Mount Sinai

The Milton and Carroll Petrie

Department of Urology

SPECIALTY REPORT | 2019

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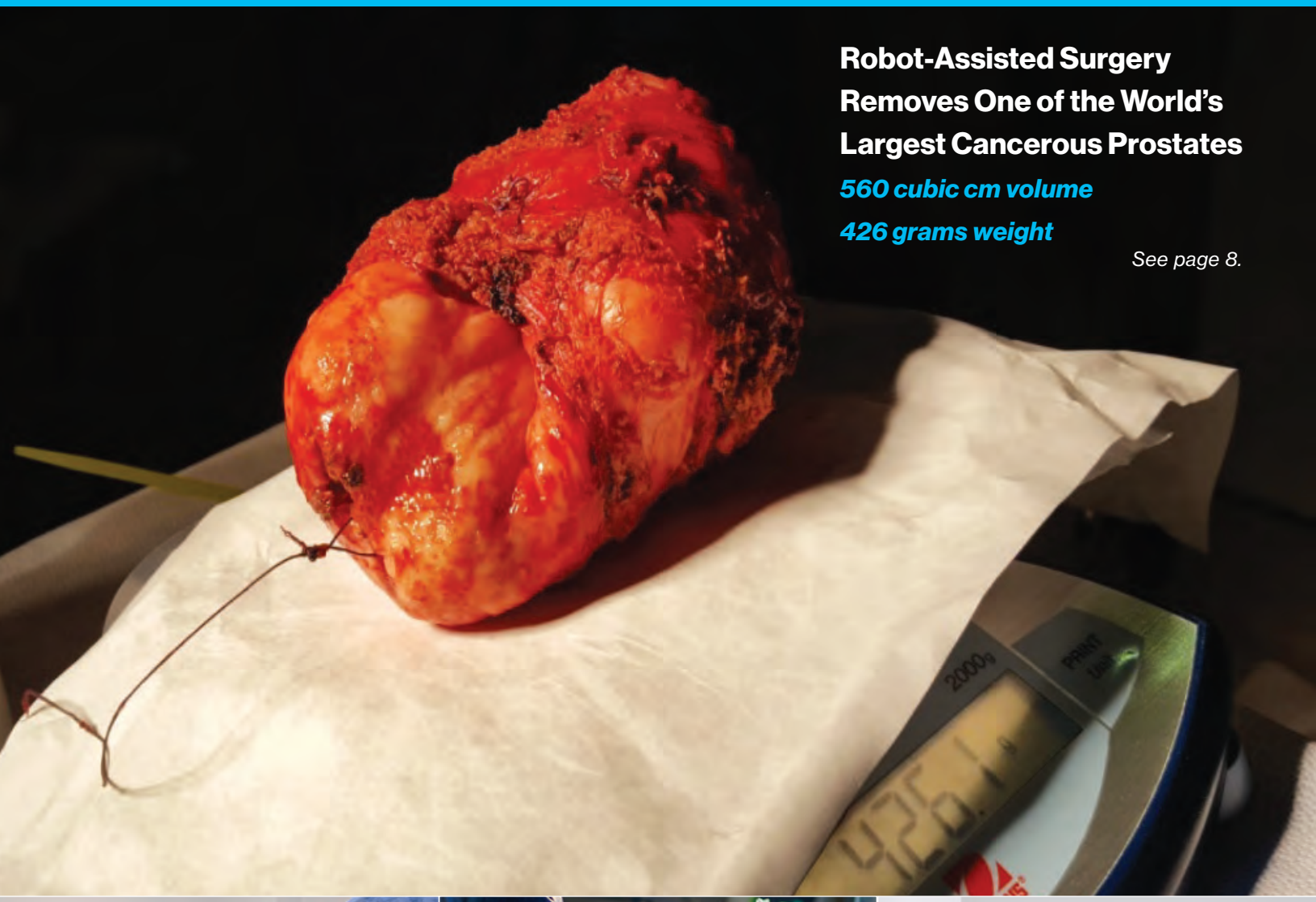


Robot-Assisted Surgery Removes One of the World's Largest Cancerous Prostates

560 cubic cm volume

426 grams weight

See page 8.

Department of Urology Quick Facts 2018–19

CLINICAL STATISTICS	
77,000+	Patient Visits
8,000+	Surgeries
2,000+	Major Cases
1,000+	Robotic Surgery Cases

RESEARCH & FACULTY STATISTICS	
$3.1	Million in Research Funding
176	Publications
40	Clinical & Research Faculty
22	Residents with 5 Matches for 2019

17 Locations, Department of Urology, Mount Sinai Health System

1. **Mount Sinai Doctors – Faculty Practice**
   5 East 98th Street
   New York, NY 10029
2. **Mount Sinai Doctors – Urology Midtown**
   625 Madison Avenue
   New York, NY 10022
3. **Mount Sinai Downtown – Union Square**
   10 Union Square East
   New York, NY 10003
4. **Mount Sinai West**
   425 West 59th Street
   New York, NY 10019
5. **Mount Sinai St. Luke's**
   1090 Amsterdam Avenue
   New York, NY 10025
6. **Mount Sinai Doctors – East 85th Street**
   234 E. 85th Street
   New York, NY 10028
7. **Mount Sinai Doctors – 77th Street Urology**
   445 E. 77th Street
   New York, NY 10075
8. **Mount Sinai Doctors – Washington Heights**
   286 Fort Washington Ave.
   New York, NY 10032
9. **Mount Sinai Doctors – Park Avenue**
   1070 Park Avenue
   New York, NY 10128
10. **Mount Sinai Doctors – Chelsea**
    325 West 15th Street
    New York, NY 10011
11. **Mount Sinai Doctors – Tribeca**
    255 Greenwich Street
    New York, NY 10007
12. **Mount Sinai Doctors – West 57th Street**
    200 West 57th Street
    New York, NY 10019
13. **Mount Sinai Brooklyn**
    3131 Kings Highway
    Brooklyn, NY 11234
14. **Mount Sinai Doctors – Brooklyn Heights**
    300 Cadman Plaza West
    Brooklyn, NY 11201
15. **Mount Sinai Doctors – Scarsdale**
    495 Central Park Avenue
    Scarsdale, NY 10583
16. **Mount Sinai Queens**
    25-10 30th Avenue
    Astoria, NY 11102
17. **Mount Sinai Doctors – Jackson Heights**
    37-22 82nd Street
    Jackson Heights, NY 11372

Ash Tewari, MBBS, MCh

As I celebrate my fifth year as Chair of Urology at the Icahn School of Medicine at Mount Sinai, I am especially proud of what we achieved this past year. We expanded our expertise in urological subspecialties, successfully managed increasingly complex cases, conducted groundbreaking clinical and basic science research, and organized industry-leading international symposia. At the same time, we handled 20 percent more patient visits, and performed more than 8,000 surgeries, including 2,000 major cases and more than 1,000 robotic surgical procedures.

