

Minimally Invasive Surgery



most valuable new tool," says Clayman. UC Irvine Medical Center was the site of the first da Vinci® robotic prostate surgery in Southern California, and urologist **Dr. Tom Ahlering** and his colleagues have performed more than 1,000 of these procedures since that time. "Robots give doctors unprecedented control over the miniature instruments used during minimally invasive surgery and allow a more detailed, magnified view of the surgical site than the naked human eye allows," says Clayman. Because robotic systems increase a surgeon's

range of motion and steadiness of hand, doctors are able to perform minimally invasive procedures that were only dreamed of 10 years ago. Furthermore, due to refinements in surgical tools and methods, the number of non-robotic, minimally invasive endoscopic and laparoscopic procedures has similarly multiplied.

The result is a new era in surgery. Orthopaedic surgeons and neurosurgeons routinely repair the spine through small incisions, decompressing pinched nerves, replacing herniated discs,

repairing damaged joints and fusing bones. Urologists perform prostate surgery through tiny incisions, preserving urinary and sexual function, and also remove ureters, kidneys and large kidney stones through tiny openings. Gynecological surgeons perform minimally invasive hysterectomies. Cardiac surgeons correct atrial fibrillation without opening the chest. Digestive disease surgeons often opt for minimally invasive procedures when removing colorectal tumors and treating other conditions such as gastroesophageal reflux disease, gallbladder disease, hernia, obesity, benign colon disease, cancer, appendicitis, diverticulitis and inflammatory bowel disease.

Leading the way. "UC Irvine surgeons are leading the way in developing and refining minimally invasive techniques so these approaches can be used in virtually all cases, including very complex surgeries," says **Dr. David Hoyt**, chair of the Department of Surgery. "The medical center is playing an important role in creating new devices and procedures to make surgery less invasive."

The efficiencies of the new surgery complex will help surgeons in this mission. Doctors and nurses can control every function in the new operating rooms with touch-screen technology, including lights, monitors, surgical cameras and

the operating table. Monitors and other equipment are suspended from the ceiling on booms, creating more space for the surgical team and eliminating hazardous wires and cables on the floor. Real-time video taken from inside the patient during minimally invasive procedures and diagnostic test information will be displayed on plasma screens that can be positioned anywhere in the room, including directly over the operating table. This ergonomic improvement

University of California, Irvine Medical Center will unveil one of the most advanced surgical complexes in the nation when the new University Hospital opens in February.

Consisting of 15 state-of-the-art

"smart" operating rooms—eight of which are designed specifically for minimally invasive surgery—the new surgery unit will expand to 19 ORs by 2011 and reflects the growing trend toward less invasive procedures.

"The new ORs are designed to accommodate the larger surgical teams that are necessary for very complex procedures," says **Dr. Ralph Clayman**, chair of the Department of Urology. They also provide an ideal environment for the surgical robot, a bulky piece of equipment that's 7 feet tall. Physician-operated and computer-enhanced, "robotic systems have become the surgeon's

LESS IS MORE

Dr. Michael Stamos, chief of colon and rectal surgery, is an expert in the treatment of colorectal cancer using minimally invasive surgery that helps preserve urinary, bowel and sexual function.



allows doctors to assume a posture that's kinder and gentler to their neck and shoulder muscles. As a result, they can focus better on their patients.

Streamlined communication. Enhanced communication also contributes to patient safety and staff efficiency. Surgeons are able to interact via video with other physicians in nearby or remote locations while jointly viewing live images from the operating room. Furthermore, the hospital's picture archiving and communication system (PACS) makes it possible to receive a patient's medical record in the OR instantaneously—including CT, MRI, ultrasound, and other diagnostic imaging or laboratory tests.

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"While providing patients with the most advanced surgical care possible, the new operating rooms also facilitate our education and research initiatives," says Hoyt. Several rooms are equipped to broadcast images to classrooms for teaching purposes. "We can transmit simultaneous views from inside and outside the patient, while showing the incisions and the surgeon's hands manipulating the instruments," says Hoyt. "This is a very powerful teaching tool." The ORs are also equipped with a special screen called a telestrator that lets surgeons make notations on displayed images. These pictures can be sent electronically for teaching purposes or interpretation by another specialist.

Multipurpose features. Another important feature of the new surgical complex is that each operating room is multipurpose and interchangeable. A room used for cardiac bypass surgery, for example, can be converted easily for knee replacement. All have the latest technology and monitoring equipment in the same location.

This means doctors can work in a familiar environment each time they do surgery without the need to reorient themselves to a new setting.

An important exception is one operating room designed especially for brain surgery. The room



THROUGH THE KEYHOLE

Ralph Clayman, chairman of the Department of Urology, and his colleagues were the first in the world to remove a diseased kidney and ureter using a laparoscope. Since then, he and his team have advanced UC Irvine Medical Center to a position of national leadership in minimally invasive surgery.

is equipped with an intraoperative magnetic resonance imaging (iMRI) scanner, which provides doctors with detailed pictures of the brain during surgery. This is critical because the brain is constantly shifting within the skull, so images taken before an operation are not entirely accurate. Since the iMRI contains a powerful magnet, the walls of the room are specially constructed to contain the machine's magnetic field. They're also lined with copper to prevent interference from outside radiofrequency fields.

Although the new surgery complex is high-tech in every respect, the focus is still on patient- and family-centered care. Registration takes place in a spacious, beautifully appointed lobby on the second floor of the University Hospital, adjacent

to the surgery suites. Families can wait in this comfortable area or in another well-appointed space. Family members are equipped with a restaurant-style pager, which alerts them when the surgeon is ready to meet or a progress report is available. These meetings take place in private conference rooms.

Once patients are out of surgery, they go to a recovery room adjacent to the ORs, and eventually to the surgical ICU or less intensive settings such as a step-down unit or a medical/surgical room. From the time patients leave the recovery room, they can benefit from the closeness of their best support system—their family.

Before the surgical complex was even designed, the hospital sought guidance from the operating room staff and personnel in every department that interfaces with surgery. The new surgical floor reflects the ideas of many professionals who have spent a good portion of their lives working in operating rooms.

"As a university-based hospital, we perform a wide spectrum of surgeries, including exceptionally complex procedures done at only a few leading hospitals in the country," says Hoyt. "We're also working to sustain a culture of safety in operating rooms and beyond. The new surgery complex will help us advance our mission, which is to deliver state-of-the-art patient care in an environment conducive to discovery and education."