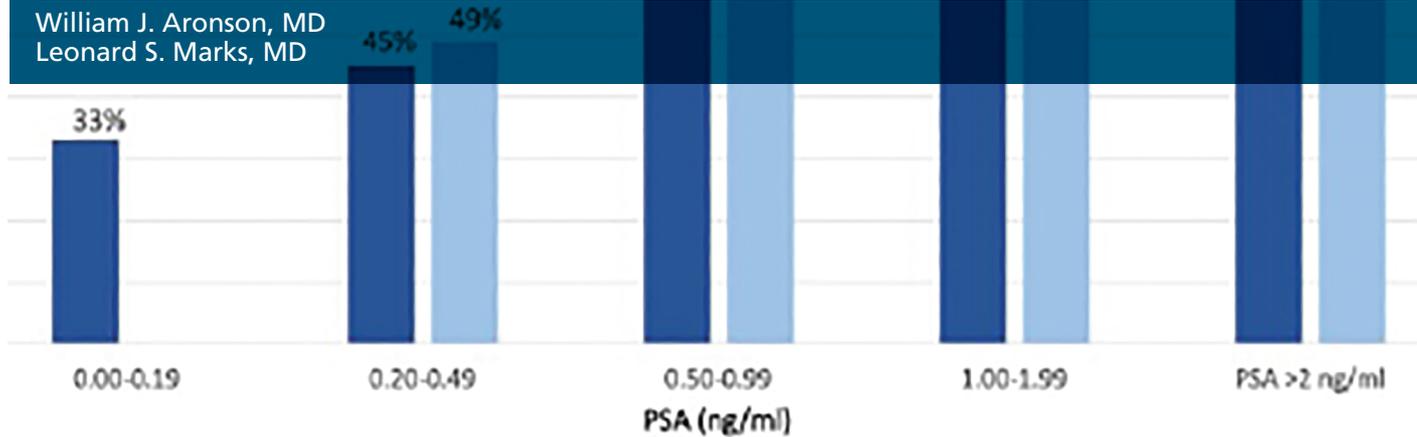




THE OFFICIAL NEWSMAGAZINE OF THE AMERICAN UROLOGICAL ASSOCIATION

## Clinical Utility of Prostate-Specific Membrane Antigen Diagnostics and Theranostics

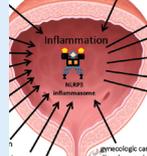
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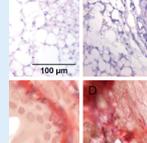
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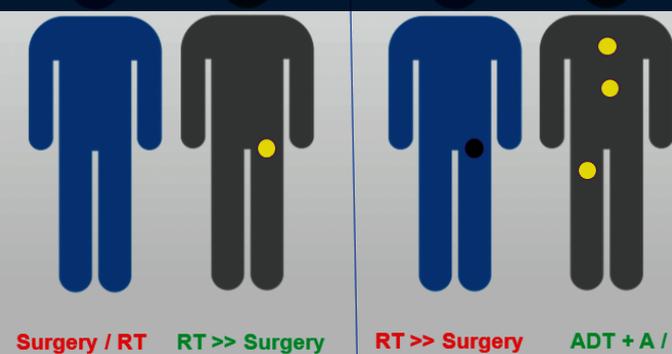
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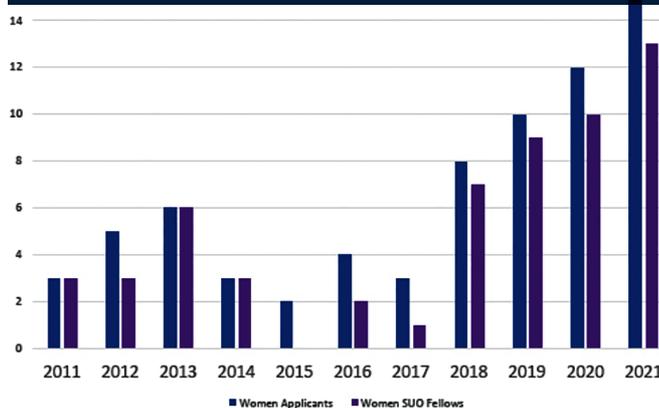
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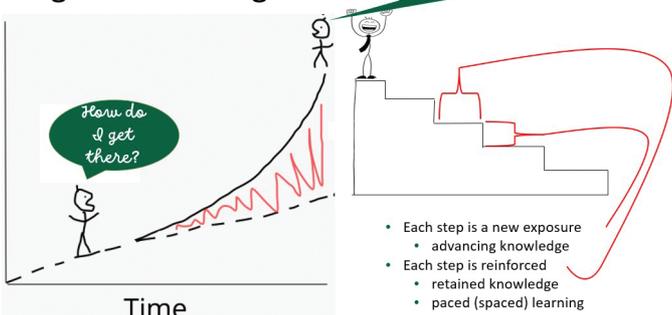
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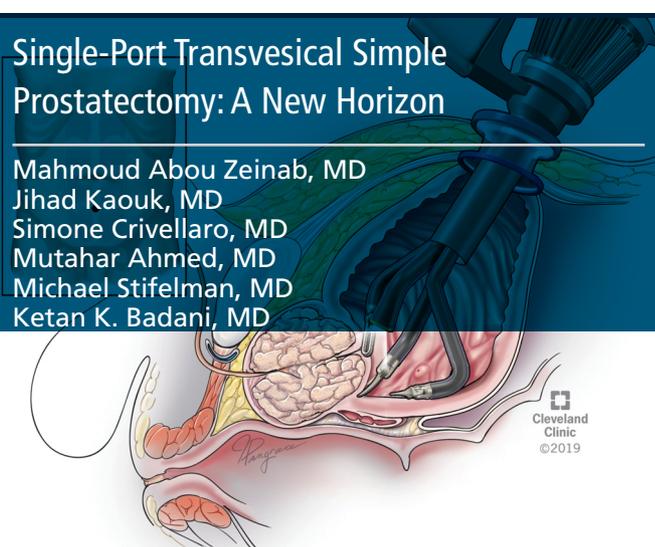
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## AUA2022: PLENARY RECAP

# Testosterone, Science, and Human Dignity

## Abraham Morgentaler, MD

Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts

I have had a set of unique experiences that have impacted my views on the nature of science, and what it means to be human. Those experiences stem directly from my research with testosterone (T) for over 45 years, in particular navigating the previously uncharted waters of testosterone therapy (TTh) in men with prostate cancer (PCa).

My interest in human dignity comes from the experiences and examples of my parents, who were survivors of Auschwitz in World War II. My mother, Chava Rosenfarb, became a widely acclaimed Yiddish author who detailed the indignities of the Holocaust. My father, Dr. Henry Morgentaler, fought to eliminate the indignities suffered by women forced to undergo illegal, risky abortions in Canada by offering safe, legal abortions.

## How I Started With T

My involvement with T began in 1975 working in the laboratory of the brilliant evolutionary biologist, David Crews, at Harvard University, where I was able to restore sexual behavior in castrated male lizards by implanting miniature T pellets in specific areas of the brain.<sup>1</sup>

In medical school I learned almost nothing about T, except that it fueled PCa and was treated with castration. That made a big impression!

In urology residency, I was taught T was like the devil. High levels caused PCa and low levels were protective. And if a physician were foolish enough to give T to a man with PCa, it was like feeding a hungry tumor or pouring gasoline on a fire. The fear of precipitating PCa meant that almost no TTh was

prescribed in the U.S., and its use was limited only to rare cases in young men with severe issues, such as absent testes or pituitary tumors.

When I started my urological career in 1988 at Beth Israel Hospital in Boston (now Beth Israel Deaconess Medical Center) and specialized in sexual medicine, there were few treatment options. Viagra® (sildenafil) would not appear for another 10 years. I wondered whether men might be like the lizards I had studied. They were! Sexual symptoms improved with TTh, and men felt more vigorous. Yet senior colleagues advised me to stop.

“You’re going to give these men PCa!” they said.

I persisted. To minimize PCa risk, for many years I performed prostate biopsies prior to initiating TTh. Contrary to expectations, we found low T was not at all protective for PCa.<sup>2</sup> And shockingly, our review of the risks of TTh in 2004 revealed no evidence that high endogenous T levels or TTh was associated with anything worrisome regarding PCa.<sup>3</sup> Yet the belief that androgens drove PCa was taught around the world to students and residents. Something was very wrong with a foundational medical concept!

## A Revolution in Understanding the Relationship of T and PCa

I will never forget the day I descended into the basement of Harvard’s Countway Library to read the landmark 1941 study by Huggins and Hodges,<sup>4</sup> which led to androgen deprivation therapy (ADT) as standard treatment for advanced PCa. My palms were sweaty as I read the concluding sentence, “Cancer of the prostate is activated by testosterone injections.”

Yet on second reading I discovered only 3 men had received T, and for no more than 18 days. Of these 3 men, they reported results for 2. One of these had already been castrated. This meant the conclusion that TTh was dangerous for the prostate was based on erratic results in a single, hormonally non-castrated patient!<sup>5</sup>

In 2006 I developed the Saturation Model<sup>5</sup> and expanded it more fully in 2009 with Abdul Traish.<sup>6</sup> This solved the mystery as to why androgen deprivation caused cancer regression, yet raising T in a noncastrated individual had little, if any, effect. The explanation is that the ability of androgens to stimulate prostate growth reaches a maximum at a low concentration of T.

Over time I offered TTh to men with progressively riskier PCa situations, eventually to men with biochemical recurrence and even metastatic disease.<sup>7</sup> Is TTh like pouring gasoline on a fire? Apparently not. For my entire career I worried that the next patient would be the one who would rapidly develop the terrible outcomes with TTh I’d been taught to expect. It never happened.

## Clinical Experience With TTh in Men With Metastatic PCa

I have learned so much about our humanity from my patients with metastatic PCa who sought treatment with TTh. All were told that TTh might kill them. Quickly. Tomorrow or next week. Yet they were willing to risk it. One man on ADT said, “The way I feel now isn’t a life at all. I’d gladly live a shorter time to be able to feel like myself again.”

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## TESTOSTERONE, SCIENCE, AND HUMAN DIGNITY

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John was on ADT for metastatic PCa. He had suffered 3 strokes over the past 5 years. John sat expressionless on his chair, and could barely grunt “yes” or “no” when asked a question. He needed assistance to stand.

When I saw John 3 months after initiating TTh I could not believe my eyes. He was charming and talkative. He stood without assistance. When I asked if they were having sex, John and his wife looked at each other and giggled. They were!

At 10 months John’s wife called to tell me he had died following a heart attack. She said, “John was so happy this past year. We’re grateful to you for giving that to us.”

In 2021 we published results of TTh in 20 men with biochemical recurrence or metastatic PCa.

None suffered rapid adverse events or death. A modified version of the bipolar androgen therapy protocol has been promising,<sup>8</sup> comprised of cycles of 8 weeks of high-dose T injections followed by 4 weeks of antiandrogens.<sup>9</sup>

### Lessons

- How we choose to die is really a statement about how we choose to live. One patient said, “While I’m alive I’d like to live as well as I can.” Who could disagree?
- There is more to life than mere survival. Where is it written that every man with metastatic PCa must die without T–weak, depressed, and sexless?
- For many of my patients, quality of life was more important than duration of life. This was about

dignity for them. “Living well” or “feeling like myself” became more critical as time became more precious.

- Medicine is practiced one patient at a time, each with their own biology, and life story.
- T deficiency is a reduced state of the human condition.
- Challenge assumptions, no matter how well established. Much of what we learn eventually turns out to be incorrect.
- Working in health care is ultimately working to benefit humankind. When faced with uncertainty, let us err on the side of human dignity. ■

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## AUA2022: REFLECTIONS

# How to Reach Excellence in Urology: Challenges and Opportunities

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Pursuing excellence should be the final goal of everyone regardless of his/her profession. There is no shortcut to excellence as it requires extensive personal and professional growth, and this involves a number of subsequent steps that need to be followed.

Rather than doing everything on our own, we should learn from the best examples who already achieved success and discovered the skills and habits necessary to be excellent and successful. Thus, regardless of the career position reached—a post-graduate medical doctor, a young urologist consultant, or a senior professor—everyone should have a mentor to follow. A mentor is someone who can guide, inspire, and encourage others to apply for new opportunities, critique ideas without

judging them, and help them to face challenging situations. Finding a mentor may take a lifetime, but it is a priority for those who want to pursue a great career. It is essential to learn from the most proficient colleagues in your field, both from their achievements and their failures. This will help us in determining the gaps in our work performance and understand what we need the most to improve our practice. In this regard, urology is a constantly evolving area, and a regular update is pivotal regardless of our position and responsibilities.

“Finding a mentor may take a lifetime, but it is a priority for those who want to pursue a great career.”

Every year, clinical guidelines are updated according to the most important articles published in the peer-reviewed literature, and urologists cannot ignore them during the decision-making process in clinical practice. To this end, program directors should invest their time in making their disciples understand the importance of staying updated with the latest advances in urology. Thus, every urologist who aims at reaching excellence should ask himself or herself clinically relevant questions and try to provide the optimal answers to the scientific community. Once one becomes an expert in a specific field, he/she should not stop investing time and energy to improve. When surgery is considered, it is necessary to know one’s own results and complications to improve outcomes. This concept is of crucial importance, especially for younger urologists who aim at improving their surgical skills to reach excellence. The concept of the learning curve

“Urology is a constantly evolving area, and a regular update is pivotal regardless of our position and responsibilities.”

makes sense only for those surgeons who carefully follow their patients and are aware of their results.<sup>1</sup> Additionally, urologists should be totally honest when presenting their results at scientific meetings, as it is part of a surgeon’s life to learn from mistakes and look for better surgical solutions. Sharing authentic and valid data, focusing also on negative outcomes, is a milestone for being excellent. Colleagues will recognize a surgeon’s global leadership and integrity, while patients

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## HOW TO REACH EXCELLENCE IN UROLOGY

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“Sharing authentic and valid data, focusing also on negative outcomes, is a milestone for being excellent.”

will appreciate and trust us when clearly explaining the major issues that may arise intra- and postoperatively. When outcomes are satisfactory, one should change to further improve his/her results. To do so, surgeons working in tertiary referral centers should create a mul-

tidisciplinary team and optimize the collaboration with the other specialists who are often the pillars for reaching the best patient management.<sup>2</sup> Lack of collaboration is often a shortcoming common to many urologists. Cooperation with dedicated pathologists, medical oncology, radiotherapist, radiologist, experts in nuclear medicine and tumor genetics, and psychologists can only improve results while achieving the best outcomes for patients. We are witnessing a revolution in the treatment of many urological diseases and will likely continue to do so in the upcoming years, along with technology and scientific research updates. There-

fore, a call for a multidisciplinary approach is no longer sufficient to guarantee the best supportive care to urological patients; rather, we advocate for an integrated network of highly specialized physicians and professionals, guided by the urologist, to offer the patient the treatment that best suits his/her comorbidity status, preferences, and disease characteristics.

I founded my career on these simple concepts. Following these steps, I have shaped the team currently working at the Department of Urology of Vita-Salute San Raffaele University in Milan. Only through hard work and dedication was I able to mold my ideas into

habits, and then habits into a lifestyle, to become successful. For many years, now, I have been continuously working as an educator, dedicating my time to supporting younger colleagues to follow the principles of scientific integrity and intellectual honesty. In conclusion, reaching excellence is a challenge and opportunity for many of us. Nevertheless, I think it should not be the destination of one's career, but a continuous journey that never ends. ■

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## AUA2022: PLENARY RECAP

# Clinical Utility of Prostate-Specific Membrane Antigen Diagnostics and Theranostics

William J. Aronson, MD

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University of California, Los Angeles

## Prostate-Specific Membrane Antigen (PSMA) Positron Emission Tomography (PET) Diagnostics

PSMA PET CT (PSMA PET) imaging has led to a profound transformation in prostate cancer diagnosis and management. PSMA PET imaging is superior to conventional imaging for initial staging in men with newly diagnosed prostate cancer, and is superior to conventional imaging for patients with biochemical recurrence. In 2020 the U.S. Food and Drug Administration (FDA) approved the radiotracer <sup>68</sup>Ga-PSMA-11 based on pivotal clinical trials done at the University of California, Los Angeles and University of California, San Francisco,<sup>1,2</sup> and in 2021

the FDA approved the radiotracer <sup>18</sup>F-DCFPyL based on results of the CONDOR and OSPREY trials.<sup>3,4</sup> <sup>68</sup>Ga-PSMA-11 and <sup>18</sup>F-DCFPyL have similar performance characteristics and are superior to the fluciclovine scan.<sup>5</sup> PSMA is overexpressed 100 to 1,000 times in prostate cancer cells. Given low PSMA levels in bone and lymph nodes, there is a favorable signal-to-background ratio allowing for excellent visualization of PSMA PET positive lesions at these sites.

Details of the sensitivity, specificity, and positive and negative predictive values for PSMA PET imaging are in the references below. Several aspects deserve special mention. For initial staging in men with newly diagnosed prostate cancer, we need to be well aware of the limitations of PSMA PET imaging for lesions less than 6 mm. For example, Cohort A in the OSPREY trial enrolled patients scheduled for radical prostatectomy with pelvic lymph node dissection with a Gleason score  $\geq 8$ , PSA  $> 20$ , and clinical stage  $\geq T3a$ .<sup>4</sup> The sensitivity of detecting prostate cancer in

histologically positive lymph nodes was low (40%). In a *post-hoc* analysis the sensitivity improved to 60% when excluding histologically positive nodes less than 6 mm. Thus, it is important not to exclude doing a pelvic lymph node dissection based on a negative PSMA PET scan. Another aspect of PSMA PET imaging that deserves special attention is the correlation between PSA levels and detection of PSMA PET positive lesions in patients with biochemical recurrence following primary therapy. As seen in the Figure, the higher the PSA, the higher the detection rate. Once the PSA reaches levels of 1 or higher detection rates are high, ranging from 75% to 95%.<sup>6</sup>

Although results from PSMA PET imaging are known to change management decisions, such as radiation therapy planning, there are no high-level data demonstrating improved patient outcomes. That being said, in a subset analysis of 35 patients from the ORIOLE trial, a phase 2 randomized trial examining stereotactic body radiation therapy for oligometastatic prostate cancer in which the radiation oncologists were blinded to PSMA PET findings, there was improved progression-free survival in patients who had all PSMA PET positive lesions treated as compared to patients who did not have all the PSMA PET lesions treated.<sup>7</sup> Prospective randomized trials evaluating therapy of PSMA PET detected lesions that are negative on conventional imaging are ongoing and we should make every effort to enroll our patients in these trials.

static prostate cancer in which the radiation oncologists were blinded to PSMA PET findings, there was improved progression-free survival in patients who had all PSMA PET positive lesions treated as compared to patients who did not have all the PSMA PET lesions treated.<sup>7</sup> Prospective randomized trials evaluating therapy of PSMA PET detected lesions that are negative on conventional imaging are ongoing and we should make every effort to enroll our patients in these trials.

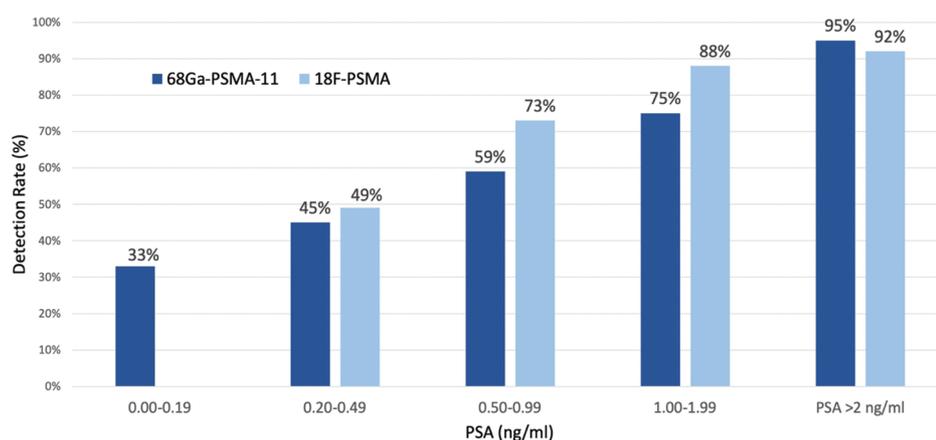
## PSMA-Based Theranostics

The term “theranostics” refers to combining diagnostics with tumor directed therapy. In the VISION trial, lutetium-177 (emits beta particles causing single-stranded DNA breaks) linked with PSMA-617 (Lu-177-PSMA-617) was proven to be an effective treatment for men with metastatic castration resistant prostate cancer (mCRPC). This was a prospective, randomized trial in men with mCRPC that failed an

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## CLINICAL UTILITY OF PROSTATE-SPECIFIC MEMBRANE ANTIGEN DIAGNOSTICS AND THERANOSTICS

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**Figure.**  $^{68}\text{Ga}$ -PSMA and  $^{18}\text{F}$ -DCFPyL PSMA scanning detection rates increase with increasing PSA in patients with biochemical recurrence.

androgen receptor pathway inhibitor and docetaxel chemotherapy. Lu-177-PSMA-617 improved progression-free survival and overall survival, and had favorable findings for quality of life and pain scores relative to the control group.<sup>8</sup> The infusion is given by a nuclear medicine physician every 6 weeks for up to 6 doses. These findings represent a major advancement for our patients with mCRPC. Trials are ongoing evaluating radioligand-PSMA based therapies for earlier stages of disease.

**“PSMA PET CT can be considered a “disruptive” technology in that we need to rethink how we image and manage all stages of prostate cancer, and reconsider what is best for our patients in the setting of insufficient outcomes data.”**

### Future Directions

There are numerous future directions for PSMA PET imaging and theranostics. Benign prostate tissue has a low uptake of PSMA as compared to prostate cancer, and prior studies suggest combining multiparametric MRI with PSMA PET may improve our ability to diagnose prostate cancer.<sup>9,10</sup> Combining PSMA PET and magnetic resonance imaging into one imaging modality to be used for fusion biopsy is also under development. The role for PSMA PET imaging to monitor treatment response and outcomes is also under investigation. Artificial intelligence image analysis may also play a role in understanding the disease biology and for risk stratification. Research is also underway evaluating intra-operative detection of prostate cancer in lymph nodes using probes that detect radiolabeled PSMA. In addition, new “formulations” of PSMA targeting for imaging and treatment are also being evaluated in prospective trials.

### Challenges Moving Forward and Take Home Messages

PSMA PET CT can be considered a “disruptive” technology in

that we need to rethink how we image and manage all stages of prostate cancer, and reconsider what is best for our patients in the setting of insufficient outcomes data. Although it seems intuitive that earlier detection of metastatic disease will result in improved outcomes for our patients, prospective randomized trials are required. To date, all the FDA-approved therapies for metastatic castration sensitive and castration resistant prostate cancer were done with conventional imaging. There exists a risk of overtreatment with increased long-term adverse events and financial toxicity if we prescribe therapies for advanced disease based on positive PSMA PET imaging with negative conventional imaging.

Take home messages are as follows: 1) PSMA PET CT imaging is superior to conventional imaging for initial staging and biochemical recurrence for our patients with prostate cancer. 2) A negative PSMA PET CT of pelvic lymph nodes should not exclude performing a pelvic lymph node dissection at the time of radical prostatectomy. 3) As per the present National Comprehensive Cancer Network<sup>®</sup> guidelines, for patients who progress while on androgen deprivation therapy, PSMA PET can be considered as an alternative to conventional imaging for bone and soft tissue. 4) Lutetium-177 linked to PSMA-617 is an effective therapy for patients with mCRPC that failed an androgen receptor pathway inhibitor and docetaxel chemotherapy. 5) When possible, we should enroll our patients in clinical trials to better define the role of PSMA based diagnostics and theranostics. ■

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**“There exists a risk of overtreatment with increased long-term adverse events and financial toxicity if we prescribe therapies for advanced disease based on positive PSMA PET imaging with negative conventional imaging.”**

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## AUA2022: PLENARY RECAP

# AUA2022 Session on How I Do It: Common Urologic Procedures

Gopal Badlani, MD, FACS, FRCS  
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The AUA secretary John Denstedt conceived the concept of visual illustration of common urological procedures by the experts in the field. Rather than live surgery, international participation was made possible with an unedited video recording of the procedure. Each speaker followed a format of case selection, the minimal required workup, an essential test before use of the device. They illustrated the technique with emphasis on anesthesia choice/location of service/equipment/technique/key tricks to make it easier. Troubleshooting during the case was an important feature. Immediate postoperative management instruction/followup is key in these procedures. Assessment as to what is the definition of success in their view and long-term data were illustrated.

## Bipolar Enucleation and Resection

Dr. Li-Ping Xie, professor and chair of urology at the First Affiliated Hospital, Zhejiang University School of Medicine in China, demonstrated a newer technique in bipolar enucleation. He has published extensively on his technique,

“Immediate postoperative management instruction/followup is key in these procedures.”

including a summary article in the *Asian Journal of Urology*.<sup>1</sup>

He demonstrated ability to deal with any size prostate using the bipolar device, a combination of enucleation and resection, to avoid the need for morcellation, as needed by laser enucleation techniques. A special loop designed by him was introduced with an ancient Chinese principle. With careful use of coagulation current, he enucleated the gland from the apex to the bladder neck, and then used the resection to remove the tissue with minimal blood loss. Postoperative care is routine as in any transurethral resection of the prostate, and his presented long-term data showed a good outcome. The learning curve for this is considerably shorter than for the laser enucleation.

## Perineal Prostate Biopsy

Dr. John Thomas Wei, professor of urology at the University of Michigan and head of andrology at Michigan Medicine at Ann Arbor, demystified the ability to do a perineal biopsy under local anesthesia in the office setting. The prevalence of prostate cancer continues to increase, and the need for biopsy in a safe manner is the current need. The transrectal approach is the most common approach in the U.S. but the perineal approach is increasingly used in Europe. Until recently, this was being done under anesthesia, but Dr. Wei showed in a very detailed and careful manner each aspect of doing the procedure in the clinic. The ultrasound can be done transrectally or perineally, and the ability to include MRI findings in planning biopsy was discussed.

“Steps including release of perineal tendon, passage of the needle through the obturator fossa, and tensioning were illustrated.”

He demonstrated the disposable device that allows the biopsy to be guided to various sites in the prostate in a controlled manner. The decrease in the infection rate is a significant advantage.

## Post Prostatectomy Incontinence

Dr. Jaspreet Singh Sandhu, associate professor of urology at the Weil Cornell Medical College and at Memorial Sloan Kettering Cancer Center, chaired the recently released AUA Guidelines on this topic. He demonstrated the new and improved design of the male sling, and emphasized the case selection as well the prerequisites prior to the surgery. Ruling out bladder neck contracture and bladder dysfunction, both overactivity and compliance issues, was key to the success of the procedure. Surgical approach for patients with 2 pads or fewer leaking per day was demonstrated. Steps including release of perineal tendon, passage of the needle through the obturator fossa, and tensioning were illustrated.

## Mini Percutaneous Nephrolithotomy (PCNL) for Renal Stones

Dr. Janak Desai, senior urologist at Samved Hospital in Ahmedabad, India, is a pioneer in the ultra mini PCNL. Intra-renal lithotripsy with flexible scopes is an established technique in the U.S. and western world, but cost of the flexible scopes and repair has led to the development of mini PCNL, which is more invasive but faster and better in stone clearance, in addition to being cheaper. Taking this 1 step further, ultra mini PCNL with a special

“The session viewing can be a ready reference for embarking on one of these procedures after appropriate training for access.”

evacuator for stone fragments was demonstrated by Dr. Desai. Access with ultrasound guidance further decreases the radiation exposure. An internal stent was adequate for drainage, obviating the need for nephrostomy tube. The patient can be discharged on the same day.

The session viewing can be a ready reference for embarking on one of these procedures after appropriate training for access. ■

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## AUA2022: PLENARY RECAP

# The Fine Frontier between High-Risk, Locally Advanced, and Oligometastatic Prostate Cancer

Amandeep Arora, MCh

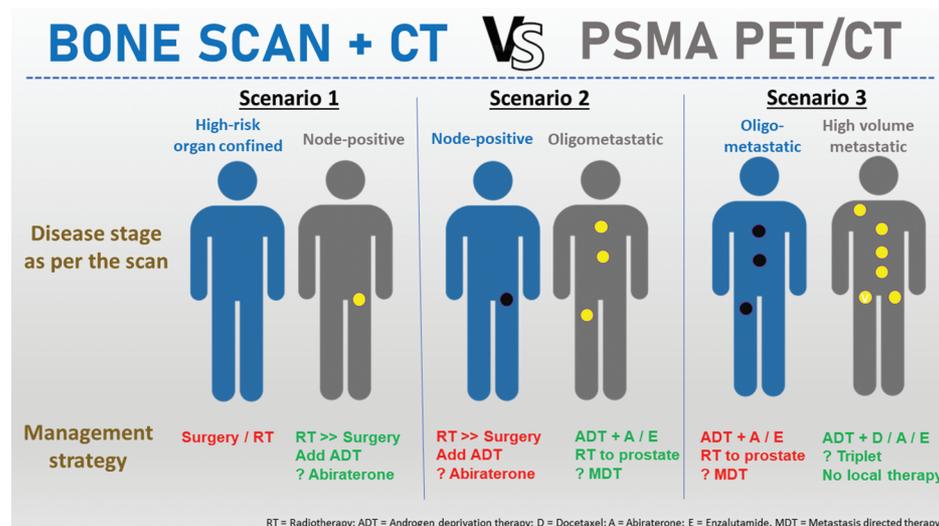
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High-risk prostate cancer (PCa) encompasses a wide spectrum of diseases, ranging from organ-confined cancer with high-risk features to locally advanced cancer which may or may not have spread to the pelvic nodes.<sup>1</sup> But when do you label your PCa patient as high-risk localized or locally advanced? Well, it depends on multiple factors—whether you stage your patients on the basis of clinical examination as suggested by the American Joint Committee on Cancer or use MRI, whether you classify your patients based on the European Association of Urology or the National Comprehensive Cancer Network<sup>®</sup> stratification, and whether you use conventional imaging or next-generation imaging (NGI) for metastatic evaluation. These variations in clinical practice broaden the spectrum of high-risk PCa even further. The last criterion is also subject to the availability of NGI (the prostate-specific membrane antigen [PSMA] positron emission tomography [PET] scan) in one's part of the world and is fast turning out to be the most impactful factor.

