential diagnostic and prognostic factor for several cancers, including urothelial carcinoma. Despite the advances in the role of these novel markers in urothelial bladder cancers, data on patients with UTUC are sparse. This prospective cohort study aimed to investigate the clinical performance of Bladder CARE, a new urine-based epigenetic test

→ Continued on page 11

A URINE-BASED DNA METHYLATION MARKER TEST TO DETECT UPPER TRACT UROTHELIAL CARCINOMA

→ Continued from page 10

that includes a panel of 3 urothelial-specific methylation biomarkers, for the diagnosis of patients with UTUC.

What We Found

Comparing 50 patients with primary UTUC and no concomitant bladder cancer with 50 sex/age-matched cancer-free healthy individuals, we found that UTUC patients had significantly higher cancer risk, expressed by higher Bladder CARE Index (BCI) values. The sensitivity, specificity, positive predictive value, and negative predictive value of the Bladder CARE test for detecting UTUC were 96%, 88%, 89%, and 96%, respectively (see Figure). This was much higher than the urine cytology values that showed a sensitivity of 37%. In addition, a significant correlation was found between BCI values and tumor size.

Limitations

This was a single-center study with a relatively small sample

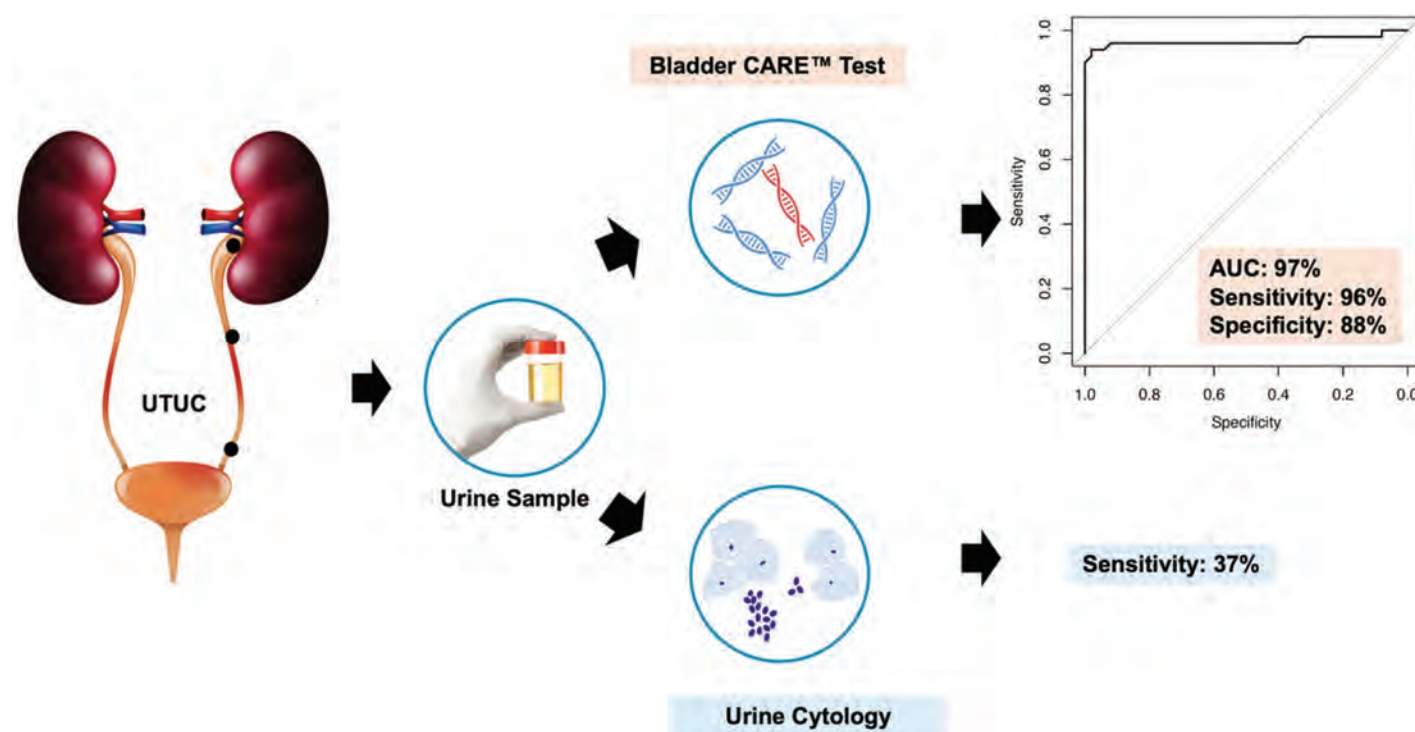


Figure. Overview of the results of Bladder CARE test and urine cytology for the diagnosis of upper urinary tract carcinoma (UTUC). AUC indicates area under the curve.

size. Urine cytology was not available for 30% of patients. In addition, the control group could have been selected from patients with a common trait and negative workup rather than healthy individuals.

Interpretation for Patient Care

Bladder CARE is a noninvasive urine-based test for the diagnosis of UTUC with high sensitivity and negative predictive value. In addition,

the sensitivity of this test is significantly higher than that of standard urine cytology. Future studies include a multi-institutional assessment to confirm it as a biomarker for UTUC. ■

JU INSIGHT

Health-related Quality of Life After Robotic-assisted vs Open Radical Cystectomy

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Clements MB, Beech BB, Atkinson TM, et al. Health-related quality of life after robotic-assisted vs open radical cystectomy: analysis of a randomized trial. *J Urol.* 2023;209(5):901-910.

Study Need and Importance

Prior randomized trials have

evaluated health-related quality of life (QoL) after robotic vs open radical cystectomy, but have included short follow-up periods (generally 6 months or less) and measures evaluating a limited number of QoL domains. While the recent iROC trial evaluated short-term outcomes and measures of disability, no studies have evaluated longer-term outcomes and included broader urinary, bowel, sexual, and psychosocial QoL assessment.

→ Continued on page 12

HEALTH-RELATED QUALITY OF LIFE AFTER ROBOTIC-ASSISTED VS OPEN RADICAL CYSTECTOMY

→ Continued from page 11

What We Found

In a secondary analysis of patients who enrolled in a single-institution, randomized trial of open vs robotic cystectomy, we analyzed 14 patient-reported outcomes measures at 3, 6, 12, 18, and 24 months postoperative. Mean differences in general cancer-related related QoL were small. For instance, Global QoL differed by 1.1/100 (95% CI -8.4, 6.2) and Physical Functioning by 0.4/100 (95% CI -5.8, 5.0).

Similar small differences were seen in bladder cancer-specific QoL, with difference in Body Image of 2.9/100 (95% CI -7.2, 13.1) and 8.0/100 (95% CI -3.0, 19.0) for Urinary Symptoms between open and robotic cystectomy. Other domains evaluating urinary, bowel, sexual, and psychosocial health-related QoL were similar. For Uroscopy Symptoms, there was some evidence of lower scores at the 3- and 24-month time points for

open surgery. However, for the other domains studied, there was no evidence of different effects at earlier or later time points after cystectomy.

Limitations

This study included only a subset of patients from the original randomized trial (61%); however, baseline clinical characteristics and QoL were similar between groups.

Interpretation for Patient Care

Over a broad range of QoL domains comparing robotic and open radical cystectomy, there are unlikely to be clinically relevant differences in the medium to long term, and QoL over this time period should not be a consideration in choosing between approaches. ■

JU INSIGHT

Clinical Impact of a Rapid Genetic Testing Model for Advanced Prostate Cancer Patients

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Breen KE, Symecko H, Spielman K, et al. Clinical impact of a rapid genetic testing model for advanced prostate cancer patients. *J Urol.* 2023;209(5):918-927.

Study Need and Importance

Patients with advanced prostate cancer are recommended to undergo germline genetic testing to determine eligibility for certain treatments, such as poly(ADP-ribose) polymerase (PARP) inhibitors. To expedite the genetic testing process and expand access for these patients, this study aimed to determine the feasibility and clinical impact of an alternative hereditary genetic testing model for individuals with advanced prostate cancer.

What We Found

Germline genetic testing initiated in the oncology clinic with post-test counseling by a genetic counselor is a feasible approach to testing patients with advanced prostate cancer. Of the 501 participants in the study, approximately 10% harbored a pathogenic variant in a cancer predisposition gene, leading to a discussion of change of treatment for 46% of those individuals. Results typically were provided to participants within 3 weeks after sample collection, and participants were highly satisfied with the pretest education and the decision to undergo genetic testing.

Limitations

We acknowledge a possible selection bias toward individuals with strong family histories or aggressive, early-onset prostate cancer. Additionally, not all participants completed the questionnaires, and one of the measures on the questionnaires was investigator-designed and unvalidated.