We added five accomplished and renowned faculty this past year. **Peter Wiklund, MD, PhD,** our new Bladder Cancer Program Director, has the most experience with robot-assisted cystectomy with totally intracorporeal neobladder in the world. He pioneered this procedure in 2003 and subsequently built the leading cystectomy program at the Karolinska Institute. Dr. Wiklund has performed more than 3,000 robotic operations and has extensive experience in advanced pelvic oncological surgery in patients where the tumor is growing on several pelvic organs (multi-organ tumor, bladder, prostate, colorectal, ovarian, and uterine).

Pasquale Casale, MD, MHA, is a pediatric urologist and expert in performing minimally invasive robotic surgery for newborns and children and sees patients through Mount Sinai Kravis Children's Hospital. **William Atallah, MD, MPH,** specializes in endourology and urinary stone disease, and also does general urological procedures. **Susan Marshall, MD,** practices general urology and performs urologic surgery. **Eric Moskowitz, MD,** is a skilled urologic oncologist with a primary clinical interest in all aspects of robot-assisted surgery for the management of kidney, bladder, and prostate cancer. I am also pleased to announce the promotion of **Deepak Kapoor, MD,** to Clinical Professor of Urology.

From a case involving one of the largest cancerous prostates ever removed via robotic surgery to finding a unique way to end a 30-year case of urethritis, our physicians completed a variety of interesting and complex cases this past year. Please explore our five highlighted cases on pages 8-12. Patient care is a critical component of what we do in our department. Read about our innovative multidisciplinary approach for high-risk prostate cancer on page 14.

I am proud of our trailblazing clinical and pure science research. We saw initial success in our study of Poly-ICLC therapies, and we have started a unique exploration of using upright MRI as a new tool for cancer diagnosis. When conducting research, we continue to partner with The Tisch Cancer Institute at Mount Sinai, a National Cancer Institute-designated center. More information on all of these exciting research projects can be found on pages 12-13. Leading the research charge in the coming year will be **Natasha Kyprianou, MBBS, PhD,** our new Vice-Chair of Basic Science Research. Also joining our research team as Assistant Professor is **Dimple Chakravarty, PhD.**

We had strong patient and volume growth at Mount Sinai West and Mount Sinai St. Luke's under the direction of Site Chair **Mantu Gupta, MD,** and at Mount Sinai Beth Israel through the leadership of Site Chair **Michael Palese, MD.** We are grateful that The Mount Sinai Hospital was nationally ranked in Urology again by *U.S. News & World Report.*

At the AUA Annual Meeting, we had 500 attendees who witnessed robotic surgeries for bladder, kidney, and prostate cancer transmitted in 3D. But we don't just attend industry events — we also create them. The biggest was our 3rd International Prostate Cancer and Urologic Oncology Symposium held over three days with 550 attendees. We had a record 115 renowned urologic specialists who gave insightful presentations on cutting-edge medical advances and groundbreaking treatment approaches for urologic cancers. The co-director I worked with on both of these events was **Ketan Badani, MD,** the Director of the Comprehensive Kidney Cancer Program. Check out the Save the Date information on the back cover for future industry events.

Our residency program reached a new milestone in the summer of 2018 when we became one of only three ACGME urology programs in the United States permitted to train five residents per year. We then successfully matched five outstanding medical students on January 18, 2019. Please see our complete roster of talented residents on page 7.

A generous donation from one of my patient's foundation created Man Cave Health, a unique sports-themed facility with the mission of getting men to the doctor to get tested for prostate cancer. Page 15 has some terrific photos of our opening event.

Thank you for reading our Specialty Report. Please reach out to me with any thoughts or questions at ash.tewari@mountsinai.org.

Ash Tewari, MBBS, MCh
Professor and Chair,
Milton and Carroll Petrie Department of Urology
Kyung Hyun Kim, MD System Chair in Urology

IN THIS ISSUE

Year in Pictures

3rd International Prostate Cancer and Urologic Oncology Symposium
December 2018

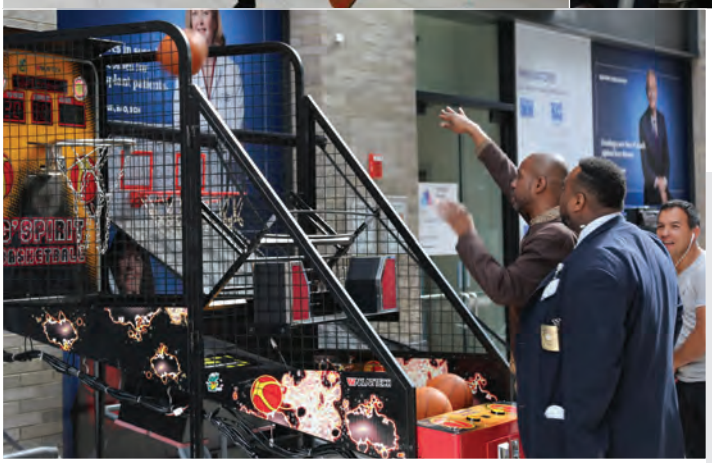
Above: The 3rd International Prostate Cancer and Urologic Oncology Symposium hosted 550 attendees, 115 world-renowned faculty members, and keynote speaker Siddhartha Mukherjee, MD, center, shown with Ash Tewari, MBBS, MCh, left, and Ketan Badani, MD, right.

Right: Sujit Nair, PhD, Assistant Professor of Urology at the Icahn School of Medicine, presented his research findings.

AUA Satellite Symposium
May 2018

At the AUA Annual Meeting in Boston, we had 500 attendees who witnessed robotic surgeries for bladder, kidney, and prostate cancer transmitted in 3D.

Kidney Cancer and Kidney Health Fair
March 2018



New York Liberty superstar Kym Hampton and NBA legend Earl "The Pearl" Monroe, seated in the center bottom row, shot hoops and raised awareness with Mount Sinai Department of Urology staff and guests.

Man Cave Health Opening
January 2019

Ash Tewari, MBBS, MCh, left, and Thomas Milana, Jr. partnered to open Man Cave Health in January 2019. See more on page 15.

Dean's Push-Up for Prostate Cancer Challenge
September 2018

Ash Tewari, MBBS, MCh, challenged staff and guests to do 29 push-ups in honor of the 29,000 men who lose their lives to prostate cancer each year.