The PSMA PET scan is turning out to be a game-changer in staging PCa. We have level 1 evidence from the proPSMA study that the PSMA PET scan has significantly greater accuracy for nodal and distant metastasis compared to conventional imaging comprising of a bone scan plus a CT.<sup>2</sup> At the recent Advanced Prostate Cancer Consensus Conference 2022 congress at Lunago, Switzerland, 78% of experts vouched for the PSMA PET scan as their investigation of choice for metastatic staging. The PSMA PET scan has now found its way into guidelines, as well.<sup>3</sup> However, we do not yet have data that tells us that using PSMA PET scans instead of conventional imaging to guide management decisions leads to a survival benefit; and the guide-



**Figure.** Bone scan and CT vs PSMA PET: possible case scenarios of change in the stage and alteration in the management plan and prognosis.

“Another point to consider is that in the setting of high-risk and locally advanced disease, we are moving towards intensification of systemic treatment in addition to the local treatment.”

lines also caution us to be aware of the lack of these outcome data.

Within the heterogeneous group of locally advanced and oligometastatic patients, using a PSMA PET scan instead of a bone scan may lead to a change in the stage, usually an upstaging, and subsequently lead to an alteration in the management plan and prognostication.<sup>4</sup> This means that certain locally advanced and low-volume metastatic patients on a bone scan would be upstaged to low-volume and high-volume metastatic cancer, respectively, on the PSMA PET (see Figure). This would lead to a change in the “intent” of treatment and would deprive these patients a chance at possible cure if we chose to not address

the primary lesion in the prostate. We need to remember that all the evidence available today for deciding whether to treat the primary in the setting of metastatic PCa comes from studies which used bone scan and CT to stage the patients, and not PSMA PET CT.<sup>5,6</sup>

Another point to consider is that in the setting of high-risk and locally advanced disease, we are moving towards intensification of systemic treatment in addition to the local treatment. Guidelines already recommend adding 2 years of abiraterone for such patients who are treated with radiation plus androgen deprivation therapy. Ongoing trials such as PROTEUS and ARNEO, amongst others, are evaluating the role of intensifying systemic treatment along with radical prostatectomy in these patients in the form of neoadjuvant apalutamide or docetaxel.<sup>7,8</sup> Quite contrastingly, while one of these trials is using conventional imaging, the other is using the PSMA PET scan for staging the patients. It would be interesting to see how the results of these trials would be applied to clinical practice in the near future. But, at this point in time, it doesn't seem fair to deprive a patient with, for example, 5 metastatic lesions on a PSMA PET scan of treatment to his primary lesion in the prostate. Whether this primary treatment

should be in the form of surgery or radiation therapy is another debate in itself. Another potential downside of treating a patient as per a higher risk category based on PSMA findings is the increased toxicity from the additional systemic therapies that may be prescribed.

The advent of NGI has only blurred further the “fine line” between high-risk, locally advanced, and oligometastatic PCa. It is the need of the hour to reach a consensus to demarcate these disease stages, for accurate and distinct risk stratification for our PCa patients, based on newer imaging. We need to identify patients who have “limited” metastatic burden on a PSMA PET scan and will benefit from treatment to their primary lesion. Inclusion of biomarkers in the decision algorithm will help better identify such patients in the near future. ■

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## AUA2022: PLENARY RECAP

# Best Way to Do a Prostate Biopsy in 2022: Summary of the AUA Plenary Session

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## Introduction

This plenary session aimed to review the best contemporary methods of prostate biopsy in terms of approach (transrectal vs transperineal) and imaging-guidance modality (MRI and micro-ultrasound). The panelists discussing the approaches were Drs. Arvin George (transrectal approach) and Ben Ristau (transperineal approach), whereas Drs. Kristen Scarpato (MRI) and Samir Taneja (micro-ultrasound) discussed image-guidance modalities.

## Transrectal vs Transperineal Approach

Several facets were considered when comparing prostate biopsy approaches, including cancer detection rates, pain scores, adverse events, and cost. Dr. George presented data from MUSIC (Michigan Urological Surgery Improvement Collaborative) on almost 10,000 men, showing similar cancer detection rates in both approaches (57.3% transperineally vs 56.5% transrectally,  $p=0.6$ ). Similarly, 2 other randomized studies were presented that showed no difference in cancer detection rates, specifically 47% vs 53% in 339 men and 35% vs 32% in 200 men for transperineal and transrectal approaches, respectively ( $p>0.05$ ).<sup>1,2</sup> However, the transperineal approach was superior for detection of apical disease in one study, where 16.2% vs 12% ( $p=0.046$ ) of “anterior only” tumors were diagnosed transperineally compared to transrectal biopsies.<sup>3</sup>

More data from the MUSIC collaborative on adverse events suggested that there were no differ-

ences between biopsy approaches in emergency room visits within 30 days of biopsy, episodes of urinary retention, or hematuria. More importantly, hospitalization rates for infectious complications were 0.6% and 0.33% for transrectal and transperineal biopsies, respectively ( $p=0.11$ ). The argument favoring the transperineal approach was bolstered by studies showing infectious complications of  $<1\%$  and the possibility of doing biopsies without antibiotics, furthering the goal of antibiotic stewardship.<sup>4,5</sup> The counter-argument, however, was that infection risk is comparably low in transrectal biopsies when preventive measures, such as enhanced antibiotic prophylaxis, pre-biopsy rectal swab cultures to look for quinolone resistance, and formalin-dipping the needle between biopsies.

Regarding patient experience, data from Michigan and others suggest that overall pain and patient discomfort are higher with the transperineal approach, mainly driven by the discomfort associated with anesthetic administration. Dr. Ristau also highlighted that the addition of pudendal nerve blockade to the standard periprostatic block

“More data from the MUSIC collaborative on adverse events suggested that there were no differences between biopsy approaches in emergency room visits within 30 days of biopsy, episodes of urinary retention, or hematuria.”

improves pain control in transperineal biopsies. Lastly, the transperineal approach is proposed to have higher costs relative to transrectal biopsies that are chiefly associated with capital costs and disposables (eg needle guide).

## MRI and Micro-Ultrasound

The potential of pre-biopsy MRI to enhance detection of clinically significant cancer and to avoid over-detection and overtreatment of low-risk disease were underscored by Dr. Scarpato. Whereas transrectal-ultrasound are useful for template biopsies, areas of suspicion can be identified on MRI. Using the latest iteration of Prostate Imaging-Reporting and Data System® (PI-RADS®), version 2.1 simplifies interpretation and reporting of MRI imaging to enhance the detection of significant cancer (grade group  $\geq 2$ ). The key findings of clinical trials comparing MRI and transrectal ultrasound guidance were emphasized by Dr. Scarpato, particularly that MRI detects higher-grade lesions (30%), fewer low-grade cancers (17%), and could avoid biopsy in a third of men when negative.<sup>6,7</sup> Therefore, these data solidify the role of MRI as an intermediate step between PSA testing and prostate biopsy.

Dr. Taneja highlighted the need for alternative diagnostic options to MRI that stems from the variability in MRI quality, access to MRI, and the significant expenses associated with it. As such, micro-ultrasound is sought after as an alternative that is less costly and more accessible. Micro-ultrasound operates at 300% higher frequency than conventional ultrasound (17–29 vs 6–12 MHz), allowing for better resolution than conventional ultrasound. Micro-ultrasound can be used with or without MRI fusion and in both the transperineal and transrectal approach.

The panelists then discussed the Prostate Risk Identification using

“Micro-ultrasound operates at 300% higher frequency than conventional ultrasound (17–29 vs 6–12 MHz), allowing for better resolution than conventional ultrasound.”

Micro-Ultrasound (PRI-MUS™), a validated 5-level risk scale that uses textural patterns to predict the likelihood of cancer. This scoring system has been shown to have a reasonable learning curve (40–60 cases) and to perform similarly to PI-RADS. Studies have demonstrated that in some instances where the MRI is negative in patients with significant cancer, a subset will have an abnormal PRI-MUS score. Moreover, PRI-MUS was also shown to have higher sensitivity (99.7% vs 84.3%) and negative predictive value (99.2% vs 64.5%) than PI-RADS. Lastly, the role of micro-ultrasound was emphasized in improving fusion biopsies as it improves lesion resolution and visual targeting of significant disease.<sup>8,9</sup> Taken together, compared to MRI, micro-ultrasound has similar diagnostic accuracy, short learning curve, lower overall cost, and ultimately returns the diagnostic workup back to the hands of the urologist.

## Take Home Message

William Kissick first described the iron triangle of health in 1994, consisting of 3 competing elements of health care: access, quality, and costs. In keeping with these fundamentals, the transperineal approach may have better quality with lower sepsis rates than transrectal biopsies, but access

## BEST WAY TO DO A PROSTATE BIOPSY IN 2022

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**Table.** Upcoming randomized controlled trials comparing transrectal and transperineal prostate biopsy

| Title (NCT No.)  | Primary Investigator | Estimated Enrollment | Primary Outcome(s)                                       | Secondary Outcome   | Completion Date |
|--|----------------------|----------------------|--|---|-----------------|
| Randomized Trial Comparing Transperineal vs. Transrectal MRI-targeted Prostate Biopsy (NCT04815876)                            | Jim Hu, MD, MPH      | 1,302                | 1. Infection adverse events                              | 1. Patient reported pain<br>2. Change in patient-reported anxiety<br>3. Detection of grade group $\geq 2$ disease<br>4. Change in adverse events                                      | February 2024   |
| Prospective, Randomized Study Comparing Transperineal and Transrectal Prostate Biopsy Efficacy and Complications (NCT04081636) | Badar Mian, MD       | 568                  | 1. Infectious complications<br>2. Bleeding complications | 1. Cancer detection rate<br>2. Tolerability<br>3. Urinary function (International Prostate Symptom Score)<br>4. Cost<br>5. Sexual function (International Index of Erectile Function) | December 2022   |

and higher costs related to start-up, disposables, and sedation (if performed in the operating room) should be considered. Whether the lower sepsis rate is enough to justify cost and patient discomfort, remains to be answered by the 2 randomized trials that aim to compare these approaches (see Table). Until then, given the limited availability of transperineal biopsy, a risk-stratified approach may be warranted.

In terms of image guidance, it is evident that the experience of radiologists is critical to the quality of MRI, and it is only cost-effective

when the biopsy is omitted if the scan is negative. However, since 15% of clinically significant cancers are not seen on MRI, urologists need to use caution about using MRI to avoid biopsy. The potential benefit of micro-ultrasound can only be realized if it can substitute MRI rather than act as an adjunct and further increase costs. Currently, the Optimization of Prostate Biopsy-Micro-Ultrasound Versus MRI (OPTIMUM Study), which aims to compare 3 biopsy techniques in a multicenter randomized controlled trial

(NCT05220501) is now open, with the primary and secondary endpoints being detecting clinically significant cancer in micro-ultrasound vs MRI-ultrasound fusion biopsy and micro-ultrasound/MRI fusion vs MRI-ultrasound fusion, respectively. We hope that the findings of these upcoming trials will improve the quality of prostate biopsy and enable us to direct appropriate efforts in providing accessible and cost-effective care for our patients. ■

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## AUA2022: REFLECTIONS

## Women in Urologic Oncology: Past, Present, and Future

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The story of the growth of women in urologic oncology started in 1954 when Willet Whitmore trained Elizabeth Pickett, the first female urologist to complete the oncology fellowship program at Memorial Sloan Kettering Hospital. It was over 30 years later before a few more of us started entering the field. By 2000 there were still only a handful of women practicing in this subspecialty across the country. At that time less than 10% of urology residents were women, and they were often encouraged to focus on pediatrics or female urology, which were considered more acceptable fields for women. Those

of us determined to focus our career in oncology were fortunate to find male mentors who encouraged and sponsored us in the field.

Over the next 2 decades there was a slow but steady increase in women entering urologic oncology fellowships as the percentage of women in residency rose to about 20% across the country. By 2010 we began seeing more women complete their training and taking junior faculty positions in academic centers across the country. A few years later we started meeting informally at the winter Society of Urologic Oncology (SUO) meeting and realized how powerful it was to meet other women with similar interests and facing similar challenges in our careers. In 2019 we reached

“activation energy” and through a concerted campaign we obtained the support of the SUO leadership to establish a formal subgroup of the SUO called WUO—Women in Urologic Oncology. This was supported by the handful of senior women in the field, but it was really led by a group of the next generation of women who were emerging as young leaders in their institutions.

Women still make up a small percentage of all urologic oncologists in practice, but the number of female applicants to SUO fellowships has more than doubled since 2014 and there are nearly 100 female members in the SUO organization today (see Figure). However, we are still short of a minimal goal of matching the 11%

of urologic oncology patients who are female.

We have learned a number of lessons on the way that are applicable to all of the subspecialties in urology and, in many cases, also to the general field of urology as a whole.

- Mentorship. This is critical in all aspects of professional life, both in and outside of academic medicine. Mentors can provide guidance, motivation, emotional support, and/or role modeling, and can help with exploring career paths, setting goals, developing contacts, and identifying resources. While role models of successful female urologists are

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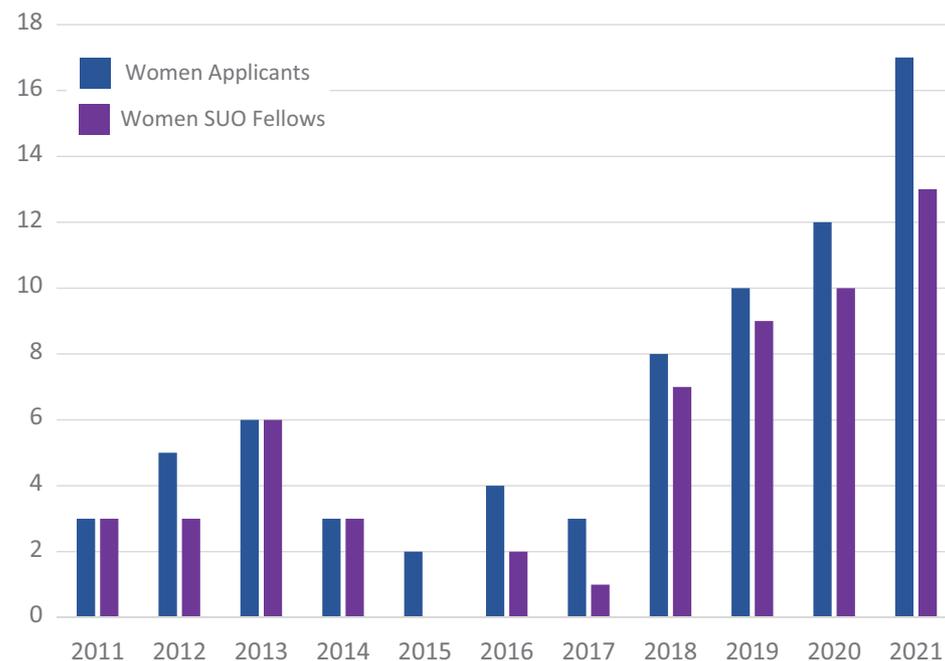
## WOMEN IN UROLOGIC ONCOLOGY: PAST, PRESENT, AND FUTURE

→ Continued from page 9

incredibly helpful, often male mentors can be equally effective in this role for many women. Many, if not most, successful professionals may have multiple mentors during the course of their career, and looking outside your department or even outside your institution may be necessary at times.

- Sponsorship. In recent years it has become increasingly evident that minority groups, including women and Underrepresented in Medicine (URM) urologists, need sponsors as well as mentors. Sponsors will help you become visible by recommending you for local, regional and national speaking opportunities, panels, committees, and other activities. Only in retrospect did I realize how often my mentors did this for me and how critical this was to my ultimate career growth.
- As many of our male colleagues have started to recognize the importance of reaching out to bring women onto panels and speaking roles at our meetings, their support has been crucial. Many are

**“In 2019 we reached “activation energy” and through a concerted campaign we obtained the support of the SUO leadership to establish a formal subgroup of the SUO called WUO—Women in Urologic Oncology.”**



**Figure.** Female applicants to SUO fellowships. Data provided by the Society of Urologic Oncology administrative office.

now speaking out when asked to participate in a “manel.” The WUO and the Society of Women In Urology, among other groups, maintain potential speaker lists as a resource to help in this endeavor.

- Affinity groups. The power of this type of networking is invaluable, especially for individuals who may feel isolated in their own institution. These groups are often informal but do require some effort to foster and sustain. The achievement of gaining official recognition for the WUO was surprisingly empowering, and I would encourage groups in other subspecialties to try to achieve this within their own subspecialty society. In addition to official recognition and some funding for our activities, we were able to gain approval for some travel fellowship and research awards for our group, heightening our potential impact for our junior members.
- Help our field adapt to having women members. We need to work toward helping the field of academic urology adapt to recruiting and keeping women in the field. Many of us got where we are by adapting to the male-dom-

inated world we work in. While there is lots of discussion of work-life balance, in fact there is no question that 5 or 6 years of training and then fellowship and the intense first few years of academic career conflict directly with the typical years of having and raising young children. There is very little flexibility in the system right now to allow for this, and I suspect that has scared away many female students and residents from pursuing an academic urology career, or may result in them dropping out along the way. The effects of the pandemic have really highlighted the tenuous balance many young faculty have been juggling. We need to come up with some creative solutions and to work with our institutions to try them out.

- Be an ally in your work. Help to eliminate discrimination and microaggressions experienced by women and URM students, trainees, and faculty. These comments come from patients, colleagues, nurses, faculty, friends, and others. Be aware of them, call them out, and intervene to support the victims.
- Pipeline development. Few stu-

dents start medical school thinking about urology, and even fewer about urologic oncology. Fortunately, now almost a third of applicants to urology residency are women, so it is no longer considered an oddity to pursue this career path. Getting junior students involved in urology research, shadowing, and other clinical activities can often spark an interest that they had never considered.

## Conclusion

The growth of women in the field of urologic oncology over the past 3 decades has been steady, and in recent years almost exponential. Our development of a formal affinity group within our national subspecialty organizational structure may be a good example for other subspecialties and under-represented groups to consider. In addition, both women and men have important roles to play in continuing to support our URM and female trainees and junior faculty in their careers, regardless of their subspecialty or practice settings.

## Acknowledgments

This article summarizes the presentation of a plenary panel at this year’s AUA annual meeting in New Orleans, with contributions from the following panel members:

Cheryl Lee, MD, Professor and Chair, Department of Urology, The Ohio State University School of Medicine; Sarah Psutka, MD, MS, Associate Professor of Urology, University of Washington School of Medicine; Sima Porten, MD, Associate Professor of Urology, University of California San Francisco School of Medicine; Kristin Scarpato, MD, MPH, Associate Professor of Urology, Vanderbilt University School of Medicine. ■

## AUA2022: REFLECTIONS

# John Duckett Memorial Lecture: Lifelong Learning— What's in It for Me?

David B. Joseph, MD

University of Alabama at Birmingham, Children's of Alabama

I am honored to have been selected as the speaker for the 2022 John W. Duckett Memorial Lecture. Dr. Duckett was a giant in pediatric urology, participating in every leadership role within pediatric urology. Many tributes describe Dr. Duckett; one representative of his character was stated by Dr. James O'Neal: "...a man of superior intellect...he shared unselfishly with others from all over the world. He took pleasure in seeing his trainees succeed." I didn't train with Dr. Duckett but was influenced by him early in my career. Reflecting on hypospadias, Dr. Duckett stated, every year think about what you are doing, review your results, and learn from the outcome of others. That was my introduction into the importance of lifelong learning.

To understand lifelong learning, I did what my patients do. I searched Google, finding lifelong learning defined as "self-initiated, continuous education outside of a traditional institution, focused on personal development." Philosophically, it is the essence of humanity and natural curiosity.

Hopefully lifelong learning creates a vision of a self-motivated commitment to long-term education. More likely, it brings visions of hurdles and hoops that one must conquer in order to fulfill requirements of state licensure, hospital credentialing, and continued board certification.

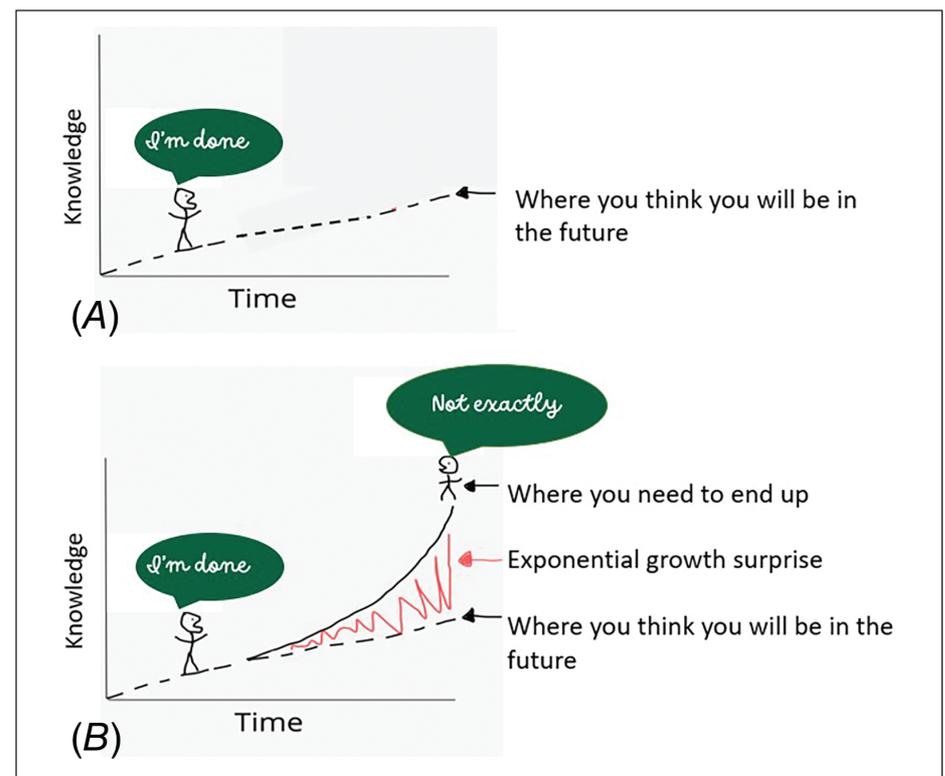
NORC at the University of Chicago surveyed a diverse group of individuals based on gender, race, ethnicity, education, and age: 98% assume their physician is up-to-date, 95% agree their physician should participate in an educational program, and 95% feel their physician should be required to demonstrate they are up-to-date in knowledge.<sup>1</sup> That expectation of lifelong learning places a burden on all physicians, taking time away

from their family and practice at an expense that is not always reimbursed.<sup>2</sup> Physicians should ask, "Lifelong learning, what's in it for me?" An easy response is "personal fulfillment, increased job satisfaction, staying abreast of knowledge, and improvement in cognition." More importantly: "Does it make you a better urologist? Does it improve your clinical practice and patient outcomes?"

Time creates an exponential growth of medical knowledge, with urology one of the most affected specialties. Medical knowledge doubling time in 1950 was 50 years; in 1980, 7 years; and in 2020, 73 days (Fig. 1). A surgeon's approach to patient care also transitions with time. During the first few years in practice, we are very analytical, questioning our understanding, evaluation, and treatment. The longer in practice we become more nonanalytical, relying on experience as our guide for evaluation and treatment.<sup>3</sup> Life experience does breed proficiency and expertise. However, there is a misconception that anyone becoming an expert remains an expert. Keeping abreast of expanding medical knowledge and maintaining expertise establishes the foundation for lifelong learning.

The effect of age on a physician's cognition is highly variable. Many occupations require mandatory retirement based solely on age (airline pilots aged 65 years, FBI agents 57 years, air traffic controllers 56 years), and some countries require surgeons to retire within their 60s. However, age as a single factor

**"Time creates an exponential growth of medical knowledge, with urology one of the most affected specialties."**



**Figure 1.** A, immediately after training, the perception of where you are now and need to be at the end of your career. B, reality of where you need to be based on the exponential growth of knowledge with time.

doesn't predict competence, skill, or clinical outcome. Clinical outcome is felt to be influenced by situated cognition theory, stating knowledge and cognition are integrated within a physician's environment, and influenced by patient acuity and practice factors including clinical volume and changing technology.<sup>4</sup>

Patient care becomes more nonanalytical as we mature; we develop a greater confidence in our abilities, which results in an illusion of competence. This translates into greater errors and subsequent disciplinary action. Cognition and length of time in practice do parallel performance complaints, with physicians older than 70 years more likely referred for concerns of competence. On the contrary, physicians current in medical knowledge, regardless of age, decrease their risk of disciplinary action.<sup>5-7</sup> The illusion of competence and knowledge is described as the Dunning-Kruger effect; individually we can't assess our own competence.<sup>8</sup> Believing we are competent results

**"Believing we are competent results in increased confidence and is often inversely associated with our true ability and skill."**

in increased confidence and is often inversely associated with our true ability and skill. In other words, "we do not know what we do not know." Autonomous nonanalytical patient care results in errors due to gaps in our knowledge and judgment, and continuously increases over time. We benefit from an outside entity helping us refocus and identify individual deficiencies.

To gain knowledge, particularly when focusing on a point-in-time exam or required activity, we often

## JOHN DUCKETT MEMORIAL LECTURE

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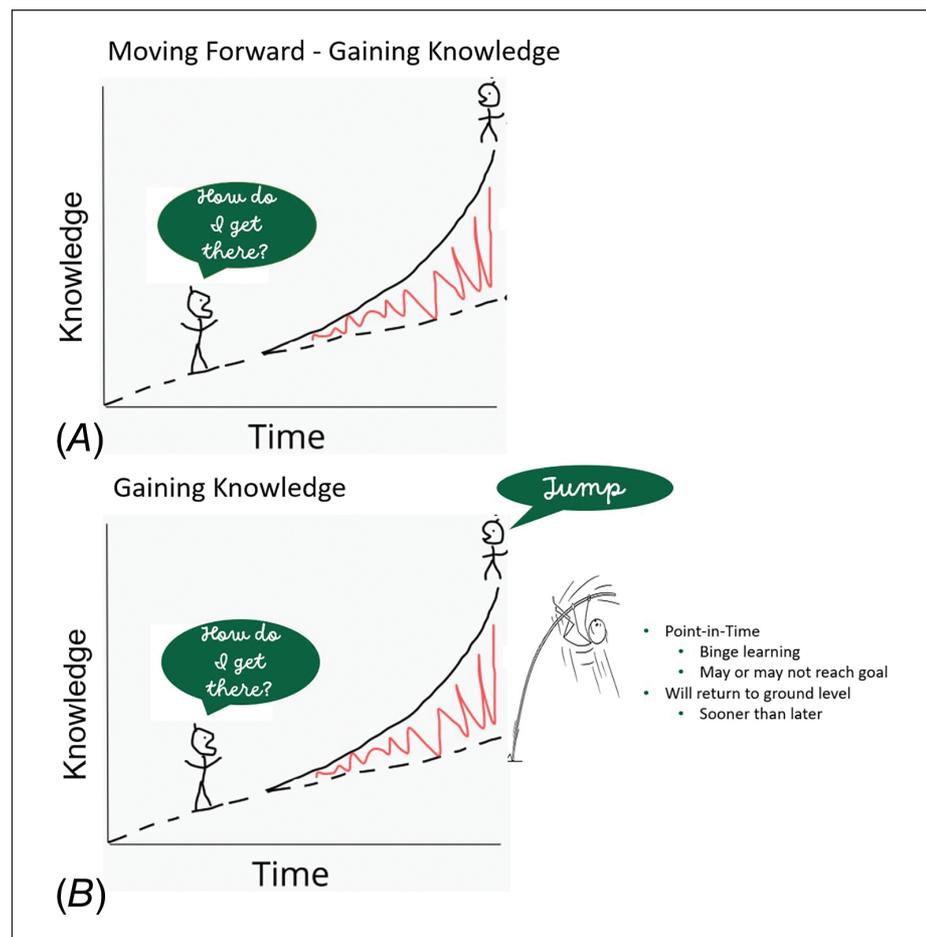


Figure 2. A, how to gain knowledge? B, binge learning can achieve an immediate goal but will not be retained.

undertake binge learning. Most of us will successfully accomplish this goal; unfortunately the knowledge gained is quickly lost over time (Fig. 2). There is a science to successful learning that confirms binge learning is not durable, and self-study without a testing process does not result in sustained learning.<sup>9</sup> To acquire, recall, apply, and retain knowledge, we must be repetitious; otherwise, learn-

ing is quickly forgotten. Testing does enhance learning, particularly when undertaken in a low-stake environment, utilizing frequent memory challenges.<sup>10</sup> That technique strengthens the foundation of knowledge and embeds learning principles. There are several testing methodologies supportive of this philosophy. One of the more commonly utilized is "spaced" education, repeating similar low-stake

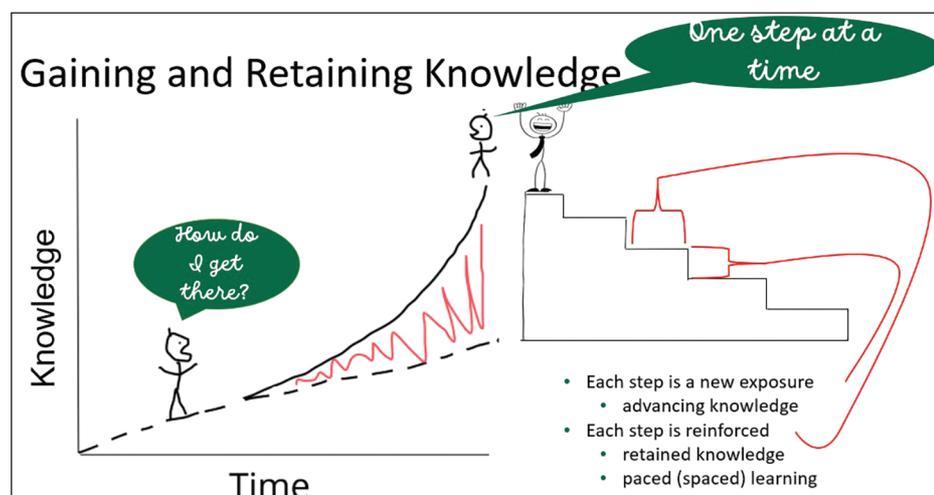


Figure 3. A "step" approach to gain and retain knowledge.

