DEVICES THAT MAKE A DIFFERENCE

Look inside an operating room and you will find metal tables draped in blue cloth, outfitted with specialized tools. Most fit in the palm of the hand, but some can rest on the fingertip. This next generation of surgical devices can repair anatomical defects, divert microscopic blood flow and even emit radio frequency signals to ensure safe removal of all sponges. These lifesaving aids, and more, are being utilized at UC San Diego Health System.

Magnets for Reflux

“Most often, as surgeons, our goal is to remove a cancer or diseased organ,” said Santiago Horgan, MD, chief of minimally invasive surgery at UC San Diego Health System. “At other times, however, our goal is to repair a malfunctioning organ. In the case of acid reflux, where the esophageal sphincter is weak, we can now use a ring of magnets to prevent acids from backing up into the throat.”

The new FDA-approved device, called LINX®, is composed of titanium beads with a magnetic core that wrap around the lower esophagus. Unlike drugs that suppress stomach acids, this flexible device corrects the anatomy and immediately addresses the actual source of reflux.

Alternate Energies

Patient satisfaction and quality of life are key factors that come into play when surgeons design a procedure. Sometimes this means choosing alternative energy sources to seal blood vessels.

“Our surgeons have stopped using standard surgical clips in breast cancer procedures because the clips can cause patients discomfort after surgery,” said Sarah Blair, MD, breast surgeon at Moores Cancer Center. “We’ve replaced clips with new energy devices that utilize either bipolar or ultrasonic energy. These alternate ways to stop bleeding are less likely to cause inflammation, fluid collections and nerve damage. It’s what’s best for the patient.”

Robotic Attack

In delicate reconstructions of organs, like the kidney, surgeons must reduce blood flow to operate in a clear field. Instead of stopping flow to the entire kidney, Ilhan Derweesh, MD, urologic oncologist at UC San Diego Moores Cancer Center, has helped perfect a robotic technique to disrupt blood flow only to the region of malignancy.

“The idea is that we can shut off blood flow to only one side of the kidney,” Derweesh said. “Instead of blocking blood flow to the entire kidney, a small device is used to stop blood flow in a limited area. The rest of the kidney receives its normal blood supply.”

The device, called a Simon clamps, was developed in Germany and has recently been adopted in the U.S. Derweesh was one of the investigators in a national study that evaluated its ability to help preserve kidney function by using it with the daVinci® robot.

“By adding this device to robotic surgery, we can preserve healthy kidney cells,” explained Derweesh. “Long term, it means that patients will have a healthier kidney and may be more prone to cardiovascular disease, anemia and osteoporosis — consequences of kidney insufficiency.”

Safety First

The pursuit of optimal results for the patient requires not only what goes into the patient, but also what comes out. Anthony Perricone, MD, cardiac surgeon at UC San Diego’s Sulpizio Cardiovascular Center, uses a new low-energy radio frequency technology to prevent retained objects from being left in a patient.

“We use a wand-like device that can detect sponges in the body,” said Perricone. “The device can detect surgical sponges through blood, dense tissue, bone and metal prior to closing an incision. It prevents the need for repeat radiologic scans or the possibility of having to look for a sponge to get a correct count.”

Perricone said the device can ultimately shorten time under anesthesia and provides the whole surgical team reassurance that the surgery has been completed safely.

JMC Groundbreaking

UC San Diego Health System recently broke ground on the 10-story, 246-bed Jacobs Medical Center. The state-of-the-art building will include three new hospitals for advanced surgery, cancer care and women and infant health. The high-tech, high-touch design creates an intuitive environment where patients receive technologically advanced and compassionate care from a team of expert providers.

Join Us for Grand Rounds

If you would like to learn about emerging treatments for cancer, cardiovascular and metabolic disease, please join us for Grand Rounds. This is an excellent opportunity to learn about emerging techniques and treatments and to connect with colleagues. For a schedule of upcoming speakers, call the Surgery Chairman’s office at 619-543-5462.

Follow Your Patient

Our goal is to take the best possible care of your patient. To access timely information on your case, you can log in to UCD Link. This online tool provides real-time access to your patient’s EMR, physician notes, lab work, films and prescriptions. To learn more, contact Julie Ciardi at jciardi@ucsd.edu.
From the Chairman

Recently, more than 100 California health care leaders joined together for the American College of Surgeons’ (ACS) fourth Surgical Health Care Quality Forum. While the attendees represented diverse groups of surgeons, nurses, policymakers and patient advocates, there was a definite consensus on the need for hospitals to come together on how to deliver the best possible quality of care, for all patients, in every possible moment. I support these initiatives wholeheartedly.

To change health care for the better, and to improve outcomes in operating rooms, we must have dedicated training in new tools, devices and methods. We have to set the standards, build the right infrastructure, use the right data and verify what we observe. These approaches can save lives and help prevent complications. The outcome is better care for all patients and could translate to a savings of $25 billion per year in health care costs.

