

# Renal & Urology News

**SPECIAL UROLOGY ISSUE**

WORLD REVIEW FOR UROLOGISTS & NEPHROLOGISTS

## Lithotripsy May Increase Risk of Diabetes

BY JOHN SCHIESZER

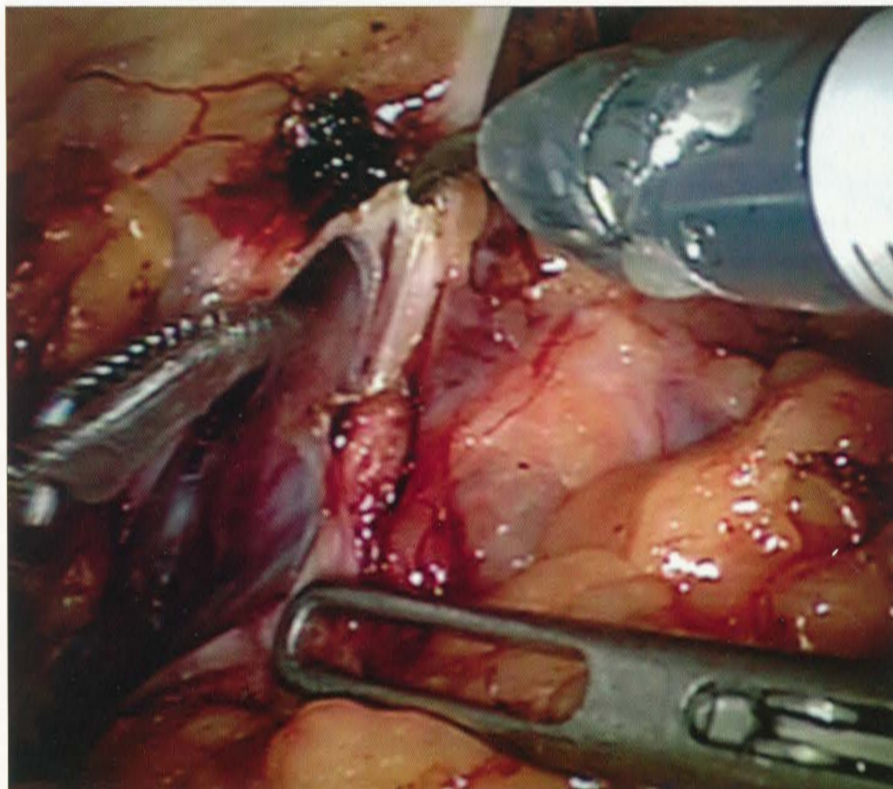
SHOCK WAVE lithotripsy (SWL) of renal and proximal ureteral stones appears to increase patients' risk of diabetes mellitus and hypertension later in life, according to a new study.

"This is a completely new finding," said Amy Krambeck, MD, lead investigator and a urology resident at the Mayo Clinic in Rochester, Minn. "This opens the eyes of the world of urology to the fact that hypertension and diabetes are potential side effects. We can't say with 100% certainty that the shock-wave treatment for the kidney stones caused diabetes and hypertension, but the association was very strong," explained Dr. Krambeck.

"The risk of developing diabetes after lithotripsy is almost four times the risk of people with kidney stones treated with medicine, and the risk of developing hypertension is one and one half times [greater],

continued on page 3

## Robotic Revolution in the OR



DURING A robotic prostatectomy, remotely controlled blades make precise cuts.

BY NELLY EDMONDSON GUPTA

NEW YORK—Advances in robot-assisted laparoscopic surgery are finding their way into prostate cancer treatment at more and more major centers across the country.