## Successful Strategy for Lifelong Learning

- Accept you are not the best person to determine your own LLL needs
- Understand repeated short activities keeps your mind sharp and up-to-date
- Periodic testing adds value to learning and identifies gaps in knowledge

- **ASSESS** and identify your knowledge gap
- **REINFORCE** your base of knowledge
- **EXPOSE** yourself to novel concepts and advance knowledge

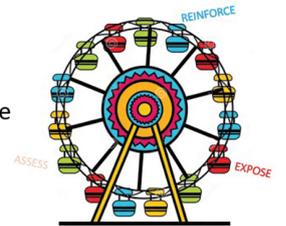


Figure 4. A strategy for successful lifelong learning (LLL).

**“To acquire, recall, apply, and retain knowledge, we must be repetitious; otherwise, learning is quickly forgotten.”**

our mind sharp and up-to-date; and understanding that periodic testing adds value to learning through reinforcement and identification of our knowledge gaps will help guide us to gain and maintain the knowledge needed to provide outstanding urological patient care.

*Dr. Joseph serves as the Lifelong Learning Chair for the American Board of Urology. ■*

tasks over time. Early foundational work in spaced education was undertaken in urology by B. Price Kerfoot.<sup>11</sup> Kerfoot randomized residents to a traditional or spaced education pathway when studying for the in-service exam. He found that both groups performed equally well on the exam, but when tested several months later, residents participating in spaced education maintained a significantly greater threshold of knowledge.

To gain and retain knowledge, a stepwise approach to lifelong learning allows for greater preservation over time (Fig. 3). Each step provides new exposure, raising contemporary knowledge. The tread of the step reinforces present and past knowledge, sustaining the learning experience.

A strategy for urological lifelong learning is founded in reinforcing our knowledge, exposing ourselves to contemporary advances, and assessing our knowledge gaps (Fig. 4). Accepting that we are not the best to determine our own lifelong learning needs; appreciating that repeated short activities keep

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## AUA2022: REFLECTIONS

# Focal Therapy for Prostate Cancer: Should It Replace the Standard of Care?

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Prostate cancer is and has been for many years the most diagnosed cancer in men. Unlike many other cancers, 97.5% of newly diagnosed men with prostate cancer survive at least 5 years and of men with localized prostate cancer, 100% survive at least 5 years. Consequently, treated men will experience the potential side effects of therapy for many years to come. While there has been a gradual adoption of active surveillance in men with low-risk prostate cancer and an increased use of aggressive surgical management in men with high-risk prostate cancer, there has been very little change in intermediate-risk prostate cancer with about 40% of patients being treated with radiation and another 40% being treated with surgery. Apart from technological advancements in surgery and radiation, men with intermediate-risk prostate cancer are treated today in essentially the same way that they were 20–30 years ago.

SEER (Surveillance, Epidemiology, and End Results) data suggest that many men have major decisional regret occurring in 15.0% managed surgically and 16.2% managed with radiation.<sup>1</sup> Sexual function and bowel bother were the major drivers of this dissatisfaction depending on the approach used. The awareness of patient unhappiness with standard therapy drives many patients to seek out alternative approaches.

The concept of focal therapy or the “male lumpectomy” was originally proposed by Onik et al in 2008, and favorable results were reported in 48 patients over the short term.<sup>2</sup> This prompted a consensus conference led by experts in the field to propose that focal

“The concept of focal therapy or the “male lumpectomy” was originally proposed by Onik et al in 2008, and favorable results were reported in 48 patients over the short term.”

therapy should be explored as an alternative for small incidental tumors that same year. Most were dismissive of focal therapy for larger or intermediate grade tumors because of the known multifocality of most prostate cancers and the concern that we could be leaving untreated areas that harbored small foci of cancer, even with careful screening of patients. Today, we recognize that these small foci of well differentiated cancers harbor very little biological risk and can be safely followed. Since the original proposals for adoption of focal therapy, we have had major advances in prostate cancer imaging with multiparametric MRI and prostate-specific membrane antigen scans and we now have multiple technologies to ablate prostate tissue.

The largest cohort of men treated with focal therapy comes from the United Kingdom, with 1,379 patients treated in a multi-institutional cohort with focal high-intensity focused ultrasound.<sup>3</sup> Depending on the risk group, 70%–80% of patient had avoided whole gland therapy at 7 years. Functional results are excellent, exceeding those of surgery or radiation with International Index of Erectile Function scores returning to near baseline within 6 months.

Today, we should very carefully consider patients for focal ther-

Table. Focal therapy options with advantages and disadvantages

| Modality                          | Advantages   | Challenges  |
|-----------------------------------|--|---|
| Cryotherapy                       | Most ablative, widely available  | Very large (>80 ml) or small prostates (<20 ml), post-transurethral resection of the prostate, median lobes |
| High-intensity focused ultrasound | Precise and easy to follow prostate contour  | Large prostates (>40 ml), anterior and apical tumors, calcifications  |
| Laser ablation                    | Magnetic resonance guided, magnetic resonance confirmation of ablation   | Large lesions   |
| Transurethral Ultrasound ablation | Magnetic resonance guided, No significant prostate size limitations, Magnetic resonance confirmation of ablation | Prostate calcifications   |

py if they have significant enough disease to warrant treatment, the disease is confined to 1 portion of the prostate and not involving the sphincter, optimally but not necessarily seen on MRI, and not judged to be high risk enough to warrant wide resection or pelvic lymph node dissection.

Fortunately, today we have multiple modalities available to focally ablate prostate tissue and a growing experience with the advantages and disadvantages of each approach. Several of the more developed technologies are listed below (see Table). Each of these technologies has aspects that make it a favorable approach or an unfavorable approach in certain patients. While there are advocates of all these approaches touting their advantages, limitations such as tumor location, prostate size and calcifications mean that the successful focal therapist will be familiar and able to offer at least 2 of these technologies so that they can effectively treat all appropriate patients. We do not have the data or followup today to conclude that these techniques should become the standard of care. We do have enough data, however, to conclude that side effects of treatment compared to conventional approaches is relatively minimal and, in the intermediate term, these technologies allow most men to avoid whole

“Fortunately, today we have multiple modalities available to focally ablate prostate tissue and a growing experience with the advantages and disadvantages of each approach.”

gland therapy and continue active surveillance protocols. Many men will choose these approaches even knowing that some will eventually require retreatment or whole gland therapy. Side effects of sexual dysfunction and loss of urinary or bowel function are major dissatisfiers and, in the view of many well-educated patients, this approach will be considered a very valuable trade-off. ■

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## AUA2022: BEST POSTERS

# Single-Port Transvesical Simple Prostatectomy: A New Horizon

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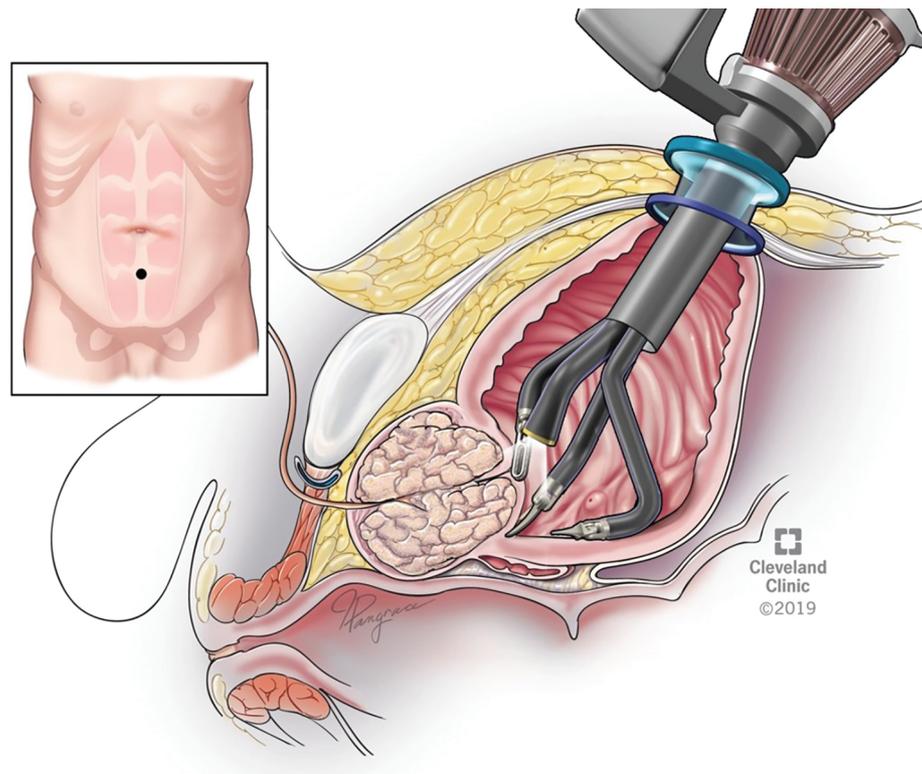


Figure 1. Illustration of the SP RASP approach. The SP robot is percutaneously docked into the bladder.

We live in an era, thanks to evolving technology, where surgical options for benign prostatic hyperplasia (BPH) treatment continue to expand, intending to minimize patient morbidity and obtain the best outcomes. According to the current guidelines, a robotic simple prostatectomy is a treatment modality for BPH with glands larger than 80 cc.<sup>1,2</sup>

In 2018, a new surgical platform was introduced in the field of Urology, the Da Vinci Single-Port (SP)<sup>®</sup> robot (Intuitive Surgical, Sunnyvale, California). This robot originated unique features as opposed to the standard multiport Da Vinci Xi<sup>®</sup> robot (Intuitive Surgical): single entry point, distal endoscope and instruments triangulation, multi-joint endowrist instruments, and 360° anatomical rotation capability. These characteristics permitted access to narrow spaces, avoiding the peritoneal cavity, and limiting the surgical space to the area of the disease, with an aim to further minimize minimally invasive surgery. Using this rationale, and through direct percutaneous bladder access (Fig. 1), the single-port robot-assisted simple prostatectomy (SP RASP) technique was first developed in 2020 and resulted in a low complication rate, same-day discharge, minimal opioid use, short catheter duration, quick recovery, and reproducibility among urologists.<sup>3-6</sup>

Most importantly, the question remains, why adopt a new platform and technique if similar results were achieved with the conventional multiport approach? For this reason, we investigated, in the largest multi-in-

stitutional setting, the outcomes between the SP RASP and the standard multiport robotic simple prostatectomy (MP RASP). Data of 91 consecutive patients who underwent SP RASP prostatectomy were compared to 91 MP RASP patients.

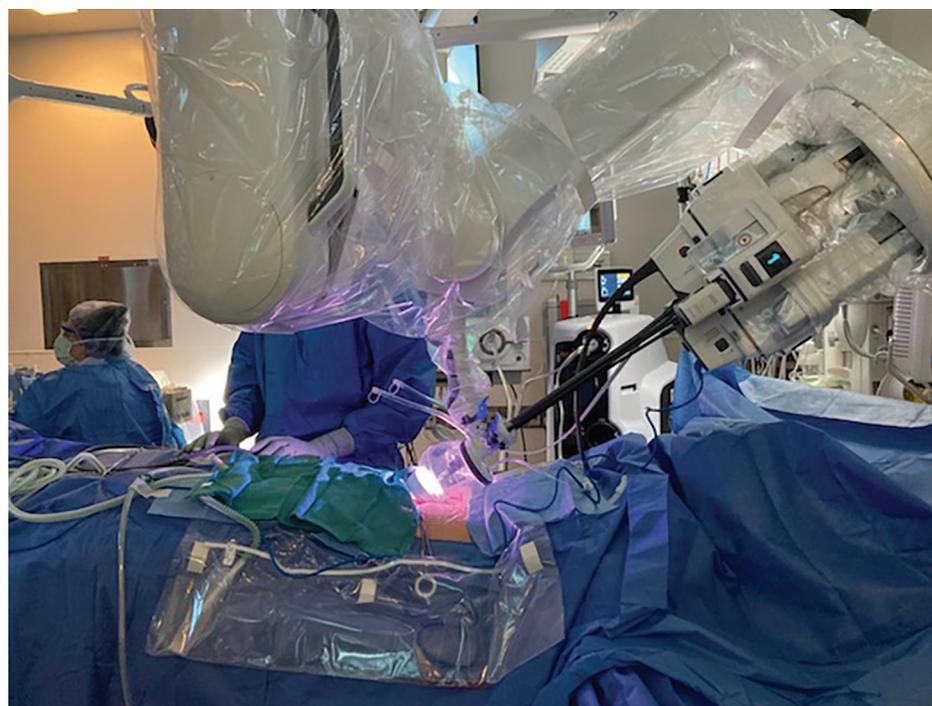


Figure 2. SP robot and instruments docked directly into the bladder via a 3 cm cystostomy using the SP Da Vinci access port.

“With the standard MP RASP approach, the bladder is accessed transperitoneally and bivalved to reach the prostatic adenoma. On the other hand, The SP robot, due to its narrow profile, is directly docked into the bladder via a small cystostomy incision (Fig. 2), thus avoiding the peritoneal cavity and limiting the disturbance of the Retzius space.”

Both groups were matched for preoperative prostate size. Only patients with a prostate volume larger than 80 cc were included in this study.

While both groups had comparable baseline characteristics with a median preoperative prostate size of 161 cc, the SP RASP group had a shorter operative time (median 162 vs 177 minutes,  $p=0.005$ ), less pelvic drainage,  $p<0.001$ , and continuous bladder irrigation postoperatively  $p<0.001$ . Both groups had no to minimal intraoperative or high-grade postoperative complication rates, however MP RASP had a higher readmission rate (0% vs 8.8%,  $p=0.016$ ). Moreover, patients in the SP RASP used less opioid medication postoperatively (morphine milligram equivalents score 7.5 vs 10,  $p=0.006$ ) and were more likely to be discharged the same

## SINGLE-PORT TRANSVESICAL SIMPLE PROSTATECTOMY

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day of the surgery (43.1% vs 0%,  $p < 0.001$ ). Decreasing Foley catheter duration to 3 days was another major achievement with the SP RASP technique ( $p < 0.001$ ).

With the standard MP RASP approach, the bladder is accessed transperitoneally and bivalved to reach the prostatic adenoma. On the other hand, The SP robot, due to its narrow profile, is directly docked into the bladder via a small cystotomy incision (Fig. 2), thus avoiding the peritoneal cavity and limiting the disturbance of the Retzius space. These small technical variations

have translated into major outcomes favoring the SP over MP RASP in terms of less drain and continuous bladder irrigation placement, less pain and opioid intake, same-day discharge, and shorter Foley catheter duration while maintaining the low complication rate.

We acknowledge that this current study is limited by its retrospective study, small sample size, and inherent selection bias; however, to our knowledge, this is the first and largest multi-institutional cohort to date. Future randomized control studies comparing the SP

RASP technique to other surgical approaches such as MP RASP and laser enucleation are needed to set its rank within the armamentarium of BPH management.

Finally, going back to answering our question, why adopt a new platform? It is because of the added values that the SP RASP provides to patients in terms of decreased morbidity, faster recovery, and outpatient setting. ■

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## AUA2022: BEST POSTERS

# Bridging the Communication Gap with a Mobile Postoperative Symptom Intervention Tool after Radical Cystectomy

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Despite advances in surgical techniques and perioperative recovery pathways, persistent high complication<sup>1</sup> and hospital readmission rates<sup>2</sup> after radical cystectomy underscore high-yield opportunities for intervention during postsurgical recovery. Symptom assessment and management after hospital discharge have historically been limited to episodic patient-initiated phone calls and routine postoperative clinic visits, which may incompletely capture developing complications. Mobile health technologies offer an appealing and increasingly accessible platform for structured symptom reporting and incorporation of patient-reported outcome (PRO) during postoperative recovery at home.<sup>3</sup>

While integration of mobile and wearable health technology with

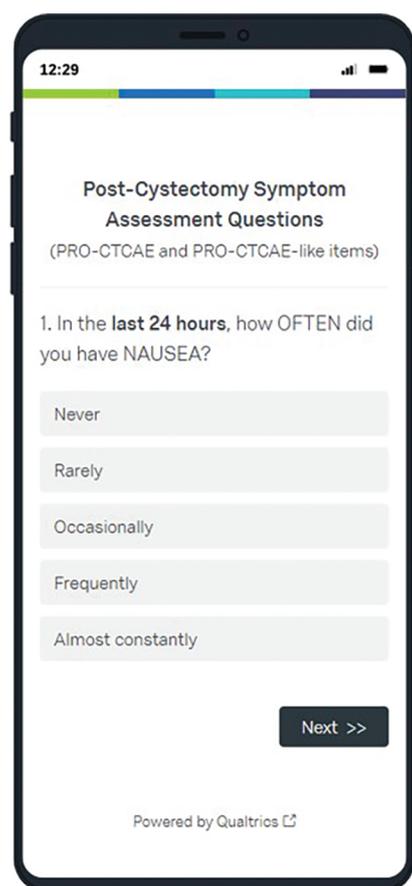


Figure 1. Patient-facing mobile POSIT.

PROs has the potential to transform how patients communicate with their care teams during recovery from major cancer surgery,

data supporting its use are limited. We recently presented a multi-phased feasibility and usability study culminating in a prospective cohort study of a mobile application-based postoperative symptom intervention tool (POSIT) for bladder cancer patients during recovery from radical cystectomy.

First, the National Cancer Institute's PRO-CTCAE<sup>4</sup> was rigorously adapted to include symptom domains relevant to major surgery and a 15-item questionnaire programmed onto a mobile application administered via iPad Air® devices (Fig. 1). Focus groups of cystectomy patients and their caregivers positively appraised POSIT content and app usability.

A prospective pilot of 15 cystectomy patients with a mean age of 71 years was then asked to complete the symptom questionnaire daily for the first 30 days after hospital discharge and continuously wear a Garmin biometric monitoring wristwatch. Participants completed a mean 78% of daily surveys over the 30-day recovery period and 99% of symptom questions were answered after survey initiation.

All patients responded that they agreed/strongly agreed that POSIT was easy to use and the majority reported it was a better way to communicate with the care team about symptoms than calling the clinic. Heart rate, physiological stress, and activity metrics were available for a mean of 17 days per participant.

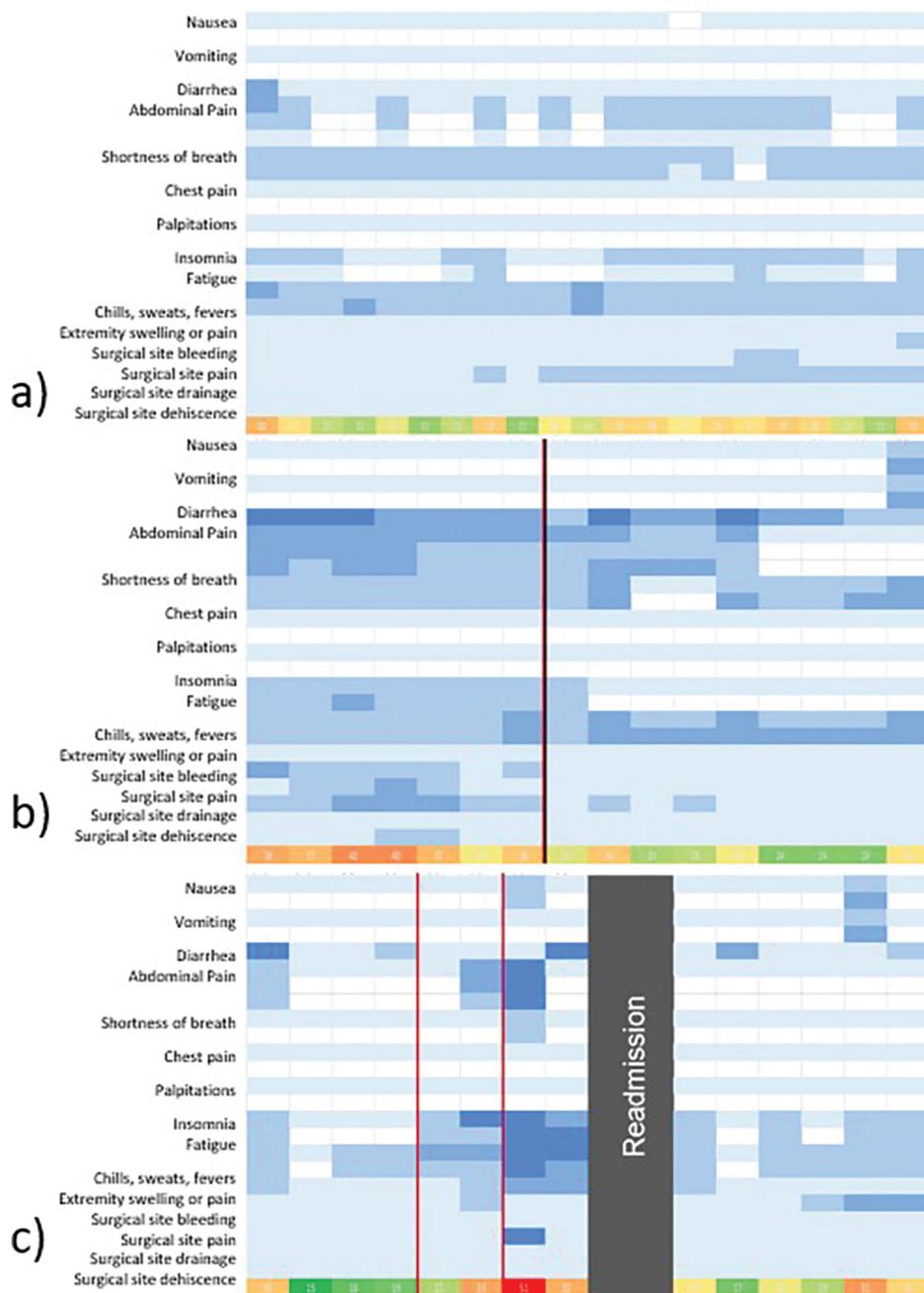
Visual analogue mapping of symptom score heatmaps and biometric data for the 6 patients who experienced a postoperative complication and 2 who required readmission demonstrated that frequency and severity of PROs appeared to cluster prior to or at the time of complication (Fig. 2).

Given the specific challenges related to complication frequency and significant patient engagement required after radical cystectomy and urinary diversion, other groups have highlighted the overwhelming amount of education required for bladder cancer patients to feel comfortable discerning between normal and abnormal symptoms.<sup>5</sup> Integration of incremental symptom-directed self-care resources for patients prompted by daily

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## BRIDGING THE COMMUNICATION GAP

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**Figure 2.** Data visualization and utility of daily SAT profiles in absence of complication (a), presence of complication (black line) and absence of readmission (b), and presence of unplanned health care encounters (red lines) and complication requiring readmission (c).

“Incorporating this strategy into future mobile health applications may present a promising mechanism to bridge the gap between improved patient education and outcomes.”

symptom assessment tools or vital signs have previously been trialed in pancreaticoduodenectomy<sup>6</sup> and cystectomy.<sup>7</sup> Incorporating this strategy into future mobile health applications may present a promising mechanism to bridge the gap between improved patient education and outcomes.

The prospective nature of this pilot advantageously mirrors real-time data collection during the 30-day home recovery phase after cystectomy. However, as the broader surgical community navigates incorporation of technology into clinical care, challenges in the clerical burden of reviewing patient-generated symptom and biometric data remain. Dedicated clinical workflows and leveraging of technology for data interpretation and prompt patient communication will likely be vital to the success of large-scale implementation of such technology.

Smartphone and wearable technology used to capture patient-reported symptoms and biometric data are feasible and rated as highly usable by bladder cancer patients after cystectomy. Symptom scores and patient-generated health data may signal developing complications. Ultimately, a thorough understanding of the correlation of these data with clinical outcomes will help clinicians identify postsurgical patients who may benefit from intervention prior to adverse events such as complication or readmission and has potential to improve outcomes during home recovery from major cancer surgery such as cystectomy. ■

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## AUA2022: BEST POSTERS

## Specialized Pro-Resolution Mediators Promote Recovery of Bladder Function from Cystitis

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There is a consensus that inflammation is a causative or exacerbat-

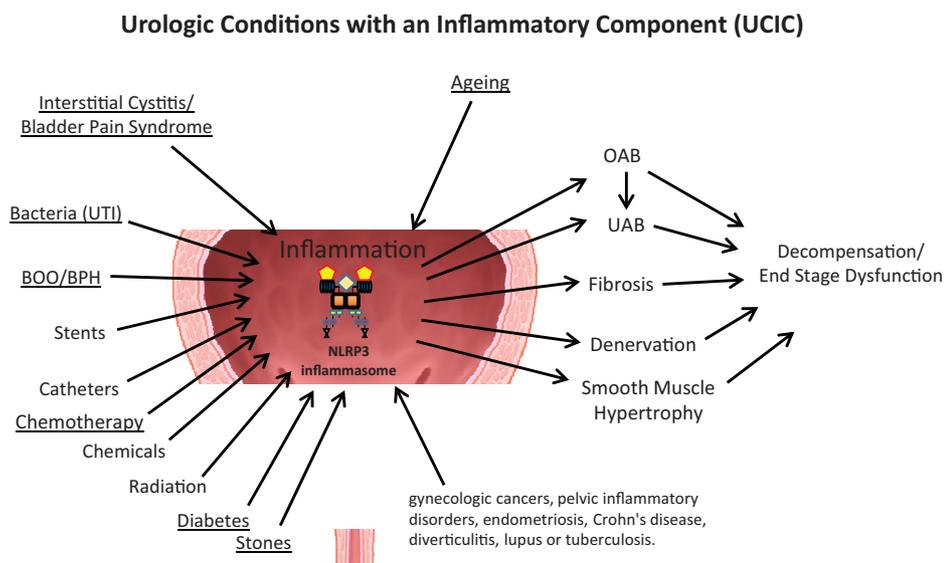
ing factor in virtually all benign urological conditions, which we call urological conditions with an inflammatory component (UCICs; Fig. 1). The bladder has well-developed and conserved machinery in place (particularly involving the NLRP3 inflammasome) that responds to all these disparate chal-

lenges by promoting inflammation. This inflammation contributes to bladder dysfunction and, if it remains unresolved, to pathological changes such as denervation, fibrosis and smooth muscle hypertrophy. When these effects reach an

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SPECIALIZED PRO-RESOLUTION MEDIATORS

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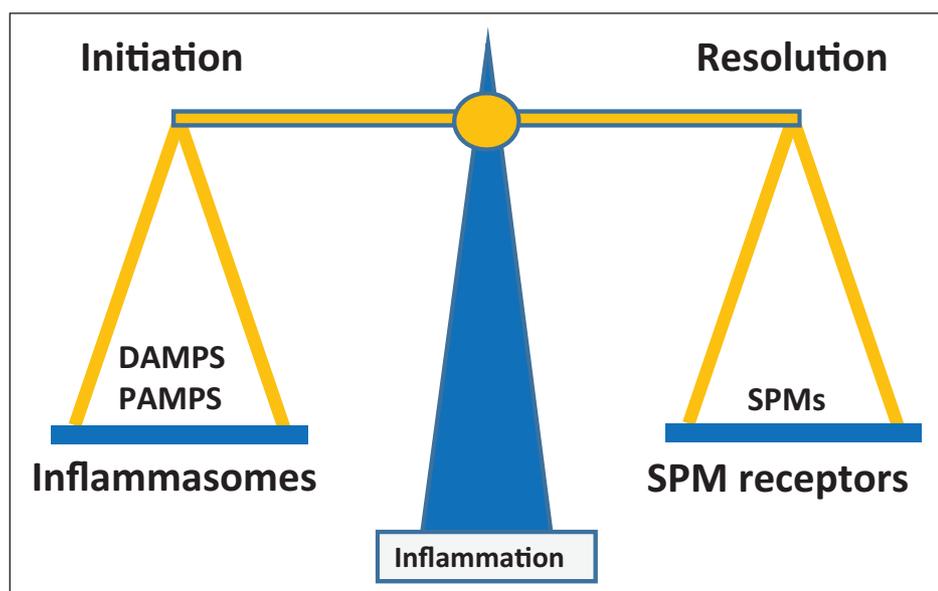


**Figure 1.** Inflammation is a causative or exacerbating factor in virtually all UCICs. Listed with inward pointing arrows are conditions known to have an inflammatory component. For those underlined, the NLRP3 inflammasome has been shown to play a major role in triggering this inflammation. Inflammation leads to bladder dysfunction (overactive or underactive bladder) and 3 major physiological changes, fibrosis, denervation and smooth muscle hypertrophy (although not all changes are found in all conditions, eg diabetes). Ultimately such changes can lead to decompensation and end-stage bladder dysfunction.

