When a patient comes to our program for treatment of cancer, we have urologic oncologists who happen to be excellent robotic surgeons. But that’s also just one of the techniques in our toolbox, in addition to surveillance, biopsy, and open and percutaneous approaches. The first thing we do is look at everything comprehensively; then we determine what’s the best treatment.

Robotic surgery has come a long way since Johns Hopkins urologists first started using it in 2001. “Our program has seen enormous growth,” says Allaf, who regularly performs robotic procedures, including nerve-sparing radical prostatectomy, partial and radical nephrectomy, pyeloplasty, adrenalectomy and retroperitoneal lymph node dissection, “an extremely delicate procedure,” for men with testicular cancer. A urologist with joint appointments in oncology and biomedical engineering, Allaf directs Johns Hopkins’ minimally invasive and robotic urological surgery program and fellowship, and his research includes studying urologic cancers and finding less invasive ways to treat them when appropriate.

Johns Hopkins urologists tackle many complex tumors and reconstructive procedures robotically. **Prostate cancer**

Johns Hopkins is among the highest-volume centers in the world for robotic prostatectomy, performing more than 600 a year, with excellent outcomes.

“Large prostates and higher-risk disease in an effective manner with robotic surgery,” Allaf says.

**Testicular cancer**

“We offer a minimally invasive approach,” says Allaf, “and remove the lymph nodes safely,” with most patients requiring only a one-night hospital stay.

**Kidney cancer**

Johns Hopkins surgeons perform more than 400 robotic kidney procedures yearly, mainly partial nephrectomies to remove cancer and still save the kidney.

“In saving the kidney,” says Allaf, “we not only take care of the cancer, but we give the patients the maximal chance at not developing other complications, including kidney failure, the need for dialysis and other related problems. Some people come to us with one kidney, and in those patients, we’ve developed techniques that potentially can make it amenable to a minimally invasive robotic approach.”

Even difficult scenarios, such as multiple tumors, large tumors, cancer that invades deep into the kidney, unusual anatomy or pre-existing kidney disease—all of which previously were thought not ideally suited for a minimally invasive approach—can be done with robotic techniques. The average hospital stay is one to two nights.

“IT’s increasingly rare for us to have to remove the entire kidney for tumors less than 4 centimeters,” Allaf says. For the team of urologists, anesthesiologists and nurses, he adds, “this is what we do, day in and day out, and to us, even very complicated cases are usually a straightforward robotic-assisted partial nephrectomy.”

To discuss a case or refer a patient, call 443-997-1851.

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Robotic Surgery: Minimally Invasive, Better Than Ever

It’s not the robot, says Mohamad Allaf. It’s the surgeon.

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See How Johns Hopkins Urologists Perform Nerve-Sparing Robotic Radical Prostatectomy Scan the code or go to http://bit.ly/robotic_prostatectomy to watch the steps involved in an actual operation to remove the prostate while preserving the antegrade neurovascular bundle.

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As both a urologist and biomedical engineer, Mohamad Allaf is working to advance the field of robotic and minimally invasive surgery. One example is the use of real-time elastography imaging during robotic prostatectomy to regain tactile feedback during the procedure.
From the Director

Our Goal with Johns Hopkins Urology is to highlight the extensive research and clinical work that we’re doing here at the Brady Urological Institute in a variety of areas. In this issue:

- Pravin Rao is bringing new hope to men with azoospermia using innovative procedures, including microdissection testicular sperm extraction.
- At our Pelvic Health Center, urologist Jamie Wright performs complex pelvic reconstruction and other procedures to restore quality of life to women with a host of conditions.
- Ardavan Akhavan’s minimally invasive pediatric surgery program aims to improve the surgical care of children with a variety of disorders involving the kidney, ureter, bladder, gonads and genitals.
- Mohamad Alall is internationally renowned for his innovative robotic procedures, including nephro-sparing radical prostatectomy, partial and radical nephrectomy, pyeloplasty, adrenalectomy and retroperitoneal lymph node dissection.
- For men with metastatic prostate cancer, Ashley Ross is starting a small clinical trial using cryotherapy to make the prostate more susceptible to immunotherapy, and then a PD-1-blocking drug to help the immune system fight off cancer.

Please call us to discover how we can contribute to your practice.

Alan W. Partin, M.D., Ph.D. David Hall McConnell Professor and Director Johns Hopkins Brady Urological Institute

Innovative Treatment Brings New Hope to Infertile Men

A lot of my patients come in thinking that if there’s no sperm in the ejaculate, there’s no hope for having children,” says urologist Pravin Rao, director of reproductive medicine and surgery. “That used to be true. But now, with the advent of intracytoplasmic sperm injection, we’re able to achieve pregnancy with very few sperm. And with improving techniques of finding sperm, we’re able to help many of these families reach their goals.”

Some men with azoospermia, or absence of sperm in the semen, may still be producing small amounts of sperm within the testes. In about 55 to 60 percent of these patients—many of whom became infertile due to an illness such as mumps or after testicular cancer—Rao can retrieve sperm from the testes with microdissection testicular sperm extraction.

The procedure is extremely delicate. “We look for areas that might be making sperm” among the thin, tightly looped seminiferous tubules, says Rao. “In most men, every tubule is making large amounts of sperm, but these men are making so little that you don’t see it in their ejaculate. But in just one or a few healthy tubules, we often find sperm.”

There are no imaging or other tests to help predict where the little pockets of sperm may be hiding. “The only way to know for sure,” Rao says, “is to go in there and find the tubules that look promising.”

Then, with the help of reproductive endocrinologists from Johns Hopkins or other hospitals in the area, the sperm is removed, joined with an egg and implanted in the female partner’s womb through in vitro fertilization. On average, Rao says, it takes two to three cycles to produce pregnancy. The sperm may be used the day it is harvested if the eggs are also being obtained then, or it can be frozen for future use.

