

A CUTTING-EDGE SURGERY FOR PROSTATE CANCER

Offered several treatment choices, a surgeon opts for the newest, a robotic procedure that is rapidly becoming the gold standard for minimally invasive surgery.

by Ralph Dittman, M.D.

"Ralph," the voice on the other end of the phone sounded anxious. It was my urologist. The fact that he was calling me at 7:30 in the morning made me just as anxious. He quickly continued, "The free PSA we drew yesterday is 7.3 percent." He paused, "You'd better come over this afternoon for a biopsy."

Prostate-specific antigen or PSA is a protein produced by the cells of the prostate gland. It is normal to have low levels of PSA in the blood. Causes of elevated PSA may include prostate cancer, benign prostatic hypertrophy (BPH), inflammation, infection, age or race. A PSA of zero to 2.5 ng/ml is considered low, 2.6 to 10 slightly to moderately elevated, 10 to 19.9 moderately elevated, and 20 or more significantly elevated. There is no specific normal or abnormal PSA level. However, the higher a man's PSA, the more likely that cancer is present. My PSA had been running at a steady 3.5 until three months ago when it jumped to 4.5. That's when my urologist ordered a free PSA.

Since its introduction as a screening test for prostate cancer, some 15 years ago, there have been attempts to look at PSA in various ways to increase the sensitivity and specificity of interpretation of the test results. Variations of the routine total PSA test include PSA velocity, age-adjusted PSA, ethnically-adjusted PSA, PSA density, and, as of 1998, the so-called free PSA (fPSA) which measures the percentage of PSA not bound in the blood. In the past, total PSA of 4 to 10 has been considered a gray zone.



Surgeons manipulate robotic hands via remote control to perform a da Vinci prostatectomy. The new surgical technique is designed to reduce blood loss, scarring, and pain, and promote faster recovery. Patients are typically discharged within 24 hours.

Now, if a person has a value in that range, it's time for a free PSA. A fPSA of less than 10 percent corresponds to a high risk of cancer. A fPSA greater than 25 percent means not to worry. While a fPSA in the range of 10 to 25 percent is another gray zone.

That afternoon, I made it to the clinic just as my first cousin arrived there for his post-op follow-up visit. "Hi, Fred," I called to him.

"Hey, compadre," he called back. "Is it your turn already?" He laughed.

"Yep, I'm afraid so. It's biopsy time for me," I said, lightly.

"Just think of it as the family curse," he paused. "Good luck, amigo," he whispered in my ear as he gave me a hug.

My cousin was right. It was a family curse. Three of our uncles had died from prostate cancer and several of our cousins... all in their 50s. I'm 59 now. Fred is 64. He had just had surgery, a so-called open radical prostatectomy, six months earlier for cancer.

According to the American Cancer Society (ACS), prostate cancer is the most common type of cancer in men in the United States, other than skin cancer. The ACS estimates that about 234,460 new cases will be diagnosed in 2006 and about 27,350 men will die of the disease. Prostate cancer is the second leading cause of death in men, exceeded only by lung cancer. Risk factors include age (the older you get, the more likely you are to get it), diet high in saturated fat, exposure to heavy metals (e.g., cadmium), race (especially Afro-American), sedentary lifestyle, smoking, and/or

a positive family history.

My biopsy that afternoon went without complication. It's a procedure performed in the clinic under local anesthetic using direct ultrasound

Men: Know Your PSA

A simple blood test taken during routine physicals, PSA test results report the level of PSA detected in the blood typically as nanograms of PSA per milliliter (ng/ml) of blood. Many doctors are now using the following ranges, with some variation:

- * 0 to 2.5 ng/ml is low
- * 2.6 to 10 ng/ml is slightly to moderately elevated
- * 10 to 19.9 ng/ml is moderately elevated
- * 20 ng/ml or more is significantly elevated

guidance. A total of either 12 or 10 so-called cores are punched out of the various lobes of the prostate gland, which is a walnut-sized gland located just in front of the rectum and just below the bladder, with the urethra running right through. The biopsies are sent to pathology for interpretation.

It usually takes three working days to process a pathology specimen. The biopsy was Tuesday afternoon. I called the clinic Friday afternoon to talk with my urologist. "Any luck?" I asked him after our cordial greetings.

"Yeah," he sounded cheerful. "The bad news is that you've got cancer. The good news is that you've only got one positive core out of ten, and that's a Gleason 6."