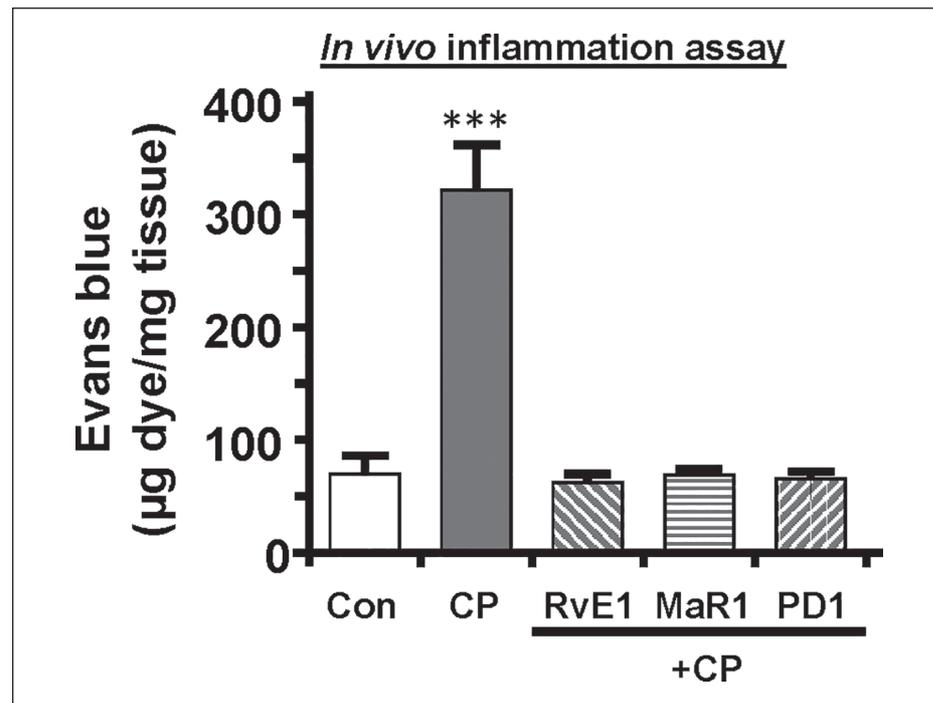
irreversible state, they can vastly complicate the physician’s ability to manage these conditions. Targeting such pathways can prevent detrimental changes but suppressing the inflammatory capacity has the potential to create immunosuppressed patients and increases the risk of urinary tract infection. Moreover, patients typically present late in disease progression when tissue

damage has already occurred.

Resolving inflammation was once thought to be a passive process, but it is now understood that it involves numerous endogenous and interrelated pathways.<sup>1,2</sup> These pathways serve as a counterbalance to the activation pathways of inflammation (Fig. 2). Specialized Proresolution mediators (SPMs) are grouped in 5



**Figure 2.** Inflammation is a balance of initiating and resolving influences. Initiation of sterile inflammation is primarily controlled by damage (or danger) associated molecular patterns (DAMPs) whereas infectious inflammation is triggered by pathogen associated molecular patterns (PAMPs). These DAMPs and PAMPs function through stimulating the formation of a multimeric inflammasome complex which activates caspase-1 and ultimately releases the pro-inflammatory cytokines IL-1 $\beta$  and IL-18. Counterbalancing initiation is resolution, which is promoted by SPMS binding to SPM receptors. There are 5 major classes of SPMs, all of which bind to only 7 SPM receptors. SPMs function to restrain and resolve inflammation on multiple fronts such as inhibiting initiation pathways, reducing proliferation of immune cells, promoting efferocytosis, reducing neutrophil migration, etc.



**Figure 3.** Resolvin E1 (RvE1), maresin-1 (MaR1) and protectin D1 (PD1) reduce CP-induced *in vivo* bladder inflammation, as measured by the Evans blue dye extravasation assay. CP was administered at 150mg/kg on day 0. RvE1, MaR1 or PD1(25 µg/kg) was administered on days 1, 2 and 3. On day 4, the mice were injected (intravenously) with Evans blue (25 mg/kg). One hour later bladders were extracted in formamide and absorbance (620nm) measured. \*\*\*p<0.001 compared to control. Hughes FM Jr, Allkanjari A, Odom MR, Jin H, Purves JT. Specialized pro-resolution mediators in the bladder: receptor expression and recovery of bladder function from cystitis. Reprinted with permission of SAGE Publications. *Exp Biol Med.* 2022;247(8):700-711. Copyright 2022 SAGE Publications.

“There is great hope that such treatments can not only normalize voiding issues, but may reverse debilitating pathological changes, such as fibrosis, that were once thought to be irreversible.”

the detrimental effects of benign urological disorders.<sup>3</sup>

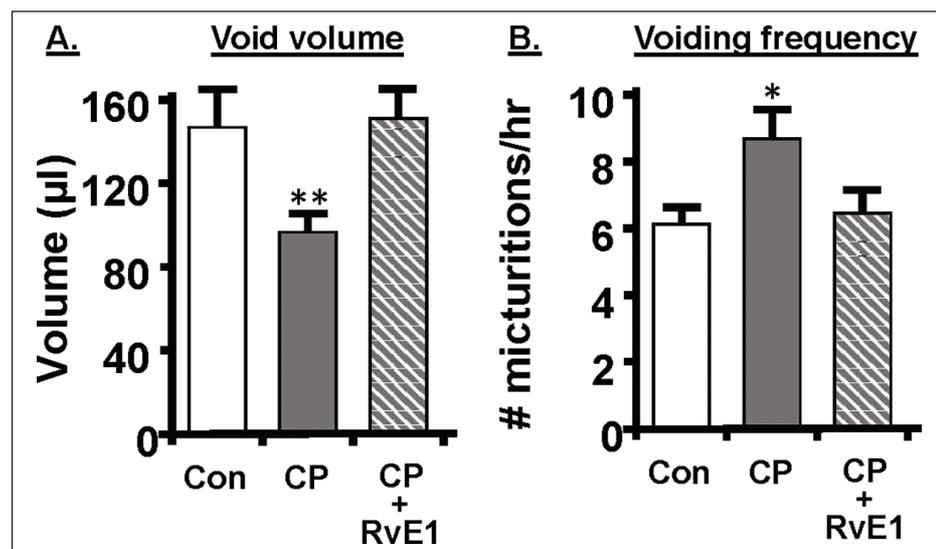
Our investigation found that all 7 known SPM receptors were present in both the human and mouse bladders, with expression mostly in the urothelia and detrusor. As proof that SPMs would have direct effects on bladder cells, we showed that representatives of 3 separate classes of the lipid SPMs (resolvin E1, maresin-1 and protectin D1) were highly effective at promoting *in vitro* wound repair of a urothelial cell monolayer. We next showed the efficacy of these 3 molecules *in vivo* by demonstrating that each could resolve bladder inflammation in a well-established and widely used model; the cyclophosphamide (CP)-induced hemorrhagic cystitis model (Fig. 3). In this model the SPM was given for 3 days after the establishment of inflammation (ie 1 day after CP). Focusing on resolvin E1, we found that this SPM could completely reverse bladder dysfunction (Fig. 4). Resolvin E1 also reversed signs of fibrosis (expression of TGF- $\beta$  and collagen I) and

classes, 1 a protein (annexin-A1) and the other 4 (lipoxins, resolvins, maresins and protectins) are lipids derived from omega-6 or omega-3 fatty acids. The potential of these molecules to treat existing inflammation in a vast number of different conditions has spawned a new field known as resolution pharmacology. Prior to this work only 1 study (on annexin-A1) had addressed the potential of targeting these resolution pathways to relieve

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## SPECIALIZED PRO-RESOLUTION MEDIATORS

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**Figure 4.** RvE1 restores urodynamics parameters following CP treatment. Following the treatment paradigm discussed in Figure 3, mice were subjected to urodynamics. *A*, average voided volume *B*, voiding frequency. \* $p < 0.05$ , \*\* $p < 0.01$  compared to control. Hughes FM Jr, Allkanjari A, Odom MR, Jin H, Purves JT. Specialized pro-resolution mediators in the bladder: receptor expression and recovery of bladder function from cystitis. Reprinted with permission of SAGE Publications. *Exp Biol Med (Maywood)*. 2022;247(8):700-711. Copyright 2022 SAGE Publications.

one of the exciting prospects of SPMs is that they appear to promote the regression of fibrosis.<sup>4,5</sup>

These results are the first to find proresolution pathways in the bladder and to demonstrate the

“Resolvin E1 also reversed signs of fibrosis (expression of TGF- $\beta$  and collagen I) and one of the exciting prospects of SPMs is that they appear to promote the regression of fibrosis.”

potential of the large and rapidly developing field of resolution pharmacology to treat the numerous and disparate UCICs.<sup>6</sup> There is great hope that such treatments can not only normalize voiding issues, but may reverse debilitating

pathological changes, such as fibrosis, that were once thought to be irreversible. ■

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## AUA2022: BEST POSTERS

## Ureteral Obstruction Promotes Ureteral Inflammation and Fibrosis

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Ureteral obstruction can cause persistent hydronephrosis and lasting kidney damage.<sup>1,2</sup> The most common cause for ureteral obstruction are calculi; urolithiasis affects 7%–13% of North Americans.<sup>3</sup>

We hypothesized that ureteral dysfunction due to obstruction might contribute to long-term adverse effects. We sought to better understand pathophysiological changes in the ureter following ureteral obstruction.

We employed a mouse model to study histomorphological changes after a 2-day or 7-day ureteral obstruction and 8 days after relieving a 7-day ureteral obstruction in ipsilateral and contralateral ureters. Obstruction was induced by placing an atraumatic vascular clip on the distal ureter. Mice without prior surgery served as controls.

A grading system was developed to compare the degree of inflammation and fibrosis. Furthermore, we determined concentrations of 44 chemokines and cytokines, and 5 matrix-metalloproteases using an immunoassay and studied the composition of cells involved in the inflammatory response by immunofluorescence.

Mice developed severe hydronephrosis after 2 days of obstruction, and peristaltic frequency was significantly reduced. Peristalsis partially recovered after the relief of obstruction; hydronephrosis, however, increased in our model.

Following obstruction, the ureters significantly dilated and the ureteral wall thickened. We observed inflammation of ureteral tissue, demarcated as hyperemia and diffuse infiltration of mononuclear cells in the lamina propria as well

“We hypothesized that ureteral dysfunction due to obstruction might contribute to long-term adverse effects.”

as clusters of mononuclear cells in the adventitia. Moreover, obstruction resulted in fibrosis of the lamina propria, muscle layer, and adventitia (see Figure).

Unsupervised hierarchical clustering of chemokine/cytokine concentrations showed clustering based on the condition (control ureters, 2-day- and 7-day-obstructed and

→ Continued on page 19

## URETERAL OBSTRUCTION PROMOTES URETERAL INFLAMMATION AND FIBROSIS

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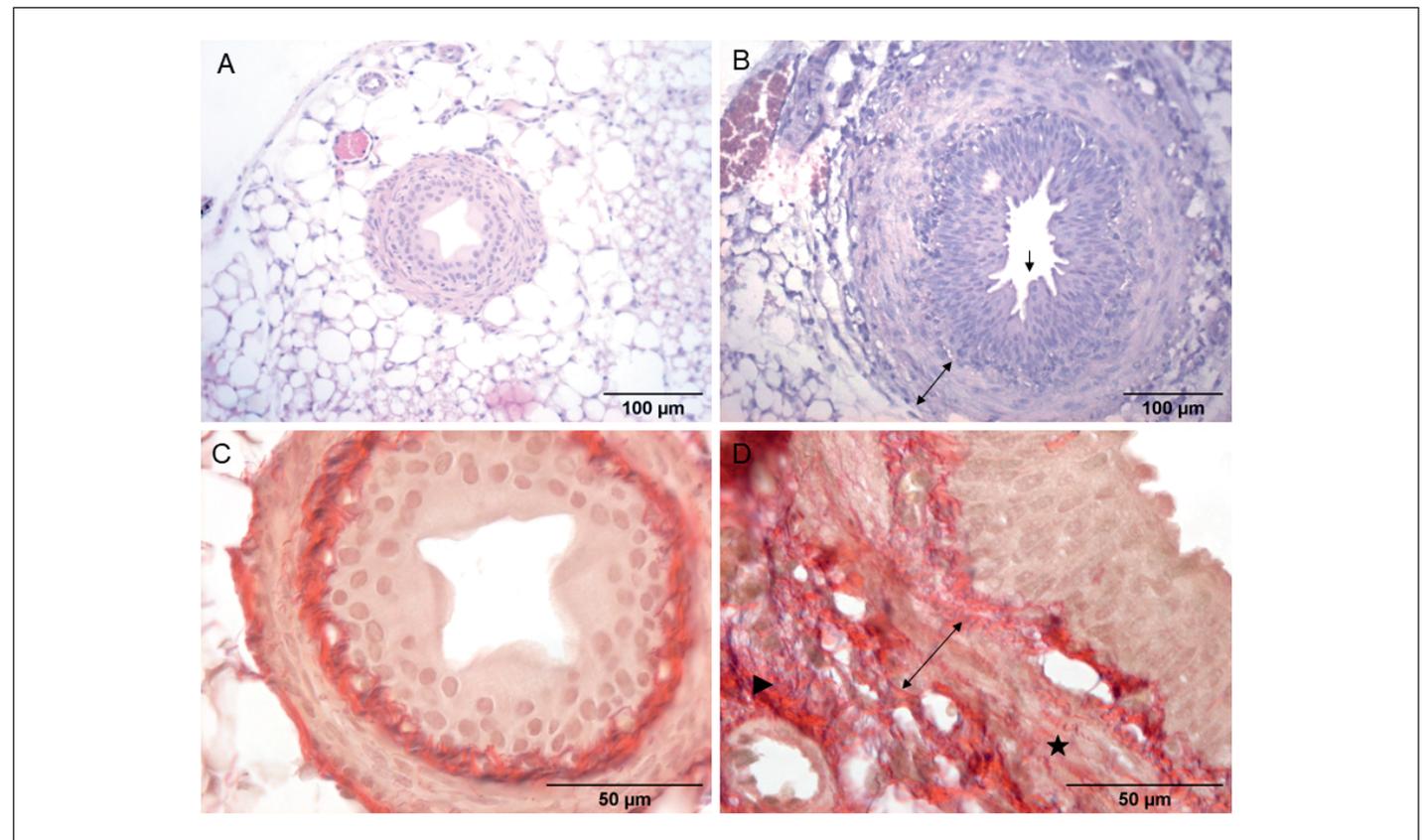
contralateral ureters, and 7 days obstructed followed by 8 days recovery). Interestingly, proinflammatory cytokines were also increased in contralateral ureters; however, the increase was less pronounced. These results indicate that specific cytokine patterns drive the acute and chronic inflammatory response and suggest systemic inflammation. Immunohistochemistry showed that the primary immune response is driven by T cells, Th-1 cells, and M1 macrophages. We observed a shift to M2 macrophages with prolonged obstruction, indicating resolution of inflammation and a pro-fibrotic environment.<sup>4,5</sup>

Correspondingly, levels of matrix-metalloproteases and their inhibitor, TIMP-1, a group of enzymes associated with tissue remodeling, were increased in obstructed and their contralateral ureters.

While the main focus of the literature has been put on the impact of ureteral obstruction on the kidney in the past, we studied how obstruction affects the ureter. We demonstrated that obstruction caused an acute inflammatory response, triggering tissue remodeling. Obstruction resulted in fibrosis of obstructed ureters. While an increase of inflammatory cytokines/chemokines, matrix-metalloproteases, and TIMP-1 suggest that obstruction affects both obstructed and contralateral ureters, histomorphological changes were limited to the obstructed ureter.

Fibrosis of smooth muscle is

“These results indicate that specific cytokine patterns drive the acute and chronic inflammatory response and suggest systemic inflammation.”



**Figure.** A–D, representative histology of murine obstructed and unobstructed ureters. A, low magnification image of a nonobstructed ureter, transverse. B and D, unilateral ureteral obstruction for 7 days showing urothelial changes (arrow, B) and thickened muscular layer (double-headed arrow, B and D) and collagen fibers in smooth muscle layer (star) and adventitia (arrowhead, D). C, high-magnification images of collagen fiber distribution in lamina propria and adventitia of unobstructed ureter. Staining: A and B, hematoxylin-eosin; C and D, sirius red in polarized light.

known to impair intestinal peristalsis and airway function due to decreased contractility.<sup>6,7</sup> In the context of ureteral obstruction, fibrosis likely impairs ureteral functionality and causes stiffness of the ureteral tissue. Therefore, we hypothesize that the observed changes might contribute to chronic kidney disease.

To date, not much is known about the impact of obstruction on the contralateral ureter. Previous studies have shown that obstruction alters the peristaltic frequency of obstructed and contralateral ureters.<sup>8,9</sup> We presumed that this “cross-talk” between ureters might be based on cytokines. Our results support the hypothesis and suggest a systemic inflammatory response.

We conclude that ureteral obstruction triggers an inflammatory response and fibrosis that contributes to functional changes. The findings warrant future investiga-

“To date, not much is known about the impact of obstruction on the contralateral ureter. Previous studies have shown that obstruction alters the peristaltic frequency of obstructed and contralateral ureters.”

tion, as targeting obstruction-induced inflammation might prevent ureteral remodeling and positively affect ureteral and subsequent kidney function. ■

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## AUA2022: BEST POSTERS

# Deferred Cytoreductive Nephrectomy in Patients with Metastatic Renal Cell Carcinoma Treated with Nivolumab Plus Ipilimumab

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Cytoreductive nephrectomy (CN) has played a central role in metastatic renal cell carcinoma (mRCC) treatment in cytokine therapy settings.<sup>1,2</sup> However, recently 2 trials, the CARMENA and SURTIME trials, rejected the superiority of up-front CN in the molecular-targeted therapy era.<sup>3,4</sup> An increase is anticipated in the number of patients without prior nephrectomy, owing to the findings of these trials. Additionally, immune checkpoint inhibitor-based treatment exhibits higher effects on tumor shrinkage in patients without prior nephrectomy,<sup>5-8</sup> resulting in the increased likelihood of considering the indication of CN during therapy, namely deferred CN (dCN). However, data regarding the dCN's therapeutic role during immune checkpoint inhibitor-based treatment remain limited.

To clarify the prognostic impact of dCN, we retrospectively evaluated 41 patients with synchronous mRCC who received nivolumab plus ipilimumab as first-line therapy at our 5 affiliated institutions between September 2016 and July 2021. During the followup period with a median period of 12.0 months, 7 of the 41 (17%) patients received dCN. The dCN was performed at a median of 10.4 months after the initiation of nivolumab plus ipilimumab treatments. Of the remaining 34 patients, 21 (51%) underwent nephrectomy prior to nivolumab plus ipilimumab treatments (ie uCN group) and 13 (32%)

**Table 1.** Patient characteristics based on nephrectomy status

| Variables   | All (41 pts)     | dCN (7 pts)      | uCN (21 pts)     | Non-CN (13 pts)  | p Value |
|---|------------------|------------------|------------------|------------------|---------|
| No. male sex (%) (reference female)                                 | 27 (65.9)        | 6 (85.7)         | 13 (61.9)        | 8 (61.5)         | 0.434   |
| Median age (yrs) (IQR)  | 64.0 (53.5–71.5) | 56.0 (47.0–64.0) | 64.0 (53.5–69.5) | 70.0 (56.5–73.0) | 0.131   |
| No. histopathology (%):   |                  |                  |                  |                  | 0.599   |
| Clear cell carcinoma  | 31 (75.6)        | 5 (71.4)         | 18 (85.7)        | 8 (61.5)         |         |
| Nonclear cell carcinoma   | 6 (14.6)         | 1 (14.3)         | 3 (14.3)         | 2 (20.0)         |         |
| Papillary renal cell carcinoma                                      | 3 (7.31)         | 0 (0)            | 2 (9.52)         | 1 (7.7)          |         |
| Other   | 3 (7.31)         | 1 (14.3)         | 1 (4.76)         | 1 (7.7)          |         |
| Unknown   | 4 (9.76)         | 1 (14.3)         | 0 (0)            | 3 (23.1)         |         |
| No. IMDC risk (%):  |                  |                  |                  |                  | 0.0286* |
| Intermediate  | 19 (46.3)        | 1 (14.3)         | 14 (66.7)        | 4 (30.8)         |         |
| Poor  | 21 (51.2)        | 5 (71.4)         | 7 (33.3)         | 9 (69.2)         |         |
| Unknown   | 0                | 1 (14.3)         | 0                | 0                |         |
| No. KPS <80 (%) (reference >80)                                     | 10 (24.4)        | 2 (28.6)         | 4 (19.0)         | 4 (30.8)         | 0.712   |
| Median mg/dL serum CRP levels                                       | 3.06 (0.37–11.6) | 5.11 (2.73–12.8) | 1.10 (0.16–2.47) | 10.7 (4.5–13.5)  | 0.0028  |
| No. metastatic organ sites (%) (reference solitary)                 | 28 (68.3)        | 5 (71.4)         | 13 (61.9)        | 10 (76.9)        | 0.641   |
| No. liver metastasis presence (%) (reference absence)               | 5 (12.2)         | 1 (14.3)         | 3 (14.3)         | 1 (7.70)         | 0.824   |
| No. bone metastasis presence (%) (reference absence)                | 8 (19.5)         | 1 (14.3)         | 7 (33.3)         | 0 (0)            | 0.0183  |
| Median days between diagnosis and systemic therapy initiation (IQR) | 22 (15–41)       | 15 (8–22)        | 40 (24–63)       | 16 (9.5–21)      | 0.001   |
| Median mos followup (IQR)   | 12 (7–21)        | 19 (18–20)       | 12 (5–25)        | 11 (6–20)        | 0.258   |

KPS, Karnofsky Performance Status.

\*Analyzed with the exclusion of 1 patient in the dCN group without IMDC risk data.

did not receive nephrectomy (ie the non-CN group). When the patient characteristics were compared based on their nephrectomy status, the patients diagnosed with poor International Metastatic Renal Cell Carcinoma Database Consortium (IMDC) risk or those with high serum C-reactive protein levels were significantly more frequent in the dCN and non-CN groups ( $p=0.0286$  and  $p=0.0028$ , respectively; Table 1).

The total tumor size decreased in all the targeted lesions (median 51.5%; Fig. 1, A) in all patients receiving dCNs. Upon analyzing the primary and metastatic lesions, the

tumors in primary lesions shrank in all the patients (median 38.7%; Fig. 1, B), and 6 (86%) patients (except Patient E) exhibited tumor shrinkage (median 69.4%; Fig. 1, C). A  $\geq 30\%$  shrinkage in the primary lesions was observed in 6 (86%) patients whose metastatic lesions concurrently shrank by  $\geq 30\%$ , including 2 (29%) patients with complete responses (Fig. 1, B and C).

The dCN had a median surgery time of 191 minutes and median blood loss volume of 50 ml (Table 2). Three (43%) patients required blood transfusions (Clavien-Dindo grade 2), while the remaining 4 (57%) did not experience

complications. The median length of postoperative hospital stay was 6 days. Regarding the pathological findings in the resected kidneys, no viable cells were observed in 2 cases.

During the followup period, 13 (32%) patients died. Patients in the dCN group had the highest overall survival (OS) rate compared to the uCN and non-CN groups (1-year rate 100% vs 72.4% vs 58.2%,  $p=0.158$ ; Fig. 2). Specifically, the OS rate tended to be higher in the dCN group compared to the uCN group ( $p=0.0587$ ) and the non-CN

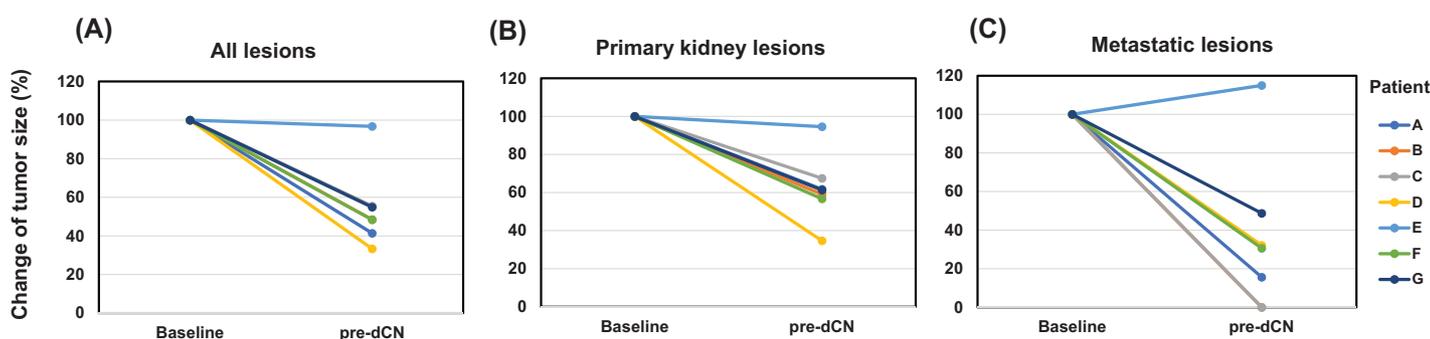
## DEFERRED CYTOREDUCTIVE NEPHRECTOMY

→ Continued from page 20

**Table 2.** Clinical characteristics and perioperative outcomes in patients undergoing dCN

| Pt | Age (yrs) | Sex | Clinical Stage | No. IMDC Risks at Diagnosis | Mos to Surgery | Procedure | Operating Time (mins) | Blood Loss (ml) | Complications            | Pathological Diagnosis | Length of Stay (days) | Postop Followup (mos) | Current Treatment | Current Outcome      |
|----|-----------|-----|----------------|-----------------------------|----------------|-----------|-----------------------|-----------------|--------------------------|------------------------|-----------------------|-----------------------|-------------------|----------------------|
| A  | 56        | M   | cT3aN0M1       | 5                           | 4              | RAPN      | 199                   | 50              | None                     | Viable cells present   | 4                     | 19                    | None              | CR                   |
| B  | 47        | M   | cT3bN0M1       | 5                           | 10             | ORN       | 239                   | 1,290           | CD grade 2 (transfusion) | Viable cells present   | 7                     | 10                    | Nivolumab         | SD                   |
| C  | 57        | M   | cT4N1M1        | N/A                         | 11             | LRN       | 200                   | 50              | None                     | Viable cells present   | 4                     | 12                    | Nivolumab         | CR                   |
| D  | 41        | M   | cT1aN0M1       | 1                           | 12             | RAPN      | 203                   | 50              | None                     | Viable cells absent    | 4                     | 9                     | None              | SD                   |
| E  | 51        | M   | cT2bN0M1       | 3                           | 1              | ORN       | 171                   | 2,055           | CD2 (transfusion)        | Viable cells present   | 8                     | 18                    | Cabozantinib      | PR (on cabozantinib) |
| F  | 64        | F   | cT3aN1M1       | 5                           | 11             | LRN       | 189                   | 20              | None                     | Viable cells absent    | 6                     | 7                     | None              | CR                   |
| G  | 76        | M   | cT3aN2M1       | 3                           | 8              | ORN       | 199                   | 315             | CD2 (transfusion)        | Viable cells present   | 8                     | 5                     | Nivolumab         | SD                   |

CD, Clavien–Dindo. CR, complete response. LRN, laparoscopic radical nephrectomy. N/A, not available. ORN, open radical nephrectomy. PR, partial response. RAPN, robot-assisted partial nephrectomy. SD, stable disease.

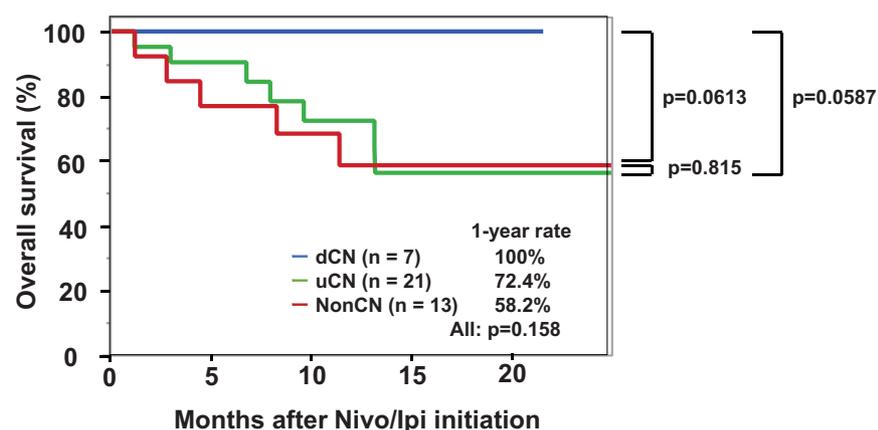


**Figure 1.** Changes in tumor size.

group ( $p=0.0613$ ). No difference was observed in the OS rate between the uCN and non-CN groups ( $p=0.815$ ). The rates of complete responses during therapy among the 3 groups were 43% (3/7), 14% (3/21), and 0% (0/13) in the dCN, uCN, and non-CN groups, respectively. Thus, the rate of complete

response was significantly higher in the dCN group ( $p=0.01$ ).

This study had several limitations. First, the retrospective nature of our analysis, in addition to the small sample size and relatively short followup period, potentially affected our findings. Moreover, our institutions have



| Patients at risk | Months after Nivo/Ipi initiation |    |    |    |    |
|------------------|----------------------------------|----|----|----|----|
|                  | 0                                | 5  | 10 | 15 | 20 |
| dCN              | 7                                | 7  | 7  | 7  | 7  |
| uCN              | 21                               | 16 | 12 | 7  | 7  |
| NonCN            | 13                               | 11 | 7  | 6  | 3  |

**Figure 2.** OS according to the patients' nephrectomy status.

Thus, a strong selection bias was inevitably introduced.

Collectively, the present data showed that dCN followed by frontline nivolumab plus ipilimumab therapy was associated with improved OS in the patients with synchronous mRCC. dCN may be an effective treatment option for a subset of patients who exhibit favorable responses for a certain period in primary lesions, with the simultaneous shrinkage of metastatic lesions. ■

“Collectively, the present data showed that dCN followed by frontline nivolumab plus ipilimumab therapy was associated with improved OS in the patients with synchronous mRCC.”

no consensus criteria for dCN. In all the dCN patients, the CN was unplanned and frontline systemic therapy with nivolumab plus ipilimumab was preferred at the time of mRCC diagnosis. dCN was conducted because the patients' primary and metastatic lesions presented sufficient response.

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## AUA2022: BEST POSTERS

# Successful Adolescent Varicocelectomy Improves Total Motile Sperm Count

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The decision to pursue varicocele repair in adolescents remains controversial. The prevalence of varicoceles in adolescent boys reaches about 15% by the age of 15, similar to that of adults, making it a common diagnosis.<sup>1</sup> Varicoceles in adults are frequently discovered and subsequently treated during an infertility workup. However, when a varicocele is diagnosed in adolescence, it is unclear which individual will go on to experience infertility and thus require treatment.