Interpretation for Patient Care

There are a growing number of patients who will undergo germline

“Of the 501 participants in the study, approximately 10% harbored a pathogenic variant in a cancer predisposition gene, leading to a discussion of change of treatment for 46% of those individuals.”

genetic testing as part of their clinical care considering the U.S. Food and Drug Administration approval of therapeutics, such as PARP inhibitors. We present and provide the materials for a model of oncologist-initiated genetic testing with post-test results provided by a genetic counselor who can provide efficient yet comprehensive care without sacrificing patient satisfaction or education. ■

JU INSIGHT

Phase I Trial of Vascular-targeted Photodynamic Therapy for Upper Tract Urothelial Carcinoma

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Yip W, Sjoberg DD, Nogueira LM, et al. Final results of a phase I trial of WST-11 (TOOKAD Soluble) vascular-targeted photodynamic therapy for upper tract urothelial carcinoma. *J Urol.* 2023;209(5):863-871.

Study Need and Importance

Radical nephroureterectomy for upper tract urothelial carcinoma (UTUC) is associated with significant morbidity and risk of renal dysfunction, and so organ-sparing strategies are highly compelling when appropriate. Existing endoscopic management techniques

“This trial demonstrates the safety and preliminary efficacy of VTP for UTUC, with an initial 30-day treatment response rate of 94% (50% complete, 44% partial; see Figure).”



Figure. Endoscopic appearance of tumor before and after 1 vascular-targeted photodynamic therapy treatment.

with laser ablation or electrocautery fulguration often require repeated procedures with increased cumulative risks of serious complications and high rates of recurrence. Thus, there is compelling rationale to improve upon the current management strategies for patients with UTUC. Vascular-targeted photodynamic therapy (VTP), which causes nonthermal tissue destruction, has demonstrated efficacy in other tumor types and preclinical models, with potential for use as an endoluminal treatment in the urinary tract.

What We Found

This trial demonstrates the safety and preliminary efficacy of VTP for UTUC, with an initial 30-day treatment response rate of 94% (50% complete, 44% partial; see Figure). The trial results have established the supporting evidence for a recently initiated multi-center Phase 3 trial (ENLIGHTED), evaluating the efficacy of VTP in low-grade UTUC, as well as a future trial for high-grade UTUC.

Limitations

Our study is limited by the small sample size, follow-up duration, and broad patient selection criteria, which did not limit tumor size or

“Vascular-targeted photodynamic therapy (VTP), which causes nonthermal tissue destruction, has demonstrated efficacy in other tumor types and preclinical models, with potential for use as an endoluminal treatment in the urinary tract.”

grade. The majority of patients in this trial had previously failed other local ablative therapies as well.

Interpretation for Patient Care

The results of this trial suggest that VTP may be a safe alternative to current kidney-sparing treatment options in select patients with both low- and high-grade UTUC, which warrants further study in a larger prospective trial setting. ■

Have You Read?

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College of Medicine and College of Engineering,
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Harris AM, Teplitsky S, Kraft KH, Fang R, Meeks W, North A. Burnout: a call to action from the AUA Workforce Workgroup. *J Urol.* 2023;209(3):573-579.

Special thanks to Drs Ashraf Selim and Mahmoud Mima at the University of Illinois at Chicago.

Burnout is an enormous problem among physicians, and urologists are no exception with increasing rates over time despite increased discussion and awareness. A Mayo Clinic study in 2016 found it to be as high as 64%, and an AUA survey that year identified a 40% rate. Rates were nearly the same overall in an AUA Census in 2021, but when analyzed, burnout among female urologists increased by 14%.

The younger age group seemed to suffer more, and this was attributed to financial factors as well as longer hours of work. Interestingly, COVID-19 did not seem to have increased the rate of burnout. Spending time replying to patients via the electronic health record as well as lack of autonomy, increased

“Burnout is an enormous problem among physicians, and urologists are no exception with increasing rates over time despite increased discussion and awareness. A Mayo Clinic study in 2016 found it to be as high as 64%, and an AUA survey that year identified a 40% rate.”

regulation, increased bureaucracy, isolation, increased administrative burden, and decreased reimbursement were among the major factors cited. High rates of depression and suicide have been reported among trainees, constituting a major cause of death in this demographic.

For the good of our field, burnout must be addressed in depth. In addition to the financial burden on the health system, burnout can lead to physician depression and deterioration in the quality of patient care and patient satisfaction. Although there are no silver bullets, there are opportunities for leaders to drive material change. Institutions can take a systemic approach to improve employee mental health and well-being, as well as practical interventions such as scribes. Burnout is real, and it is imperative that we give it the thoughtful care that it is due.

Wu J, Ho W, Klotz L, Yuan M, Lee JY, Krakowsky Y. Assessing “spin” in urology randomized controlled trials with statistically nonsignificant primary outcomes. *J Urol.* 2023;209(3):494-503.

Special thanks to Drs Graham Hale and Samuel Ohlander at the University of Illinois at Chicago.

Medical research scandals have lately captured news headlines, particularly within Alzheimer’s research. These authors embarked on a timely and critical appraisal of a small sliver of our own field’s literature, assessing spin and its severity in randomized controlled trials (RCTs) with statistically nonsignificant primary outcomes. They found the use of spin, defined as an emphasis or language manipulation in reporting that may influence the interpretation of results, was pervasive in this setting and reported it present in 76% of studies. They categorized the degree as moderate or severe in nearly half (46%).

In this study, 2 independent reviewers analyzed a sample of 46 urology-related negative RCTs

across a range of journals between 2019 and 2021. Using Boutron’s criteria to classify the strategies and severity of spin, they report the most prevalent spin strategy in abstracts was “obscuring the statistical nonsignificance of the primary outcome and focusing on statistically significant secondary results” and “emphasis of trend despite nonsignificant results” within the main text.

Although taken from a modest sample size and with only negative RCTs, this study highlights an important issue permeating our literature and suggests that we may benefit from a more comprehensive review. The publication bias against negative results is well known and may be pressuring authors to contort their findings. Perhaps journals can try to lessen this bias while simultaneously enforcing clearer and more rigorous research methodologies. While the ultimate burden of incorporating research findings into clinical practice lies with the reader, patients, clinicians, and researchers all lose while this affliction lingers.

Hakam N, Shaw NM, Lui J, Abbasi B, Myers JB, Breyer BN. Role for conservative management in grade V renal trauma. *J Urol.* 2023;209(3):565-572.

Special thanks to Drs Grace Chen and Simone Crivellaro at the University of Illinois at Chicago.

How can we confidently determine which patients to select for nonsurgical management of grade V renal trauma? By studying the outcomes of currently utilized management strategies, the authors of this paper sought to identify the patient characteristics associated with a successful course of conservative management.

Nearly 2,000 patients with grade V renal trauma were identified and stratified first by survival, then by whether a conservative or operative management strategy was employed. Conservative management included any intervention other than renorrhaphy, nephrectomy, or

“The publication bias against negative results is well known and may be pressuring authors to contort their findings. Perhaps journals can try to lessen this bias while simultaneously enforcing clearer and more rigorous research methodologies.”

angioplasty, with the most common being the placement of a percutaneous drain or ureteral stent. Over one-third of surviving patients were successfully managed with conservative treatments. Factors associated with the decision to pursue conservative management included favorable hemodynamic factors such as a lower mean pulse rate and fewer blood transfusions, nonpenetrating mechanisms of injury, and lack of other abdominal injuries.

Of note, the mortality rate for patients managed conservatively was about 11%, which was less than half of the mortality rate for those who underwent surgery. While the authors understandably attributed this finding to selection bias, it provides evidence that hemodynamic stability and blunt mechanism of injury are important prognostic factors in successful nonoperative management. Another important question the authors posed was whether specific injury characteristics were important for delineating which patients would be amenable to conservative treatment. Unfortunately, the radiological data in this study were too limited to differentiate these diagnoses. For now, hemodynamic stability seems to be the most important factor in safely proceeding with conservative management. ■

JU INSIGHT

Bladder Neck Contractures Stabilize After Placement of the Artificial Urinary Sphincter

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Krughoff K, Peterson AC. Bladder neck contractures stabilize after placement of the artificial urinary sphincter. *J Urol.* 2023;209(5):981-991.

Study Need and Importance

For prostate cancer survivors with stress urinary incontinence and bladder neck contracture (BNC), the optimal approach to artificial urinary sphincter (AUS) placement is uncertain. BNC stability is often pursued prior to AUS placement, with several algorithms reporting successful restoration of continence. The effect of AUS

“BNC stability is often pursued prior to AUS placement, with several algorithms reporting successful restoration of continence. The effect of AUS placement on BNC stability, however, has not been previously investigated.”