Faculty

Ash Tewari, MBBS, MCh, FRCS (Hon.)
System Chair
Urologic Oncology, Prostate Cancer, Robotic Surgery

Mantu Gupta, MD
Site Chair
Endourology and Stone Disease

Michael A. Palese, MD
Site Chair
Urologic Oncology, Endourology, Robotic Surgery

Ketan K. Badani, MD
Vice-Chair
Urologic Oncology, Kidney Cancer, Robotic Surgery

Natasha Kyprianou, MBBS, PhD
Vice-Chair, Basic Science Research
Urologic Research

Natan Bar-Chama, MD
Erectile Dysfunction, Male Infertility, Andrology

Jerry Blaivas, MD
Urogynecology, Voiding Dysfunction, Reconstructive Urology

Jillian Capodice, MS, LAC
Acupuncture, Nutrition, Wellness

Barbara Chubak, MD
General Urology, Voiding and Sexual Dysfunction

Norman Coleburn, MD
General Urology

Caner Dinlenc, MD, MBA, FACS
Urologic Oncology, Kidney Stones, Robotic Surgery

Michael J. Droller, MD
Urologic Oncology

Erik Goluboff, MD, MBA, FACS
Urologic Oncology

Neil Grafstein, MD
Male and Female Voiding Dysfunction

Aaron Grotas, MD
Reconstructive and Transgender Urology

Gerald P. Hoke, MD, MPH
General Urology

Isuru Jayaratna, MD
General Urology, Urologic Oncology

Steven A. Kaplan, MD
Men's Health, Benign Prostate Disease

Reza Mehrazin, MD
Urologic Oncology, Robotic Surgery

Jay A. Motola, MD
Male and Female Urology

Craig F. Nobert, MD
Urologic Oncology, General Urology

Rajveer Purohit, MD, MPH
Reconstructive and Transgender Urology

Art Rastinehad, DO
Urologic Oncology, Interventional Urology, Focal Therapy

Avinash Reddy, MD
General Urology, Robotic Surgery

John Sfakianos, MD
Urologic Oncology, Bladder Cancer

Sovrin M. Shah, MD, FPMRS
Female Urology

Vannita Simma-Chiang, MD
General Urology, Female Urology

Doron Stember, MD
Erectile Dysfunction, Male Infertility, Andrology

Jeffrey A. Stock, MD
Pediatric Urology, Robotic Surgery

Cynthia Trop, MD
General Urology

Robert Valenzuela, MD
Prosthetic Urology, Erectile Dysfunction

Nikhil Waingankar, MD, MSHP
Urologic Oncology

New Appointees

William Atallah, MD, MPH, specializes in endourology and urinary stone disease, and also performs general urological procedures and treatments such as circumcision and hydrocele. A member of the American Medical Association, the American Urological Association, and the Endourological Society, he has published his work and presented at multiple conferences.

Pasquale Casale, MD, MHA, is one of the foremost authorities on pediatric minimally invasive surgeries, and a world-renowned pioneer in pediatric robotic surgery. He frequently serves as a lecturer and visiting professor, both nationally and internationally, on advanced laparoscopy and reconstruction, as well as on endourology and robotic surgery for children. He holds editorial board positions on many scientific journals and has authored hundreds of articles, editorials, and book chapters.

Susan Marshall, MD, practices general urology and performs urologic surgery. Dr. Marshall has authored many scientific papers and presented her research in national and international conferences. She is a board-certified Diplomate of the American Board of Urology, and is a member of the American Urological Association.

Eric Moskowitz, MD, specializes in all aspects of robot-assisted surgery for the management of kidney, bladder, and prostate cancer and treats all aspects of urological conditions. Dr. Moskowitz has authored several peer-reviewed publications and his research has been presented at both national and international meetings, including the American Urological Association Annual Meeting, the World Congress of Endourology, and the Congress of the Société Internationale d'Urologie. He has also served as a reviewer for the *Journal of Endourology*.

Peter Wiklund, MD, PhD, has the greatest experience with robot-assisted cystectomy with totally intracorporeal neobladder in the world. He pioneered this procedure in 2003 and subsequently built the leading cystectomy program at the Karolinska Institute in Stockholm, Sweden. Dr. Wiklund has performed more than 3,000 robotic operations and has extensive experience in advanced pelvic oncological surgery in patients whose tumor is growing on several pelvic organs. Dr. Wiklund travels the world as an invited lecturer at various courses and master classes in robotic surgery. Dr. Wiklund is Chairman of the scientific working group of the European Urology Robotic Section of the European Association of Urology and is an international member of the American Urological Association. ■

Current Residents

Chief Residents
Kyrollis Attalla, MD
Julio Chong, MD
Miriam Greenstein, MD
Ted Vellos, MD
Jared Winoker, MD

PGY-3
Eric Bortnick, MD
Christine Liaw, MD
Daniel Rosen, MD
Rollin Say, MD

Pre-Urology
Harry Anastos, MD
Shivaram Cumarasamy, MD
Beth Edelblute, MD
Shirin Razdan, MD

PGY-4
David Ahlborn, MD
Zeynep Gul, MD
Marissa Kent, MD
Jason Rothwax, MD
Peter Sunyaro, MD

PGY-2
Conner Brown, MD
Andrew Katims, MD
Gregory Mullen, MD
Andrew Tam, MD

Our Urology Residency is authorized by the ACGME to train 5 residents per year.

COMPLEX CASES

Robot-Assisted Surgery for One of the Largest Cases of Prostate Cancer in Medical Literature

Ash Tewari, MBBS, MCh

It is rare to find malignancy in prostates larger than 200 cc, but one recent case demonstrates how Mount Sinai's extensive expertise in diagnosis and resection results in positive outcomes for patients who present with complex prostate cancers.

In January 2018, Avinash Reddy, MD, Assistant Professor of Urology at the Icahn School of Medicine at Mount Sinai, saw a 78-year-old African-American male from Staten Island who had been referred to Mount Sinai with gross hematuria. Dr. Reddy ordered a complete blood count, which revealed a hematocrit of 22.8. But a subsequent CT scan was negative for lesions, and a urine cytology test was negative for malignancy. The patient's prostate-specific antigen level was 90 ng/ml, a strong indicator of prostate cancer, yet that seemed unlikely when an MRI revealed that his prostate was approximately 659 cc.

Negative results prompt further tests

Determining that more tests were required, Dr. Reddy proceeded with a cystoscopy with a clot evacuation, but the results were negative for bladder lesions. However, a biopsy of the patient's prostate revealed a Gleason 9 (4+5) cancer, with six out of 14 cores testing positive for cancer with 35 percent tumor involvement. Based on these results, the patient was referred to Vinayak Wagaskar, MBBS, MCh, Clinical Fellow at the Department of Urology at Mount Sinai, who ordered an MRI, CT scan, and bone scan to stage the cancer and rule out lymph node and bone metastases. Although the results of the bone and CT scans were negative for cancer, a May 2018 MRI showed a 3.5 cm lesion in the right mid-gland of the prostate in the peripheral zone and a prostate volume of 560 cc.