As adolescent varicoceles became increasingly recognized, initially, the recommendations for treatment were based on testicular hypotrophy or varicocele grade, with a higher grade warranting repair.<sup>2</sup> However, it was eventually determined that there is no correlation between grade of varicocele and degree of testicular disproportion, thus deemphasizing grade as an indication for repair.<sup>3</sup> Over time, some groups discovered that Tanner stage V adolescents with varicoceles and large testicular volume differentials were also found to have significantly decreased sperm concentration and total motile sperm count (TMSC). As a result, our current indications for adolescent varicocele correction in prepubertal males are testicular volume differential >20% or clearly associated discomfort, or abnormal semen parameters.<sup>4,5</sup>

To date, though, it has been generally presumed that a varicocele repair improves TMSC in adolescents, there are minimal data available to verify this, as preoperative and postoperative semen analyses

“To date, though, it has been generally presumed that a varicocele repair improves TMSC in adolescents, there are minimal data available to verify this, as preoperative and postoperative semen analyses are rare.”

are rare. Our goal was to provide these data and to investigate the optimization of semen parameters in adolescents post-varicocelectomy.

We retrospectively examined over 1,600 patients ≤20 years of age from the Boston Children’s Hospital adolescent varicocele database for patients who underwent a varicocelectomy and also had both pre- and postoperative semen analyses. From this, 15 Tanner stage V adolescents were identified. Of our 15 patients, 12 had complete resolution of their varicocele, with all but 1 of them experiencing an improvement of their TMSC postoperatively (see Figure). Nine patients had an abnormal preoperative TMSC as defined by <20 million,<sup>6</sup> and 5/9 (55.6%) of them improved to within a normal range of ≥20 million following successful varicocele repair.

Our rate of improvement of TMSC was 91.7%, similar to that of Chu et al’s series, which had a rate of improvement of 82%. Additionally, our 55.6% rate of normalization was similar to Chu et al’s rate of 55%. Together, our results

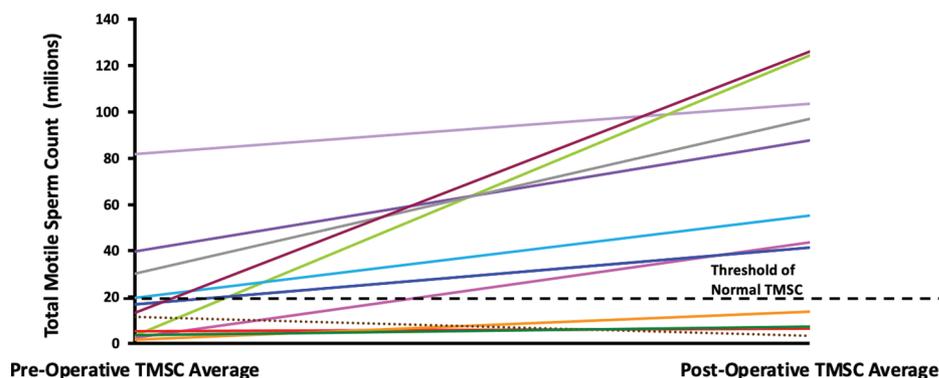


Figure. Increase in TMSC after surgical cure of varicocele.

demonstrate that in the majority of adolescents undergoing varicocelectomy TMSC will improve as with adults, and in over half of cases an abnormal preoperative TMSC will increase to within normal parameters postoperatively.

Even amongst adult men undergoing varicocele repair for infertility, the pregnancy rate following varicocelectomy alone is documented at ~38%.<sup>7</sup> It is reasonable to question if the fertility of the remaining 62% could have been salvaged through treatment at a younger age, which may highlight the importance of identifying a more objective measure to predict which adolescent may experience infertility in adulthood. Therefore, a semen analysis should be obtained when considering varicocele repair in adolescents and counseling patients on management options. ■

“Together, our results demonstrate that in the majority of adolescents undergoing varicocelectomy TMSC will improve as with adults, and in over half of cases an abnormal preoperative TMSC will increase to within normal parameters postoperatively.”

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AUA2022: BEST POSTERS

# Is It Clinically and Oncologically Safe to Omit Biopsy in Low-Risk Stratified Patients?

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(csPCa). Additionally, the number of cores taken per patient can be reduced significantly.<sup>3</sup> But there is still fear of missing csPCa. Retrospective analyses have shown that between 4% and 6.8% of men harbor csPCa despite having been stratified as low risk according to the RPCRC.<sup>4,5</sup> Therefore, a clear pathway is needed to followup this low-risk subgroup of men not undergoing PBx in the first place.

The combination of low PSA density and negative multiparametric MRI (mpMRI) is a reliable predictor of the absence of csPCa.<sup>6</sup> Thus, a safety net based on PSA density was analyzed (Fig. 1).

The safety net consists of 3 steps. After initial low-risk stratification, men and their referring urologist are asked to perform PSA testing and digital rectal examinations (DREs) regularly (step 1). If PSA density exceeds 0.15 ng/ml/ml in PBx-naïve men or 0.2 ng/ml/ml in men with prior PBx, a new MRI is recommended (step 2). If risk stratification based on the new parameters reveals a progression from low-risk to intermediate- or high-risk csPCa, patients are advised to undergo PBx. If risk stratification remains

According to current guidelines of both the European Association of Urology and the American Urological Association, an individual risk stratification should precede prostate biopsy (PBx) in patients with suspected prostate cancer (PCa).<sup>1,2</sup> This aims at reducing overdiagnosis as well as PBx-related complications. Recent findings have shown that risk stratification using the Rotterdam Prostate Cancer Risk Calculator (RPCRC, issued by SWOP) can lead to a significant decrease in the detection of low-risk PCa while simultaneously increasing the detection rate of clinically significant PCa

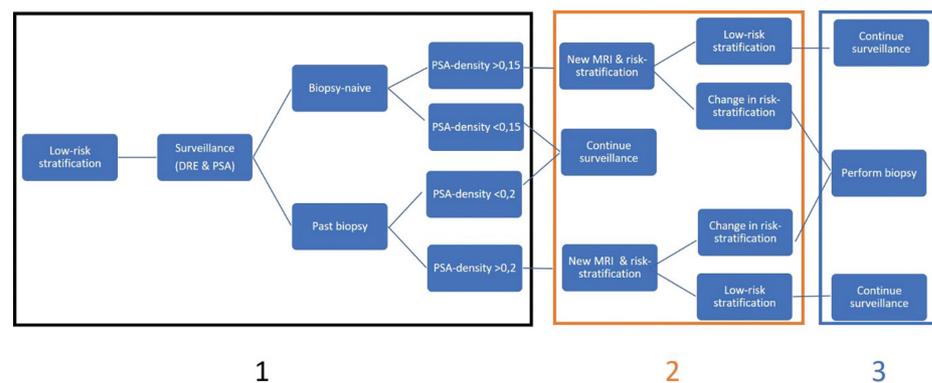


Figure 1. Safety net based on PSA density.

“Retrospective analyses have shown that between 4% and 6.8% of men harbor csPCa despite having been stratified as low risk according to the RPCRC.”

years (interquartile range [IQR] 58–68 years). Median PSA was 6.6 ng/ml (IQR 4.6–9.4) at initial presentation with a slight decrease to a median PSA of 6.1 ng/ml (IQR 4.4–8.1) during followup. During a median followup of 12.5 months, 110 men (98.2%) adhered to the proposed safety net. Further patient characteristics are shown in the Table.

A relevant increase of the PSA density was detected in 15 men (13.6%), resulting in a new MRI. After repeated risk stratification, 11 men (10%) had biopsy performed due to an increased risk of csPCa. Figure 2 depicts the distribution of risk classifications after followup. All men with an increased risk underwent MRI-fusion PBx. On MRI no high-grade Prostate Imaging-Reporting and Data System®

low risk, the surveillance should be continued (step 3).

A total of 112 men who had been stratified as low risk at our institution between September 2019 and February 2020 were included in this study; 49 men (44.1%) were biopsy-naïve. The median age of all men was 63

→ Continued on page 24

Table. Baseline characteristics of 110 patients

|                                    |                |
|------------------------------------|----------------|
| Median yrs age (IQR)               | 63 (58–68)     |
| Median ng/ml Initial PSA (IQR)     | 6.6 (4.6–9.4)  |
| Median ng/ml PSA at followup (IQR) | 6.1 (4.4–8.1)  |
| Median cc prostate vol (IQR)       | 60 (50.0–80.0) |
| No. DRE (%):                       |                |
| Unsuspicious                       | 109 (99.1)     |
| Suspicious                         | 1 (0.9)        |
| No. prior biopsy (%):              |                |
| Yes                                | 62 (55.9)      |
| No                                 | 49 (44.1)      |
| No. initial mpMRI performed (%):   |                |
| Yes                                | 105 (94.6)     |
| No                                 | 7 (5.3)        |
| No. mpMRI at followup (%):         |                |
| Yes                                | 15 (13.6)      |
| No                                 | 95 (86.4)      |

Two men were lost to followup.

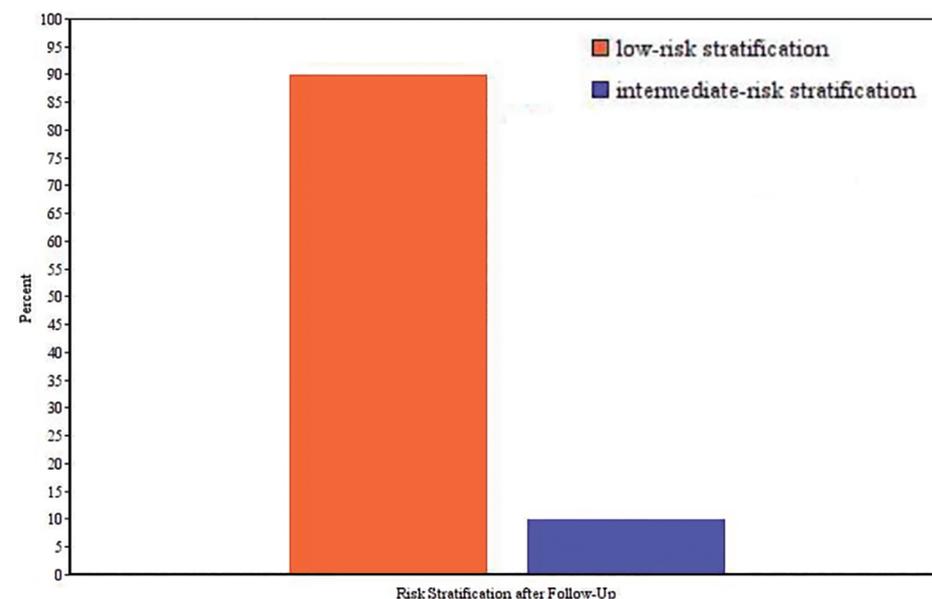


Figure 2. Distributions of risk classifications after followup of 12.5 months.

## IS IT CLINICALLY AND ONCOLOGICALLY SAFE

→ Continued from page 23

**“In conclusion, omitting PBx in patients stratified as low risk according to the RPCRC appears to be safe.”**

(PI-RADS®) lesions according to PI-RADS V. 2.1 (ie PI-RADS score  $\geq 3$ ) were detected.<sup>7</sup>

Histopathological results showed low-risk PCa in only 1 patient (Gleason pattern 3+3 in 1 out of 12

cores, infiltration  $<5\%$ ). Hence, no csPCa was detected.

Furthermore, it should be noted that in addition to the 110 men discussed in this article, 12 men underwent subvesical desobstruction after initial low risk stratification. Pathology did not find PCa in any of these men.

To our knowledge, this study is the first to prospectively follow men who were stratified as low risk by using the RPCRC. In conclusion, omitting PBx in patients stratified as low risk according to the RPCRC appears to be safe. The probability of missing csPCa seems marginal at best. However, men who are stratified as low

risk should be monitored closely. Special attention should be paid to younger, PBx-naïve men. In general, parameters such as PSA velocity and family history of PCa should be considered when counseling men on whether to omit PBx after low risk stratification, as well. A safety net based on PSA density might provide additional security for both patients and urologists.

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## AUA2022: BEST POSTERS

## Using a Manual Trigger with a Traditional Moisture Alarm for Treatment of Primary Monosymptomatic Nocturnal Enuresis

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dergarments, and even code-word alarms, in which a pre-recorded code word is given to the child when the alarm goes off and the child is encouraged to remember the word the next morning, have been studied.<sup>2</sup> There is not an es-

**“There is not an established gold standard, but alarms are now considered first-line treatment for primary monosymptomatic nocturnal enuresis (PMNE) by the International Children's Continence Society (ICCS).”**

The first enuresis alarm was introduced in 1904 with the goal of signaling the need for change of bedclothes to staff on the pediatric ward, and an unexpected therapeutic effect was observed in older children with nocturnal enuresis.<sup>1</sup> Since that time, many iterations of enuresis alarms, including “bell and pad alarms” with a mat placed under the patient with moisture sensor, body-worn alarms in which a sensor is placed in the child's un-

dergarments, and even code-word alarms, in which a pre-recorded code word is given to the child when the alarm goes off and the child is encouraged to remember the word the next morning, have been studied.<sup>2</sup> There is not an established gold standard, but alarms are now considered first-line treatment for primary monosymptomatic nocturnal enuresis (PMNE) by the International Children's Continence Society (ICCS).<sup>3</sup> Mechanisms of action for alarms are incompletely understood, and var-

ious types of behavioral conditioning, conditioned muscle response of the urethral sphincter, increased functional bladder capacity, increased antidiuretic hormone production, and a maturational delay

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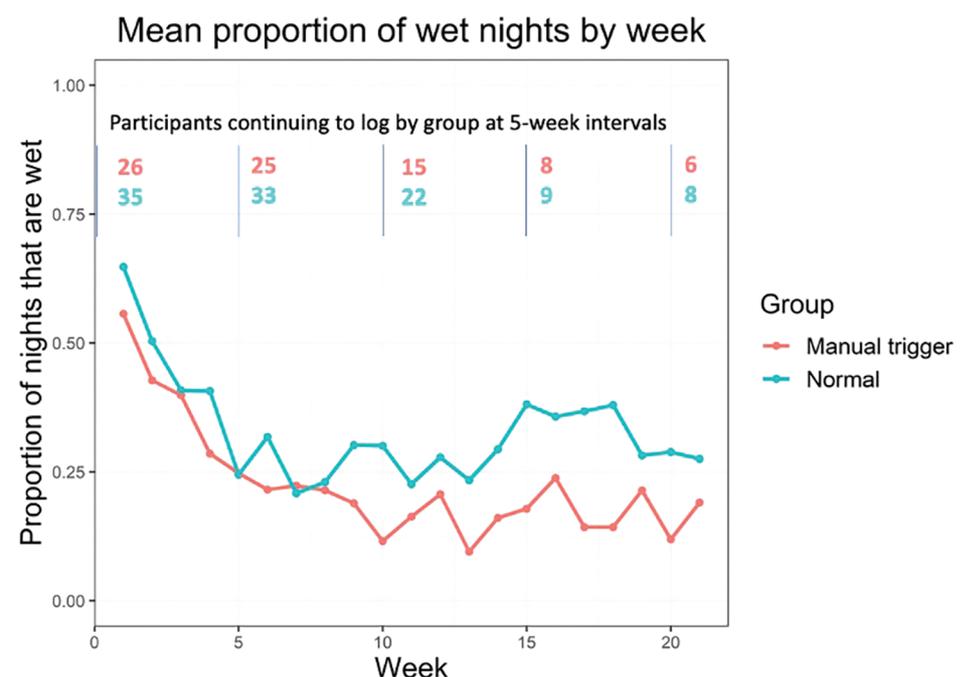


Figure 1. Mean proportion of wet nights over time in each group.

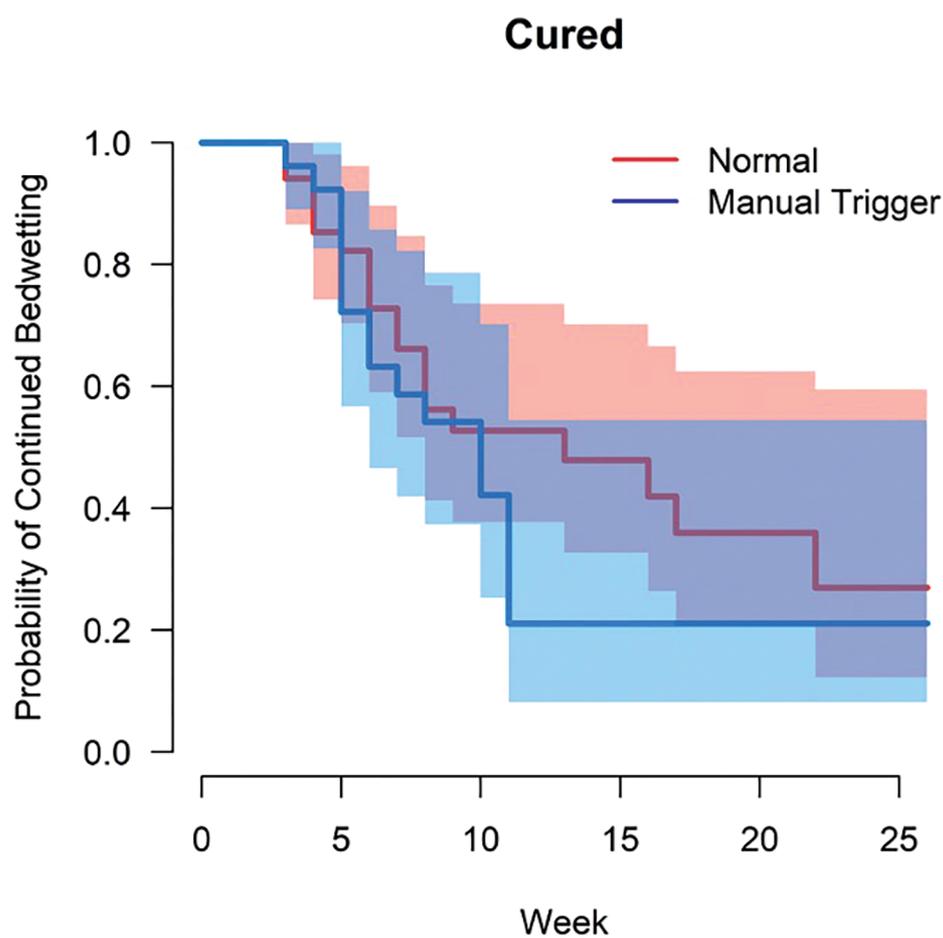
## USING A MANUAL TRIGGER WITH A TRADITIONAL MOISTURE ALARM

→ Continued from page 24

of central reflex control have been postulated.<sup>4</sup> Behavioral interventions, including random nighttime waking, have also been studied, but there is no high-quality evidence suggesting that waking at random intervals leads to cure of nocturnal enuresis. We sought to determine if manual nighttime waking in addition to a traditional moisture sensor alarm would lead to benefit in treatment of children with PMNE.

We recruited patients with diagnosis of PMNE as determined by ICCS criteria and Vancouver Symptom Scores at the University of Iowa Pediatric Urology clinic and randomized them to the traditional moisture alarm versus a “manual trigger” plus moisture alarm group. Members of each group were given an identical Wet-Stop 3+ wearable alarm (donated by Potty MD, Knoxville, Tennessee). In both groups, subjects and parents completed a nightly diary of enuresis events and alarm usage. In the manual group, in addition to using in the traditional fashion, parents were instructed to trigger the alarm via an embedded switch in the device 1 to 2 hours after bedtime. Logging was continued until subjects no longer wished to continue or until the child experienced 14 consecutive dry nights or 27 nonconsecutive dry nights over a 30-day period, considered cure.

We enrolled 117 children, with 61 of those completing diaries sufficient to analyze outcomes. Median



**Figure 2.** Kaplan-Meier curves and 95% confidence intervals for the probability of continued bedwetting over time by group when continued bedwetting is defined as not being cured.

age was 8.4 years (IQR 7.2–10.8), and 75% of subjects were males. Overall trends were favorable for the manual trigger group but differences were not statistically significant. The overall rate of cure in the traditional group was 54% and 62% in the manual trigger group. Reduction to at least 50% of dry nights was 87% versus 96%, respectively. Figure 1 shows mean pro-

portion of wet nights per week in each group. Mean time to cure was 8.2 weeks (range 3–22) in the traditional group and 7.0 weeks (range 3–11) in the manual trigger group. Figure 2 shows the Kaplan-Meier curves showing the probability of continued bedwetting over time between groups. The average time to a 50% reduction in the proportion of wet nights was about

4 weeks for both groups. Over the first 10 weeks, the probability of continued bedwetting decreased at a similar rate in both groups, but after week 10 we observed a lower probability of continued wetting in the manual trigger group.

Although cure and time to cure were more favorable in the manual trigger plus moisture alarm group, no statistically significant differences were demonstrated. It is possible that the study was underpowered to demonstrate a clinically significant difference, so a larger or multi-institutional cohort may prove different. The rigorous diary-keeping allowed for us to not only obtain information about rates of cure but also exact time to cure. Overall success rate of 57%, mean time to reduction in 50% of wet nights of 3.9 weeks, and mean time to cure of 7.6 weeks is valuable information for families considering undertaking enuresis alarm treatment. ■

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## AUA2022: BEST POSTERS

# Urology Resident Autonomy Compared to General Surgery Resident Autonomy

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surgical training, resident physicians have undergone supervised medical education. Throughout their training, residents are granted gradual increases in surgical autonomy and are expected to fulfill a minimum number of key procedures to graduate per the Accreditation Council of Graduate Medical Education.<sup>1</sup> Despite this, surgical resident autonomy in the operating room has

been declining for all specialties.<sup>2</sup> There has been concern for resident readiness for independent practice in surveys of residents, faculty, and fellowship directors.<sup>3</sup>

Our project analyzed the VASQIP (Veterans Affairs Surgical Quality Improvement Program) database to determine how autonomy in the operating room has changed over a 15-year time frame

in both urology residency and general surgery residency.

We found that there was a decline in urological resident primary cases from 31.3% to 18.6%, a 41% decline compared to a 66% decline for general surgery residents (see Figure). The decrease in primary urological resident surgeries was matched by

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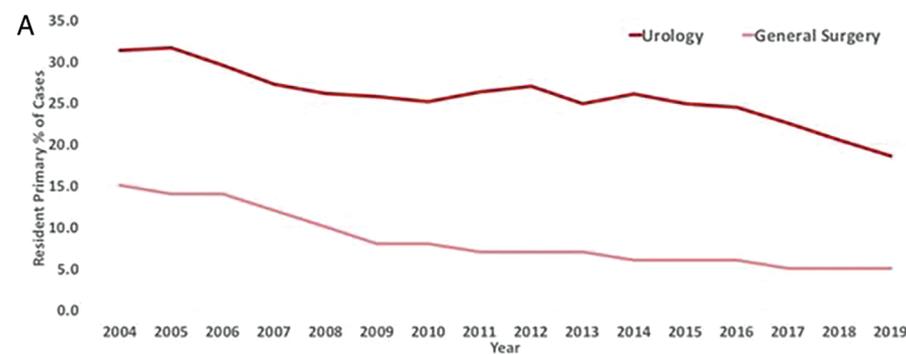
## UROLOGY RESIDENT AUTONOMY COMPARED TO GENERAL SURGERY RESIDENT AUTONOMY

→ Continued from page 25

“We found that there was a decline in urological resident primary cases from 31.3% to 18.6%, a 41% decline compared to a 66% decline for general surgery residents.”

an increase in cases performed by an attending and resident. On the other hand, the decrease in general surgery resident primary cases resulted in an increase in attending primary cases. While there was an increase in 30-day reoperation rates, there was no increase in 30-day mortality or morbidity for resident primary surgeries.

This abstract was part of a larger project which was recently



**B**

|                                | Comparison of post-operative outcomes among groups |                         |                  |                  |                         |                  |
|--------------------------------|--|-------------------------|------------------|------------------|-------------------------|------------------|
|                                | UROLOGY  |                         |                  | GENERAL SURGERY  |                         |                  |
|                                | AR vs. AP (OR)                                     | RP vs. AP (OR)          | AR vs. RP (OR)   | AR vs. AP (OR)   | RP vs. AP (OR)          | AR vs. RP (OR)   |
| 30-day all-cause mortality     | 0.90 (0.72-1.12)                                   | 0.97 (0.76-1.23)        | 0.93 (0.74-1.18) | 1.00 (0.91-1.09) | 0.97 (0.83-1.12)        | 1.04 (0.90-1.20) |
| 30-day composite complications | 1.09 (1.02-1.17)                                   | 1.06 (0.98-1.15)        | 1.02 (0.95-1.10) | 1.14 (1.10-1.18) | 1.04 (0.98-1.11)        | 1.10 (1.03-1.16) |
| 30-day return to OR            | 1.36 (1.27-1.46)                                   | <b>1.23 (1.14-1.34)</b> | 1.10 (1.03-1.19) | 1.03 (0.99-1.08) | <b>1.23 (1.15-1.33)</b> | 0.84 (0.78-0.90) |

**Figure.** A, resident primary cases per year in urology and general surgery. B, comparison of outcomes among resident primary and attending primary surgeries. The bolded numbers signify statistical significance.

featured in *AUANews* in an article by Dr. Anh Nguyen and Dr. Hossein Sadeghi-Nejad.<sup>4</sup> This larger study analyzed resident involvement across various procedures

in urology as well as the socioeconomic patterns in cases with resident involvement. ■

1. The Accreditation Council for Graduate Medi-

“While there was an increase in 30-day reoperation rates, there was no increase in 30-day mortality or morbidity for resident primary surgeries.”

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## AUA2022: BEST POSTERS

## Delayed Lower Urinary Tract Symptom Improvement following Convective Water Vapor Thermal Therapy

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The prevalence and the severity of lower urinary tract symptoms (LUTS) associated with benign prostatic hyperplasia (BPH) is common and progressive.<sup>1</sup> Transurethral resection of the prostate has traditionally been the mainstay treatment for LUTS/BPH,

but is associated with adverse effects including erectile dysfunction and retrograde ejaculation, and requires general anesthesia with hospital stays. These aspects increase the cost and impact the quality of life.<sup>2</sup>

Convective water vapor thermal therapy (CWVTT-Rezūm™) is a minimally invasive surgical technique for LUTS/BPH that has been shown to produce clinically significant and durable results for up to 5 years.<sup>3</sup> This therapy disrupts epithelial cell membranes by transferring stored thermal energy directly to prostatic tissue. Unlike transurethral needle ablation and transurethral microwave therapy, the thermal effects are confined to the transitional zone.<sup>4</sup> An additional advantage is preservation of sexual function, including erection

“Convective water vapor thermal therapy (CWVTT-Rezūm™) is a minimally invasive surgical technique for LUTS/BPH that has been shown to produce clinically significant and durable results for up to 5 years.”

and ejaculatory function.<sup>5</sup>

While CWVTT has been shown

to be clinically effective and provide rapid relief for LUTS/BPH, a subset of men experience a delay in their LUTS improvement following the procedure. In this study, we described patient- and treatment-specific risk factors that drive this delayed improvement, as this has not previously been investigated. We hypothesized that there are preoperative and perioperative risk factors that increase the likelihood for men to experience a delayed improvement in their LUTS following CWVTT.

In our study, patients who underwent CWVTT from January 2018 to December 2020 were retrospectively identified. Patient demographics, comorbidities, preoperative evaluation, intraoperative data,

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## DELAYED LOWER URINARY TRACT SYMPTOM

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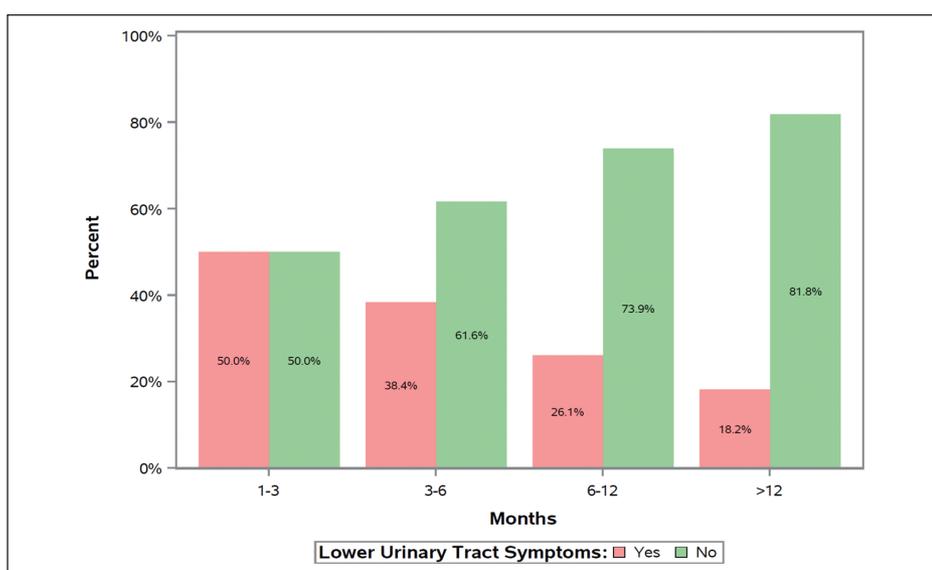
and postoperative outcomes were extracted for analysis. The primary outcome of our study was clinically significant improvement in LUTS 4 weeks following CWVTT, as defined by reaching the minimal clinically important difference (MCID) of a 25% improvement in International Prostate Symptom Score (IPSS). Conversely, delayed LUTS improvement was defined as a failure to reach a 25% improvement in the IPSS by 4 weeks. Patient-specific and treatment-specific risk factors were assessed using univariate and multivariate logistic regression to estimate the odds of delayed LUTS improvement.