Rao also performs vasectomy reversal and other procedures to correct a host of issues that can cause a very low to nonexistent sperm count, such as hormonal or environmental factors, varicocele, or blocked ejaculatory ducts.

“For many men who think there is no hope,” says Rao, “there is actually a lot of hope.”

To discuss a case or refer a patient, call 443-997-1851.

In-hospital death and hospital-acquired complications among patients undergoing partial cystectomy for bladder cancer in the United States.

Max Kates; Michael A. Gorin; Christopher M. Deibert; Phillip M. Pierorazio; Mark P. Schoenberg; James M. McKiernan; Trinity J. Bivalacqua; Urologic Oncology: Seminars and Original Investigations 2014;32(1):53.e9-53.e14

Paper Trail

A smattering of the urology research and thinking underway at Johns Hopkins

Prostate specific antigen velocity risk count predicts biopsy reclassification for men with very low risk prostate cancer.


The diet as a cause of human prostate cancer.

William G. Nelson, Angelo M DeMarzo, Srini Vasan Yegnasubramanian; Cancer Treatment and Research 2014;159:51-68

Small cell carcinoma of the prostate.


In-hospital death and hospital-acquired complications among patients undergoing partial cystectomy for bladder cancer in the United States.

Max Kates; Michael A. Gorin; Christopher M. Deibert; Phillip M. Pierorazio; Mark P. Schoenberg; James M. McKiernan; Trinity J. Bivalacqua; Urologic Oncology: Seminars and Original Investigations 2014;32(1):53.e9-53.e14

To discuss a case or refer a patient, call 443-997-1851. • www.hopkinsmedicine.org/urology
Target: Hedgehog Pathway
New Trial Opens for Men with High-Risk Prostate Cancer

WHY ARE UROLOGISTS EXCITED about a pathway named after a hedgehog? Because this critical signaling pathway—discovered in mice with prostate cancer in 2005 by Johns Hopkins scientists David Berman and Philip Beachy—is known to be important for the growth and spread of prostate cancer. And, says urologist Ashley Ross, because men with high-risk prostate cancer are badly in need of a drug that could potentially prevent cancer growth and metastasis by targeting this pathway.

“By looking at gene expression patterns, we and others have found that the Hedgehog pathway appears up-regulated in men with disease that metastasizes after local therapy,” says Ross. “Also, in men with advanced prostate cancer, itraconazole, which inhibits the Hedgehog pathway, appears to slow the disease by a mechanism independent of the androgen receptor. Itraconazole, an antifungal drug, is somewhat crude, but new Hedgehog pathway-specific drugs with much more favorable toxicity profiles are now available.”

Ross and oncologist Emmanuel Antonarakis are beginning a randomized, placebo-controlled clinical trial of a highly selective Hedgehog pathway inhibitor called LDE225. Men will begin taking the inhibitor about a month before radical prostatectomy. All will undergo a repeat biopsy and have a molecular profile done on their cancer cells before surgery, and then will have the radical prostatectomy specimens examined afterward.

“It’s a pharmacodynamic trial to see if LDE225 actually gets into the prostate and inhibits the Hedgehog pathway,” says Ross. “Of course, men will be followed closely following prostatectomy, and we will also monitor whether superior cancer control results are achieved in those who received LDE225.”

The trial is open to radical prostatectomy patients at Johns Hopkins with high-risk prostate cancer: men with a Gleason score of 8 to 10, a PSA of 20 or greater, or clinical stage T3 disease. One worry with these patients is “micrometastatic” cells. Use of a systemic Hedgehog inhibitor may help wipe out these “micrometastatic” cells.

“We need to start thinking of high-risk disease as a different type of cancer,” says Ross, “a systemic disease, and we have to start treating them with a systemic approach in addition to surgery and/or radiation.”

To discuss a case or refer a patient, call 443-997-1851.
State-of-the-Art, Minimally Invasive Pediatric Surgery

There is an enormous opportunity to improve the surgical care of children,” says Ardavan Akhavan, a pediatric urologist specializing in minimally invasive surgery. He has joined the Johns Hopkins urology faculty from Seattle Children’s Hospital, University of Washington Medical Center, and his job is an exciting one: to build a minimally invasive pediatric surgery program.

“Johns Hopkins will be one of the first children’s hospitals in the country to have the newest robotic surgery system,” says Akhavan, “which will allow us to expand the limits of minimally invasive surgery in children and offer the most advanced surgical technologies to our smallest patients.”

Over the last few years, the applications for pediatric minimally invasive urology have expanded dramatically, he adds. “Minimally invasive surgery has revolutionized the care for patients as young as 6 months by allowing for smaller incisions, decreased pain, shorter hospitalization and quicker recovery,” he explains. Many procedures can be done on an outpatient basis.

Akhavan uses robotic, laparoscopic and endoscopic techniques to treat a variety of disorders involving the kidney, ureter, bladder, gonads and genitals with minimal to no incisions.

“Correction of a ureteropelvic junction obstruction,” he says, “we can perform a robotic pyeloplasty. For surgical repair of vesicoureteral reflux, we offer robotic ureteral reimplantation. The list is ever-expanding.”

When he’s not in the operating room or clinic, Akhavan is involved in research, working to correlate surgical skills with patient outcomes to standardize the training and evaluation of robotic surgeons.

“Robotic surgery is as operator-dependent as any other form of surgery,” he says. “We hope our research will help establish the criteria for assessing and teaching robotic surgical skills to improve the safety and outcomes of patients undergoing minimally invasive surgery everywhere.”

To discuss a case or refer a patient, call 443-997-1851.