Results necessitate RALP approach

Based on these results, Dr. Wagaskar recommended that the patient undergo dissection of the prostate and lymph nodes via robot-assisted laparoscopic prostatectomy (RALP) to enhance precision, minimize blood loss, improve recovery, and accelerate return of continence. A urinary tract infection caused by catheter use necessitated a delay so the patient could undergo antibiotic therapy. In August 2018, the patient was cleared for RALP, which was performed by a surgical team led by Ash Tewari, MBBS, MCh, the Chair of the Milton and Carroll Petrie Department of Urology at the Icahn School of Medicine.

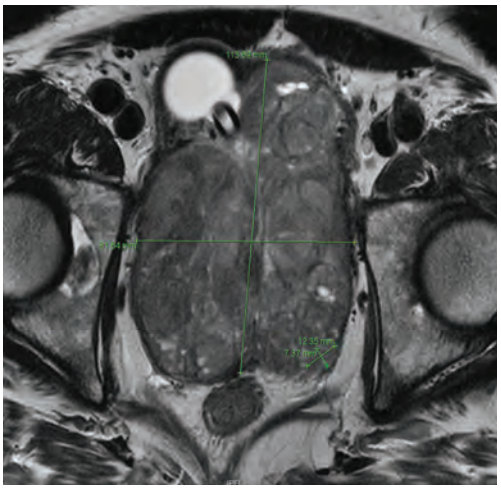
After placing the patient in Trendelenburg position and administering anesthesia, Dr. Tewari made a 4 cm incision at the left periumbilical area and created a pneumoperitoneum, which was inflated to 15 mm of mercury to enable successful dissection of the prostate and lymph nodes. He then introduced a first-entry 12 mm port on the left side of the umbilicus for the binocular scope and the insertion of the Alexis Contained Extraction System, which features a specimen containment bag and a guard that protects the bag from instrumentation punctures.

Continence and no complications

Once the supporting ports were in place for visualization, dissection, and suction irrigation, Dr. Tewari began dissecting the prostate on the lateral, posterior, and anterior sides. This proved challenging, as the size of the prostate made it difficult to handle and posed a significant risk for puncturing iliac veins on the lateral side or rupturing neurovascular bundles on the posterior side. The procedure was completed in three hours with no complications, and the patient was discharged the next day. The final pathology showed that the patient had a p2 cancer that was confined to the prostate, which weighed 426 grams.

Dr. Wagaskar says the patient's catheter was removed 12 days postop and he has been experiencing 100 percent continence. A subsequent cystogram showed no leaks and the patient's PSA levels were non-detectable.

"To our knowledge, this is one of the largest cases of prostate cancer removed via robot-assisted surgery ever noted in the medical literature," says Dr. Wagaskar. "The fact the patient achieved 100 percent continence the day we removed his catheter is equally noteworthy. This case is symbolic of the outcomes we are able to achieve at Mount Sinai, even in rare and complex cases of prostate cancer." ■



MRI of prostate approximately 560 cubic cm

Prostate weighed 426 grams

Complex Partial Nephrectomy Made Possible Through Innovative Technology, Clinical Trials

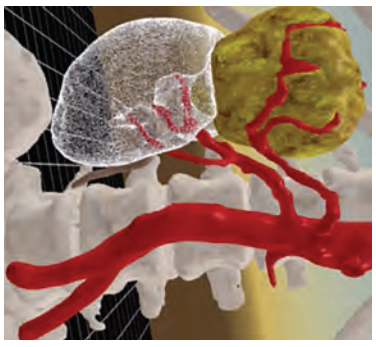
Partial nephrectomy can pose a considerable challenge for surgeons, even more so in cases involving large tumors, given the ischemia times involved, and the risk of bleeding or a urine leak. At Mount Sinai, new technologies and innovative surgical approaches are helping to reduce these risks, making the procedure practical for more patients as demonstrated by one recent case.

In September 2018, Ketan K. Badani, MD, Vice-Chair of Urology and Robotic Operations and Director of the Comprehensive Kidney Cancer Program at Mount Sinai Health System, saw a female patient who had been experiencing orthopedic issues due to an automobile accident. She was referred to Dr. Badani when an ultrasound revealed that she had a 6.5 cm right-sided kidney tumor.

Although the optimal approach for a tumor of this size typically is a nephrectomy, given the high risk of malignancy, Dr. Badani, who is also Professor of Urology at the Icahn School of Medicine at Mount Sinai, knew the patient preferred a partial nephrectomy. He decided to explore if such an approach was possible by enrolling the patient into innovative clinical trials.

3D modeling, radiomics facilitate partial nephrectomy

"We are participating in a multicenter study looking at the utility of 3D models to help plan partial nephrectomies," Dr. Badani says. "These models enable you to look at different layers of anatomy to determine if a partial nephrectomy is possible. We are also involved in a radiomics study in which we are exploring the efficacy of using radiology images to determine disease pathology. I enrolled her in the radiomics study, obtained an MRI of the kidney, and that was then rendered as a 3D model."



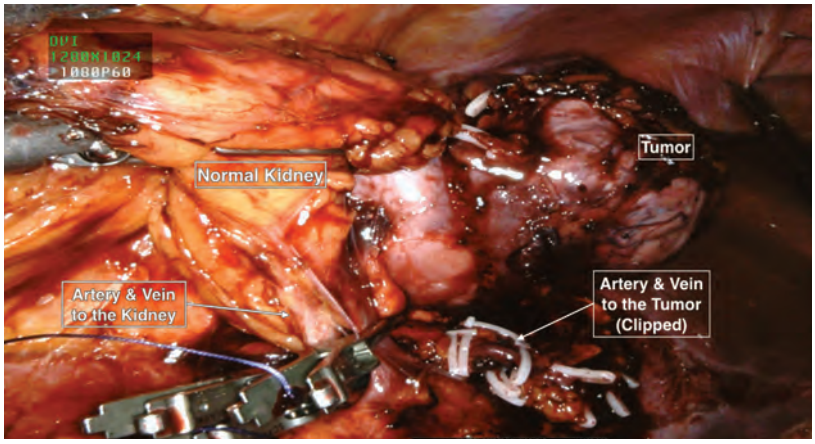
3D model of the kidney

The 3D model revealed that the patient had an upper pole artery that appeared to only perfuse the tumor and a second lower artery that perfused the normal kidney. Determining that a partial nephrectomy was possible, Dr. Badani decided that the best course of treatment would be a robotic partial nephrectomy using a technique he developed, called FAST (First Assistant Sparing Technique), to reduce ischemia time during the resection.