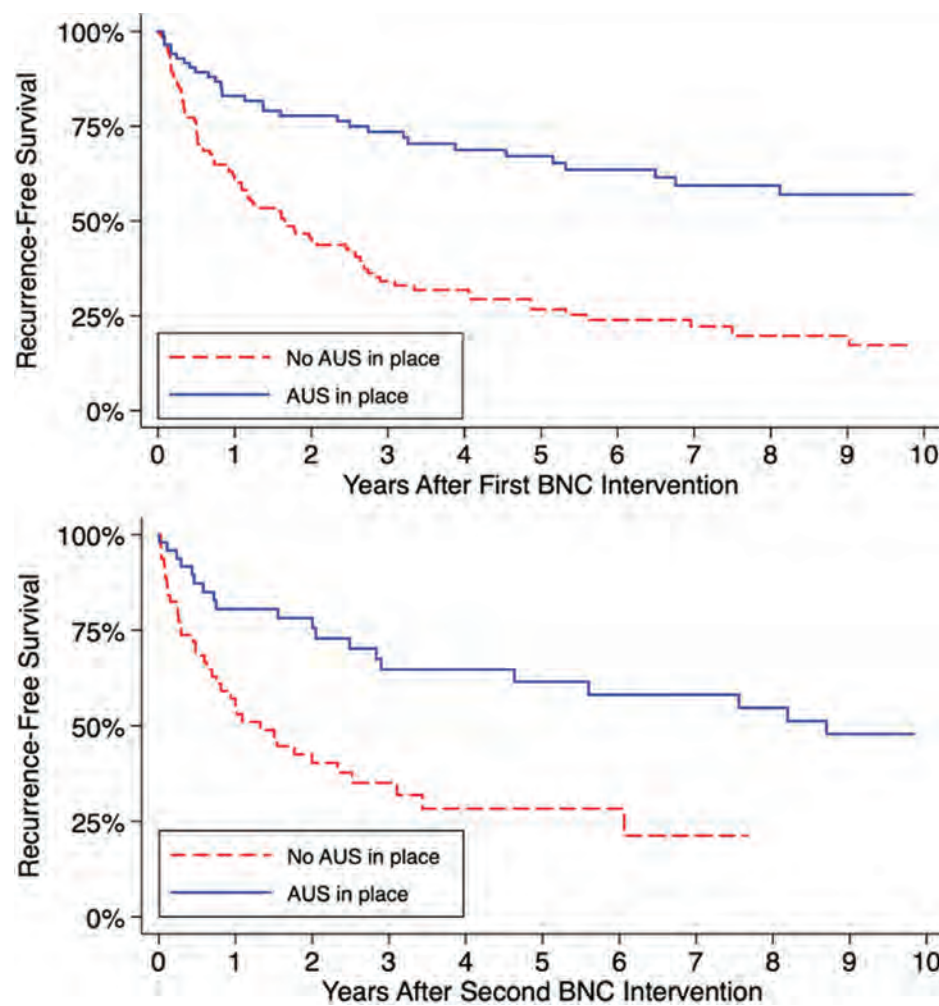


Figure. Bladder neck contracture (BNC) recurrence-free survival with vs without artificial urinary sphincter (AUS) in place.

placement on BNC stability, however, has not been previously investigated. Our standard approach is for BNC treatment at time of AUS placement. Based on anecdotal experience with this, we hypothesized that the AUS imparts a BNC-stabilizing effect.

What We Found

We evaluated records of prostate cancer survivors with stress urinary incontinence and ≥ 1 BNC intervention from 2001-2021. We

compared BNC recurrence-free intervals between those who did or did not undergo AUS placement using a survival model conditional on the number of previous BNC interventions. The BNC re-intervention rate was 61% lower with an AUS in place when accounting for the number of prior BNC interventions and commonly described BNC risk factors. The Figure illustrates differences in BNC re-intervention stratified by number of prior BNC interventions. Of 31 patients who underwent synchro-

“The BNC re-intervention rate was 61% lower with an AUS in place when accounting for number of prior BNC interventions and commonly described BNC risk factors.”

nous BNC intervention and AUS placement, 1 erosion occurred after 263 days. Of 20 BNC interventions performed with an AUS in situ, 1 erosion occurred 13 years later.

Limitations

While staged algorithms are not utilized at our institution, the potential for selection bias for AUS placement remains. BNC intervention is performed for urinary retention and lower urinary tract symptoms; however, there likely exists inter-provider differences in diagnostic algorithms and thresholds for intervention. Records with obliterated lumens and/or urethral stents were excluded, which limits the scope of these findings.

Interpretation for Patient Care

AUS placement is associated with a lower BNC re-intervention rate. Continence restoration using an AUS should not be delayed or avoided when a BNC is present. ■

JU INSIGHT

Impact of Maximal Transurethral Resection on Pathological Outcomes at Cystectomy

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Kirk PS, Lotan Y, Zargar H, et al. Impact of maximal transurethral resection on pathological outcomes at cystectomy in a large, multi-institutional cohort. *J Urol.* 2023;209(5):882-889.

Study Need and Importance

Pathological findings at radical cystectomy for bladder cancer are known to be predictive of subsequent oncologic outcomes. It is possible that maximal transurethral resection (TUR) of bladder tumors prior to neoadjuvant chemotherapy may help increase rates of pathological response, though possibly at the cost of increased complications. This work aimed to examine the influence of maximal resection on both pathological outcomes at cystectomy as well as subsequent survival outcomes.

What We Found

In this multicenter, retrospective cohort maximal TUR was associated with pathological downstaging at radical cystectomy. Achieving maximal TUR was less common in patients with more advanced cancer.

“In this multicenter, retrospective cohort maximal TUR was associated with pathological downstaging at radical cystectomy. Achieving maximal TUR was less common in patients with more advanced cancer.”

However, maximal TUR was not associated with subsequent overall or cancer-specific survival.

Limitations

These data likely included heterogeneity due to the inclusion of clinical staging and TUR completeness data from referring surgeons prior to cystectomy. This cohort also was lacking in several covariates including postoperative complications after TUR, patient comorbidity, and size of primary bladder tumor.

Interpretation for Patient Care

Maximal TUR may improve rates of pathological response at cystectomy, but the impacts on subsequent survival are unclear. The importance of achieving maximal TUR must also be weighed against surgical risk. ■

UPJ INSIGHT

Effects of In-office Dispensing by Single-specialty Urology Practices on Management of Advanced Prostate Cancer

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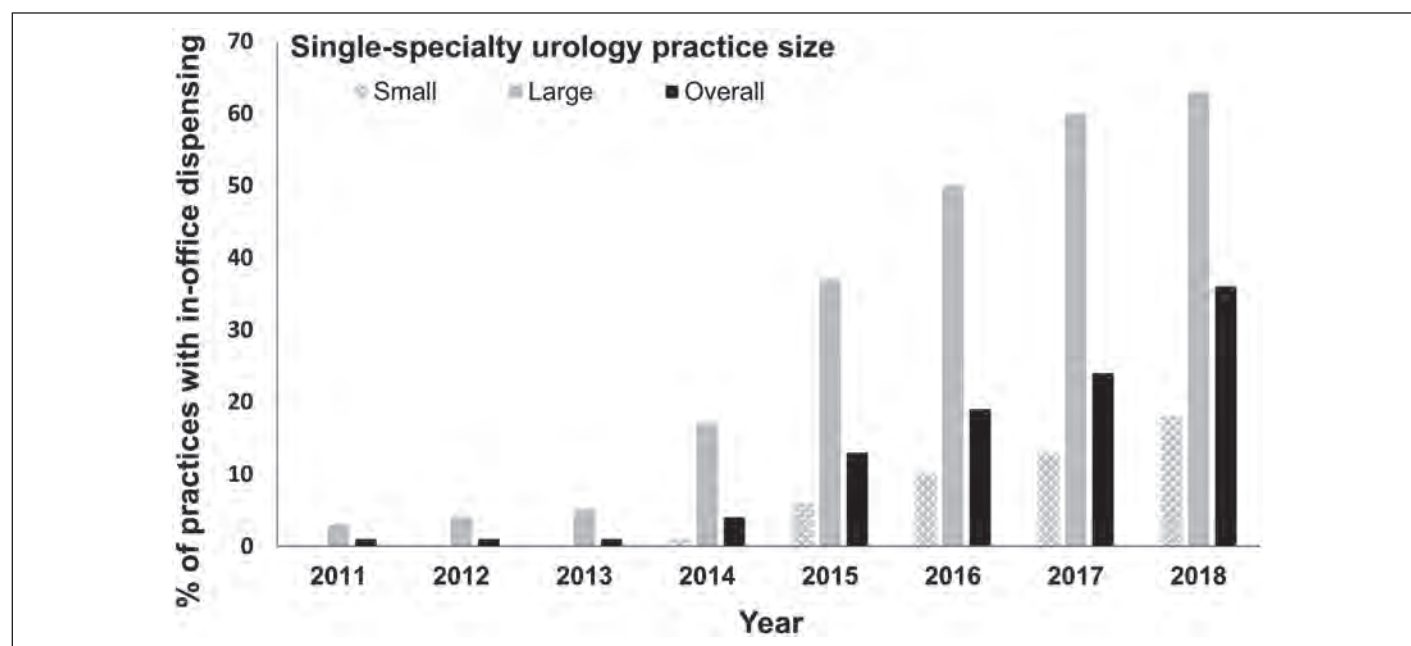


Figure. In-office dispensing among single-specialty urology practices by size—small (<10 urologists), large (10 or more urologists), and overall—from 2011 to 2018, by year.