The last decade and the next decade are clearly a crossroads for surgery. The days are gone when you would finish your surgery training and be ready to practice for the next 40 years. Technology is changing how we operate. At UC San Diego, the Center for the Future of Surgery is dedicated to helping surgeons across the globe, as well as our own, train on the newest and best equipment.

If you have questions about our surgeons and their specialties, I invite you to call me. I may be reached at 619-543-6453, or email me at mtalamini@ucsd.edu.

Mark A. Talamini, MD
M.J. Orloff Family Professor and Chairman
Surgeon-in-Chief
UC San Diego Health System

LAB NOTES: Glowing Reviews

Surgeons at UC San Diego Health System are researching ways to make surgery less invasive by using tools, such as fluorescence, to detect and treat cancer, and to identify and preserve nerves.

Labeling Nerves

Accidental damage to thin or buried nerves during surgery can have severe consequences, ranging from chronic pain to permanent paralysis. Scientists at the UC San Diego School of Medicine may have found a remedy: injectable fluorescent peptides that cause hard-to-see peripheral nerves to glow, alerting surgeons to their location even before the nerves are encountered.

“Nerve preservation is important in almost every kind of surgery, but it can be challenging,” said Quyen T. Nguyen, MD, assistant professor of head and neck surgery at UC San Diego School of Medicine. “For example, if the nerves are invaded by a tumor or if surgery is required in the setting of trauma or infection, the affected nerves might not look as they normally would, or their location may be distorted.”

Nguyen and colleagues at Moores Cancer Center developed and injected a systemic, fluorescently labeled peptide into mice. The peptide preferentially binds to peripheral nerve tissue, creating a distinct contrast (up to tenfold) from adjacent non-nervous tissues. The effect occurs within two hours and lasts for six to eight hours.

“Of course, we have yet to test the peptide in patients, but we have shown that the fluorescent probe also labels nerves in human tissue samples,” Nguyen said. “Interestingly, fluorescence labeling occurs even in nerves that have been damaged or severed, providing they retain a blood supply. The discovery suggests fluorescence labeling might be a useful tool in future surgeries to repair injured nerves.”

Staging Pancreatic Cancer

More than 80 percent of people with pancreatic cancer are diagnosed after the cancer has metastasized and by then, the prognosis for long-term survival is dismal. However, surgeons—scientists at UC San Diego School of Medicine are developing a laparoscopic technique that uses fluorescent light to improve pancreatic cancer staging and treatment.

Michael Bouvet, MD, professor of surgery, UC San Diego School of Medicine, and his team compared a standard xenon laparoscope with a laparoscope using a light-emitting diode (LED) source. They took two antibodies that are commonly expressed by pancreatic cancer and tagged them with a fluorescent marker, thus making the cancerous tumors “light up” in colors of bright green or red. The surgeons and scientists then administered fluorescent antibodies into mice. The researchers were able to see primary and metastatic tumors more vividly with the LED light, at a sensitivity rate of 96 percent, compared to traditional laparoscopy, which has a sensitivity rate of 40 percent.

“Laparoscopy is used for staging in patients with cancer, often before we make a big incision,” said Bouvet. “Now, we’ve made it even better with the LED light source. We modified it so you can see both the normal background of the anatomy, plus the fluorescent tumor signal at the same time.”

In preclinical studies, the fluorescent marker did not show evidence of toxicity or side effects in the mice. The combination of LED light and fluorescent markers for malignant tumors could potentially improve how surgeons detect and treat pancreatic cancer in human patients.

Welcome New Faculty

Thomas Alexander, MD
Dennis Bandyk, MD
Clark Chen, MD, PhD
Mike Hsieh, MD
Jacob Husseman, MD
Alexander Khaledi, MD, MS
Philip Weissbrod, MD
Head and Neck Surgeon
Vascular Surgeon
Neurosurgeon
Urologic Surgeon
Head and Neck Surgeon
Neurosurgeon
Head and Neck Surgeon

Rapid Referrals

Would you like to consult with a UC San Diego surgeon? Our team is here to help you today. Please call 855-543-0655.

Editor
Jacqueline Carr, jarr@ucsd.edu
Fighting Cancer at 22

At the age of 22, Nakita Garcia was diagnosed with triple negative breast cancer, an aggressive form of the disease that does not express the genes for estrogen receptor (ER), progesterone receptor (PR) or HER2/new. She has undergone a double mastectomy with plans for reconstruction, and is currently enrolled in a clinical trial to receive a promising investigational drug. Her diagnosis has not stopped her. Nakita is a mother, book author and skydiver.

"My surgeon, Dr. Wallace, and my oncologist, Dr. Helsten, are exceptional. It's reassuring to know you are in the hands of a team of capable, intelligent and supportive doctors. When your life is turned upside down by cancer, just knowing you have the best possible care is a step towards healing."

