Giving the surgeon a hand

By Toni Heinzl

Da Vinci is enhancing the art of surgery.

The machine, not the man, is raising the art to a level beyond human possibility. With steady-as-a-rock hands, the da Vinci surgical system, with four robotic arms, is helping UT Southwestern physicians perform laparoscopic surgeries with precision never seen before.

For patients like Richard Halleen, that precision translated to less pain.

When Mr. Halleen got the diagnosis of prostate cancer, the 53-year-old sales manager for a Dallas department store pondered many options: watchful waiting, radioactive seeds, external radiation and chemotherapy, or prostatectomy.

His research led him to Dr. Claus Roehrborn, chairman of urology at UT Southwestern Medical Center and an internationally renowned prostate cancer expert who has mastered both open surgery and the four-armed robotic surgery system called da Vinci.

"The surgery took four hours," Mr. Halleen said. "I left the hospital the next day and was able to walk up the stairs in my house. I did not feel a great deal of discomfort and took pain medication for less than 24 hours."

A week after his surgery, Mr. Halleen resumed his daily exercise routine of brisk two-mile walks twice a day around his Plano neighborhood.

The $1.4 million da Vinci robotic-assisted surgery system takes minimally invasive surgery to unprecedented levels of accuracy. It consists of a four-armed robotic device linked to a tiny video camera and a computer.

"It gives the surgeon an extra hand, if you will," said Dr. Roehrborn, director of the Sarah M. and Charles E. Seay Center for Pediatric Urology and holder of the E.E. Fogelson and Greer Garson Fogelson Distinguished Chair in Urology. "That hand is not only there to extract and expose and to help and facilitate, that hand also is absolutely steady. It will never move."

Offering 3-D high-resolution vision in color and up to 10 times magnification of the surgical area, robotic-assisted laparoscopic surgery with da Vinci has quietly revolutionized surgical procedures for a variety of cancers, including those affecting the prostate, ovaries, cervix, bladder, colon, esophagus, pancreas and stomach, as well as coronary artery bypass grafting and valve replacement. It has become particularly popular with urologic surgeons because of access difficulties during surgery for prostate or bladder cancer, urethral reimplantation and vaginal hernias called prolapse.

The da Vinci system, which was purchased with funds from the Friends of UT Southwestern University Hospital-Zale Lipshy, filters out the slightest tremors and fatigue even the most skilled surgeons can experience. The surgeon, seated at a console less than 15 feet away from the patient, uses joystick-like controls to operate the robotic arms holding the surgical instruments and foot controls to focus and move the camera and switch between instruments. The surgical tools are inserted through ports requiring only small, 1/4-inch incisions in the patient.

Dr. Roehrborn performed his first prostatectomy with the assistance of da Vinci on Feb. 20, 2006, after having performed the procedure with open surgery hundreds of times before.

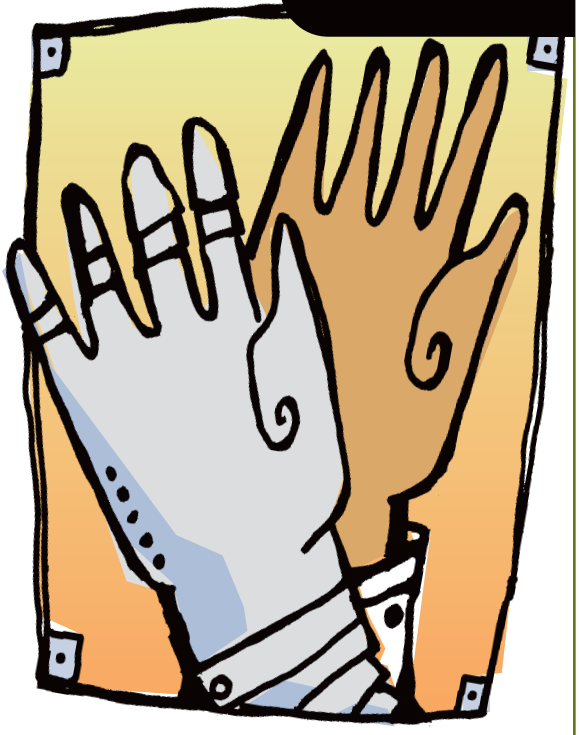
"It requires access ports rather than a midline incision with open surgery," Dr. Roehrborn said. "It is associated with less blood loss, reduces the need for blood transfusion, requires less pain medication and results in less postoperative pain, and enables patients to recover more quickly."