Men diagnosed with clinically localized prostate cancer and who have a life expectancy of at least 10 years are candidates for robotic prostatectomy, a procedure first performed six years ago and whose

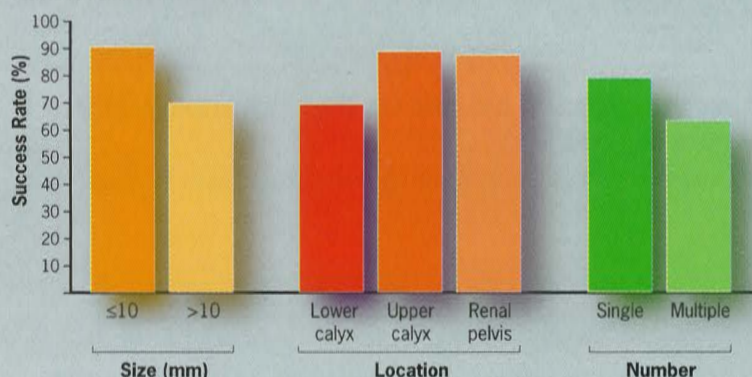
popularity is growing among both patients and doctors.

Using a computer-assisted robotic system, urologic surgeons can operate with unprecedented precision that enhances their ability to spare nerves and minimize blood loss. The system consists of a surgeon console, patient-side cart, instruments, and image processing equipment. The surgeon operates using two handles positioned directly under a magnified three-dimensional display of the operative field. The surgeon manipulates the handles to control tiny surgical instruments and an endoscopic camera that are attached to the arms on the surgical cart. Manipulation of the handles is transmitted to a computer that filters, scales, and relays the surgeon's movements to the robotic arms and instruments.

In this issue, we offer an up-close look at robotic prostatectomy, taking you inside an operating room at the Weill Medical College at Cornell University to view a procedure from start to finish. To begin your tour, please turn to page 16. ■

### Size Matters in Lithotripsy

Stone size, site, and number can predict the likelihood of successful treatment with extracorporeal shock wave lithotripsy, according to a study of 427 patients. Treatment success—defined as complete clearance of stones or the presence of clinically insignificant residual fragments—was observed in 333 patients (78%).



Source: Al-Ansari A, As-Sadiq K, Al-Said S, et al. Prognostic factors of success of extracorporeal shock wave lithotripsy (ESWL) in the treatment of renal stones. *Int Urol Nephrol*. 2006;38:63-67.

### Using Drugs, Supplements to Avert PCa

BY ERIC A. KLEIN, MD

PROSTATE CANCER is an attractive and appropriate target for primary chemoprevention strategies because of its incidence, prevalence, and disease-related morbidity and mortality. For Caucasians and African Americans, the estimated lifetime risk of the disease is 17.6% and 20.6%, and the lifetime risk of death is 2.8% and 4.7%, respectively.<sup>1</sup> Despite advances in early diagnosis and therapy, most men who develop metastatic disease are still destined to die.

The molecular pathogenesis of prostate cancer also lends itself to primary prevention. Several histologic

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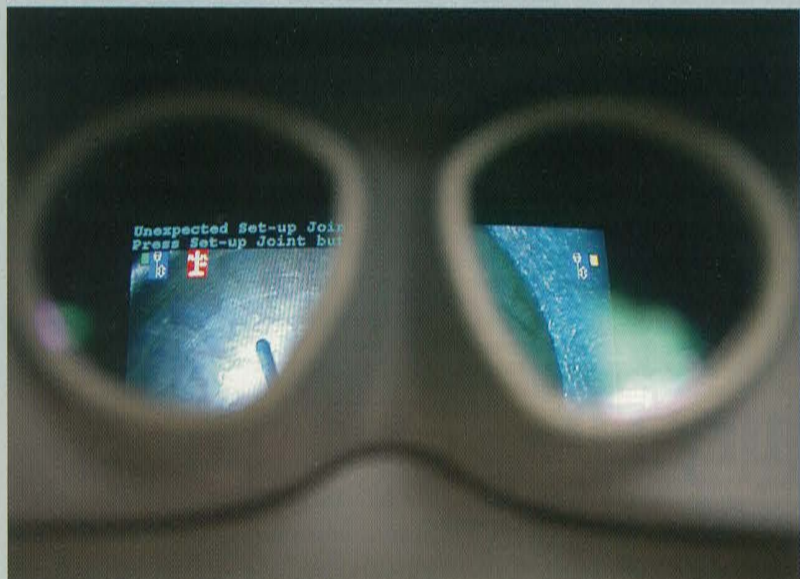
### INSIDE THIS ISSUE