Lai LY, Kaufman SR, Oerline M, et al. Effects of in-office dispensing by single-specialty urology practices on management of advanced prostate cancer. *Urol Pract.* 2023;10(3):229-235.

Study Need and Importance

As management of advanced prostate cancer has evolved to include novel oral targeted therapies, urology practices have become interested in providing these therapies directly to patients through in-office dispensing—a form of care delivery that allows prescriptions to be dispensed on-site or through a pharmacy owned by the practice. However, the scope of this new delivery model and its effects on utilization are unknown.

“Prescriptions for abiraterone and/or enzalutamide increased almost 9-fold among practices with dispensing and 2-fold among practices without dispensing.”

What We Found

In-office dispensing increased from 1% to 30% of single-specialty urology practices from 2011 to 2018, with 28 practices adopting

dispensing in 2015 (see Figure). Prescriptions for abiraterone and/or enzalutamide increased almost 9-fold among practices with dispensing and 2-fold among practices without dispensing. Although the number of prescriptions increased, the volume of patients with advanced prostate cancer managed by practices did not change after adopting in-office dispensing.

Limitations

Our findings must be considered in the context of several limitations. First, our sample is limited to Medicare beneficiaries and our findings may not be generalizable to younger and commercially insured patients. Second,

we only focused on the changes surrounding the year before and after adoption of in-office dispensing. Third, we are unable to account for potential imbalances in the severity of metastatic disease between practices, which may influence treatment decisions.

Interpretation for Patient Care

In-office dispensing resulted in an increase in the number of prescriptions for oral targeted therapies for men with advanced prostate cancer. As this model of care delivery is increasingly adopted by urology practices, it will be important to understand its effects on quality and patient out-of-pocket costs. ■

JU INSIGHT

Bladder Mucosal Cystitis Cystica Correlates With Recurrent UTI in Postmenopausal Women

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Ligon MM, Liang B, Lenger SM, et al. Bladder mucosal cystitis cystica correlates with recurrent UTI in postmenopausal women. *J Urol.* 2023;209(5):928-936.

Study Need and Importance

Postmenopausal women are particularly susceptible to recurrent urinary tract infections (rUTIs). There remains a great need to understand the clinical factors that drive the increase in susceptibility and frequency of rUTIs in this population, and we sought to identify potential pathological correlates. Previous work had identified that aged female mouse bladders develop lymphoid aggregates, and we systematically defined these structures as bladder tertiary lymphoid tissue (bTLT). bTLT formed with increasing age and following reproductive

senescence, formed bona fide germinal centers, and was associated with a significant increase in rUTIs.

What We Found

Bladders of postmenopausal women harbor inflammatory lesions evident as cystitis cystica (CC) on cystoscopy that were structurally bTLT in form and composition and that are better described in pathologic terms as follicular cystitis (see Figure). To further understand the relationship between CC and rUTIs, we performed a retrospective and observational analysis of a cohort of 138 women with culture-proven rUTIs and who underwent cystoscopy. Our study showed that approximately 40% of women had bTLT/CC lesions and were significantly more likely to have multiple rUTIs in a given year. Furthermore, the presence of these lesions was strongly associated with a shorter time to next urinary tract infection (UTI). Tertiary lymphoid tissue in postmenopausal bladders have been shown to be associated

“Our study showed that approximately 40% of women had bTLT/CC lesions and were significantly more likely to have multiple rUTIs in a given year.”

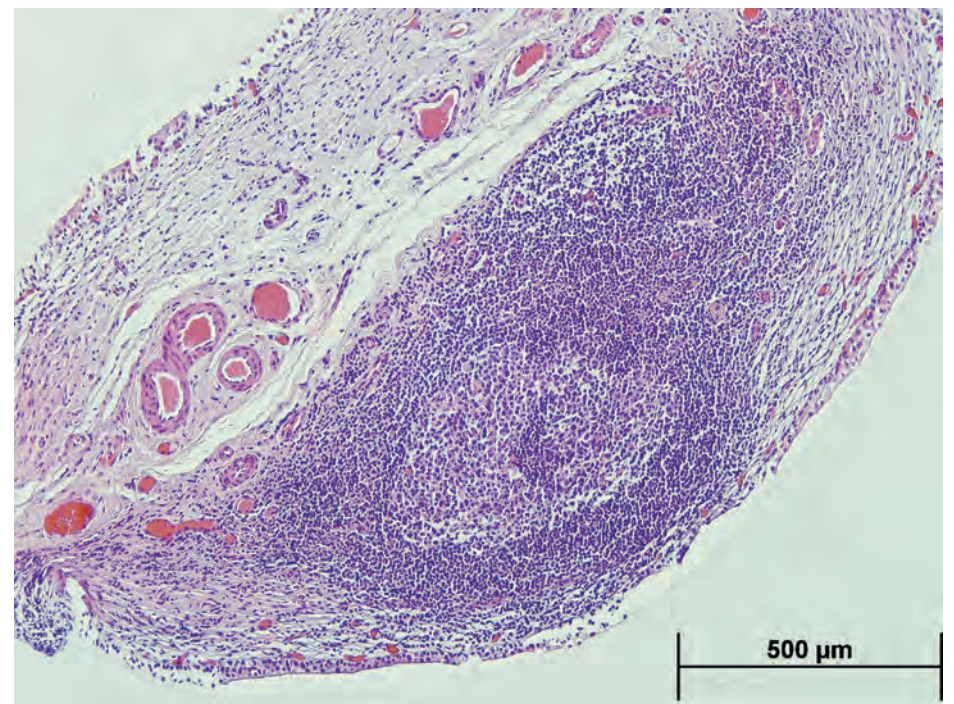


Figure. Representative hematoxylin and eosin image of lymphoid tissues with germinal center in cystitis cystica biopsies.

with co-localization of *Escherichia coli* species. The presence of tertiary lymphoid tissues may potentiate overexuberant or ineffective immune responses that promote inflammation rather than resolution of UTIs. We could demonstrate that a multimodal regimen of therapy, which was successful in limiting UTIs, showed regression of bTLT lesions upon repeat cystoscopy.

Limitations

Limitations of this study were the overall small sample size of women and a lack of standardized methods to cystoscopically assess the severity of CC. Developing a validated severity scale would improve CC lesion monitoring over time.

“We could demonstrate that a multimodal regimen of therapy, which was successful in limiting UTIs, showed regression of bTLT lesions upon repeat cystoscopy.”

Interpretation of Patient Care

We suggest that identifying CC in patients with rUTI may be useful in stratifying future UTI risk and tailoring appropriate treatment strategies. ■

JU INSIGHT

Deep Learning of Videourodynamics to Classify Bladder Dysfunction Severity in Patients With Spina Bifida

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Weaver JK, Martin-Olenski M, Logan J, et al. Deep learning of videourodynamics to classify bladder dysfunction severity in patients with spina bifida. *J Urol.* 2023;209(5):994-1003.