I was relieved. The Gleason grading system is not the only grading system, but is the one most commonly used in this country. Pathologists use the term "grade" to describe the appearance of the slices of cancer tissue when observed under a microscope. The Gleason system is based exclusively on the architectural pattern of the glands of the prostate tumor. It evaluates how effectively the cells

of any particular cancer are able to structure themselves into glands resembling those of the normal prostate. The ability of a tumor to mimic normal gland architecture is called its differentiation, and experience has shown that a tumor whose structure is nearly normal (well differentiated) will probably have a biological behavior close to normal—that is not very aggressively malignant. Each slide of the biopsy specimen is graded from one (well differentiated) to 5 (poorly differentiated). The combined Gleason score is a sum of the scores of the most prevalent primary and secondary patterns: the lowest being a 1+1 or 2, the highest being a 5+5 or 10.

While the pathologist grades the tumor, the clinician stages the tumor based upon tumor size, character of its cells, and the extent of metastases (spread) as determined by physical examination and/or bone scan and/or MRI.

"As you well know," my urologist continued our phone conversation, "as a stage A, you've got all the treatment options open to you." Having been classified as a stage A meant

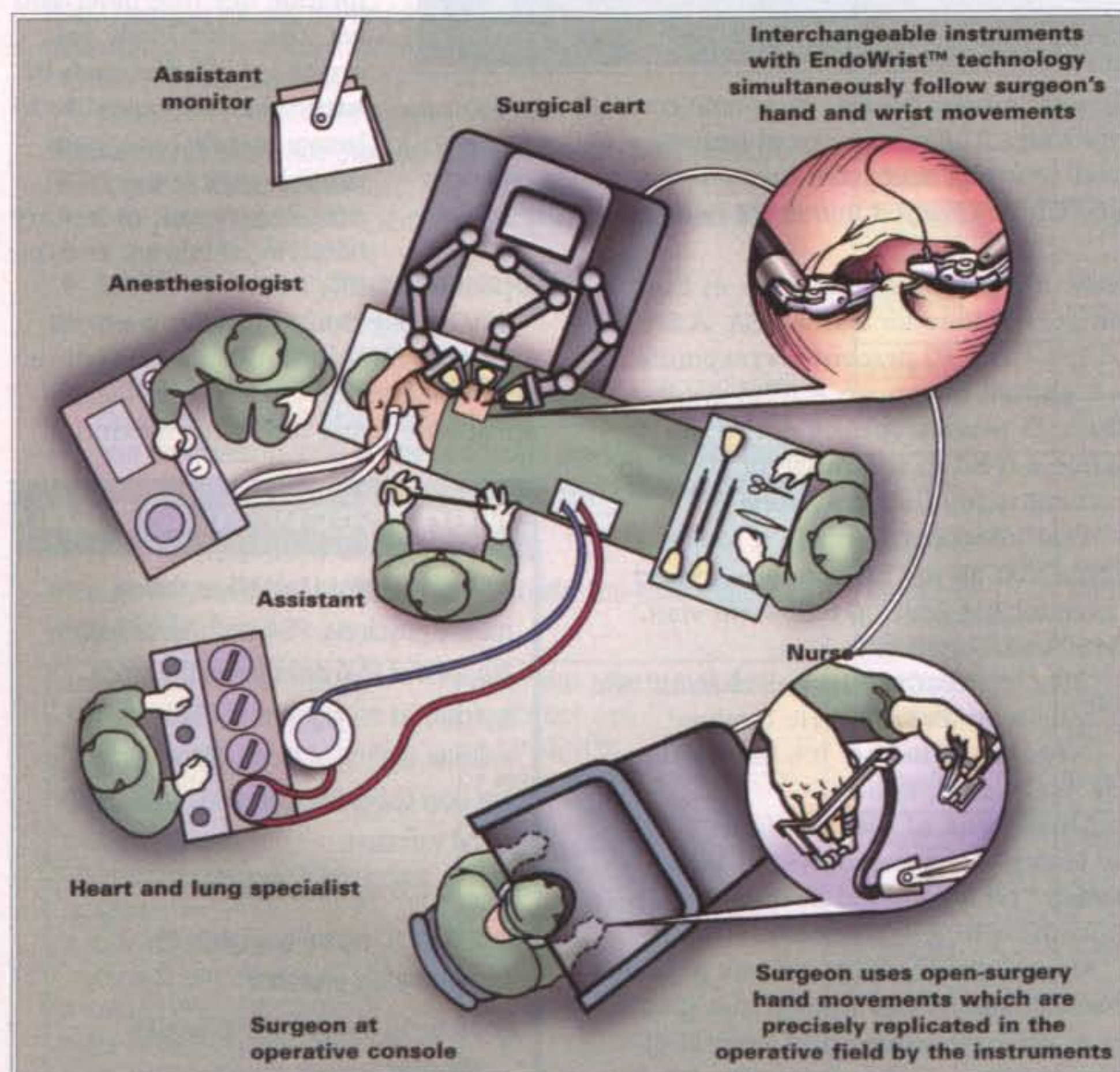
that the tumor was very early, without symptoms, and with the cancer cells confined to the prostate. Stage B is also confined to the prostate, but is palpable by digital rectal examination (DRE). Stages A and B cancers are considered curable. Stage C means cancer cells are found outside the prostate capsule, but the spread is confined to the surrounding tissues. Stage D means metastases to regional lymph nodes or to distant organs. Stages C and D are treatable, but their prognosis is not as good as a A and B. My urologist continued speaking, "If you decide to have surgery, you'll need to wait six to eight weeks from the time of the biopsy until surgery."