A total of 109 patients qualified for analysis, and 73% (80/109) of our patients had preoperative pressure flow studies performed. We found that 50% of men had clinically significant LUTS improvement (MCID > 25%) at 1 month following CWVTT. Of the men 81.8% had clinically significant LUTS improvement at the time of their last followup (Fig. 1). We also found that as months following surgery increased, the probability that men reported LUTS decreased (Fig. 2). Overall, postoperative IPSS scores tended to decrease with time from CWVTT, indicating overall im-

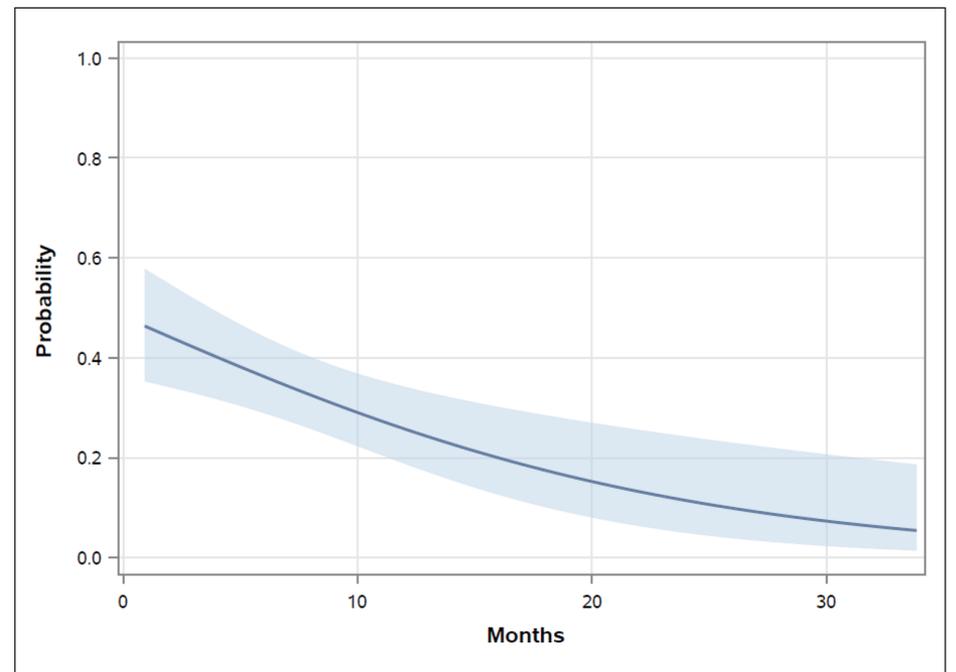
“While CWVTT has been shown to be clinically effective and provide rapid relief for LUTS/BPH, a subset of men experience a delay in their LUTS improvement following the procedure.”

provement in LUTS among the cohort (data not shown).

Lower bladder outlet obstruction index (BOOI) and prior surgical therapy for BPH were significantly associated with delayed LUTS improvement. The mean preoperative BOOI for patients with and without delayed LUTS improvement was 48.3 (SD=27.3) and 59.0 (SD=32.7), respectively. Every 10-unit increase in the preoperative BOOI was associated with a 15% decrease in the odds of delayed LUTS improvement (adjusted odds ratio [aOR]=0.85,



**Figure 1.** Percent of patients with 25% improvement of LUTS over time following CWVTT. The likelihood of persistent LUTS following CWVTT decreased with time.



**Figure 2.** Probability of clinically significant LUTS following CWVTT. Following CWVTT, the probability of patients having LUTS decreases.

$p=0.01$ ). Patients with prior surgical BPH therapy were 3.5 times more likely than those without prior surgical BPH therapy to experience delayed LUTS improvement following CWVTT (aOR=3.47,  $p=0.01$ ). Finally, the odds of reaching the MCID increases by 9% with each additional month following CWVTT (aOR=0.91,  $p=0.003$ ) (data not shown).

Postoperative time to gauge LUTS improvement and treatment efficacy was short in our cohort. However, our data suggest that regardless of an initial delayed LUTS improvement, most men will have clinically significant LUTS improvement by 1 year following CWVTT. This improvement was shown to be durable in initial randomized trials.<sup>3</sup> Patients with lower BOOI and patients with prior surgical BPH therapy might not benefit as quickly from CWVTT, as these individuals are more at risk for a delayed improvement in their LUTS. For these patients, shared decision making and accurately weighing the risks and benefits of CWVTT with providers is important when

proposing a treatment plan. These data provide novel insights into patient counseling and prioritize comprehensive review of patient characteristics and past medical history prior to CWVTT. Furthermore, our study lays the groundwork for prospective research for patients at risk for delayed LUTS improvement following CWVTT. ■

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# Women Urologists in Israel: Accomplishments and Challenges

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Cleveland Clinic, Ohio

Reut Shashar, MD

Rambam Medical Center, Haifa, Israel

Shira Chatumi, MD

Migdal Hame'ah Specialist Polyclinic at Clalit Health Services, Tel Aviv, Israel

While women physicians are growing in numbers globally, urology largely remains male-dominated. Participation by women in the urology workforce varies widely worldwide, reaching as high as 22% in Columbia and 18.2% in Australia, while in some countries it is nonexistent.<sup>1</sup>

Women represent 41% of practicing physicians in Israel and 59% of Israeli medical students.<sup>2</sup> The Israeli Urologists' Association (IUA) was founded in 1956, and through the 1970s all its members were men. An initial trickle of women urologists in the 1980s and 90s has become a steady stream, reaching 35 in 2022, representing roughly 8% of Israeli urologists (see Figure). Currently, 19 women urologists are accredited specialists and 16 are residents (sources: IUA, Israeli Scientific Council, and urologist community).

Women urologists in Israel face challenges like our peers worldwide, with several unique struggles and opportunities. In response to the article by Dr. Albareeq and Dr. Turki on the Middle Eastern women urologist,<sup>3</sup> we thought to share our perspective as Israeli women urologists in various career stages.

## Cultural Gender Roles

Israel is a democratic modern Jewish state with a large Arabic minority and multiple ethnic, cultural, and religious groups, each with its own views of gender roles and its expectations of doctors. Gender perceptions may influence patients' comfort with gender-concordant or discordant urologists,<sup>4</sup> but it may also affect the perception of who looks like a urologist, by patients, fellow doctors, and ourselves.<sup>5</sup> Can we view men and women as equally knowledgeable,

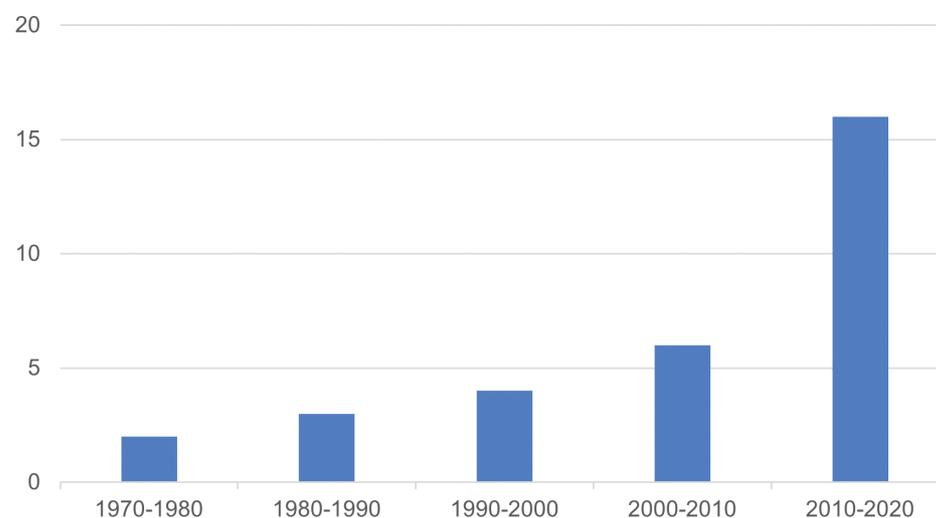


Figure. Women beginning urology residency in Israel, by decade. Source: the Israeli urological community.

caring, and competent?

Intersectional barriers also exist, and while the numbers of Jewish secular and traditional women are increasing, representation of women from ethnic and religious minority groups still lags behind.<sup>6</sup>

In gendered languages, such as Hebrew or Arabic, many words have no gender-neutral form, including “doctor” and “urologist.” The male form is traditionally considered neutral, unintentionally excluding women and nonbinary physicians. Many societies and institutions with male names are changing into gender-inclusive, and recently the IUA has been challenged to do the same.

## Tokenism and Pigeonholing

While some patients prefer a gender-concordant urologist,<sup>3,4</sup> urologists shouldn't be restricted to see gender-concordant patients. Our experience echoes findings from other countries, where women urologists perform a significantly higher percent of women procedures.<sup>7</sup>

As for other professions, urology has a gender pay gap. Though men and women urologists work equal hours, women are more likely to work in less profitable settings, perform fewer procedures, and see fewer patients,<sup>8</sup> a health care version of low-rewarding, “invisible labor” expected of women in the workplace. As the number of women urologists increases, our

“As the number of women urologists increases, our profession must advocate for fair compensation of all urological care and ensure that all our trainees are provided with equal opportunities for training and exposure.”

profession must advocate for fair compensation of all urological care and ensure that all our trainees are provided with equal opportunities for training and exposure.

## System Structure

In the Israeli public medical system everyone is entitled to receive government-funded, high-level medical care. The relative resource shortage in such a system burdens interns and residents with administrative and technical duties, adding to the load of invisible labor and affecting the quality of training. The need for formal fellowship training, mostly overseas, creates a barrier, especially for families, and disproportionately affects women.

## Family-Work Balance

Being a surgical profession demanding long training and radiation exposure, urology disproportionately impacts women's reproduction and family life. Due to mandatory military service, many Israeli men and women begin their higher education at an older age, translating into women spending a greater proportion of their childbearing years in residency. Compared to their male colleagues, women surgeons carry a larger share of household and parenthood duties.<sup>9</sup> Women surgical residents continue to voluntarily delay childbearing, have fewer children than the general population, and experience more infertility and obstetrical complications.<sup>10</sup> Israeli society values family, holding the highest total fertility rate among the Organization for Economic Co-operation and Development,<sup>11</sup> evident in paid maternity leave and funding for infertility treatment. With men surgical trainees showing increased interest in work-family balance and active fatherhood,<sup>12</sup> it seems like paternity leave is the next logical step.<sup>13,14</sup>

## Education and Mentorship

The scarcity of women in urology presents challenges to their male mentors as well, and equal opportunities in surgical training may mean different things for different people. For instance, surgical instruments originally designed for men pose ergonomic difficulties for the woman urologist which her male supervisors may not realize,<sup>15</sup> and socialization may cause differences in how men and women display confidence.

Men urologists tend to perceive their work environment as more gender-equal than women do, implying that a man mentoring women urology residents may benefit from his women peers' input on challenges he is unaware of.<sup>16</sup> Sponsorship of women and minority trainees is

## WOMEN UROLOGISTS IN ISRAEL

→ Continued from page 28

“We encourage women to seek women colleagues from other departments and generations for guidance and perspective.”

another important approach to improving health care diversity.

Upstanders calling out discrimination, however subtle, can have a great effect on women inclusion,<sup>17</sup> as did my senior when correcting a patient who mistook me for a non-medical professional on rounds.

Dr. Albareeq described the hardships and triumphs of becoming the first woman urologist in her country. Some of these are true for many, often the only woman in a room of men. We encourage women to seek women colleagues from

other departments and generations for guidance and perspective. Being a woman in a male department can feel like a constant spotlight, where one’s shortcomings seem to represent the whole gender. Sharing successes and failures with our peers, we accumulate knowledge and confidence to pass down to future generations.

## Conclusion

Urology is held back when we don’t utilize the full potential of our community. We cannot afford leaving out half of our potential talent and diverse points of view.

Women urologists are making notable progress in Israel and worldwide, but there is yet room for improvement and obstacles to remove. Scarce but influential, we strive to lead by example and give our patients the optimal treatment, to practice gender-oriented urology, and to encourage the next generation of women urologists for the benefit of

our patients of all genders. As more women join the IUA, achieving academic and leadership positions, the Israeli urological community has much to celebrate as we continue to face the challenges ahead of us. ■

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## FROM THE CHIEF EXECUTIVE OFFICER

# Diversity & Inclusion Committee

Michael T. Sheppard, CPA, CAE  
CEO, American Urological Association

As you know, the AUA is continuing to prioritize diversity, equity and inclusion within the organization itself as well as the larger urological community. To that end and following the recommendation of the AUA’s Diversity & Inclusion Task Force, we have created a Diversity & Inclusion Committee. The committee will identify and advise on potential solutions to meet diversity gaps within the AUA organizational programs; advise AUA Program Councils on the implementation of diversity initiatives and advise on methods to recruit, support and retain diverse AUA leaders and volunteers.

Earlier this summer, the AUA selected Larissa Bresler, MD, DABMA, to serve as the inaugural chair of the Diversity & Inclusion



**Figure.** Larissa Bresler, MD, DABMA, inaugural chair of the Diversity & Inclusion Committee and Chief Diversity Officer for the AUA.

Committee and Chief Diversity Officer for the AUA (Figure). She will advise the Board on shaping

and executing diversity initiatives.

Dr. Bresler was chosen for her impressive track record of understanding and advancing diversity and inclusion and education initiatives in various leadership roles. Nationally, she sits on the Federal Women’s Task Force that helps promote equity and inclusion for federal workers and she recently completed her term as senior consultant of Urology Basics and Core Topics with the AUA’s Core Curriculum Committee. She has also participated on the AUA’s Practice Guidelines Committee. Regionally, Dr. Bresler is a member of the North Central Section (NCS) of the AUA’s Board of Directors, Long Range Planning and Education Committees and chairs the NCS Women in Urology (WIU) Committee. Locally, she has championed diversity initiatives as the President of the Chicago Urological Society.

“Dr. Bresler was chosen for her impressive track record of understanding and advancing diversity and inclusion and education initiatives in various leadership roles.”

Under Dr. Bresler’s direction, the NCS WIU Committee has expanded its role beyond women to diversity and inclusion in general.

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## DIVERSITY & INCLUSION COMMITTEE

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The committee developed a Support On the Spot program geared to women and underrepresented minorities to have the ability to reach out for rapid advice in navigating complex work situations and to provide a sponsor to expand underrepresented minorities and WIU opportunities for involvement in professional societies, meetings and leadership prospects.

An active member of AUA since 2003, Dr. Bresler is an associate professor of urology, obstetrics and gynecology at the Loyola University Medical Center. She obtained her MD from Oregon Health and Sciences University, completed her urology residency at Loyola University Medical Center and completed the AUA leadership program in 2019. Dr.

Bresler is a board certified acupuncturist as well as a resilience and wellness coach. She has published over 50 papers and book chapters and has received numerous honors and awards, including multiple teaching awards, the Best of AUA (Female Urology) and *Illinois Magazine's* Top Urologist 2021-2022.

Dr. Bresler has championed

diversity throughout her career, and she has built a legacy paving the road for underrepresented minorities, LGBTQ+ persons and women. I look forward to working with her and I'm confident in her ability to help AUA advance diversity and inclusion initiatives in the urology community while improving urological care throughout the world. ■

## FROM THE EDUCATION COUNCIL

# Staying Busy This Fall

Jay D. Raman, MD, FACS  
Chair, AUA Office of Education

"I was always into staying busy, into my goals, into making notes and planning. I'm not one who truly lives in the past."—Richard Simmons

And just like that, it is fall again. Football season, crisp mornings, the AUA In-Service Exam and Abstract deadline, and AUA Section meetings sprinkled throughout the autumn months. With the majority of AUA Sections running meetings between September and November, it is a busy time for many of us, and the Office of Education is excited to continue to provide accreditation for these conferences. I myself am looking forward to returning to the Bayou this October to spend some time with my Mid-Atlantic AUA Section colleagues.

As a surgically driven field, "hands-on" training remains critical for urologists to gain and maintain proficiency of skills. The AUA Office of Education is committed to providing opportunities for our membership, and we are delighted to offer 2 skills training opportunities this fall.

On September 17, 2022, the Office of Education will host a hands-on ultrasound course at the AUA Headquarters (Linthicum, Maryland) led by course director Chris Porter, MD from Virginia Mason

**"The new AUA University app is 100% free as a member benefit, available on Apple or Android platforms, and includes the AUA Guidelines, Core Curriculum, Surgical Video Library, and access to much more content."**

Medical Center. This course will focus on performance of ultrasound in urological practice, which satisfies increasing requirements of documented training for third-party payers. Then on November 12 and 13, 2022, the AUA's practical percutaneous nephrolithotomy course will be offered at the Smith Institute for Urology, with David Hoenig, MD serving as course director. For many years, the AUA has offered this course to provide education on patient selection, access techniques, lithotripsy devices, and exit strategies post-procedure. Both of these courses are open for

registration, and we encourage you and your colleagues to take advantage of these educational resources for practice-based learning.

For residents and fellows who were unable to attend the course, "The Evolving Landscape of Advanced Prostate Cancer Treatment," offered in New Orleans (AUA2022), we are delighted to offer a complimentary virtual course on September 19 and 20, 2022. This course, presented in partnership with the Society of Urologic Oncology, is designed to be an interactive forum and will focus on the updated 2020 AUA Guidelines on Metastatic Hormone Sensitive Prostate Cancer and Castration-Resistant Prostate Cancer. Discussions will focus on various case scenarios encountered in clinical practice and will integrate up-to-date information on the role of genetic testing in advanced prostate cancer as well as novel imaging and drug therapies (including immunotherapy and PARP inhibitors). Registration is open on AUA University (<https://auau.auanet.org/>).

The 2022 In-Service Exam and Oncology Knowledge Assessment Test are scheduled for November 19, 2022. We do not expect any changes to either the format or the structure of this year's exams, and believe they are an outstanding tool for trainees and programs to benchmark knowledge base and areas of focus for education. To help prepare

for these exams, I strongly recommend using 2 of our apps. The new AUA University app is 100% free as a member benefit, available on Apple or Android platforms, and includes the AUA Guidelines, Core Curriculum, Surgical Video Library, and access to much more content. In addition, the Self-Assessment Study Program app houses approximately 1,650 questions that have been compiled over the past 11 years, and users can complete these in a topic-based deck or random question order, whichever you prefer.

Finally, the Office of Education will once again offer our genitourinary cancer series this fall on the AUA University Podcast. This series of free episodes will focus on the newest and most evolving areas in urologic oncology, spanning diagnosis, staging, treatment, surveillance, and survivorship for patients. It is always my pleasure to host conversations with thought leaders in our field.

Whether you want to participate in a course, listen to a podcast as you work out or commute from work, or do a quick content search on the AUA University app, the Office of Education is working on your behalf to provide education, clinical information, and resources to help you in your daily practice.

As always, I welcome your feedback. Please feel free to contact us at [education@auanet.org](mailto:education@auanet.org). ■

## CASE REPORT

# Bladder Adenocarcinoma with Bilateral Ovarian Metastases

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## Introduction

Adenocarcinoma is a malignant neoplasm derived from the urothelium with a histologically pure glandular phenotype. Primary adenocarcinoma of the urinary bladder is uncommon, accounting for 0.5%–2% of all malignant tumours. It affects adults, with a peak incidence in the sixth decade of life, and is more common in men.<sup>1</sup> The enteric type of adenocarcinoma is identical to its gastrointestinal counterpart. Our aim is to show a rare case of urinary bladder adenocarcinoma with bilateral ovaries metastases.

## Clinical Case

This is a 26-year-old female patient who presented with a 6-month history of hematuria. A transurethral resection of the bladder was performed in another institution, the result of which showed a moderately differentiated adenocarcinoma. She had an upper gastrointestinal endoscopy and a colonoscopy without lesions.

A CT scan demonstrated a 50 × 40 × 80 mm, sessile, heterogeneous lesion in the bladder (Fig. 1), together with polylobulated formations with cystic and solid areas in the right hemiabdomen (130 × 80 × 30 mm) and left pelvis (180 × 110 × 200 mm), ascitic fluid, and pulmonary images compatible with secondary disease. Serum markers showed β-human chorionic gonadotropin <1 mIU/ml, alpha-fetoprotein <3.5 mg/ml, carcinoembryonic antigen 30.2 mg/ml,



Figure 1. CT scan showing a voluminous lesion.

cancer antigen-125 40.9 U/ml, and cancer antigen 19-9 177.2 U/ml. An exploratory laparotomy was performed, showing peritoneal carcinomatosis and a large tumor mass in the ovaries (Figs. 2 and 3), bladder (Fig. 4), and greater omentum. Bilateral oophorectomy, omentectomy, cystectomy, and cutaneous ureterostomies were performed. The pathological findings were a moderately differentiated intestinal-type adenocarcinoma in the dome of the bladder, presence of cystic cystitis, and ovaries with infiltration of adenocarcinoma. Immunohistochemistry showed negative pax8 and absence of β-catenin. These findings rule out ovarian and colorectal origin and favor bladder origin.

After 2 weeks, the patient was

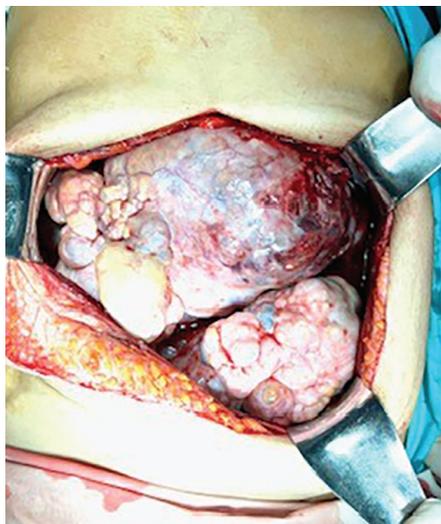


Figure 2. Polylobulated formations.

rehospitalized with severe metrorrhagia (hemoglobin dropped to 4.7 gm/dl) that needed a vaginal packing and was interpreted as hormonal deprivation. A speculoscopy was performed showing evidence of a clot in the distal third of the vagina. She was started on hormonal replacement therapy and did not repeat the leak.

The patient was scheduled by clinical oncology to receive oxaliplatin and capecitabine in the next weeks.

## Discussion

Adenocarcinoma is an uncommon malignancy in the urinary bladder which may arise primarily in the bladder as well as secondarily from a number of other organs<sup>2</sup> and has a poor prognosis, largely because it is usually diagnosed at an advanced stage.<sup>3</sup>

Primary adenocarcinoma of the bladder is derived from the urothelium of the bladder but exhibits a pure glandular phenotype. It is most common in the sixth and seventh decade of life with male predominance and hematuria is the main symptom. Several risk factors have been described: 10% of all bladder cancers are adenocarcinomas in areas where schistosomiasis is endemic, chronic irritation, obstruction, cystocele, and endometriosis.

Primary bladder adenocarcinoma exhibits several different growth patterns, including enteric, mucinous, signet-ring cell, not otherwise specified, and mixed patterns. Urachal adenocarcinoma demonstrates similar histological features but it can be distinguished from bladder adenocarcinoma on careful pathological examination, and immunohistochemical study is valuable in identifying the origin of secondary adenocarcinomas.<sup>2</sup>

The criteria for making a diagnosis of urachal carcinoma includes tumor in the absence of cystitis cystica and cystitis glandularis, predominant invasion of the muscularis or deeper tissues with a sharp

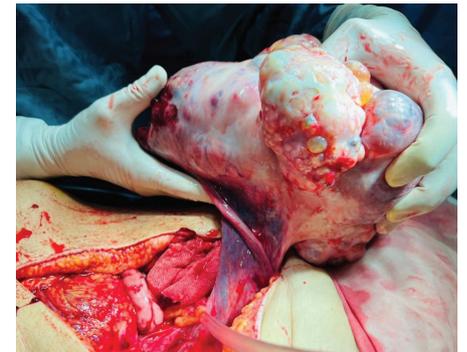


Figure 3. Left ovary.

demarcation between the tumor and the surface bladder epithelium, the presence of urachal remnants within the tumor, extension of tumor into the bladder wall with involvement of the space of Rezius, the anterior abdominal wall or the umbilicus, and no evidence of primary neoplasm elsewhere.<sup>4</sup> As our patient showed cystic cystitis in the biopsy, urachal origin was ruled out.

Histologically, bladder adenocarcinoma exhibits various growth patterns: enteric (colonic or intestinal); mucinous; signet ring cell; not otherwise specified, and mixed patterns.<sup>1</sup> The enteric pattern is composed of intestinal-type glands with pseudostratified columnar cells and nuclear atypia, closely resembling colorectal adenocarcinoma. Colorectal adenocarcinoma is the most frequent

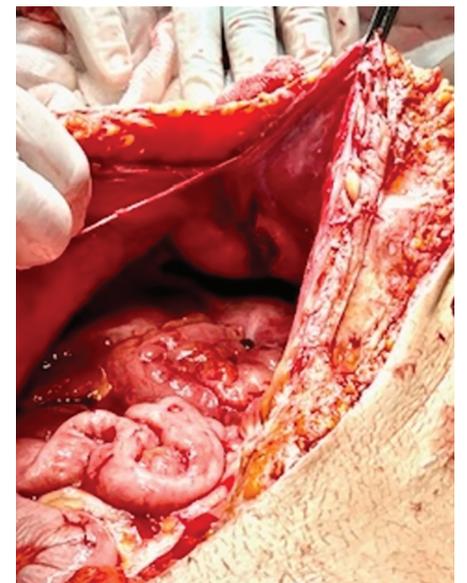


Figure 4. Bladder.

## BLADDER ADENOCARCINOMA WITH BILATERAL OVARIAN METASTASES

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metastasis in the bladder. It is important to differentiate primary bladder adenocarcinoma from secondary colorectal adenocarcinoma.

Primary bladder adenocarcinoma usually lacks GATA3 staining, rendering this stain useless in differential diagnosis from secondary colorectal adenocarcinoma. A panel of immunostains, including CK7, CK20, thrombomodulin, and beta-catenin, is of diagnostic value in differentiating primary bladder adenocarcino-

ma from secondary adenocarcinoma of colorectal origin. A nuclear  $\beta$ -catenin and CK20 positive stain favors colorectal origin, while primary bladder adenocarcinoma is usually positive for CK7 and shows membranous staining for  $\beta$ -catenin.<sup>3,5</sup> The immunohistochemistry in our patient's biopsy favored bladder origin.

The best treatment is surgery with or without adjuvant radiation or chemotherapy. Radical or partial cystectomy with or without node

dissection is the commonly used surgical procedure.<sup>1</sup> The most important prognostic factor is tumor stage.<sup>6</sup>

Finally, the importance of early diagnosis of this disease should be highlighted to improve the survival of the patients. ■

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## AQUA IN ACTION

# Regional and Time Trends in Post-Prostatectomy Interventions

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Urinary incontinence and erectile dysfunction (ED) are common and debilitating complications for prostate cancer survivors who underwent radical prostatectomy. Surgical treatments for incontinence and ED are associated with high satisfaction and overall success rates. During COVID, many elective procedures were often delayed or avoided altogether. The impact of the pandemic on the timing of surgical therapy has not been previously studied. In cooperation with Verana Health, we evaluated the timing of urological procedures to address side effects of ED and urinary incontinence following prostatectomy over time using the national AUA Quality (AQUA) Registry from January 1, 2012 to February 27, 2022.

Over the 10-year study period, we identified 41,171 patients who underwent prostatectomy and had at least 12 months of followup available. Within this cohort, 89.4% had undergone a robotic or laparoscopic prostatectomy, while the remain-

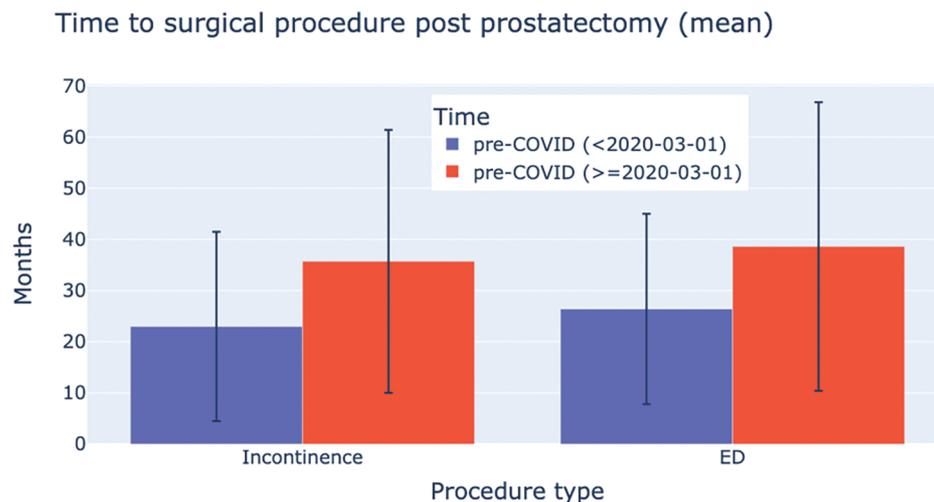


Figure. Trends in procedures during COVID.

ing had an open procedure. There were 2,298 (5.6%) patients who received at least one of the selected supportive procedures to treat incontinence or ED post-prostatectomy. About half (1,159, 50.4%) of these were procedures for ED, followed by slings (859, 37.4%), artificial urinary sphincter procedures (749, 32.6%), and insertion of bulking agents (137, 5.97%). Overall, the average time to the first surgical intervention for ED or incontinence was 25.4 months (SD 18.5). There has been a significant delay in time to surgical treatment following March 1, 2020 ("post-COVID") compared with "pre-COVID" (before March 1, 2020). The average time to intervention was 25.2 months (SD 18.6) pre-COVID and has been delayed to 36.8 months

(SD 26.7) post-COVID ( $p < 0.01$ ; see Figure).

Regional differences highlight that the average time to surgical intervention for ED and incontinence in the West was the shortest at 20 months post-prostatectomy, compared with 30.4 months in the Northeast. Furthermore, there are regional trends in the rates at which patients undergo surgical intervention for ED or incontinence post-prostatectomy. The Northeast region has the highest rate of surgical intervention for ED or incontinence at 9.1%, compared with the Southwest, where the rate of intervention is 3.5%. In all regions, except for the West, a penile implant was the most common procedure performed. In the West, an artificial urinary sphincter was performed

"The AQUA data show a small percentage of patients after prostatectomy undergo surgical intervention for ED or urinary incontinence, with regional variability."

more frequently.