Percutaneous embolization of varicoceles safe, effective	6
MRI of bone marrow improves metastatic PCa follow-up	7
Perioperative chemotherapy for bladder cancer	10
Laser vaporization, TURP comparable for BPH	27
Early adjuvant radiation after prostate surgery beneficial	33
Cryoablation is feasible for localized prostate tumors	36
Update on bulking agents for urinary incontinence	37
<b>Departments</b>	
FDA News	22
Legal Issues in Medicine	31
Malpractice News	32
Meetings Calendar	42
Marketplace	43



**HANDS-OFF SURGERY.** Lead surgeon Ashutosh Tewari, MD, stands at a console across the room from the da Vinci robot. Since he will not be touching the patient, there is no need for Dr. Tewari to scrub.



**A 3-D VIEW.** Looking through this eyepiece, Dr. Tewari can peer deep inside the patient's body, viewing magnified images captured by a laparoscopic camera on a three-dimensional monitor.



**POSITION, PLEASE.** The da Vinci robot, draped in heavy plastic to keep it sterile, is positioned over the patient. In the hands of a skilled surgeon, this clunky-looking but versatile machine removes the diseased prostate with grace and precision.

# Beyond Hu

## Robotic surgery spares nerves,

**BY NELLY EDMONDSON GUPTA**

THE DA VINCI robot may not be as cute as R2-D2, but it could be the skillful droid's soul mate. Like the brave starship mechanic, the da Vinci is packed with tool-tipped appendages that enable it to perform amazing feats. For example, the robot is adept at excising tissue with instruments far too small—some a mere 5 mm wide—to be wielded by human hands. Moreover, surgeons using the da Vinci (so named because Leonardo invented the first robot) can conduct entire operations from across the room. Indeed, the technology could even allow them to perform a procedure from anywhere in the world.

Six years ago this month, the world's first robotic prostatectomy was performed in Germany. One year later, the FDA approved the da Vinci robotic surgical system, and since then, its use has grown steadily in the United States. Last year, an estimated 20% of prostatectomies in this country were performed with the da Vinci robot, and

surgeons say a majority could be done robotically as early as 2007. Although prostatectomy is the most common robotic procedure, surgeons also use the system, made by Intuitive Surgical of Sunnyvale, Calif., for everything from heart repair to gynecologic, weight loss, and infertility operations.

### How robotic prostatectomy works

After the patient's abdomen is inflated with carbon dioxide to enlarge the operative field, the robot's arms are lowered, and assisting surgeons access the target site through small, dime-sized holes in the skin. Surgeons insert plastic ports into each hole to create channels for laparoscopic tools. Most patients have five port sites. The robot's camera is attached to a swivel like a tiny human wrist, giving the surgeon a three-dimensional



Robot waiting for action prior to surgery.



# man Hands

## minimizes pain and blood loss

view inside the patient. Doctors can move the camera to see all sides of an organ instead of having to look straight down.

During the operation, the lead surgeon sits at a console, turning knobs to remotely manipulate tiny surgical instruments, including forceps and scissors, which are attached to the adjustable robotic arms. The instruments move with precision, avoiding most blood vessels, deftly separating tissue from bone and preserving nerves. The instruments are designed to provide surgeons with natural dexterity and full range of motion. Surgery lasts an average of 3.5 hours.

### One man's story

Randy Flax, 49, a propane dispatcher from Eastchester, N.Y., was diagnosed with prostate cancer in January

2006. While Flax was considering his treatment options, his urologist recommended that he speak with Ashutosh K. Tewari, MD, director of robotic prostatectomy at The Weill Medical College of Cornell University in New York City.

"Dr. Tewari recommended robotic prostatectomy," said Flax. "He told me it's less invasive than traditional surgery, and that I'd only be in the hospital for one day."