Low ischemia time, enhanced functional outcome

In October 2018, Dr. Badani performed a partial nephrectomy assisted by his expert surgical team. He began the procedure by making five key hole incisions in the patient's abdomen. Using the 3D model for guidance, Dr. Badani applied temporary clamps to both arteries, injected indocyanine green, and then removed each clamp sequentially to confirm that the upper pole artery was not perfusing the normal kidney. He then proceeded to clamp the lower artery and, using the FAST approach, he resected the lesion and reconstructed the defect in only nine minutes. The total blood loss was less than 50 ml, and the total time for surgery was under 2 hours.

Ketan K. Badani, MD



Operative view of partial nephrectomy, normal kidney on the left, tumor on the right.

"Not only is it uncommon to perform a partial nephrectomy on a tumor of this size, but the ischemia times typically approach 30 minutes, which is usually the upper limit of what is considered safe," Dr. Badani says. "Using advanced technologies, and the techniques we have developed at Mount Sinai, we have really paved the way in improving kidney functional outcome over time."

The tumor was completely resected with clear margins, and the final pathology showed that it was a renal cell carcinoma. The patient was discharged after an overnight stay and has maintained a baseline creatinine level of 0.9. She will be monitored with CT scans at six-month intervals over the next two years, but Dr. Badani considers the patient cured.

"This is a case that highlights all the strengths of Mount Sinai's kidney cancer program," Dr. Badani says. "It demonstrates that we can do a very safe, clean partial nephrectomy on a very challenging tumor with a very good outcome, low ischemia times, and low blood loss, all supported by innovative clinical trials that contribute to outcome management.". ■

Dorsal Urethral Reconstruction with Buccal Graft Provides Relief in 30-Year Case of Urethritis

Jerry Blaivas, MD

When it comes to a complex case of urethritis, a Mount Sinai surgeon demonstrates that innovative thinking, pioneering expertise, and a dedication to individualized treatment can result in positive outcomes and a very satisfied patient.

In February 2018, Jerry Blaivas, MD, a senior faculty member in Urology at The Mount Sinai Hospital, consulted with a 63-year-old female patient from Westchester County who had a 30-year history of chronic urethritis, and presented with dysuria and a thin stream. The patient had previously undergone a series of urethral dilations, two urethral meatoplasties, and a ventral vaginal flap urethroplasty in 2013, but she had subsequently developed a recurrent stricture. The degree of sharp, burning pain she experienced was such that she was interested in a urinary diversion.

Providing an alternate approach

Wanting to get a better understanding of the patient's situation, Dr. Blaivas performed a series of tests, starting with a video urodynamic study, a technique he helped pioneer in the 1970s. It revealed that the patient had a moderately severe urethral obstruction with a detrusor pressure at maximum flow of 63 cm of water and a maximum uroflow of only 4 ml per second. A subsequent cystoscopy, performed under anesthesia, revealed a very distal panurethral pinpoint stricture that extended from the bladder neck to the urethral meatus. The urethral meatus was retracted and neither visible or palpable due to the patient's previous surgery.

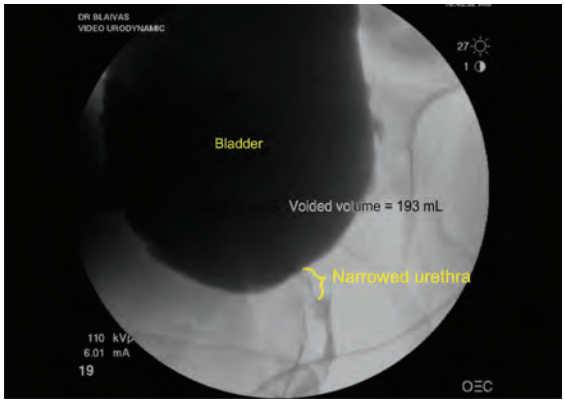


Image of a Video Urodynamic study

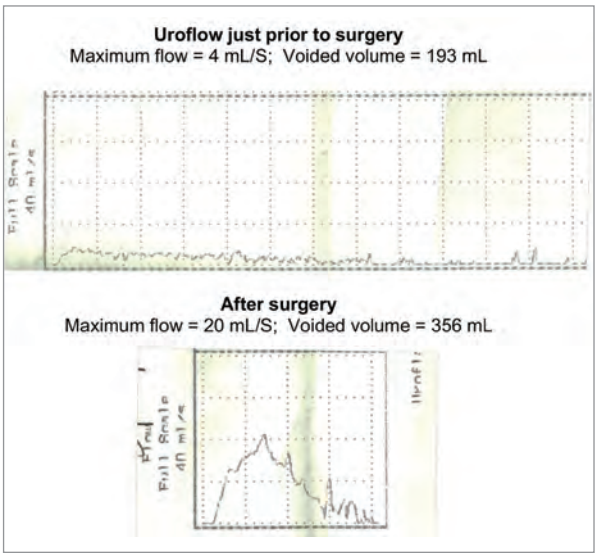
Dr. Blaivas believed the patient was a good candidate for a dorsal urethral reconstruction with a buccal graft. "Although urethral strictures in women are uncommon, we are quite experienced with them and have a good success rate. Complications are quite low and, if successful, she would be spared a much bigger operation with a much higher complication rate." he says. "The scarring from the procedures she had undergone, combined with the shortened urethra and small vagina, made this a particularly complex case that would be challenging for anyone to treat. But I knew from experience that this could be done dorsally."

After discussing the matter with the patient, Dr. Blaivas carried out the two-hour procedure in September 2018. He began by making a vertical incision above the urethra and, using Metzenbaum scissors, continued the dissection proximally under the pubis until entering the retropubic space. He passed a bougie a boule through the urethra to determine the proximal extent of the stricture and made a vertical midline incision, which was extended until it was easy to pass a 26 French bougie. Dr. Blaivas then placed a 3x3 cm buccal mucosal graft and tested the repair with the bougie to ensure there had been no narrowing of the urethra. The dead space between the graft and the periurethral musculature was closed and the graft was everted at the urethral meatus to prevent stricture.

Pain free, voiding well

The patient was discharged following an overnight stay. Subsequent tests show that her maximum uroflow has increased from 4 ml to 21 ml per second and her lower urinary tract symptom score has fallen from 35 to 5. Her bladder diary reveals that her bladder capacity has increased from 303 ml to 426 ml, her voiding difficulties have decreased from eight to zero per day, and her urgency episodes decreased from six to two per day.