The AQUA data show a small percentage of patients after prostatectomy undergo surgical intervention for ED or urinary incontinence, with regional variability. The total number of patients receiving these interventions is potentially underestimated in this current analysis given the known phenomenon of patients having multiple providers who may or may not be included in the AQUA Registry. As expected, policy and practice changes required during COVID did result in a measurable delay in receipt of these symptom-management interventions. There is a need to understand if these variabilities in care delivery result in differences in quality of life in prostate cancer nationwide. ■

# Journal Peer Review University: A Seminar for Budding Reviewers

Michael Ernst, MD

Nationwide Children's Hospital, Columbus, Ohio

Christopher Jaeger, MD

Boston Children's Hospital, Boston, Massachusetts

Caleb Nelson, MD, MPH

Boston Children's Hospital, Boston, Massachusetts

Christina Ching, MD

Nationwide Children's Hospital, Columbus, Ohio

The peer review process is a cornerstone of scientific publication and key aspect of many academic careers. This process is used to improve the quality of scientific publications through critical review and aid editors in decision making. However, there is a concern that this process is overly reliant on the volunteer work of a few dedicated reviewers. Across scientific fields there has been a widespread need to increase the number of quality reviewers.<sup>1</sup> Scientific journals have tried many initiatives to increase their pool of reviewers, including sending reviews to authors who have previously submitted to a journal, searching cited authors on a paper, accepting suggested reviewers from submitted authors, and recruiting young faculty members and trainees.<sup>2</sup> This is in line with recommendations from the World Academy of Young Scientists “that junior scientists should be involved in peer review of scientific literature and that it is a critical activity in their educational process.”<sup>3</sup>

Journals will not just benefit from the increased quantity of available reviewers by engaging trainees and young faculty members, but will also increase the diversity of their reviewers by recruiting from this pool of candidates. This is especially true in urology, where trainees represent a more diverse population than that of currently practicing urologists. In 2021 women made up 34% of all matched applicants in urology, 16% of fulltime faculty, and 10.3% of practicing urologists.<sup>4,5</sup> Similar trends are seen for racial/ethnic minorities in urology where, based on the most recent AUA census data, 2.1% of practicing urologists were Black and 3.8% Hispanic, while for residents 3.1% were Black and 5.7% Hispanic.<sup>4</sup> Intentional outreach, engagement, and support of young

faculty and trainees to become reviewers can help to increase the diversity of voices contributing to the publication of scientific research.

While not robust, there has been some scientific literature describing the inclusion of trainees and young faculty in peer review. Generally, these have consisted of a mentorship or training program. *American Journal of Neuroradiology* (AJNR) developed a program to support 36 trainees as reviewers.<sup>2</sup> These trainees were initially paired with 2 to 3 more senior reviewers. At first, they were sent simpler articles, such as case reports, but then were gradually given more complex and technically specific articles to review. After 2 years, the AJNR found young reviewers completed their tasks more quickly than senior reviewers with no significant discordance in disposition decisions between senior and junior reviewers, and that 25/36 trainees submitted articles to AJNR after becoming reviewers with a significantly higher acceptance rate, suggesting possible improved scientific writing and study design. Perhaps most encouragingly, all eventually migrated into their general pool of senior reviewers.

Several scientific publishers have guides available to assist young reviewers. These include written feedback from editors to reviewers,<sup>6</sup> face-to-face or self-taught training,<sup>7</sup> checklists,<sup>8</sup> and structured mentorship programs.<sup>9</sup> None of these, however, has demonstrated an improvement in the quality of reviews. In a study looking at the relationship of previous training and experience of journal peer reviewers to subsequent review quality, they found that academic rank, formal training in critical appraisal and statistics, and status as a principal investigator failed to predict performance of high-quality reviews. The only significant factors in predicting high-quality reviews were working at a university operative hospital vs other teaching environment, and relative youth (<10 years from finishing training).<sup>10</sup> It is possible that these resources are most useful to increase recruitment of new reviewers and introduce them to the pro-

“Journals will not just benefit from the increased quantity of available reviewers by engaging trainees and young faculty members, but will also increase the diversity of their reviewers by recruiting from this pool of candidates.”

cess of performing scientific review, as opposed to increasing quality of review. Ultimately, the ability to write a quality review varies by individual more than by training.

In light of these findings and in an attempt to increase peer review participation in urology, *The Journal of Urology*<sup>®</sup> and *Journal of Pediatric Urology* are joining to sponsor their first reviewer mentorship seminar at the upcoming Societies for Pediatric Urology annual meeting in October 2022 in Las Vegas, Nevada. In informal conversations with current urology trainees, it is clear they are interested but desire tools to participate in the review process. This ranges from “know how” of being involved to demystifying how to actually perform a review. Certainly comfort and feeling of preparedness would impact interest and willingness to participate in peer review and contribute to recruitment of junior reviewers.

This seminar, titled “Journal Peer Review University: A Seminar for Budding Reviewers,” will feature a panel discussion of senior reviewers and editorial board members from both journals on the review process, followed by smaller breakout group sessions composed of a senior reviewer mentor to a few trainees for a practice review. An article for review will be preassigned and the small groups will have the op-

portunity to go through the review together, with direct feedback from the mentor. Mentors will be identified prior to the session, and trainees will sign up in advance. Formal announcements and recruitment for participation of trainees will be announced closer to the meeting. It is the hope of *The Journal of Urology*<sup>®</sup> and *Journal of Pediatric Urology* to increase accessibility of the peer review process to those who might not be familiar with the process or who currently feel uncomfortable with participation, and thus increase the reviewer pool pipeline. In doing so, the goal is to better equip those being trained in many capacities as a urologist to be impactful participants in the peer review process. Lastly, the journals do plan to assess the response to such a seminar, with the hopes of implementing future such seminars across other subspecialties in urology, but with the pediatric team leading the way.

Please stay tuned for ways to participate. If you have any questions, however, please reach out to christina.ching@nationwidechildrens.org and caleb.nelson@childrens.harvard.edu. ■

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## Have You Read?

**Craig Niederberger, MD, FACS**

*College of Medicine and College of Engineering,  
University of Illinois at Chicago*

**Plata Bello A, Apatov SE, Benfante NE, et al. Prevalence of high-risk prostate cancer metastasis to cloquet's ilioinguinal lymph node. *J Urol.* 2022;207(6):1222–1226.**

*Special thanks to Drs. Marcin Zuberek and Daniel Moreira at the University of Illinois at Chicago.*

Cloquet's node has historically been the lower limit of the external iliac lymph node dissection in prostate cancer surgery. Most urologists chased after it deep to the inguinal ligament to remove any possibility of micrometastatic disease, as it has been a part of the long standing resection template. But is such extensive dissection necessary for the benefit of the patient? Is this sentinel node of utmost importance for optimal oncologic staging and outcomes?

These authors hypothesized that it was not. In a series of 105 patients with high and very high risk prostate cancer, both nodes of Cloquet have been removed and sent for pathology separately. Forty-one percent of patients had positive lymph nodes, but only in 1% of all subjects only a single node of Cloquet was involved.

This study highlights one of the old adages in medicine: "you don't know what you don't know." While the node of Cloquet has been posited to be the sentinel node for prostate cancer spread, it seems that we

still have a lot to learn about this complex disease. With the new diagnostic modalities involving prostate-specific membrane antigen positron emission tomography, we may be able to better understand the progression of micrometastatic disease in prostate cancer. This can help us tailor our medical approach to a more individualized care to the point that we might diagnose and treat only the lymph nodes involved with cancer.

**Anderson KT, Vanni AJ, Erickson, BA et al. Defining success after anterior urethroplasty: an argument for a universal definition and surveillance protocol. *J Urol.* 2022;208(1):135–143.**

*Special thanks to Dr. Juan Diego Cedeño at the University of Illinois at Chicago.*

Do we need universal agreement? Many strive for that ultimate goal especially in urology practice. Urethroplasty is no exception, and the authors of this article sought to evaluate successful urethroplasty based on objective data, as there is no uniform definition of surgical success among most publications.

They compared 5 different ways to define failure in urethroplasty including stricture retreatment, anatomical recurrence as visualized by cystoscopy, a peak flow rate of less than 15 mL/second, weak stream denoted on questionnaire and failure by any of the criteria. By the Kaplan-Meier survival curves so determined, estimated probabilities of success

were all over the map, ranging from 57% to 94% at 1 year and 23% to 75% at 5 years. They concluded that depending on the way success is defined, the estimated probability of success after urethroplasty changes dramatically just by changing the criteria. This is the bane that has resulted an inability to compare urethroplasty outcomes across studies.

While this result may frustrate those trying to improve urethroplasty by examining its outcomes, it reveals a fundamental truth: until we have apples to apples comparisons based on agreed on metrics, we won't be able to know how to better our surgeries. This article serves as a call to arms to formulate those universal outcome measures.

**Carnes KM, Singh Z, Ata A, Mian BM. Interventions to reduce opioid prescriptions following urological surgery: a systematic review and meta-analysis. *J Urol.* 2022;207(5):969–981.**

*Special thanks to Drs. Jason Huang and Mahmoud Mima at the University of Illinois at Chicago.*

Opioid addiction is rampant in many communities throughout the United States. Sadly, up to 1 of 3 patients receiving post operative opioid pain medications may become long-term opioid users with the attendant ill health effects. How can we as urologists address this? These authors conducted a systematic review and meta-analysis to better understand how different strategies for

pain control may impact patients after urological surgery.

Across 19 studies that met inclusion criteria and were sufficient for analysis, over 8,000 patients were included. Both major and minor surgeries were well represented. The authors observed that both direct interventions such as standardized prescriber pathways, provider-directed education, individual audits, patient education, and indirect interventions such as state mandated monitoring and the ERAS pathway resulted in significant reductions of prescribed opioids ranging from 6 to 10 tablets of 5 mg oxycodone. However, direct interventions, such as provider education, feedback, and individual audits appeared to have a greater impact than indirect interventions on reducing opioid prescriptions. Interestingly, these did not result in negative impacts on patient outcomes such as pain scores, phone calls or emergency room visits, additional opioid prescriptions or patient satisfaction scores.

The authors concluded that various strategies effectively reduce prescribed opioids, especially directly targeted interventions. Reductions in prescribed opioids do not lead to inferior patient outcomes or increased clinical workload. In fact, despite decreases in prescribing, patients do not use two-thirds of prescribed opioids, underscoring the need for continued reductions in opioid prescriptions. ■

## PRACTICE TIPS AND TRICKS

# It May Be Time to Reduce Capacity in Your Schedule

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It's now months after the March 2020 lockdown, our schedules are full, and there are patients waiting 3-4 weeks to obtain an appointment, but our revenues are flat or even decreasing. What are we to

do? This is a situation that is all too familiar for many colleagues and their practices.

There are two solutions to this dilemma: 1) increase capacity which entails increasing the staff, adding more providers, increasing space, and increasing overhead expenses, or 2) selectively reducing

the volume of patients. As volume reaches capacity, doctors must be prepared to give up the bottom 15% of patients to increase revenue. By eliminating this bottom 15%, there will be an increased capacity for patients that can now be focused on areas where the doctor is especially skilled and/or has the

greatest interest or expertise. The bottom 15% of revenue is frequently generated by a disproportionately high number of patients for whom reimbursements are not adequate for the care provided. Now a greater capacity will be freed up for

## IT MAY BE TIME TO REDUCE CAPACITY IN YOUR SCHEDULE

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revenue growth when this bottom 15% of patients are eliminated. Opportunities for reducing the costs associated with this excess capacity can also be achieved.

There are two situations in which reducing the bottom 15% should be considered: 1) the bottom 15% of a practice's revenue is likely to be generated by the lowest paying payer, and 2) the bottom 15% of revenue may be generated by specific diagnoses or services that are not rewarding or productive.

Usually, the bottom 15% of revenue is often generated by a disproportionately high number of patients. As a result, a greater ca-

capacity will be freed up for treating cases for which the urologist has the greatest interest, the greatest skill and enjoyment, and the most favorable reimbursements. When there is excess capacity created by removing the bottom 15% there is usually an associated reduction in overhead costs.

The four situations where elimination of the bottom 15% is appropriate occur: 1) when the schedule has reached full capacity, 2) when patients must wait 3-4 weeks to access the practice, 3) when you have identified the lowest payers or those payers who take weeks or months to pay for your services,

and 4) when your revenue is flat or declining.

Before reducing the bottom 15% of patients, it is important to consider the impact of removing the bottom 15%. You will have to consider the impact on your referral sources. One of the options is to refer those patients to another doctor in the practice who does not have a full schedule.

The benefit of reducing the bottom 15% is greater satisfaction by the urologists for treating those conditions which allow him/her to focus on conditions and procedures he/she prefers. Now the urologist has more time to not only

solve the chief complaint but also discuss secondary issues that have been "put off to later" when the doctor is rushed to see all the patients on the schedule. The result is increased revenue from additional procedures and tests, increased patient satisfaction, improved online reputation, and an improvement in outcomes.

The bottom line: with eliminating the bottom 15% of work, the urologist has more time to focus on the things that he/she prefers treating. The bottom line is a win-win for the urologists and the patients with an increase in patient satisfaction and revenues. ■

## UPJ INSIGHT

# Demographic and Practice Trends of Rural Urologists in the U.S.: Implications for Workforce Policy

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Garg T, Meeks WD, Coward MC, Merrill SB, Huang WC, Burnett AL. Demographic and practice trends of rural urologists in the U.S.: implications for workforce policy. *Urol Pract.* 2022;9(5)481-490.

## Study Need and Importance

Older Americans utilize urological services at 3 times the rate of other adult populations. The projected urologist shortage will disproportionately impact older adults, particularly those in rural areas, where only 0.4% of urologists practice. To prepare for future workforce needs,

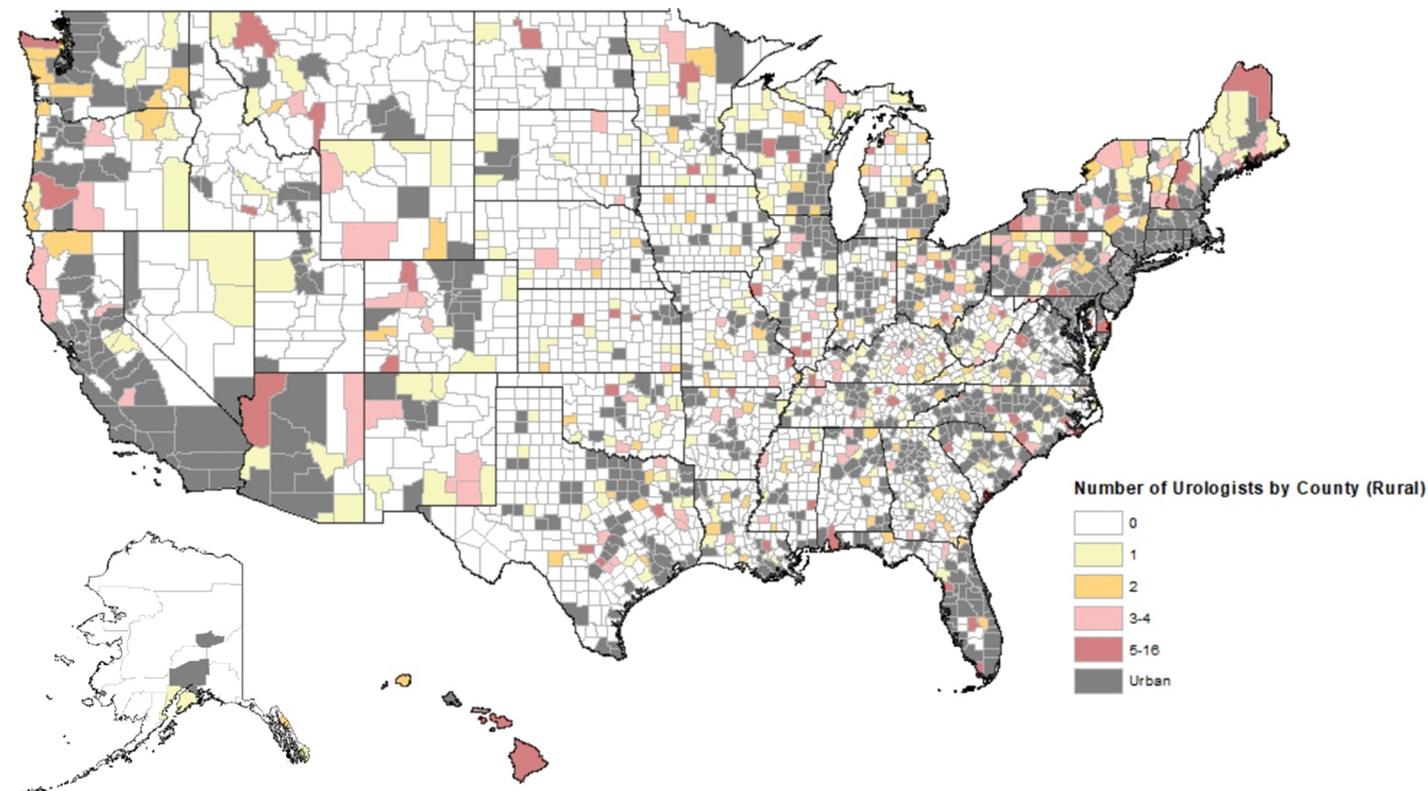


Figure. Distribution of rural urologists by county (2020).

we describe the current demographics and practice characteristics of rural urologists using American Urological Association Census data from 2016 to 2020.

## What We Found

The rural urologist workforce is older, and mean age and years in practice have increased from 2016 to 2020. Rural urology practices have significantly more difficulty

filling urologist vacancies. Rural urologists took more call nights per week and had consistently fewer practice resources such as advanced practice providers and

→ Continued on page 36

## DEMOGRAPHIC AND PRACTICE TRENDS OF RURAL UROLOGISTS IN THE U.S.

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nurses. The majority of U.S. rural counties have no urologists (see Figure).

### Limitations

There are known limitations to describing rurality using the U.S. Department of Agriculture urban-rural designations for zip codes. Our results were primarily descriptive. The American Urological Association Census data are

limited for assessing trends over time as the respondent group varies each year.

### Interpretation for Patient Care and the Specialty

The aging urology workforce coupled with the overall urologist shortage will disproportionately affect rural America. These findings highlight the need to develop new policies and initiatives that encour-

“The aging urology workforce coupled with the overall urologist shortage will disproportionately affect rural America.”

age urologists to practice in underserved rural areas.

### Acknowledgment

We thank William D. Meeks for his contributions to study design, AUA Census data, conducting statistical analysis, creating the geocoded map, and drafting and editing the manuscript. ■

## UPJ INSIGHT

# Cost-Effective and Readily Replicable Surgical Simulation Model Improves Trainee Performance in Benchtop Robotic Urethrovesical Anastomosis

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### Study Need and Importance

Robotic-assisted radical prostatectomy is a commonly performed yet challenging procedure for residents to master. One of the most difficult steps of robotic-assisted radical prostatectomy is the urethrovesical anastomosis (UVA). With increasing nonsurgical responsibilities and thus limited training opportunities in the operating room, residents may benefit from procedural simulation to achieve competency for these surgical skills. In this study, we developed a cost-effective, reusable surgical model of the UVA and evaluated its impact on resident surgical skills over multiple sessions.

### What We Found

Our model required 2 hours to create utilizing materials easily obtained online with a cost of \$64 (see Figure). Residents demonstrated significant improvements in time-to-anastomosis, perpendicular needle handling and anastomotic pressure withstood by the UVA. There was also a significant improvement in an independently validated Prostatectomy Assessment Competency Evaluation score. Pre-task confidence was measured on a Likert scale and improved significantly over the 3 trials.

### Limitations

Our sample size was limited to 21 residents, although statistical

significance was still observed for several metrics. Another limitation is the use of silicone as replacement for human tissue. While silicone cannot entirely replicate natural tissue, it is a durable and cost-effective alternative, and most trainees believed it was a good substitute. Finally, we cannot translate improvement in Prostatectomy Assessment Competency Evaluation score into actual surgical performance. However, considering that our model involves use of a real suture and space constraints, it has potential to improve the learning curve in the operating room.

### Interpretation for Patient Care

Our model for UVA was cost-effective, reusable and easily reproducible. Residents demonstrated significant improvements of fundamental surgical skills, validated surgical assessment score and confidence after several trials. Our model shows potential for increasing accessibility of robotic training models for urological education. Additional investigation will be required to further assess the utility and validity of this model. ■

Jeong S, Caveney M, Knorr J, et al: Cost-effective and readily replicable surgical simulation model improves trainee performance in benchtop robotic urethrovesical anastomosis. *Urol Pract.* 2022;9(5)504-511.

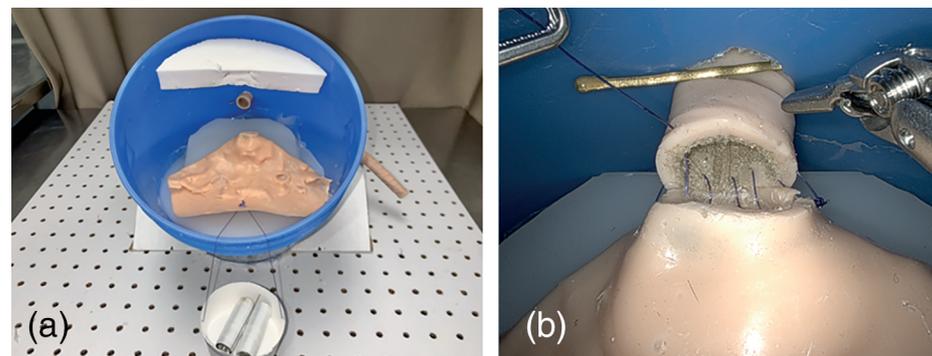


Figure. A, model. B, exercise in progress.

UPJ INSIGHT

# 18-Year Population Trends Determine Factors Associated with Future Access to Urologists

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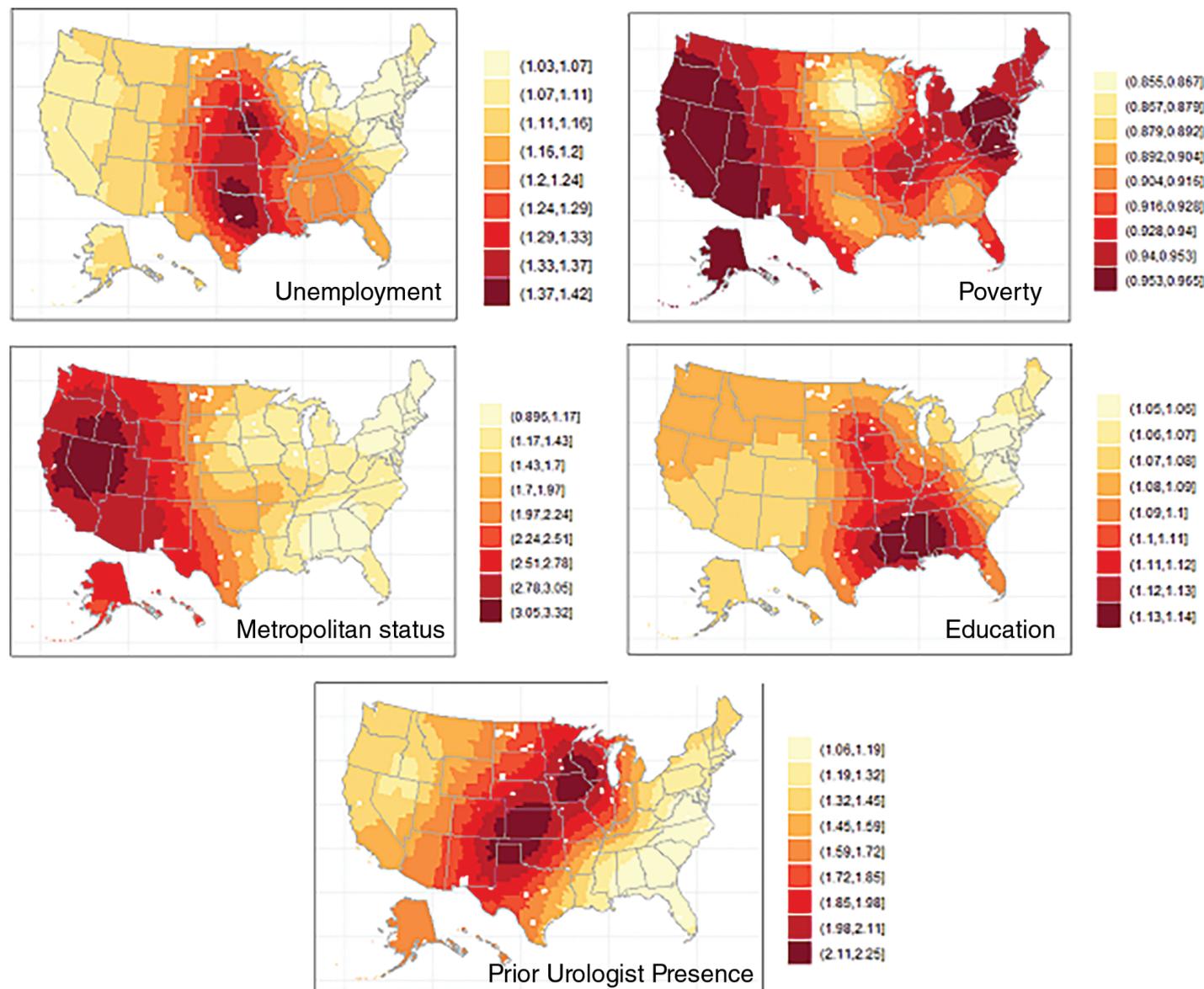
**Pittman SP, Patel S, Thompson JA, Nangia AK.** 18-year population trends determine factors associated with future access to urologists. *Urol Pract.* 2022;9(5)441-450.

## Study Need and Importance

Urologists remain in high demand across the United States, and concern regarding future access to care has been mounting due to the large increase in the aging U.S. general population. General population migration has not been accounted for in previous studies investigating access to care. Our study evaluated urologist density over time in light of U.S. population shifts to determine if urologists are following population patterns, and to identify factors associated with future access to care.

## What We Found

We analyzed county-level data from the U.S. Census, American Health Resources Files and American Community Surveys from 2000, 2010 and 2018. From 2000 to 2018, there was a 13% decline in local urologist availability ( $-0.03$  urologists/10,000 individuals, 95% CI 0.02-0.04,  $p < 0.0001$ ). General population increased the most in the South (approximately +512,000) and decreased the most in the Northeast (approximately -352,000). Urologist availability fell in every region due to population increases, while a 4.5% decline in the Northeast is



**Figure.** Geographic depiction of the predictive effect of the independent factors associated with increasing urologist availability. Corresponding odds ratios are shown by color-matching with each individual legend. Darker regions indicate that an independent factor has a higher odds ratio in relation to predicting increasing urologist availability.

attributed to an actual loss of urologists, which outpaced a decline in general population. On multivariate analysis, metropolitan status was the greatest predictor of urologist availability (OR 1.86, 95% CI 1.47–2.34), followed by prior urologist presence (OR 1.49, 95% CI 1.16–1.89), defined as a higher number of urologists in 2000. The predictive weight of these factors varied by U.S. region, as indicated by color-mapped odd ratios in the Figure.

## Limitations

Our study is limited in that

“From 2000 to 2018, there was a 13% decline in local urologist availability ( $-0.03$  urologists/10,000 individuals, 95% CI 0.02-0.04,  $p < 0.0001$ ).”

advanced practice providers or recent increases in utilization of

telemedicine were not accounted for. Additionally, some urologists provide outreach clinics that cannot be captured by current data sets.

## Interpretation for Patient Care

These results indicate that access to urologists is worsening across all regions, although for different reasons. Policymakers should address disparities in care based on regional socioeconomic factors that affect urologist practice patterns. ■

## UPJ INSIGHT

# Impact and Implications of the COVID-19 Pandemic on Urological Training

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**Callegari M, Maclean J, Rhodes S et al. Impact and implications of the covid-19 pandemic on urological training. *Urol Pract.* 2022;9(5)474-480.**

## Study Need and Importance

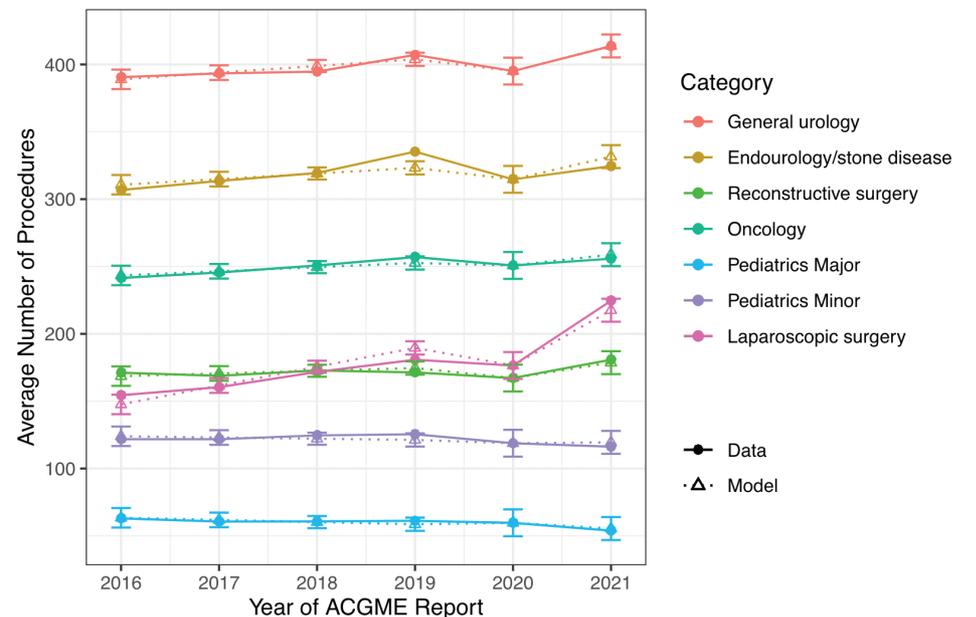
COVID-19 has forever impacted health care in the U.S. Changes to health and hospital policies led to disruptions to both patient care and medical training. There has been and continues to be limited understanding

of the impact on urology resident training across the U.S. Our aim within this article was to examine the trends in urology procedures before, during and within the early COVID pandemic through the lens of resident case logs captured and reported by the ACGME (Accreditation Council for Graduate Medical Education). Retrospective review of the only publicly available urology resident case logs was performed spanning July 2015 and June 2021.