Liking what he heard, Flax, who is divorced and has one grown son, decided to go ahead. On March 16, accompanied by his father and two sisters, Flax arrived at New York-Presbyterian Hospital on the Upper East Side of Manhattan. Although he was scheduled for surgery at 2 p.m., operating room delays pushed back Flax's procedure for several hours. Finally, at about 6 p.m., he walked into the operating room, where he filled out paperwork before being prepped and anesthetized. "The last thing I remember, they were shaving my leg," recalled Flax. "Then I was out."

continued on page 18



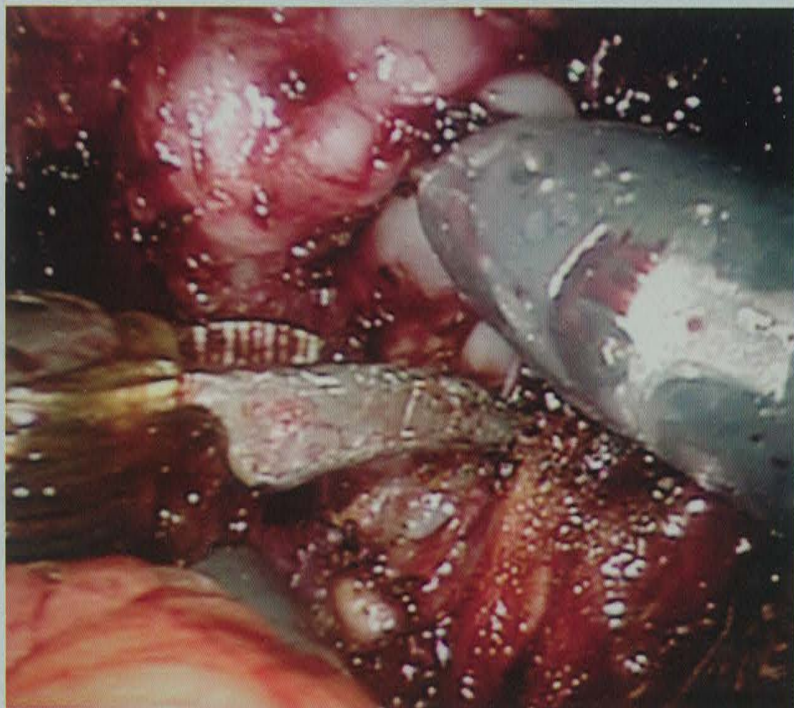
**VITAL CONNECTIONS.** The robot is attached to the patient's body through small, pencil-sized connectors (trocars). The patient-side surgical team ensures that the robotic arms are docked at the correct angle.



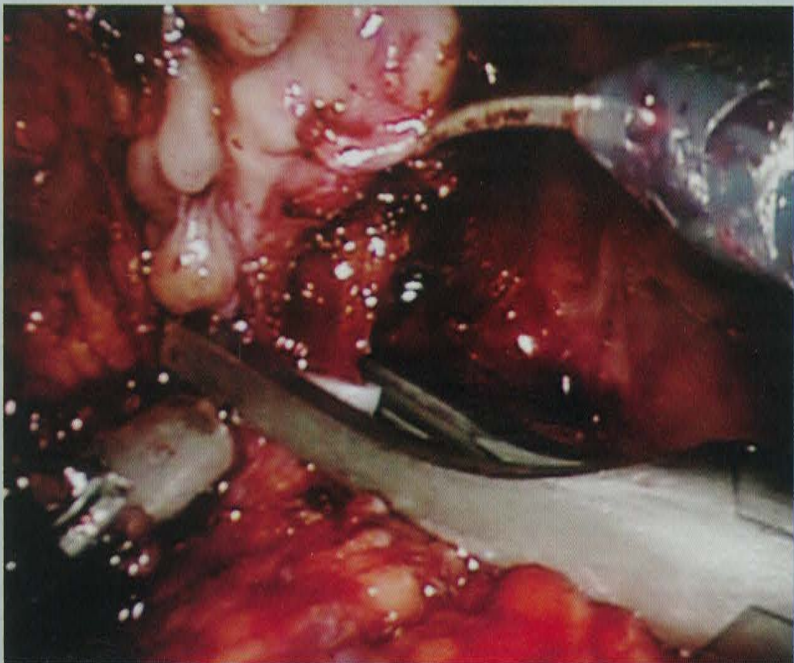
**TEAMWORK IN ACTION.** While the patient-side surgical team focuses on the prostatectomy in progress, the anesthesia team ensures the patient's safety by monitoring vital parameters and medication.