"The patient indicated that she has never voided this well in her life," Dr. Blaivas says. "She also indicated this is the first time she hasn't had pain after her operations. A case like this demonstrates that Mount Sinai has the experience and the techniques to consistently achieve good outcomes in complex cases such as this." ■



Robotic Surgery Leads to Successful Outcome in Bladder Neck Reconstruction

Scarring of the bladder neck following a transurethral resection of the prostate (TURP) and radiation therapy poses considerable challenges for treatment. But a recent case showcases how Mount Sinai can provide patients with options for surgical intervention that otherwise would not be available to them.

In December 2017, a patient was referred to The Mount Sinai Hospital with a tight, impassable bladder neck contracture and leakage of urine. Reviewing the patient's history, Rajveer Purohit, MD, MPH, Director of Voiding Dysfunction and Reconstructive Urology and Associate Professor of Urology at the Icahn School of Medicine at Mount Sinai, noted that the patient had been diagnosed with prostate cancer in 2002 and underwent two rounds of radiation therapy resulting in radiation-induced scar tissue.

Successive TURPs result in constriction

In 2015, the patient underwent a Green Light Laser prostate ablation to correct the contracture and relieve the obstructive urinary symptoms he was experiencing, but the scar tissue subsequently reformed. A second TURP was performed two years later and several urinary dilations followed. Yet none of these interventions helped and he was ultimately managed with placement of a suprapubic tube. The patient was informed by his urologist that his only options were further dilations, intermittent catheterization, or a urinary diversion.

Dr. Purohit ordered a cystoscopy and retrograde urethrogram (see Figure 1 and 2), which confirmed the presence of an almost completely obliterative stricture in the mid-prostate gland. He knew the location of the stricture would make it difficult to access through open surgery. "Traditionally, we would have done a pubectomy, but the fact that the patient had undergone radiation created a high risk of complications, such as chronic pain and pubic bone infections," Dr. Purohit says.

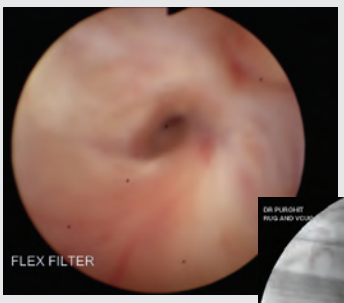


Figure 1

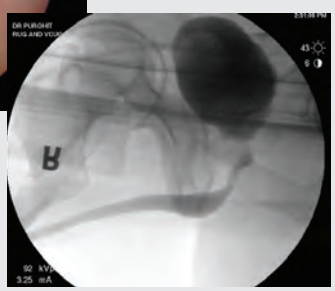


Figure 2

"Ultimately, I decided that a two-team robotic reconstruction of the bladder was the optimal approach to treat this patient. It would result in smaller incisions, decreased pain, and enhanced access to the bladder neck, which would facilitate the procedure and improve patient recovery time," he says.

Robotic approach preserves natural anatomy

Working in partnership with Ketan K. Badani, MD, Professor of Urology at the Icahn School of Medicine and Vice-Chair of Urology and Robotic Operations for the Mount Sinai Health System, the team performed the three-hour procedure in March 2018. Starting with five 1-cm incisions along the patient's lower abdomen to permit access for the robotic instrumentation, the team proceeded to cut open and excise 3 cm of scar tissue from the prostate gland. Using the robot to create a new bladder muscle flap, Dr. Purohit and Dr. Badani performed the bladder neck reconstruction. There were no complications and the total blood loss was less than 20 ml. The patient was discharged the following day.

Dr. Purohit says a retrograde urethrogram performed three weeks postop revealed that the bladder neck had healed completely and there were no signs of stricture. Six months later the bladder neck remained open (see Figure 3) and the patient had subsequently undergone a successful artificial urinary sphincter replacement surgery to restore his continence by Dr. Purohit.

"This was a patient who was given limited options for treatment," says Dr. Purohit. "Despite the considerable challenges posed by his previous surgeries and radiation therapy, we were able to preserve the patient's natural anatomy instead of creating a urinary diversion. This demonstrates our ability to handle highly complicated reconstructions in a way that minimizes patient morbidity and the risk of complications such as incontinence. I think that is something few other centers in the world are capable of doing when presented with a case such as this." ■

Rajveer Purohit, MD, MPH

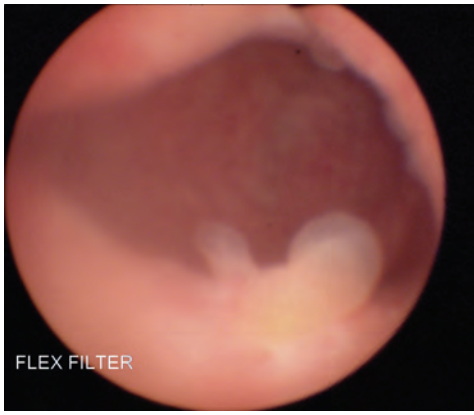


Figure 3

Unique Approach Enables Single Procedure Treatment of Peyronie's Disease, Climacturia, Erectile Dysfunction

Robert Valenzuela, MD

A patient with post radical prostatectomy iatrogenic Peyronie's disease, erectile dysfunction, urinary incontinence, and climacturia would typically undergo two separate surgeries. However a Mount Sinai surgeon was able to address all these issues in one procedure using one peno-scrotal incision and an armamentarium of unique surgical techniques.

Loss of length, impaired function following prostatectomy

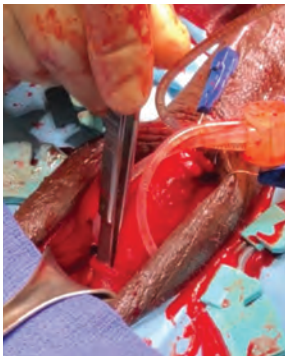
In March 2018, Robert Valenzuela, MD, Assistant Professor of Urology and Director of Penile Prosthesis Surgery at the Icahn School of Medicine at Mount Sinai, saw a patient who had undergone a robot-assisted laparoscopic prostatectomy. Two years after the procedure, the patient experienced biochemical failure and required androgen deprivation therapy prior to salvage radiation therapy. As a result, the patient experienced loss of penile length, erectile dysfunction, climacturia, and Peyronie's disease.

The patient was referred to Dr. Valenzuela, and he administered an injection of six units of double-strength Trimix which produced a semi-rigid erection with rigidity of 4/10. Dr. Valenzuela noted a 60-degree dorsal curvature of the penis. An ultrasound identified the presence of microcalcifications, and the peak systolic velocity was measured at 18 ml/s with incomplete diastolic suppression.