Nakita offers this advice for other young patients diagnosed with cancer:

1. Always take it one day at a time. Your days could turn into years. Don't worry about statistics — worry about you.
2. Your family is going through a hard time, too. Be open with them and accept their support and help.
3. Never, never, never give up.

New Surgical Technique May Reverse Paralysis, Restore Use of Hand

Justin M. Brown, MD, reconstructive neurosurgeon at UC San Diego Health System, is one of only a few specialists in the world who have pioneered a novel technique to restore hand function in patients with spinal cord injury. In a delicate four-hour procedure, Brown splices together tiny nerve endings, only one millimeter in width, to help restore hand mobility. Most patients return home 24 hours after surgery.

"Even if a patient appears to have lost total hand function, as long as there is some nerve in the arm or shoulder under the patient's control, mobility may be regained," said Brown, director of the Neurosurgery Peripheral Nerve Program and co-director of the Center for Neuropsychology and Restorative Neurology at UC San Diego Health System. "With a nerve transfer, the goal is to reverse paralysis. This means achieving functional grasp and release so that patients can eat independently, operate a computer or hold a loved one's hand."

Brown and his team treat hand impairments at cervical 5 level and below. Operating under a microscope, Brown disconnects the damaged nerve and reconnects it to a healthy one. The healthy nerve is taken from underneath the muscles of the upper arm and then connected to a nerve branch that provides finger function. In contrast to muscle transfers, nerve transfers allow whole muscle groups to be restored in the arm without visibly changing the body's anatomy.

"The nerves grow at a rate of 1 millimeter per day," said Brown, who is also a founding member and first president of the International Society for Restorative Neurology. "Over a period of six to 12 months, patients can essentially wake up their arms and hands and return to a satisfying level of functionality and improved quality of life."

Northern Exposure

Our surgeons are now seeing patients in the North Coastal area of San Diego. If you or your practice manager would like a tour of our facilities, please call 858-336-4375.

Viral Vector Attacks Brain Cancer

Moores Cancer Center doctors are among the first in the nation to treat patients with recurrent brain cancer by injecting an investigational viral vector into their tumor.

"This clinical trial targets glioblastoma, one of the deadliest forms of brain tumor," said principal investigator Santosh Kesari, MD, PhD, director of neuro-oncology at Moores Cancer Center.

The current standard of care for a newly diagnosed, high-grade gliomas includes surgically removing as much of the tumor as possible, followed by radiation therapy and chemotherapy. Despite these measures, the tumor usually recurs.

The trial is investigating the use of Toca 511 for injection, in combination with Toca FC extended-release tablets. Toca 511 is a retroviral replicating vector that is designed to deliver a cytosine deaminase (CD) gene selectively to cancer cells. After allowing time for the Toca 511 to spread through the cancerous tumor, those cancer cells expressing the CD gene can convert flucytosine into the anti-cancer drug 5-fluorouracil.

"This may provide a new way to destroy cancer cells without disrupting delicate neurocircuitry," explained Clark Chen, MD, PhD, neurosurgeon at Moores Cancer Center. "We fused the patients’ CT scan to their MRI and used neuro-navigation software to calculate exactly where in the tumor we needed to place the injection. The patients were given the injection and discharged from the hospital the day after the procedure."

Participants in this clinical trial must be 18 years or older, have a single recurrent Grade 3 or 4 glioma and have had prior surgery and chemotherapy.
SURGERY INSIDER

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UC San Diego
HEALTH SYSTEM

Organ Recycling: A Novel Approach to Save Lives

“‘We recently had a case in which we were able to transplant a liver with a genetic disorder into a patient whose healthy body was able to overcome the defect,’ said Alan Hamming, MD, liver surgeon at UC San Diego Health System. ‘While the liver did not function as needed for the first patient, it extended the life of the second. This is a new approach to managing the severe shortage of livers for transplantation.’”

“I saw this as a tremendous opportunity,” said patient James O’Gara, 61, a real estate developer from California. “The doctors did not sugarcoat the risks of receiving this organ. They explained everything and even encouraged me to seek a third-party opinion. When the call came to get the liver, I said, ‘Sign me up.’”

O’Gara, who had liver complications from ulcerative colitis, added, “I have had great results. I feel good and my spirits are high. They saved my life and I am deeply grateful.”

According to the U.S. Department of Health and Human Services, more than 16,170 patients await a liver transplant each year in the United States. Approximately 15 percent of patients on the transplant list will die while waiting for an organ. A surgical team at UC San Diego Health System has taken a novel approach to evaluating livers for transplantation.

Call Direct

Physician Access Services is a dedicated line that allows you to speak directly with one of our physicians at UC San Diego Health System — no automated systems, no on-hold soundtrack. This number gives you real and immediate access to a fellow physician and a trusted partner. So whether you want to talk about a particular case, facilitate a transfer or refer your patient for highly specialized care, our physicians are standing by to take your call. Call 855-543-0655 or visit health.ucsd.edu/access.

To learn more, contact Julia Civardi at jcivardi@ucsd.edu.