I began to map out my options as I mechanically voiced approval to my urologist's last statement, even though I've never agreed with this dictum of waiting, especially in light of the other cancer dictum that states that once you cut across the cancer, you get rid of it as soon as possible. Anyway, I began considering my options as I said goodbye and hung up the phone.

If I had been a stage C or D, my options would have been limited to medical treatment. Because I was less than 70 years old, and in fairly good health with at least ten more years ahead of me, I felt I had the full spectrum of cures to choose from: the various forms of surgery or radiation.

The two radiation options included brachytherapy and external radiation therapy. Brachytherapy involves implanting tiny radioactive capsules, or seeds, into the prostate gland in and around the tumor. The seeds, containing palladium 103, or iodine 125, emit radiation for about three months. Approximately 50 to 100 grain-sized pellets are implanted into the prostate through a needle under transrectal ultrasound guidance on a day-surgery basis. The long-term survival results are said to be comparable to open prostatectomy surgery with lower rates of incontinence and impotency, but with some risk of burning the rectum or bladder.

The other radiation option I considered was that of external radiation treatment. This is especially recommended for stage B, but is an option for stage A also. High-energy x-rays are projected onto the prostate tissue



Instead of requiring the traditional eight- to ten-inch incision, da Vinci robotic hands capable of extremely precise movements do the cutting and sewing through five tiny slits in the abdomen.



Can you name this picture?

...contest: The Saturday Evening Post will award \$100 to the author of the winning limerick for this picture. Your limerick must contain exactly five lines.

Send your entry on a postcard. Entries will not be returned. Enter as many times as you wish.

Send entries to: Limerick Contest, The Saturday Evening Post, 1100 Waterway Blvd., Indianapolis, IN 46202.

All eligible limerick entries must be postmarked by September 5, 2006.

The winner of the July/August 2006 contest will be announced in the Nov./Dec. 2006 issue.



Our congratulations and a check for \$100 go to William C. Kohler, Derby, Connecticut, for the winning entry in the March/April 2006 limerick contest.

*She knows that it never will fit,
But it won't hurt to dream just a bit.
He has thoughts of his own,
But you won't hear him groan;
Without saying a word, he'll just sit.*

Our congratulations and honorable mentions go to Vada Lee Jones, Atherton, California, and Don M. Bryant, LaGrange, Georgia, for their entries.

*Although he's convinced beyond doubt
For that costume she's clearly too stout,
If he's smart he'll think twice
Before giving advice
And just wait till she figures it out!*

*He must speak to avoid the disgrace
Of ruffles and stripes and bare space.
Unafraid that she'll bop him,
There's nothing to stop him
But the look of sheer joy on her face.*

Prostate Cancer

continued from page 40

from a machine outside the body. The radiation destroys cancer cells and shrinks the tumor. The treatment requires seven to eight weeks on an outpatient basis, five days a week. Complications include some impotency and bladder and rectal burns.