Study Need and Importance

Videourodynamics (VUDS) is the gold standard for the evaluation of the lower urinary tract in patients with spina bifida to charac-

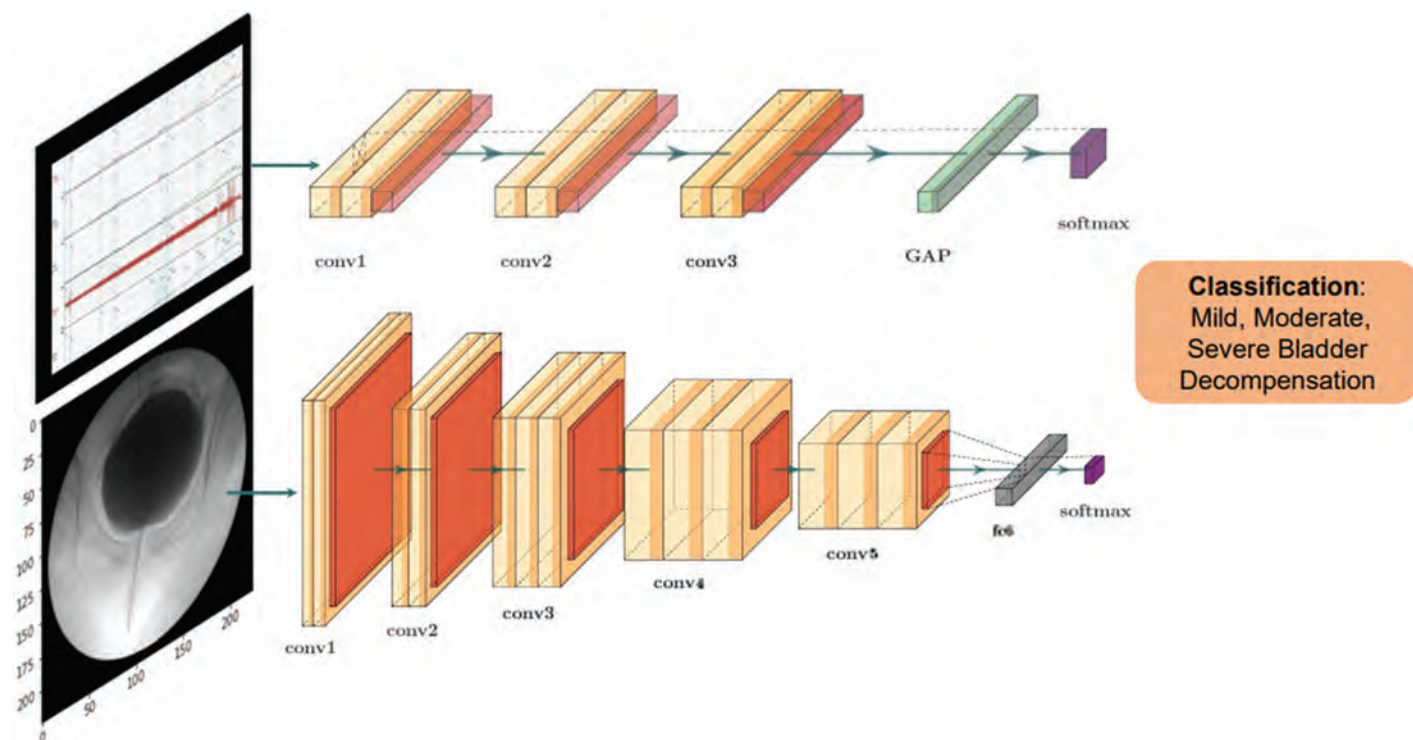


Figure. Schematic of the pressure-volume model (1D convolutional neural network) and the imaging model (VGG-16 pretrained convolutional neural network). Averaging the risk probabilities of these respective models resulted in the ensemble model.

terize bladder function. The interpretation of these data is important to determine whether a bladder has safe storage and emptying functions and whether bladder dysfunction could contribute to the loss of kidney function. VUDS data are rich in detail but laborious for an individual to fully understand, and their interpretation has high interobserver variability. These characteristics create challenges for the utility of VUDS in the longitudinal evaluation of children with spina bifida.

What We Found

In this study, deep learning models that automatically extracted features from pressure and volume tracings and/or fluoroscopic images from VUDS studies classified severity of bladder dysfunction with moderate accuracy (see Figure). The highest performance was observed in models that included longitudinal volume and pressure data

“Our deep learning models were able to automatically classify bladder dysfunction severity.”

and fluoroscopic images. The best performing model was the 75% estimated bladder capacity ensemble model, which had an overall accuracy of 70%. Model performance was directly related to the degree of bladder filling; the accuracy of the classification increased and the discordance between categories decreased as the percentage of estimated bladder capacity achieved increased.

Limitations

We used the expert reviewers' majority rating as the ground

truth by which our models were assessed. Although there is known significant interrater reliability among pediatric urologists, a majority rating by expert reviewers was deemed to be the most scientifically rigorous way to establish ground truth for training and testing our models. Additionally, overfitting and poor generalizability are two known limitations of machine learning models built from small, single institution cohorts.

Interpretation for Patient Care

Our deep learning models were able to automatically classify bladder dysfunction severity. Retrospective and prospective studies performed at other institutions are needed to validate our models, but in the future, these models could influence clinical decision-making by extracting informative features from VUDS studies that would not otherwise be available to clinicians. ■

JU INSIGHT

Efficacy of TAR-200 in Patients With Muscle-invasive Bladder Cancer

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Tyson MD, Morris D, Palou J, et al. Safety, tolerability, and preliminary efficacy of TAR-200 in patients with muscle-invasive bladder cancer who refused or were unfit for curative-intent therapy: a phase 1 study. *J Urol.* 2023;209(5):890-900.

Study Need and Importance

Standard-of-care treatment for muscle-invasive bladder cancer (MIBC) is platinum-based neoadjuvant chemotherapy followed by radical cystectomy or multimodal treatment combining maximal transurethral resection of bladder tumor with chemo/radiotherapy. However, half of patients with MIBC worldwide may not receive curative-intent

therapy. Elderly or frail patients with MIBC are most affected by this unmet need.

TAR-200 is a novel intravesical drug delivery system that provides sustained, local release of gemcitabine into the bladder over a 21-day dosing cycle. This phase 1 study evaluated the safety, tolerability and preliminary efficacy of TAR-200 in patients with MIBC who either refused or were unfit for curative-intent therapy.

What We Found

Overall, 35 patients with MIBC who refused or were unfit for curative-intent therapy received at least 1 dose of TAR-200. Median age was 84 years and 46% had Eastern Cooperative Oncology Group performance status 3-4.

TAR-200 was generally safe and well tolerated. The most common TAR-200-related treatment-emergent adverse events (TEAEs) were dysuria and urinary frequency, generally observed at grades 1-2. Two patients experienced TEAEs leading to removal of TAR-200.

TAR-200 also showed prelim-

inary signs of efficacy, with an overall response rate of 40.0% at 3 months, a median overall survival of 27.3 months, and a progression-free rate at 12 months of 70.5%.

Limitations

Our study is limited by its small sample size, single-arm design, and the absence of complete pathological assessment that would have been provided by radical cystectomy. Additionally, it is a challenge to distinguish whether TAR-200-related TEAEs were attributable to the drug, the delivery system, or the disease state, as this determination may be confounded.

Interpretation for Patient Care

The safety and preliminary efficacy data from this study support the continued development of TAR-200 across the bladder cancer spectrum. Multiple global, randomized, controlled phase 2/3 trials investigating TAR-200 are ongoing. ■

JU INSIGHT

Ureteral Stents Harbor Complex Biofilms With Rich Microbiome-Metabolite Interactions

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Werneburg GT, Hettel D, Lundy SD, et al. Ureteral stents harbor complex biofilms with rich microbiome-metabolite interactions. *J Urol.* 2023;209(5):950-962.

Study Need and Importance

Ureteral stents, used to drain the upper urinary tract or facilitate healing, can be associated with encrustation and infection. Biofilms, structures of bacteria adherent to

URETERAL STENTS HARBOR COMPLEX BIOFILMS

→ Continued from page 20

one another and a surface, commonly form on stents. Biofilm formation has been implicated in stent-associated urinary tract infection and encrustation, but biofilms also form in the absence of these phenomena. Understanding the relationship between stent biofilm composition and infection or encrustation may lead to optimization of materials and strategies to reduce biofilm and stent-related complications.

What We Found

All ureteral stents harbored microbial biofilms, even in the absence of infection. Specific microbial genera were more abundant in samples from stents where there was antibiotic exposure during indwelling time (*Escherichia/Shigella*, *Pseudomonas*, *Staphylococcus*, *Ureaplasma*) and in those associated with infection (*Escherichia/Shigella*, *Ureaplasma*). The antibiotic resistance genes *sul2* (sulfonamide resistance) and *ampC* (beta-lactamase) were detected in 65.7% and 97.1% of stents tested for resistance, respectively. Strains identified as clinically relevant and central to microbe-metabolite interaction networks were analyzed using a CDC continuous-flow stir tank bioreactor, a large culture environment designed to mimic the urinary tract with an indwell-

“Microbes isolated from stents reconstituted biofilm formation in vitro, and thus novel material types and coatings may now be tested for anti-biofilm properties, and commensal strains tested for bacterial interference properties against pathogens.”