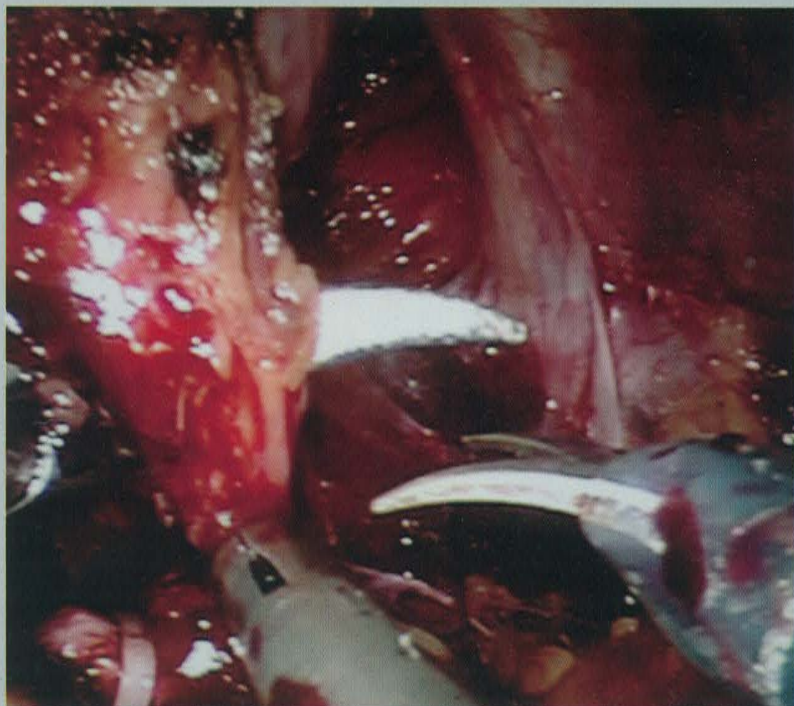
**HELPING HANDS.** The patient-side surgical team follows the console surgeon's lead, watching robotic instruments on a 3-D monitor, manually retracting tissue and providing suction to clean the surgical field.



**IMPORTANT ID.** Using a so-called 'bimanual pinch,' the surgeon identifies the junction between the bladder and the prostate.



**ANATOMY LESSON.** Minute surgical clips allow for the precise manipulation of arteries connected to the seminal vesicles and vas deferens.



**CAREFUL CUTTING.** The relationship between the medial pedicle and the neurovascular bundle can be seen on the left side. Careful clipping and cutting are in progress.

### Robotic Prostatectomy At a Glance:

- Overall rate of margin positivity: less than 5%
- Rate of margin positivity in men whose cancer is confined to the prostate: 3%
- Average post-surgery hospital stay: Around 24 hours regardless of patient's age
- Average estimated blood loss: 116 cc—approximately 1/3 volume of a 12 oz soda can
- Percentage of patients needing no continence pads post-surgery: 30% at one week; 60% at 4-6 weeks; 90% at 3 months. Additional urinary recovery continues for 9-12 months

Source: Ashutosh Tewari, MD

*Renal & Urology News* had the permission of Flax, Dr. Tewari, and New York Presbyterian to witness and photograph the entire procedure. On these pages we present highlights from medical photographer Michael Tamborrino's extraordinary shooting.

#### 'No pain at all'

At 9:30 p.m., Randy Flax awoke in the recovery room. He was discharged from the hospital the following day at 1 p.m. "When I got home I started walking; I had no pain at all," he says. "The only thing that bothered me was the catheter."