## What We Found

Analysis of the procedures performed indicated an average upward trend of urological cases nationally over the 5 years reviewed, even when COVID-19-impacted 2020 was included. This trend (and dip) can be observed within the Figure. Deeper review illustrates an average annual increase of 26 procedures between

“Analysis of the procedures performed indicated an average upward trend of urological cases nationally over the 5 years reviewed, even when COVID-19-impacted 2020 was included.”



**Figure.** Number of procedures split by category and fit of model 3B (+ 95% confidence intervals).

2016 and 2021, except for 2020, which saw an average drop of approximately 67 cases. However, in 2021 case volume dramatically increased to the same rate as projected had there not been a disruption in 2020.

## Limitations

Some limitations toward these findings stem from the fact that resident case logs are products of self-reporting across all accredited programs within the U.S. and fail to capture how regional or institutional policies may have impacted case slowdowns or overall volume, and ultimately each resident's experience.

## Interpretations for Patient Care

While the number of logged

“Urological care is essential and in high demand, as evidenced by the uptick in volume across the U.S.”

cases decreased during 2020, a return to pre-pandemic volume was noted by 2021. Despite widespread pandemic-related disruptions in surgical care, urological volume appeared to not only have rebounded, but continued to increase, likely having minimal detriment to urological training over time. Urological care is essential and in high demand, as evidenced by the uptick in volume across the U.S. ■

## UPJ INSIGHT

# Radium-223 Utilization Patterns and Outcomes in Clinical Practice

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**Taich L, Zhao H, Stock SR, et al. Radium-223 utilization patterns and outcomes in clinical practice. *Urol Pract.* 2022;9(5)405-413.**

## Study Need and Importance

Radium-223 was approved by the U.S. Food and Drug Administration in 2013 for the treatment of metastatic castration-resistant prostate cancer on the basis of improved overall survival and delayed skeletal events in the sem-

inal ALSYMPCA trial. Despite the observed benefits, the application and practice patterns of radium-223 outside of clinical trials are largely unknown. We describe the use of radium-223 in a large and multiracial population of men in the entire Veterans Affairs Health-care System.

## What We Found

We found that radium-223 is used as second- (35%) or third-line (48%) therapy as part of 5 common treatment patterns. Radium-223 was least frequently used as a first-line therapy agent, accounting for only 6% of patients. Our cohort had a shorter median overall survival (11 vs 14.9 months) than in ALSYMPCA. We found that men who received the treatment pattern of androgen receptor-targeted agent-docetaxel-radium had worse overall survival, likely attributable to patient selection bias. Only 40% of patients in this series received a full 6 injections of radium.

## Limitations

There is an inherent patient selection bias for each treatment due to the retrospective nature of the study, making it difficult to discern treatment effects vs natural course of disease. In addition, there may have been a degree of therapy overlap in the treatment sequences that was unaccounted for.

## Interpretation for Patient Care

Our study provides insight regarding the incorporation of radium-223 into clinical practice within a multiethnic population across multiple providers in the United States within the Veterans Affairs system. In this real-world cohort, radium-223 appears to be used later in the disease course than in ALSYMPCA with concomitant shorter survival, higher number of skeletal-related events and lower treatment completion rates. ■

## UPJ INSIGHT

# Surgical Preparation by Urology Trainees in 2021: The Interplay of Video and Print Resources

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**preparation by urology trainees in 2021: the interplay of video and print resources. *Urol Pract.* 2022;9(5)512-518.**

## Study Need and Importance

Technological advances have caused a generational shift. Modern-day urology trainees have a wide variety of video sources in addition to standard print mate-

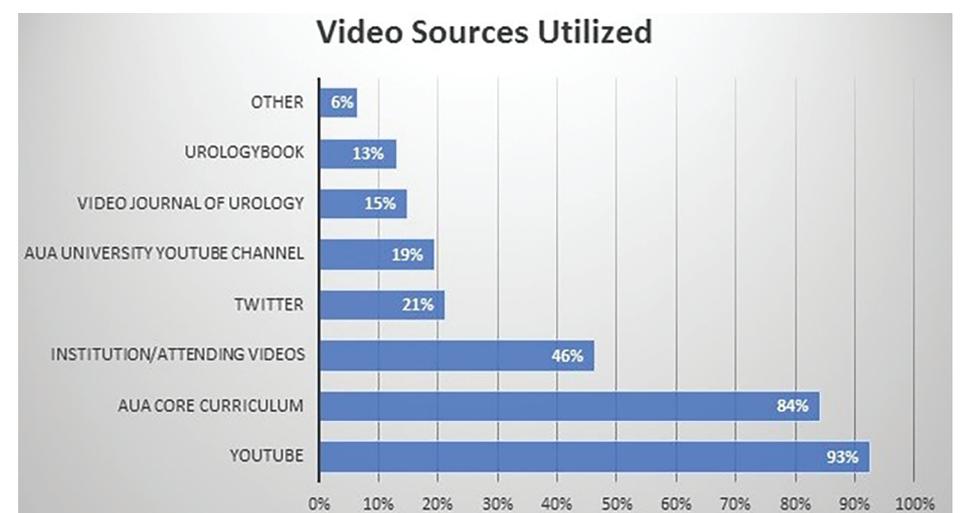


Figure. Video sources utilized.

**Eccles JM, Michalak N, Raman JD, MacDonald SM. Surgical**

→ Continued on page 40

## SURGICAL PREPARATION BY UROLOGY TRAINEES IN 2021

→ Continued from page 39

rials to prepare for operative procedures. We queried what sources (both print and video) and what combinations are used by urology residents.

### What We Found

Of the 108 responding residents, 87% use a video source, of which YouTube (93%), American Urological Association (AUA) Core Curriculum Videos (84%) and institutional/attending-specific videos (46%) are most common (see Figure). Video quality (81%) is the most commonly

used criterion for video selection. The majority of residents use videos to supplement print sources, with 43% using videos a quarter to half of their preparation time, and 35% half to three-quarters of the time. When asked to rank their top 3 sources overall combining print and video, of 104 respondents, 25% of residents reported YouTube as their top source and 75% included it in their top 3. There was no significant correlation between program year level and use of YouTube as a top source. While 75% of residents reported

that they were aware the AUA Core Curriculum contains a video section, only 23% of residents were aware of the AUA YouTube channel.

### Limitations

The major limitation of this study is the sample size. With 108 respondents we were able to capture less than 10% of current urology residents; however, this may be a representative sample given the even distribution in terms of program year level.

### Interpretation for Patient Care

This study clearly demonstrates the use of video in combination with print sources for operative preparation and that residents heavily rely on YouTube, which may include videos of variable educational quality. Continued emphasis on the production and accessibility of high-quality, peer-reviewed videos is needed by the AUA. Publicity for available sources and a streamlined user interface would help direct residents to the most educationally dense video sources. ■

## JU INSIGHT

# Tension-Free Vaginal Tape and Polyacrylamide Hydrogel Injection for Primary Stress Urinary Incontinence: 3-Year Followup from a Randomized Clinical Trial

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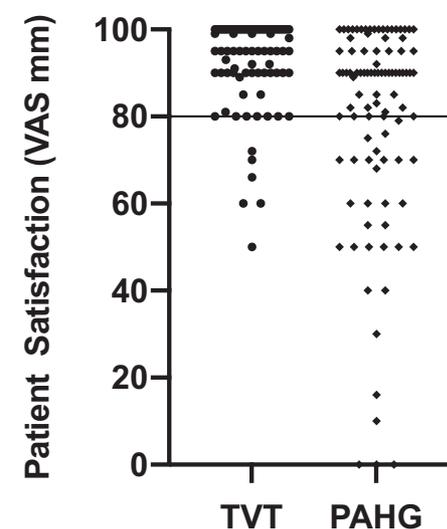
**Freitas A-MI, Isaksson C, Rahkola-Soisalo P et al. Tension-free vaginal tape and polyacrylamide hydrogel injection for primary stress urinary incontinence: 3-year followup from a randomized clinical trial. *J Urol*. 208(3)658-667.**

### Study Need and Importance

Retropubic tension-free vaginal tape (TVT) has been the gold standard treatment for female stress urinary incontinence (SUI). Concerns have been raised about the long-term complications associated with mid urethral mesh slings, and medical authorities in some countries have published warnings and even suspended their use. Transurethral injection of polyacrylamide hydrogel (PAHG) is a minimally invasive alternative; however, the long-term patient satisfaction, safety and efficacy of this treatment in primary SUI are undefined.

### What We Found

In this randomized noninferiority trial with 223 randomized patients at 3-year followup the satisfaction score (visual analogue scale 0–100) median was 98.5 in the TVT group and 90.0 in the PAHG



group, whereas a score  $\geq 80$  was reached in 95% and 68%, respectively (see Figure). Thus, PAHG did not meet the noninferiority criteria set in our study. Within the 3-year followup period, any peri- or postoperative complication before crossover between the groups was detected in 44% of women in the TVT group and 24% of women in the PAHG group.

### Limitations

According to our normal clinical practice, we did not perform invasive urodynamics in all women after detailed office evaluation for SUI. Although our data cannot be fully generalized to other mid urethral slings or bulking agents, we studied TVT, which is the gold standard for SUI, and PAHG, being currently the most commonly used bulking agent in Europe.

### Interpretations for Patient Care

In midterm followup, PAHG did not reach in patient satisfaction the noninferiority set in our study. However, since most PAHG-treated women considered themselves cured or improved and the vast majority of women were satisfied without the need for further invasive treatment, PAHG can be offered as a safe and durable alternative treatment for women with SUI. ■

## JU INSIGHT

# Does Perioperative Testosterone Predict Post-Prostatectomy Genomic Risk Score?

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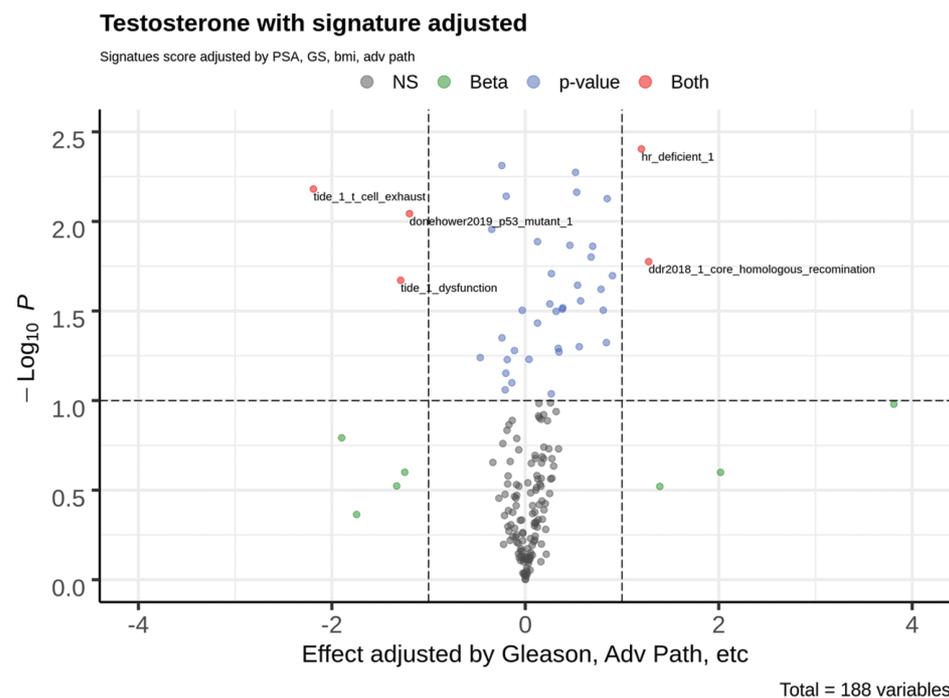
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**Shahait M, Cheaib JG, Davicioni E, et al. Does perioperative testosterone predict post-prostatectomy genomic risk score? *J Urol.* 2022;(6)1214-1221.**

## Study Needs and Importance

The role of endogenous testosterone in *de novo* prostate cancer pathogenesis in humans remains unclear. The Decipher® genomic classifier (GC) post-radical prostatectomy has been shown to be highly correlated with Gleason grade and predictive of the risk of metastasis and prostate cancer-specific mortality. If serum testosterone levels truly affect high-risk prostate cancer pathogenesis, this should be reflected in the tumor transcriptome. As such, a low testosterone level should be a predictor of the presence of a high GC score. The effect of testosterone on the tumor genome is not explored.



**Figure.** Association of serum testosterone levels with previously described prostate cancer gene-expression signatures. The log p value of the association between signature scores and serum testosterone levels are plotted by the odds ratio effect size, after adjusting for PSA, BMI, Gleason score, and tumor pathological stage. *NS*, not significant. *Beta*, beta value (regression coefficient). *Adv Path*, adverse pathology.

“The Decipher® genomic classifier (GC) post-radical prostatectomy has been shown to be highly correlated with Gleason grade and predictive of the risk of metastasis and prostate cancer-specific mortality.”

## What We Found

We explored the correlation between perioperative testosterone level on genomic risk score in

339 men who underwent radical prostatectomy and had adverse pathological features in their final surgical specimens (positive margin and/or pT3a or higher) at final pathology. The median genomic risk score was lower in the low testosterone group compared to the intermediate and normal testosterone groups (0.38 vs 0.52 vs 0.53, respectively;  $p=0.049$ ). There was no difference in biochemical recurrence-free survival between the 3 testosterone groups ( $p=0.9$ ). Patients with low testosterone levels had higher odds of receiving secondary treatment (OR: 2.27; 95% CI: 1.14–4.50;  $p=0.02$ ) than those with normal levels. A total of 43 (of 188) gene expression signatures were associated with testosterone level ( $p < 0.05$ ). In total, 33 signatures were positively associated with serum testosterone levels, including 12 signatures involved in DNA re-

“A total of 43 (of 188) gene expression signatures were associated with testosterone level ( $p < 0.05$ ).”

pair pathways (see figure).

## Limitations

The generalizability of our results is limited by this being a single-center, single-surgeon study with a short followup. Also, in this study a commercial prostate cancer diagnostic kit was used that examines only an index tumor which is associated with significant pathological parameters, such as the highest Gleason score, the largest tumor volume and extraprostatic extension, and clinical events such as metastasis; however, this approach can miss identification of some aggressive tumors due to intratumoral and intertumoral heterogeneity, and given the multifocal nature of localized prostate cancer.

## Interpretation for Patient Care

This is the first study to assess the correlation of preoperative testosterone levels on the tumor transcriptome and showed no significant clinical correlation between pre-defined GC score risk groups and the testosterone group. This study adds to the notion that endogenous testosterone plays a limited role in the development of *de novo* high-risk localized prostate cancer. ■

## JU INSIGHT

# Do New Complications Develop during Puberty after Childhood Hypospadias Repair?

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Snodgrass W, Bush N. Do new complications develop during puberty after childhood hypospadias repair? *J Urol.* 2022;208(3):696-701.

## Study Need and Importance

Some have speculated that penile growth, erectile forces and sexual activity during puberty can create new complications after successful childhood hypospadias repair, leading to recommendations that followup should continue until growth is completed. Worry about late complications requiring more surgery also persuades some caregivers that repair should be delayed until puberty is complete, which exposes patients to functional and body image concerns arising from uncorrected hypospadias. Furthermore, the potential for late complications years after repair may cause surgeons to question the validity of reports with followup that ends before puberty. The goal of this study was to determine if new complications develop during puberty after childhood hypospadias repair.

## What We Found

There was a bimodal distribution of complications in this series of 82 Tanner 2-5 patients following childhood hypospadias repair (see Figure). Most (85%) occurred before puberty, including all cas-

“Worry about late complications requiring more surgery also persuades some caregivers that repair should be delayed until puberty is complete, which exposes patients to functional and body image concerns arising from uncorrected hypospadias.”

es of ventral curvature and dehiscence, 10 of 12 fistulas and a third of strictures. A second, smaller group (15%) presented well after puberty in middle age, all with strictures or meatal stenosis. Only 5% reported symptoms that began during puberty, 2 with fistulas and 2 with strictures.

## Limitations

Our study relied on patient recall to determine when complications were first noted, but it is unlikely that recall bias significantly influenced our observations. All those reporting onset in childhood stated unequivocally that their symptoms were present long before puberty. Men presenting in middle age with new obstructive symptoms said those began

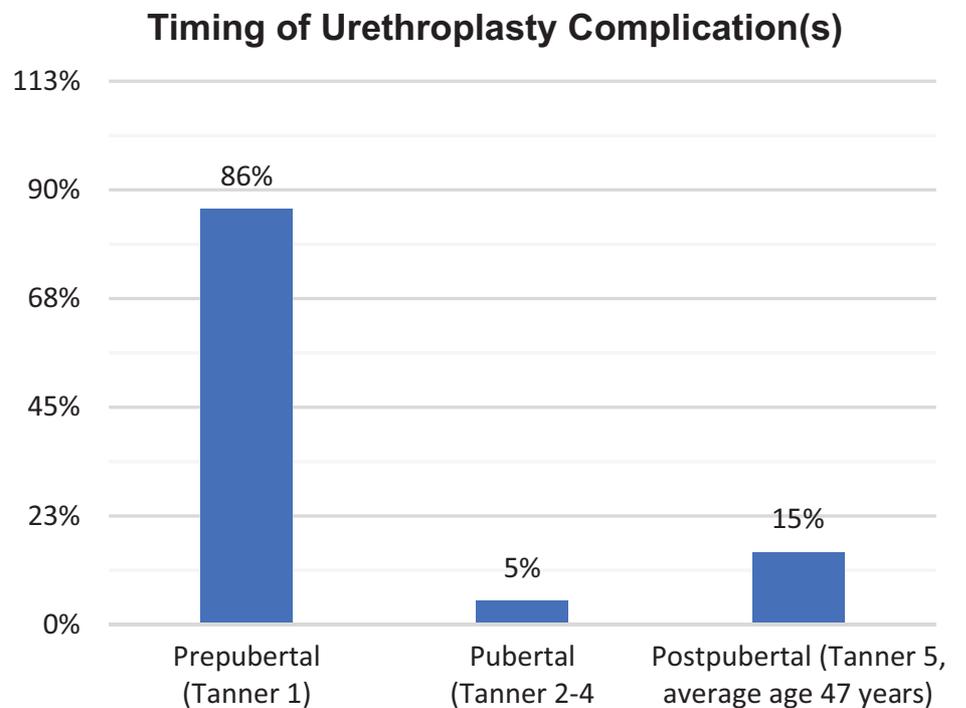


Figure. Among 82 consecutive Tanner 2-5 males presenting for hypospadias reoperation, the complication occurred before puberty in 86%, during puberty in 5%, and after puberty in 15%—primarily obstructive voiding symptoms from urethral stricture/meatal stenosis at an average age of 47 years.

recently, well after puberty. That left only a few who described the onset of a complication during puberty.

## Interpretation for Patient Care

Most complications after childhood hypospadias repair occurred before puberty, with a lesser number diagnosed in middle age. Only 5% had the onset of a new complication during puberty, with none presenting with new penile curvature or dehiscence, and only 2 with a fistula. These findings should reassure caregivers that successful childhood hypospadias repairs have little risk for complications developing during puberty. They

“These findings should reassure caregivers that successful childhood hypospadias repairs have little risk for complications developing during puberty.”

also demonstrate that followup to detect all complications would have to be lifelong. ■

## JU INSIGHT

# Sequential Intravesical Gemcitabine and Docetaxel for bacillus Calmette-Guérin-Naïve High-Risk Nonmuscle-Invasive Bladder Cancer

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McElree IM, Steinberg RL, Martin AC, et al. Sequential intravesical gemcitabine and docetaxel for bacillus Calmette-Guérin-naïve high-risk nonmuscle-invasive bladder cancer. *J Urol.* 2022;(3)589-599.

## Study Need and Importance

High-risk nonmuscle-invasive bladder cancer (NMIBC) poses significant risk of recurrence and progression. Bacillus Calmette-Guérin (BCG) is currently recommended as the gold standard adjuvant therapy following complete transurethral resection of bladder tumor. Continued production issues have precluded use of BCG in many urological practices. Furthermore, the efficacy

“Continued production issues have precluded use of BCG in many urological practices. Furthermore, the efficacy and tolerance of BCG is suboptimal.”

and tolerance of BCG is suboptimal. Given these factors, there has been increasing interest and utilization of alternative first-line intravesical therapies. Given ongoing BCG shortages, our institution has transitioned to use of sequential intravesical gemcitabine and docetaxel (Gem/Doce) in the first-line setting.

## What We Found

We analyzed a cohort of 107 patients with high-risk BCG-naïve NMIBC treated with Gem/Doce. Patients had high-risk characteristics including 47 with any carcinoma in situ and 55 with T1 disease. Median followup was 15 months. Recurrence-free survival was 89%, 85% and 82% at 6, 12 and 24 months, respectively (see Figure). The recurrence rates were not affected when the cohort was stratified by presence of carcinoma in situ. No patients developed disease progression or died of bladder cancer. One patient underwent cystectomy for end-

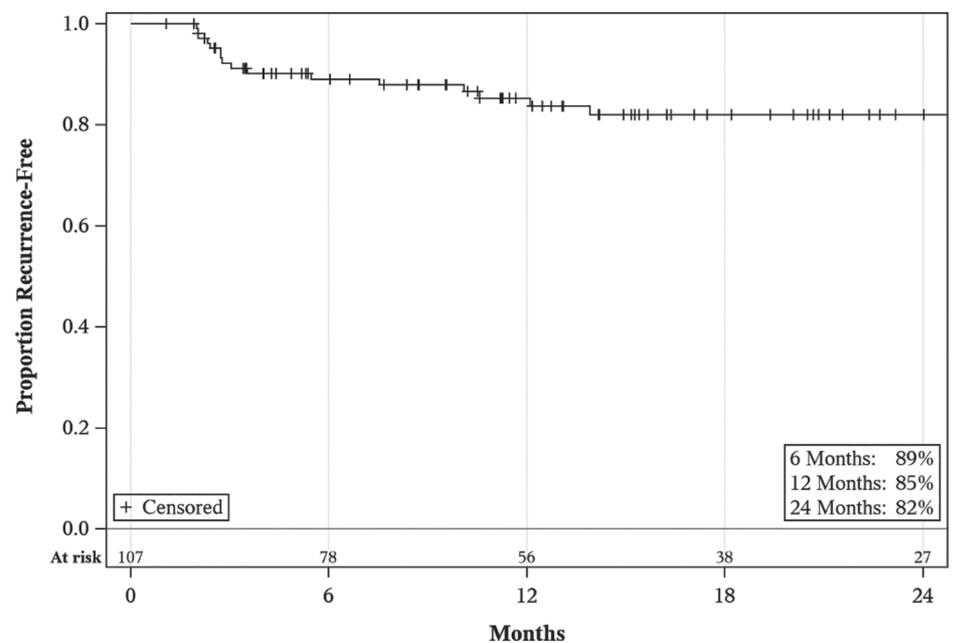


Figure. Recurrence-free survival following Gem/Doce induction.

“Compared to BCG, this treatment is readily available, cheap and not subject to supply constraints.”

stage lower urinary tract symptoms. Overall survival was 84% at 2 years. The treatment was well tolerated, with only 4 patients unable to tolerate a full induction course of Gem/Doce. The most commonly reported side effect was frequency/urgency occurring during instillation.

## Limitations

This study is limited by its retrospective nature and lack

of a comparator arm, allowing for potential selection bias. Furthermore, these results are from a high-volume institution with rigorous NMIBC protocols that may limit generalizability.

## Interpretation for Patient Care

Our results demonstrate that Gem/Doce is a safe and effective adjuvant treatment for patients with high-risk NMIBC. Compared to BCG, this treatment is readily available, cheap and not subject to supply constraints. While prospective validation is needed, in the setting of chronic BCG shortage, Gem/Doce represents a valuable alternative treatment option for patients with NMIBC. ■

## JU INSIGHT

# A Randomized, Single-Blind Clinical Trial Comparing Robotic-Assisted Fluoroscopic-Guided with Ultrasound-Guided Renal Access for Percutaneous Nephrolithotomy

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**Taguchi K, Hamamoto S, Okada A, et al. A randomized, single-blind clinical trial comparing robotic-assisted fluoroscopic-guided with ultrasound-guided renal Access for percutaneous nephrolithotomy. *J Urol.* 2022;208(3):684-694.**

## Study Need and Importance

Percutaneous nephrolithotomy (PCNL) is an efficient procedure and thereby is the gold standard for the treatment of large renal stones. However, creating an accurate percutaneous needle puncture into the renal collecting system is challenging and has a steep learning curve that requires rigorous training of surgeons for achieving appropriate skills. To address this unmet need for quick and accurate skill acquisition, we developed an artificial intelligence-empowered robotic interventional device called automated needle target with x-ray for percutaneous renal access.

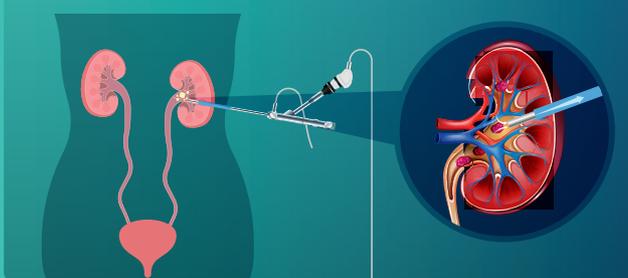
## What We Found

In this randomized controlled trial of 71 patients with renal stones, robotic-assisted fluoroscopic (RAF)-guided renal access demonstrated a comparable single-puncture success rate (50.0% vs 34.3%), significantly fewer number of needle punctures (1.8 vs 2.5 times) and shorter needle puncture duration (5.5 vs 8.0 minutes) compared to ultrasound (US)-guided access in PCNL when employed by novice surgeons. No differences were seen in stone-free or complication rates between the 2 groups. Interestingly, RAF guidance reduced the required number of needle punctures by 0.73 times (see Figure).

→ Continued on page 45

## Potential of Robotic-Assisted Fluoroscopic-Guided Renal Access in Mini-Percutaneous Nephrolithotomy

Obtaining renal access is the most crucial step in mini-percutaneous nephrolithotomy (PCNL) for kidney stone removal



### Major renal access methods



Both require a great deal of expertise to be carried out successfully

How efficient is robotic-assisted fluoroscopic-guided (RAF) renal access compared to US guidance during mini-PCNL?



71 patients undergoing mini-PCNL assisted with:

US (n = 35)

RAF (n = 36)

Automated needle targeting with X-ray (ANT-X)



### Observed outcomes

- Single-puncture success rate
- Stone-free rate
- Complications
- Needle puncture duration

|   | RAF-guided mini-PCNL | US-guided mini-PCNL |
|---|----------------------|---------------------|
| Single-puncture success rate                          | 50.0%                | 34.4%               |
| Inability to obtain access due to difficult targeting | 0.0% cases           | 14.3% cases         |
| Mean number of needle punctures                       | 1.82                 | 2.51                |
| Median needle puncture duration                       | 5.5 minutes          | 8.0 minutes         |
| Stone-free rate at 3 months                           | 83.3%                | 70.6%               |

The speed, accuracy, safety, and effectiveness of RAF-guided mini-PCNL illustrate its potential in transforming percutaneous procedures in renal surgery

## A RANDOMIZED, SINGLE-BLIND CLINICAL TRIAL COMPARING

→ Continued from page 44

### Limitations

Since this was a single-center trial, the results need to be validated worldwide through multicenter trials with a larger case volume. Given our hospital's consistency with daily practice, we compared

RAF guidance with freehand US guidance. Therefore, the results of this study may be more applicable to institutes employing US-guided PCNL than others; this might benefit from a comparison between RAF guidance and freehand fluoroscopic guidance.

### Interpretation for Patient Care

RAF-guided PCNL can be performed as safely and effectively as US-guided PCNL, even by novice surgeons. Its benefits for patients with renal stones are more

accurate and faster percutaneous access, potentially reducing the perioperative complication rate. Additionally, this technology can potentially reduce the surgeon's training load and allow for PCNL procedures at a wider range of hospitals. ■

## SECTION AND SPECIALTY MEETINGS

# Western Section AUA to Hold 98th Annual Meeting in Kauai, Hawaii

Christopher Porter, MD  
President, AUA Western Section

It is truly an honor and privilege to serve as President for the Western Section AUA in 2022. It has been a pleasure following the successful term of Kathleen Kobashi, MD, who kept the ship afloat during the pandemic. As many of you know, Kathleen's father is a urologist in the Western Section and she literally grew up in the "ohana" (family) of the Western Section.

I would like to welcome all of you to our annual meeting in Hawaii, at the Hyatt Regency Kauai on Poipu Beach. This venue is the most luxurious, glorious, and fitting site for our annual meeting

"We realize the need to combine a fantastic educational experience with relaxation and support."

and has generated much enthusiasm among the urological community.

Thanks to the negotiations of the DeSantis Management Group, along with Local Arrangements Chair, Rob and Gloria Carlile (Oahu), we are able offer competitive registration packages for mem-



Figure 2. View of Poipu Bay and beach from the Hyatt Regency Kauai Resort.



Figure 1. Swimming pool and garden on the Hyatt Regency Kauai Resort.

bers and nonmembers, as well as spouses and guests. As always, our focus will be on unmatched educational excellence through a wide range of scientific session topics, coupled with all the best that the "Garden Isle" of Kauai has to offer. The final night, Thursday, November 4, is our fabulous Hukilau under the moon with a sumptuous buffet and superb Hawaiian entertainment, not to be missed.

Our Program Chairman and Secretary, Dr. Sia Daneshmand, and the entire Program Committee have developed a brilliant scientific program. This year in response to surveys and requests from members, we arranged for a hybrid meeting, where all videos and most of the sessions will be available

for viewing via direct video link (WHOVA app).

The Western Section realizes the demands on physicians, advanced practice providers, and their families. We realize the need to combine a fantastic educational experience with relaxation and support. Consequently, we have continued to provide a 5-day meeting format to allow for more free time in the afternoons, with conclusion on Friday, November 4.

Please watch your email for announcements. Stay on top of meeting schedules, programs, and any updates by visiting our meeting website [www.surgewest.org](http://www.surgewest.org). Surge west to another phenomenal Western Section annual meeting, the best in the west. ■