> "It gives the surgeon an extra hand, if you will."
>
> — *Dr. Claus Roehrborn*

Dr. Daniel Scott, director of the Southwestern Center for Minimally Invasive Surgery and assistant professor of surgery, believes it is the wave of the future.

"It makes surgery more precise than humanly possible and mimics the ease with which surgeons manipulate instruments during open surgery," Dr. Scott said.

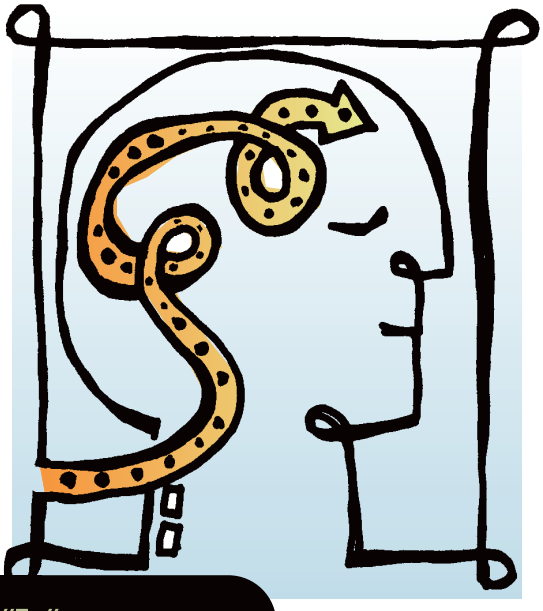
For more information, please call 214-645-8765 or 214-648-2677.✲



PIN– pointing the pathways

By Aline McKenzie

In brain surgery, knowing where the problem is and reaching the target without harming other parts of the brain is often difficult.



A technique under development at UT Southwestern Medical Center provides a pathway to the base of the brain that avoids the problem entirely. The surgeons don't go through the brain. Instead, they send thin tubes up the spinal cord.

They foresee a day when they can use this route to send drugs, cameras, even tiny scissors or other tools to the brain for surgeries or treatments not otherwise possible.

"One of the things we learned early on is how easy it is," said Dr. Phillip Purdy, who co-holds the pending patent for the method with UT Southwestern.

The method, called PIN for percutaneous intraspinal navigation, is limited so far to only the sickest of patients. The doctors compare this to early organ transplants, which were also performed on the most critically ill.

The technique has performed well in practice, delivering a clot-busting drug to a man who had suffered a massive stroke.

Bill Morris, a 55-year-old regional sales manager from suburban Atlanta, was in central Texas on a business trip when he collapsed in December 2005. He was flown to UT Southwestern, where his wife and three grown children immediately converged.

"The kids and I talked about it and said, 'If there's any possibility, go for it,'" said his wife, Rose. "We were willing to try just about anything if it would give him a chance. Quite frankly, it was scary."

Using a needle to create an opening at the base of his spine, the surgeons threaded a tube through the hole, using X-rays to follow its progress. Once it reached the brain, they began slowly pumping in the drug. Over several hours, X-rays showed the clot visibly decreasing as the blood washed away.

Because of the overall damage to his brain caused by the stroke, however, Mr. Morris died several days after the surgery.

"If what they did can help someone else in the future, that would be good," Mrs. Morris said several months later.

Dr. Purdy and his colleagues got the idea for PIN as they were doing research in another direction – recovery from spinal injury.

"It really started with an accident," said Dr. Purdy, professor of neurological surgery and radiology.

They found that the few millimeters of fluid-filled space between the spinal cord and the spinal bones seemed cavernous to surgeons accustomed to operating in tight corners of the brain.

Using cadavers, they learned to feed a tube, about the thickness of a grain of rice, from the lower spine to the base of the brain.

Now, they use X-rays and cameras to see where they're going, while a knob at the bottom of the tube makes the tip wiggle, allowing them to navigate around the nerves that feed out from the spinal cord.

"Even for a neurosurgeon who operates there all the time, it's a different way of looking at the anatomy," said Dr. Purdy, who holds the Orien and Jack Woolf, M.D., Distinguished Chair in Neurosurgery and Neuroangiography.

A surprising amount of technology can be packed into tubes that thin: a fiber-optic light and a camera to navigate the nerves from inside, and a smaller tube that actually delivers the drugs. Dr. Purdy and his colleagues are now working with a company to make the tubes even more versatile.