Several other options I fleetingly considered were cryosurgery, or cryoablation, in which the cancer cells are destroyed by twice rapidly freezing and thawing cancerous tissue. I also fleetingly considered high-intensity focused ultrasound (HIFU) which is currently undergoing clinical trials in the United States. It is a noninvasive technique that uses precision-focused ultrasound waves to heat and destroy targeted tissue without affecting the healthy surrounding tissue.

The "wait and see" approach or "watchful waiting," is nothing more than stupid procrastination in my opinion. After carefully considering all the options, the surgeon in me opted for a radical prostatectomy. "When in doubt cut it out," or "a chance to cut is a chance to cure" were always my professional dictums. Besides, I was of the mindset just to "get it out of me."

Even though I'm a retired surgeon turned researcher, I've maintained a reputation among my friends as a referral doctor. I had received a call four months earlier from San Williams, my good friend in Austin, Texas, who had had a similar decision to make. He had opted for surgery. At first I thought about referring them to the world-renowned cancer center in Houston, but San, a Presbyterian preacher, wanted to stay in Austin. I used my fool-proof, best-doctor-location technique: I called the charge nurse of the operating rooms of each of the two largest hospitals in Austin. Both nurses and several other eavesdropping O.R. nurses said without hesitation: Dr. Randy Fagin and the da Vinci procedure.

"The what?" I asked.

"The da Vinci Prostatectomy," they insisted.

That's what San chose after fully considering all his other options. He did great.

Now, four months later, I'm going through the same due diligence and discovery. The gold standard for academic survival rates and complication rates related to radical prostate

surgery is the so-called open radical prostatectomy. This procedure classically involves either a retropubic approach or perineal approach to the lower pelvis for the surgical removal of the prostate gland and surrounding tissues, including the seminal vesicles, and any suspicious pelvic lymph nodes. Prior to the mid-1980's, a radical prostatectomy almost always meant loss of potency and a high rate of chronic incontinence because the nerve bundles that supplied the penis and the bladder ran directly below the prostate on either side and, with the classic open procedure, usually got sacrificed.

As with all surgical procedures, time brings innovative changes. In 1986, Patrick Walsh, M.D., at Johns Hopkins introduced the so-called "nerve-sparing procedure" in which the surgeon tries to avoid removing

or cutting the nerves that control the ability to achieve an erection. With the nerve-sparing, open technique about 40 percent to 60 percent of men retain potency.

The next surgical innovation was the introduction of the laparoscopic radical prostatectomy first performed in 1991 by William Schuessler, M.D. This form of minimally invasive surgery (MIS) allows the procedure to be performed through several small incisions in the abdominal wall. A laparoscope (a device consisting of a tube and an optical system) is inserted through one incision while surgical instruments are inserted through the other incisions. This procedure has served as a stepping stone to what I consider the best approach.

The robotic prostatectomy utilizing the da Vinci Surgical System is the latest innovation in radical prosta-

tectomy surgery. At the heart of this procedure is a sophisticated robotic platform designed to enable complex surgery using an MIS approach.

The da Vinci system consists of a surgeon's console, a patient-side cart with four interactive robotic arms, a high-performance vision system, and proprietary EndoWrist® instruments.