Dr. Valenzuela determined that the best therapeutic approach would be the insertion of a penile prosthesis with a midline sub-muscular reservoir placement, correction of the penile angulation, and the application of a sling to correct the climacturia and mild incontinence. Supported by a team of residents, Dr. Valenzuela carried out these procedures in one surgery in October 2018. "The surgical techniques I have developed enable me to implant both the sling and the prosthesis at the same time using the same peno-scrotal incision, and using a circumferential mobilization procedure," says Dr. Valenzuela. "These techniques allow me to place the prosthesis in a more favorable position that maximizes corpora relaxation and helps with length and girth preservation."

One incision, one procedure, one satisfied patient

Starting with a standard 3 cm midline vertical penile-scrotal incision, Dr. Valenzuela proceeded with circumferential mobilization and eversion of the penis to maximize corpora elasticity and prevent loss of penile length. Proximal dissection allowed Dr. Valenzuela to apply a 5.5 cm mini man sling, which supports the urethra when the prosthesis is empty and tightens to prevent mild urinary incontinence and climacturia during sexual activity. After confirming that there was no excess pressure on the urethra, Dr. Valenzuela dissected the dorsal compartment of the corpora and, using a Furlow insertion tool, he inserted the patient's penile prosthesis. A midline sub rectus reservoir and scrotal pump were then inserted. The patient is now sexually active, continent, and reports he is satisfied with the correction of angulation, length, girth, and function of the prosthesis. ■



Mini-male sling in place

RESEARCH

Kidney and Bladder Cancer Research Highlights

Reza Mehrazin, MD

Reza Mehrazin, MD, a urologic oncologist, develops new treatment strategies through translational and clinical research. In the field of kidney cancer, his clinical research focus is on active surveillance of renal tumors, development of novel strategies for kidney preservation, and improvement of predictive models for kidney cancer treatment. In the field of minimally invasive renal surgery, Dr. Mehrazin is conducting multi-institutional research assessing the long-term oncological differences between robotic/laparoscopic partial nephrectomy versus an open approach.

A recent project led by Dr. Mehrazin involves a multi-institutional review of 2,402 patients, describing predictors of disease recurrence following nephron sparing surgery and comparing patients who experienced recurrence of renal cell carcinoma (RCC) after Robotic Partial Nephrectomy (RPN) to Open Partial Nephrectomy (OPN). During median follow-up of 1.82 years, 2.7 percent of patients experienced RCC recurrence. Recurrence occurred in 19/1753 (1.1 percent) and 47/649 (7.2 percent) of RPN and OPN cases, respectively ($p<.001$). Estimated blood loss ($p=.002$) and length of hospital stay ($p<.001$) were greater in the OPN group. Interestingly, compared to the OPN cohort, median time to recurrence was shorter following RPN (0.64 years vs. 1.68 years, respectively, $p=.013$).

In the field of urothelial carcinomas, with the use of state and national databases, Dr. Mehrazin's research has been on examining trends, outcomes, and disparities in health care delivery for patients with bladder cancer. Recent collaborative work with Peter Wiklund, MD, PhD, Matthew Galsky, MD, and Nihal Mohamed, PhD, has been on the evaluation of the impact of tumor downstaging with neoadjuvant therapies, the natural history of untreated muscle-invasive bladder cancer, and the unmet informational and supportive care needs of the patients with muscle-invasive bladder cancer. ■

RESEARCH

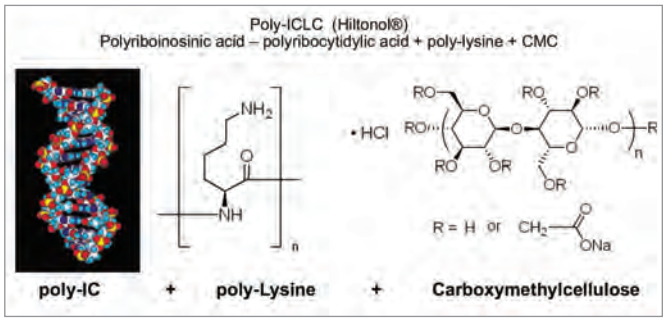
Phase I Study of Poly-ICLC Therapies Proves Promising for Prostate Cancer Patients

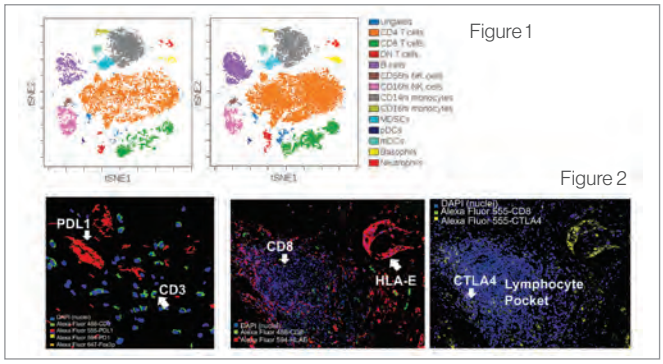
Initiated by Ash Tewari, MBBS, MCh, Chair of Urology at the Icahn School of Medicine at Mount Sinai, the Phase I study is exploring the safety of intratumoral and intramuscular Poly-ICLC therapies among prostate cancer patients. The investigational agent, polyinosinic-polycytidylic acid stabilized with polylysine and carboxymethylcellulose, is a stabilized double-stranded RNA (dsRNA) that has been extensively researched in a variety of clinical trials involving solid tumors.

The study is open to patients with high-risk, clinically localized prostate cancer who are planning to undergo radical prostatectomy. A participant's tumor is injected with Poly-ICLC, which is then followed by booster injections intramuscularly.

"The hypothesis is that, by injecting this immune modulator into the tumor, it will promote the production of antibodies that fight the tumor," says Sujit Nair, PhD, Assistant Professor of Urology at the Icahn School of Medicine. "We will be looking at the anti-tumor response that is generated, but this is a dose escalation study, so the main goal is to determine the maximum tolerated dose and possible toxicities of this therapy," he says.

The study is being conducted using a three-plus-three cohort design. In each successive cohort participants will receive a higher dose of Poly-ICLC until a dose-limiting toxicity occurs, at which point the cohort is expanded to six patients to determine if the maximum tolerated dose has been achieved, thus enabling Phase II and Phase III trials to explore therapeutic benefit. ■





Top: Poly-ICLC molecule, courtesy of Nina Bhardwaj, MD, PhD.
Bottom: An example of immune subtypes analyzed from blood samples of prostate cancer by CyTOF (Figure 1) and Multiplex IHC of immune and HLA-markers (Figure 2).

Upright MRI a New Tool for Early Cancer Diagnosis

Upright MRI to be used in new prostate cancer diagnosis study

In light of the continuing rise in the incidence rate of prostate cancer nationwide, the Mount Sinai Health System has launched an investigator-initiated, Pivotal study to determine the efficacy of an upright MRI developed by Fonar to facilitate diagnosis and early intervention. The study will compare upright MRI against conventional MRI imaging and the prostate-specific antigen (PSA) test. The target population is men age 18 or older who are at risk of prostate cancer and who have been advised to undergo a prostate MRI.