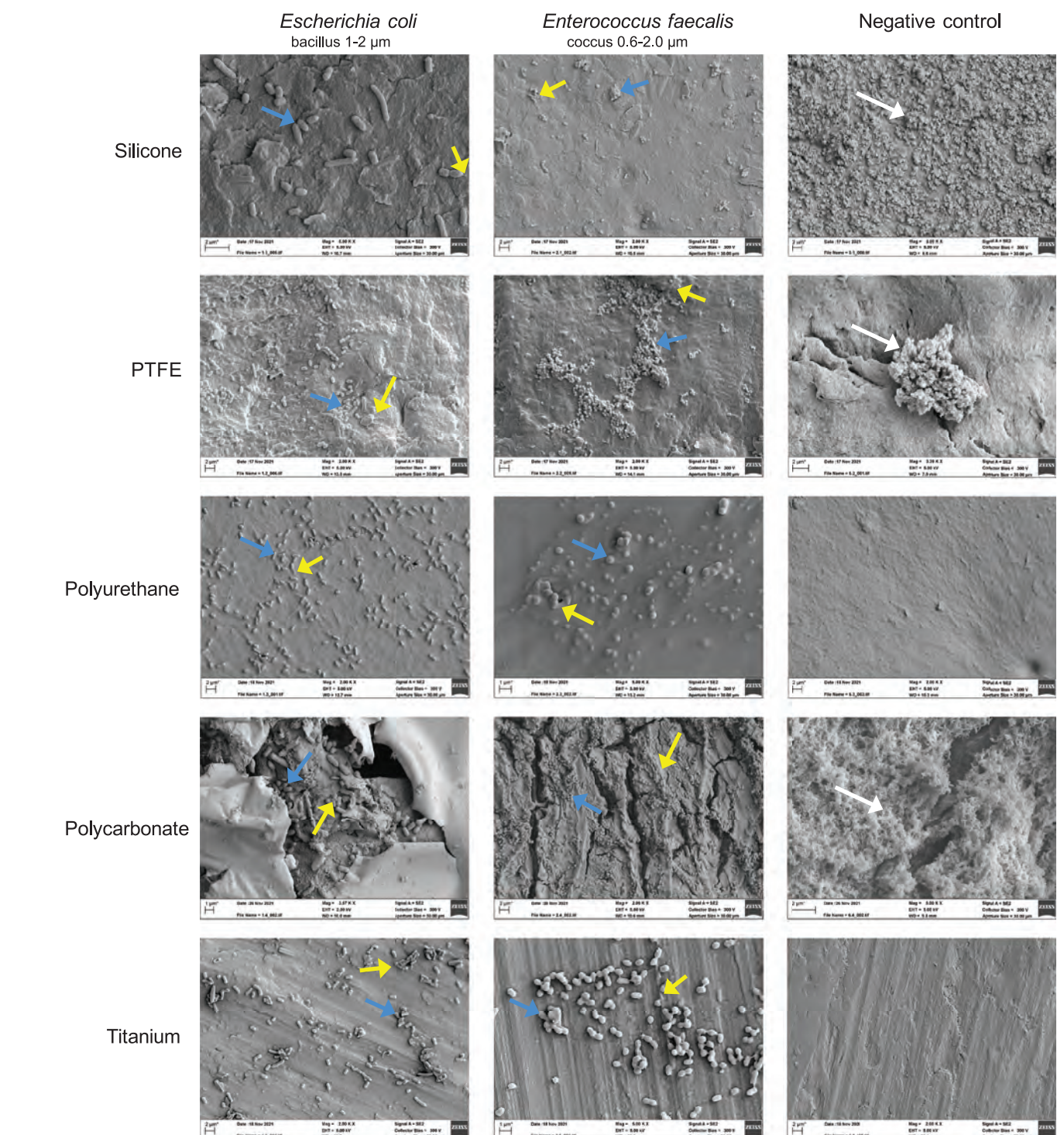


Figure. Scanning electron microscopy reveals biofilm formation on multiple strains and material types. Each strain was grown in a continuous-flow stir-tank bioreactor for 72 hours along with a series of coupons of different material types. Material types are indicated to the left of each row. *Escherichia coli* is indicated in the left column and *Enterococcus faecalis* is indicated in the center column. The negative control, wherein coupons were incubated in the bioreactor together with sterile media, is shown in the right column. Blue arrows indicate bacteria, yellow arrows indicate matrix components, and white arrows indicate abiotic crystals. Microbial size and morphology are indicated on the top of each column. Scale bars are indicated on the respective micrographs. Micrographs of all tested strains and materials are shown in Supplemental Figure 6, and quantitative analyses of biofilm are shown via plate count assay in Figure 5 of the manuscript. EHT indicates electron high tension; Mag, magnification; PTFE, polytetrafluoroethylene; WD, working distance.

ing ureteral stent. All strains analyzed in the bioreactor reconstituted biofilm, with differential formation by strain (*Enterococcus faecalis* most) and material type (see Figure).

Limitations

Limitations of the study include the small sample size of stents as-

sociated with infection and lack of stratification of stents by model and composition.

Interpretation for Patient Care

Biofilms are uniformly present on stents and exhibit patterns unique to infection and recent antibiotic use. Microbes isolated from

stents reconstituted biofilm formation in vitro, and thus novel material types and coatings may now be tested for anti-biofilm properties, and commensal strains tested for bacterial interference properties against pathogens. The findings and techniques may be generalizable to other indwelling medical devices within and outside urology. ■

JU INSIGHT

Detection of Bacteria in Bladder Mucosa of Adult Females

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Wolfe AJ, Rademacher DJ, Mores CR, et al. Detection of bacteria in bladder mucosa of adult females. *J Urol.* 2023;209(5):937-949.

Study Need and Importance

Interstitial cystitis/bladder pain syndrome (IC/BPS) is a chronic urological condition. Whether urinary microbiota play an etiological role remains controversial. Most studies assessed the microbiota of IC/BPS patients with voided or catheterized urine as a proxy for bladder urothelium; however, urine may not be a true reflection of bladder microbiota. Direct urothelium assessment, through bladder biopsy, may provide more accurate and clinically relevant information.

What We Found

Using 16S rRNA gene sequencing, we detected bacteria in most urothelial biopsies. The genera are typically detected in bladder urine obtained by transurethral catheter; however, the distribution differed. In urine, *Lactobacillus* is typically the most prevalent and abundant genus, followed by *Gardnerella*, *Streptococcus*, and *Staphylococcus*. In biopsy tissue, the most prevalent and abundant genus was *Staphylococcus*, followed by *Lactobacillus*; *Escherichia* was prevalent but not abundant. There was no apparent difference between IC/BPS patients and controls. To verify sequencing results, we used a combined fluorescence in situ hybridization and immunohistochemistry imaging, which reproducibly detected 16S rRNA in epithelial cells and shed cells in the urothelium and in lesioned areas and capillary walls in the lamina propria of the biopsy tissue.

Limitations

This small study cohort was all female and did not consider racial/ethnic variability. It does not identify taxa by imaging, limiting the ability to compare imaging and sequencing results. Subsequent studies may benefit from the use of probes for specific taxa.

Interpretation for Patient Care

There is no compelling evidence that bacteria play a significant role in IC/BPS. Etiological discovery should focus elsewhere. While urine obtained by catheter is a noninvasive proxy for bladder microbiota, researchers and clinicians should recognize that compositional distribution may differ. This difference likely results from variability in the degree of association between bacteria that adhere to the surface of the urothelium compared to those that invade. ■

JU INSIGHT

Magnetic Resonance Imaging for Localizing Prostate Cancer Near the Urethra in Focal Gland Ablation Candidates

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Patel N, Hughes A, Zhang JH, et al. Utility of magnetic resonance imaging for localizing prostate cancer near the urethra in men who are candidates

for focal gland ablation. *J Urol.* 2023;209(5):911-917.

Study Need and Importance

The utilization of focal gland ablation to treat localized prostate cancer is increasing substantially. However, there is still significant concern regarding long-term efficacy, especially given the high rates of biopsy-proven treatment failures. By identifying men who

are candidates for focal gland ablation but who underwent radical prostatectomy, a critical analysis of their whole-mount pathology can potentially help discern mechanisms of treatment failure with focal gland ablation. Given that ablative therapies often require the use of a protective urethral catheter or limit energy delivery near the urethra, identifying the frequency that tumors

→ Continued on page 23

MAGNETIC RESONANCE IMAGING FOR LOCALIZING PROSTATE CANCER

→ Continued from page 22

“In order to better select patients who could benefit from alternative treatment ablation modalities, prostate MRI can be used to calculate tumor to urethral distance as the sensitivity of detecting tumors within 5 mm of the urethra is 77%.

are within close proximity to the urethra can help better guide treatment selection.

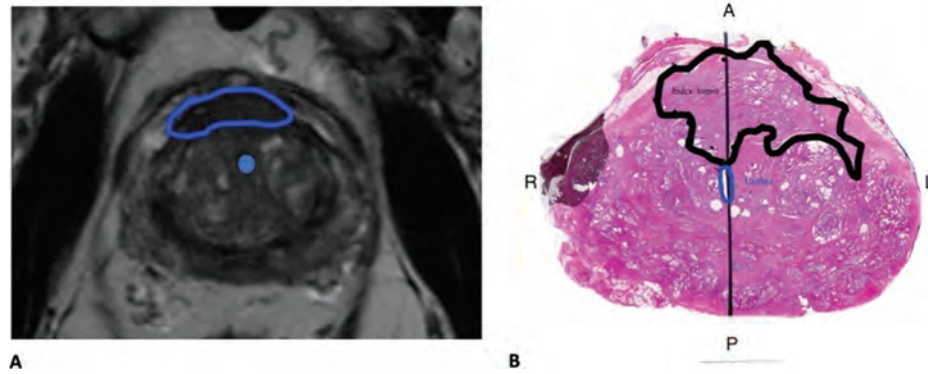


Figure. Example of a discordant MRI region of interest reported being 6 mm away from urethra but that was abutting the urethra on whole-mount pathology. A, MRI T2-weighted image showing region of interest (blue outline) is away from the urethra (blue dot). B, Whole-mount pathology shows lesion (black outline) abutting urethra (blue outline). A indicates anterior; L, left; P, posterior; R, right.