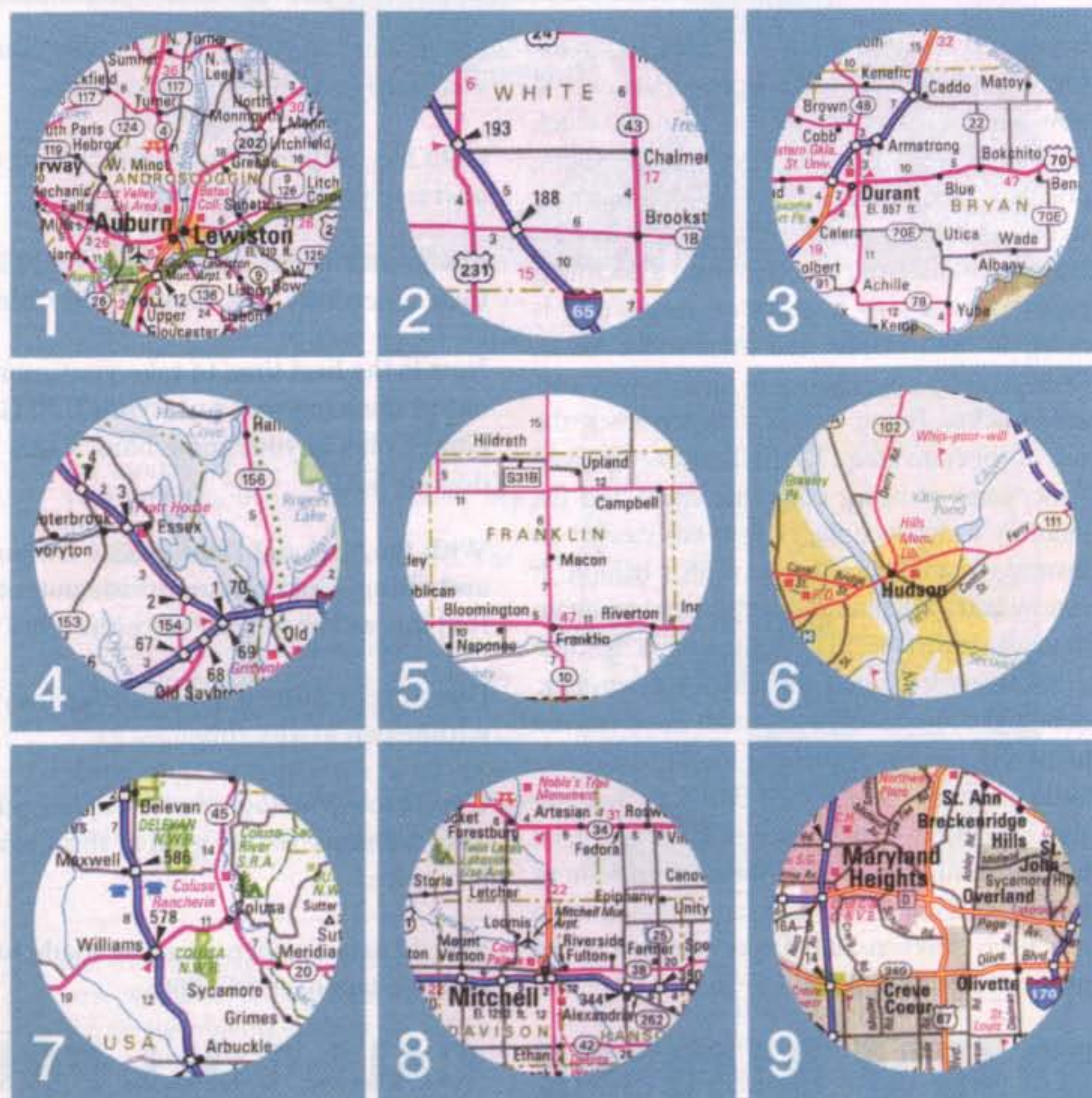
The original prototype for the da Vinci System was developed in the late 1980's at the former Stanford Research Institute—now SRI International—under contract to the U.S. Army. While initial work was funded in the interest of developing a system to perform battlefield surgery remotely, potential commercial applications were even more compelling: it was clear that this technology could accelerate the application of the minimally invasive surgical approach to a broad range of complex procedures.

To perform a procedure, the surgeon uses the console's master controls to maneuver the patient-side cart's four robotic arms, which securely hold the instruments and high-magnification endoscopic camera. The instruments' jointed-wrist design exceeds the natural range of motion of the human hand.

Motion scaling and tremor reduction further interpret and refine the surgeon's hand movements. A final hallmark of the da Vinci system is its fail-safe design to minimize opportunities for human error when compared with traditional approaches.

The da Vinci system is a remarkable improvement over conventional laparoscopy, in which the surgeon operates while standing, using hand-held, long-shafted instruments which have no wrists. With conventional laparoscopy, the surgeon must look up and away from the instruments to a nearby two-dimensional video monitor to see an image of the target anatomy. The surgeon must also rely on his/her patient-side assistant to position the camera correctly. In contrast, the da Vinci System's ergonomic design allows the surgeon to operate from a comfortable, seated position at the console, with eyes and hands positioned in line with the instruments. To move the instruments or to reposition the camera, the surgeon simply moves his or her hands.

By providing surgeons with superior visualization, enhanced dexterity, greater precision, and ergonomic comfort, the da Vinci makes it possible



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Where do you think you are?

East, West, North, or South, each of the areas above appears on the map of a single state or province. Can you identify these locations? If you find the game too easy (but you won't), try to guess this issue's theme. "And the winner is..."

(Answers on page 89)