"Accurate imaging is vital in determining the location and severity of a prostate tumor," says Julia Wagner, MPH, Clinical Research Coordinator in the Department of Urology at the Icahn School of Medicine at Mount Sinai. "What we want to know is whether this device can provide us with enough data to conduct screening and ensure we are not following up on a false positive from an elevated PSA and avoiding a false negative in a normal PSA."

Patients will be assessed by a urologist to see if they meet diagnostic criteria, which include having an elevated PSA and an abnormal digital rectal exam (DRE). Upon enrollment participants will undergo a seated MRI using the Indomitable MRI scanner, ex vivo magnetic resonance imaging using 0.6 T strength, and a standard-of-care closed 3T MRI. Participants will then complete a series of questionnaires to assess their comfort level during both MRIs.

"There are certain benefits to using an upright MRI from a patient perspective," Wagner says. "It does not have the claustrophobia factor that makes many patients reluctant to undergo an MRI, and it gives them the ability to sit comfortably in a chair and watch TV as it is performed."

In total, 550 participants will be enrolled in the study. They will be followed every six months for PSA and DRE for five years after completion of, or early withdrawal from, study treatment. ■

PATIENT CARE

Multidisciplinary High-Risk Prostate Cancer Treatment Program

On the same day a patient with advanced or high-risk prostate cancer has an appointment with Ash Tewari, MBBS, MCh, that patient can also meet with other cancer specialists in a unique, multidisciplinary clinic. This innovative, team-based approach enables the optimal management of patients who have or are at risk for cancer metastasis.

Joining Dr. Tewari at this clinic are Philippa Cheetham, MD, a board certified urologist who has a strong interest in integrative and holistic medicine; Bobby Liaw, MD, Assistant Professor of Medicine, Hematology and Medical Oncology, who specializes in the treatment of genitourinary and gastrointestinal cancers; and Richard Stock, MD, Professor of Radiation Oncology, who uses the most advanced technology available to target tumors while sparing normal tissues.

Dr. Tewari and the team develop a plan that may include radiation or hormone treatment (if hormone injections are recommended, they can begin on the same day at the office). Patients receive advice on diet, exercise, and supplements, and also get perspectives about sexual recovery, urinary issues, novel therapies, comparative outcomes, side effect profiles, and various newer treatments that are currently on the horizon.

Current patient Andrew Gaspar sums it up best when he says, "From a patient's point of view, this is exactly what we needed—an explanation of the disease and its possible treatment options, told by doctors from each area who both advocated their particular approaches as well as sewed together the fabric of options into a coherent whole. You and Mount Sinai are to be congratulated for this extraordinary effort, which is an important differentiator of services in an arena served by the very best hospitals in the world." ■

From left to right, Ash Tewari, MBBS, MCh, Bobby Liaw, MD, Richard Stock, MD, and Philippa Cheetham, MD.

Non-Opioid Protocol Helps Patients Undergoing a Robot-Assisted Radical Cystectomy

John Sfakianos, MD

Bladder cancer is the fifth most common cancer in the United States, with 81,190 new cases in 2018. Approximately 25 percent of newly diagnosed patients have muscle-invasive bladder cancer (MIBC), for which the primary treatment is radical cystectomy (RC) with bilateral lymph node dissection with or without chemotherapy. More than 6,000 cystectomies are performed annually in the United States, and narcotic-based analgesia has been an integral component of postoperative pain control for these surgeries.

Narcotics are known to have negative effects on bowel function and pose a potential risk of addiction. In recent years, the opioid epidemic has reached a crisis and in 2016 was a major contributor to the 64,000 deaths in the United States due to drug overdose. Opioid pain relievers account for approximately half of opioid-overdose deaths.

Robot-assisted radical cystectomy (RARC) is performed more frequently with each passing year. Because patients undergoing RARC remain exposed to the potentially adverse effects of narcotic use, Mount Sinai Health System has implemented a non-opioid (NOP) protocol.

Comparing patients in our NOP protocol to a retrospective cohort that received narcotics, a much lower dose of postoperative morphine milligram equivalents (2.5 [IQR: 0-23] versus 44 [14.5-128], p <0.001) was identified respectively, but with no difference in pain scores. In the NOP protocol, the median time to regular diet was significantly shorter (four days [IQR: 3-5] versus five days [IQR: 4-8], p=0.002) and the length of stay was two days shorter compared to the control group (five days [IQR: 4-7] versus seven days [IQR: 6-11], p <0.001). When evaluating the direct costs within 30 days after initial surgery, the NOP protocol produced an 8.6 percent reduction as compared to the control group (p=0.032). In multivariate analysis, the receipt of the NOP protocol was a significant predictor of a length of stay <seven days after RARC (OR: 12.09; 95% CI: 1.70-140; p=0.023).

The implementation of a NOP protocol for patients undergoing RARC is feasible and it allows for minimal narcotic usage, and provides benefits to patients and institutions. At Mount Sinai Health System, this protocol is the mainstay for all patients undergoing RARC. ■

PHILANTHROPY

Man Cave Health

Our mission is awareness

In partnership with the Department of Urology at the Mount Sinai Health System, Man Cave Health opened its doors in January 2019. As a unique patient care model it combines educational resources, emotional support, and the latest in prostate cancer early diagnosis and treatment. This sports-themed facility is a place a man can feel at ease, complete with a team of friends, medical professionals, educators, and advocates ready to help him tackle this disease — and beat it.

The brainchild of prostate cancer survivor Thomas Milana, Jr., Man Cave Health is determined to break the silence surrounding this disease, and save men's lives. Mr. Milana was diagnosed in 2016, and as he navigated his way from diagnosis back to wellness, he increasingly saw the need for more awareness about men's health issues. Already deeply entrenched in numerous philanthropic endeavors through The Milana Family Foundation, he knew he needed to become an advocate for his fellow prostate cancer survivors, and so he launched Man Cave Health, Inc. ■
www.mancavehealth.org

Thomas Milana, Jr., right center, and family celebrating the Man Cave Health opening with Ash Tewari, MBBS, MCh, left center.

Acknowledgements

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Vital Continuing Programs

- The generosity of the Arthur M. Blank Family Foundation and The Lizzie and Jonathan Tisch Foundation provide critical funds for our Prostate Cancer Immunotherapy program.
- The Richard S. and Karen LeFrak Charitable Foundation kindly supports our Young Investigators in Prostate Cancer Research program.

SAVE THE DATE

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