What We Found

In a cohort of men who would have been potential candidates for focal gland ablation but underwent a radical prostatectomy, we found that 72% of the tumors are within 5 mm of the urethra (see Figure). Thus, if this tissue is not adequately ablated, in-field recur-

rences could occur in the periurethral tissue. In order to better select patients who could benefit from alternative treatment ablation modalities, prostate MRI can be used to calculate tumor to urethral distance as the sensitivity of detecting tumors within 5 mm of the urethra is 77%.

Limitations

Limitations include the retrospective design of the study and the hypothetical mechanism of treatment failure for focal gland ablation. Future studies should consider periurethral biopsies in men who had focal gland ablation with a urethral protective device to determine the frequency of periurethral recurrences.

Interpretation for Patient Care

Prostate MRI is already widely used to help select which men are candidates for focal gland ablation. The tumor to urethra distance can be calculated using the MRI to help better tailor treatment choice and/or energy modality for focal gland ablation. ■

JU INSIGHT

Mitomycin Gel as Adjuvant Therapy After Complete Endoscopic Management of Upper Tract Urothelial Carcinoma

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Labbate C, Woldu S, Murray K, et al. Efficacy and safety of mitomycin gel (UGN-101) as an adjuvant therapy after complete endoscopic management of upper tract urothelial carcinoma. *J Urol.* 2023;209(5):872-881.

Study Need and Importance

Upper tract urothelial carcinoma (UTUC) has high rates of local recurrence after nephron-sparing surgery. UGN-101 was approved

by the Food and Drug Administration in 2019 as a chemoablative treatment of low-grade UTUC, but its usage as an adjuvant agent after complete endoscopic ablation has yet to be described. This multicenter experience provides data from the 15 highest UGN-101 utilizing centers post-commercialization in the U.S.

What We Found

At the first endoscopic evaluation, use of UGN-101 as an adjuvant agent (following complete endoscopic ablation) resulted in disease-free status in 69% (36 of 52) of patients, which was greater than the disease-free status of patients

→ Continued on page 24

MITOMYCIN GEL AS ADJUVANT THERAPY

→ Continued from page 23

undergoing UGN-101 as chemoablative therapy alone (40%, $P < .01$). Ipsilateral recurrence during follow-up was observed in an additional 4 patients. Disease progression to high-grade or metastatic disease after adjuvant therapy was rare, occurring in 1 patient during follow-up. The rate of ureteral stenosis was not different in patients who underwent adjuvant therapy (19%) or chemoab-

lative therapy (27%, $P = .55$).

Limitations

As a rare genitourinary malignancy, data were collected across 15 centers and thus are prone to bias introduced by practice pattern variation. In particular, adjuvant UGN-101 was administered by nephrostomy tube in 54% of cases, which

may influence adverse event profile. Intensity and duration of ureteroscopic surveillance were not protocolized in this retrospective review.

Interpretations for Patient Care

UGN-101 appears to be well tolerated after complete endoscopic ablation of UTUC. Pa-

tients who underwent complete endoscopic ablation followed by UGN-101 were more likely to be disease-free at first endoscopic evaluation than those who underwent chemoablation alone. This highlights the potential benefit of complete up-front endoscopic ablation. The durability of ipsilateral disease-free response requires longer follow-up. ■

UPJ INSIGHT

Merit-based Incentive Payment System Quality Reporting in Urology Practices

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Maganty A, Krampe N, Shah AA, Golla V. Merit-based incentive payment system quality reporting in urology practices. *Urol Pract.* 2023;10(3):244-252.

Study Need and Importance

The Merit-based Incentive Payment System (MIPS) represents one of the most extensive changes to the way in which physicians are reimbursed. MIPS attempts to move from volume towards value by adjusting reimbursement based on performance across quality measures and per beneficiary spending. Most urologists caring for Medicare beneficiaries will be subject to the policies within MIPS. However, with few measures specific to urological conditions within the program, it remains unclear what measures urologists are choosing to track and report.

“During the 2020 performance year, most urologists reported as part of a group or alternative payment model (56% and 30%, respectively), while few reported as an individual (14%).”

What We Found

During the 2020 performance year, most urologists reported as part of a group or alternative payment model (56% and 30%, respectively), while few reported as an individual (14%). The most frequently reported measures were relevant to primary care and not specific for urological conditions. Moreover, only 11% of urologists reported at least 1 urology-specific measure (see Figure) and only 3% reported measures from qualified registries such as AQUA (American Urological Association Quality Registry).

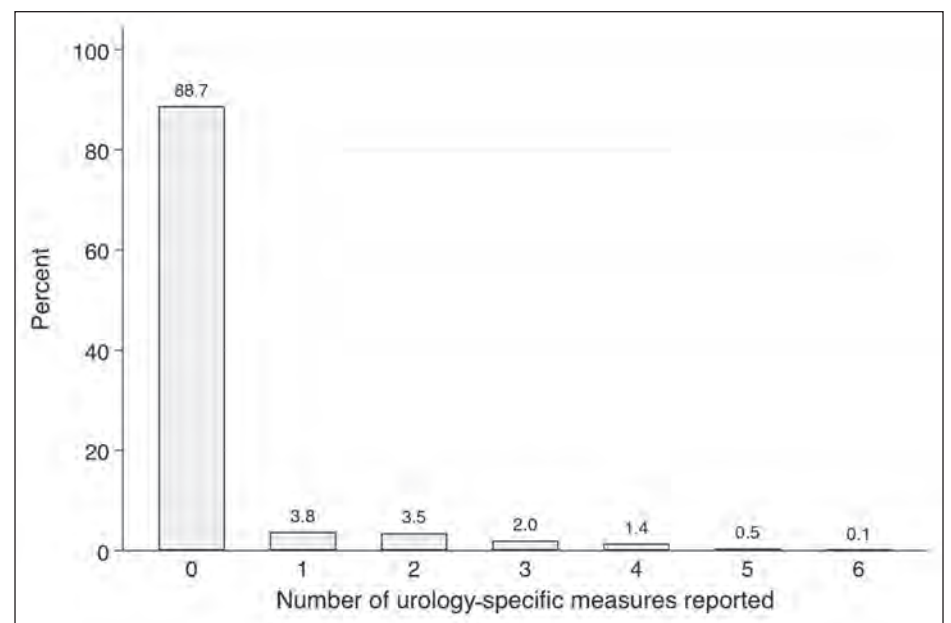


Figure. Percent of physicians reporting urology-specific measures (inclusive of Merit-based Incentive Payment System urology measures and those from qualified clinical registries).

Limitations

These findings must be considered in the context of several limitations. First, this data is publicly available through Centers for Medicare & Medicaid Services, and may contain missing or incomplete information. Second, we explored urology-specific measures, but other measures may provide meaningful improvements to patient care. Third, this is a retrospective analysis of a single performance year during the COVID-19 pandemic,

during which time practice patterns were likely altered.

Interpretation for Patient Care

Our study highlights that most measures submitted under urologists do not align with the diseases they treat. This raises concern that participation in this program—which likely imposes significant time and financial burden for physicians—is unlikely to improve the quality of care for patients with urological conditions. ■

UPJ INSIGHT

Non-race-based Glomerular Filtration Rates to Estimate Renal Functional Outcomes Following Nephrectomy

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Britton CJ, Sharma V, Lohse CM, et al. Non-race-based glomerular filtration rates to estimate renal functional outcomes following radical and partial nephrectomy. *Urol Pract.* 2023;10(3): 212-216.

Study Need and Importance

The gold standard for management of localized renal malignancy remains surgical resection. Renal function can be estimated using serum markers such as creatinine. Functional decline following radical and partial nephrectomy is an important consideration for providers. National organizations have recommended movement away from glomerular filtration rate (GFR) equations which use racial variables. Because of this shift in practice, these formulas require validation for predicting GFR postoperatively.