"It's amazing what we can accomplish through a simple needle stick in the spine," he said.✲

"It's amazing what we can accomplish through a simple needle stick in the spine."

–Dr. Phillip Purdy

A bright future in sight

By Russell Rian

Lou Ann Mix used to have to hold her alarm clock up to her nose in order to see the time in the morning.

"I wake up in an entirely different world now," she said. "It is a delightful surprise every day."

Ms. Mix was one of the first patients in North Texas to have both her eyes implanted with contacts.

Major breakthroughs in lasers and implanted artificial replacement lenses can now carry through on the promise of life without glasses for a broad range of vision troubles, from nearsightedness and cataracts to the blurry reading sight associated with age called presbyopia.

In one of the leading ophthalmology departments in the country, the doctors at UT Southwestern Medical Center stay at the forefront in offering patients the latest glasses-free technologies. More importantly, they have the scientific expertise to distinguish what works from simply what's new.

"A discriminating taste in selecting technology is important in the fast-paced environment of lasers and lenses," said Dr. James McCulley, chairman of ophthalmology, who has served on national committees that review the latest technologies approved by the Food and Drug Administration. "It's also critical to match the right technology to each patient's visual needs."

Ophthalmologists at UT Southwestern's Laser Center for Vision Care were the first in the region to implant the new ReSTOR lens that allows cataract and presbyopic patients to see near, far and middle distances without glasses. They also are using the VISIAN implantable collamer lens (ICL), often referred to as implantable contacts, which offers better sight for special cases of nearsightedness.

"I used to try to imagine what it must be like to just see without glasses or contacts or anything. The reality of it is millions of times better than I could ever have dreamed," said Ms. Mix, who had the ICL surgery.

The ReSTOR lens is considered an evolutionary step for implanted lenses. The soft plastic artificial lens is inserted into a tiny incision made to the eye, replacing the damaged, natural lens. Its optical design and biocompatibility set it apart from other lenses, said Dr. McCulley, who directs the Jean H. & John T. Walter Jr. Center for Research in Age-Related Macular Degeneration and holds the David Bruton Jr. Chair in Ophthalmology.

In addition to the new advances in multifocal implanted lenses like ReSTOR are supplemental lenses, which target smaller groups of patients who have more specialized eye problems. For example, the VISIAN ICL is designed to remain in the body indefinitely to correct vision for those who aren't good candidates for laser surgery.

"Think of it as a contact lens inside your eye," said Dr. Wayne Bowman, professor of ophthalmology and holder of the Irene Wadel and Robert I. Atha Professorship in Ophthalmology. Dr. Bowman performed the first operations for the ReSTOR lens as well as the new VISIAN ICL.

In addition to needing implanted lenses, some patients require additional fine-tuning with lasers, said Dr. H. Dwight Cavanagh, professor of ophthalmology, who often trains other area eye surgeons on new techniques and technologies.

"Our approach is that the surgeons who implant multifocal lenses are not only established cataract surgeons but also established keratorefractive surgeons, so the same surgeon would be doing all necessary surgical procedures," said Dr. McCulley.

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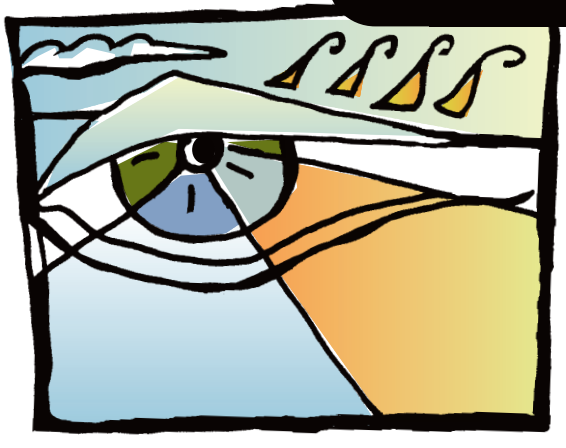

UT Southwestern's Laser Center for Vision Care is the only place in North Texas to offer IntraLase, which prepares the eye for refractive surgery, along with three different types of lasers – the Allegretto WaveLight Laser System, VISX Star S4/IR Excimer Laser System and Alcon LADARVision 6000 Excimer Laser – that enable physicians to customize vision correction, said Dr. Cavanagh, holder of the Dr. W. Maxwell Thomas Chair in Ophthalmology.

For more information, please call 214-645-2020.✻