Six days later, Flax returned to the hospital and had the catheter

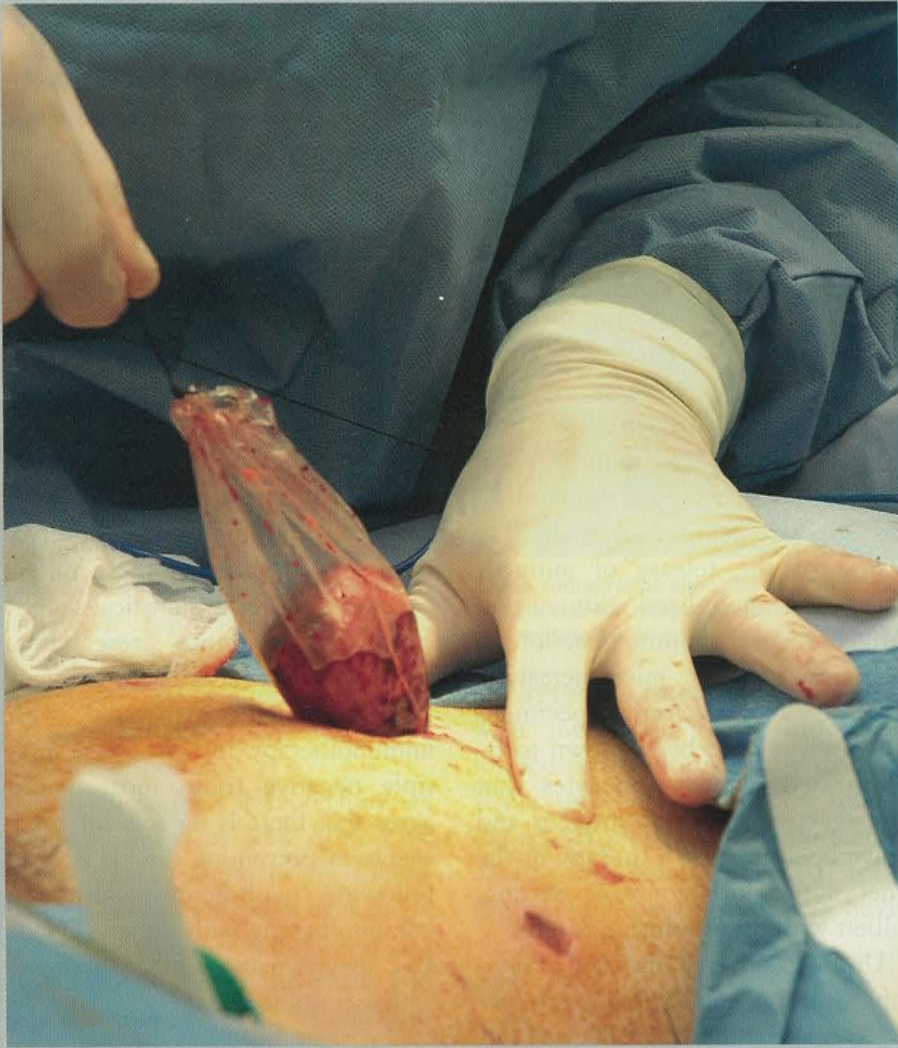
removed. In the intervening days, the only discomfort he experienced was "where the stitches were when I bent down to tie my shoes."

Two weeks after the operation, Flax was taking 25 mg of sildenafil (Viagra) per day to enhance blood flow to the genital area, and said that his erectile function was already returning. "I sent Dr. Tewari a thank-you card," added Flax, who feels very good about his experience with robotic surgery. "I would recommend it," he concluded, "to anyone who has prostate cancer." ■

**Photos by Michael Tamborrino, a medical photographer from Massapequa Park, N.Y.**



**THE RIGHT MOVE.** The right-side surgical assistant places a clip on the prostate pedicle.



**BELLY-BUTTON REMOVAL.** The prostate gland is removed through a small incision at the patient's navel.



**POST-SURGERY EXAM.** The prostate is palpated and examined for cancer, firmness, and apical contour.



**THE O.R. TEAM.** Lead surgeon Ashutosh Tewari, MD (back row, second from left), and members of the robotic surgical team.