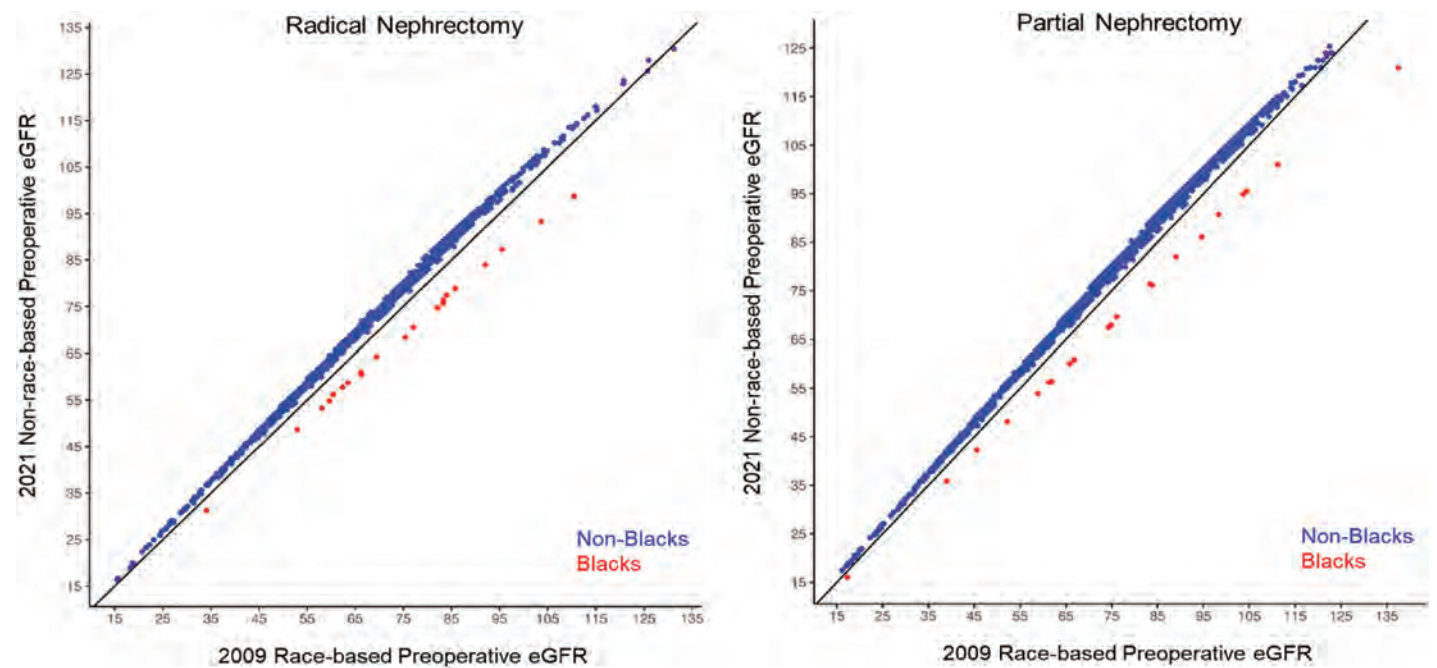


Figure. Predicted postoperative estimated glomerular filtration rate (eGFR) following radical and partial nephrectomy using race-based and non-race-based eGFR formulas.

“In light of the recommendations from national organizations, providers can be reassured that non-race-based formulas provide accurate assessment of predicted postoperative renal function.”

What We Found

We examined non-race-based formulas for estimating preoperative GFR and predicting short- and long-term renal function outcomes following radical and partial nephrectomy. These equations do not significantly alter predictive ability for estimated GFR (eGFR) in the postoperative setting. However, utilizing non-race-based formulas led to a decrease in eGFR for Black patients and an increase in eGFR estimation for non-Black patients (see Figure).

Limitations

The main limitation of our work is

the limited number of Black patients analyzed. Future studies with larger cohorts will be needed to validate these findings and provide generalizability to more diverse populations.

Interpretation for Patient Care

Our findings demonstrate limited changes to predicted renal functional outcomes following partial and radical nephrectomy for localized renal malignancy. In light of the recommendations from national organizations, providers can be reassured that non-race-based formulas provide accurate assessment of predicted postoperative renal function. ■

UPJ INSIGHT

Biomarker Surrogate for Nutritional Status to Predict Overall Survival in Patients Post-radical Cystectomy

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Farag CM, Akosman S, Luu J, Haji-Momenian S, Whalen MJ. Hemoglobin, albumin, lymphocyte, and platelet count is a significant biomarker surrogate for nutritional status to predict overall survival in patients post-radical cystectomy. *Urol Pract.* 2023;10(3):261-269.

Study Need and Importance

Patients who undergo radical cystectomy (RC) are at risk for malnutrition for a variety of reasons. A prognostic marker for underlying nutritional and immune status is of much value in urologic oncology because patients can be better screened and targeted with pre-/perioperative immunonutritional therapy, with the goal being to improve post-RC outcomes. Our paper sought to validate the hemoglobin, albumin, lymphocyte, platelet score (HALP) as a surrogate for

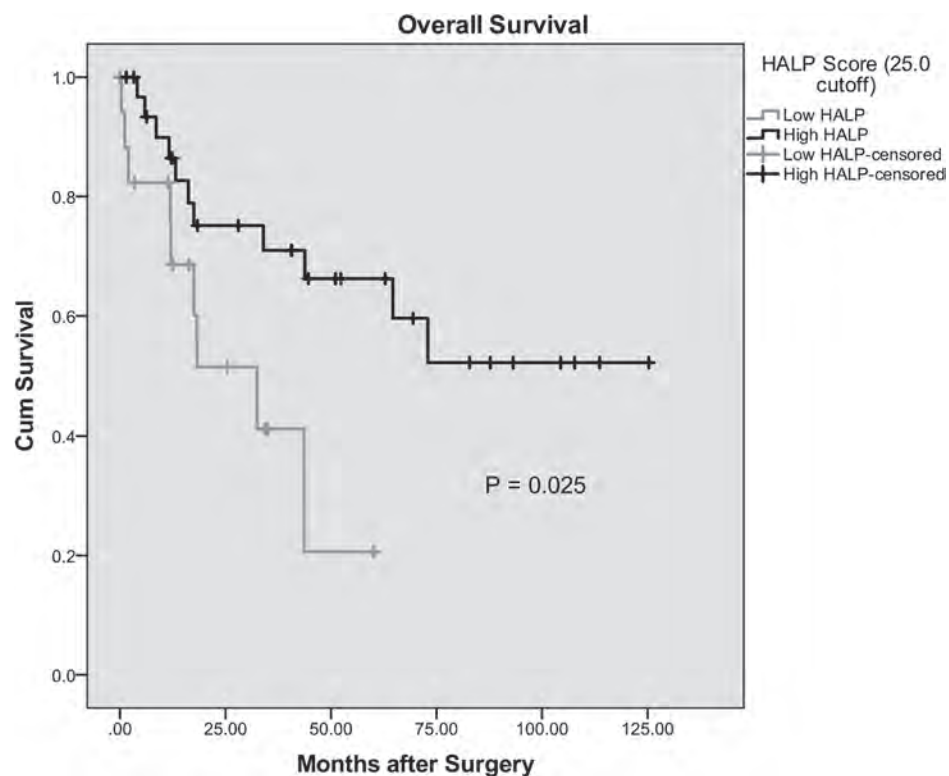


Figure. Kaplan-Meier estimates of overall survival by low and high hemoglobin, albumin, lymphocyte, and platelet (HALP) scores prior to radical cystectomy. Cum indicates cumulative; High HALP, ≥ 25.0 ; Low HALP, < 25.0 .

immunological and nutritional status to predict RC postoperative outcomes.

What We Found

We found that low HALP scores are a predictor for shorter overall survival (see Figure). HALP remained predictive even when adjusting for comorbidities, TNM staging, and neoadjuvant chemotherapy. We determined that an optimum HALP cutoff of 25.0 is clinically meaningful to preoperatively screen patients for

nutritional deficiency. This finding is in line with a previous study which identified 22.2 as an optimum threshold in RC, which further lends credence to the utility of HALP.

Limitations

This study is limited by a small sample size ($n=50$) and clinical data collected from only a single institution. Furthermore, some of the patients in our sample underwent neoadjuvant chemotherapy, which has an unknown effect on

“We determined that an optimum HALP cutoff of 25.0 is clinically meaningful to preoperatively screen patients for nutritional deficiency.”

the HALP score. Although our study adjusted for neoadjuvant chemotherapy, neoadjuvant chemotherapy may have nevertheless impacted HALP scores across groups.

Interpretation for Patient Care

HALP is potentially a powerful predictor of overall survival following RC. Given that HALP evaluates nutritional and immunological status, it is possible to use HALP to screen for patients who may be in need of preoperative nutritional and immune therapy. Future research should investigate if preoperative HALP score can be improved by administering preoperative nutritional supplementation, with the goal of improving the arsenal of preoperative interventions to aid malnourished patients undergoing surgery. ■