

With Minimally Invasive Surgery, Kindest Cut May Be No Cut

By Jackie Carr | March 05, 2014

Surgery without a large incision? Yes, it's possible.

And for many procedures at UC San Diego Health, it's considered the standard of care.

Over the past two decades, surgeries have been redesigned to offer fewer cuts, sometimes a single small incision. With shorter and fewer incisions, patients experience less pain, briefer hospital stays, reduced risk of [post-operative hernia](#) and less scarring.

Will all surgeries one day be scarless? Probably not, but this next-generation of operations is friendlier to the patient and can be used to treat a variety of conditions, from appendicitis to obesity to pancreatic cancer.

One of the nation's early trailblazers of minimally invasive surgery is [Santiago Horgan, MD](#), chief of minimally invasive surgery at UC San Diego Health. The son of a surgeon, he grew up believing that a large scar was the sign of a talented surgeon.

"Times have changed. Now surgical incisions measured in centimeters instead of inches are, in many cases, considered better for the patient. At the [Center for the Future of Surgery](#), we are re-inventing how the most common surgical procedures can be achieved with fewer incisions in a safe environment with the best possible outcomes for patients."



Beginning in 2007, Horgan and his surgical team led the nation's first clinical trials to evaluate natural orifice transluminal endoscopic surgery or NOTES. This surgical technique takes advantage of the body's natural anatomy to place surgical instruments through openings such as the mouth. Considered controversial at the time, many U.S. hospitals now use this technique to perform common procedures to remove an inflamed appendix or gallbladders.

“We have safely performed hundreds of these minimally invasive procedures for both men and women,” said Horgan. “Research surveys show that patients appreciate the cosmetic outcome as well as less pain. In many cases, we can hide the single incision in the belly button so there is no visible scar after surgery.”

How it Works

Minimally invasive surgery is a broad term for a range of different procedures that includes NOTES. Other options include laparoscopy, robot-guided laparoscopy and transanal minimally invasive surgery (TAMIS). What these procedures have in common is that the surgeon can use technologically-advanced flexible tools or surgical platforms to remove diseased tissue or organs and perform reconstructions without large cuts to the patient’s skin. Here are three examples of the newest techniques:

- **Oral Appendectomy:** New surgical instrumentation and specialized cameras allow surgeons to reach surgical sites through natural body openings such as the mouth. Instead of making multiple incisions in the belly, one small incision is made in the belly, often hidden in the navel, to place a camera. Then, through the mouth, the surgeon can guide a thin device down the throat to access the stomach. A tiny hole is made in the stomach so that the rest of the abdomen can be reached by the advanced device which holds multiple tools to remove a diseased organ. The stomach heals quickly and no other incisions are needed.
- **Gastric Plication:** Patients seeking a minimally invasive weight-loss surgery that does not require an implanted device or permanent change to their anatomy have a new option at UC San Diego Health. With gastric plication, surgeons can fold the stomach into a smaller, more compact size. During a one-hour procedure, one to five small incisions are made in the abdomen to reach the stomach to place the folds. With the stomach volume reduced by 80 percent, patients can expect to lose up to two pounds per week following the procedure.
- **TAMIS:** This technique allows surgeons to remove large colon polyps and masses that cannot be completely removed during a routine colonoscopy. During a TAMIS procedure, thin surgical instruments are placed through a soft but stable surgical platform that rests inside the anus. The platform permits full visualization of the rectal growth allowing surgeons to precisely access and remove the abnormality. There are no permanent scars on the abdomen or around the anus. This approach helps surgeons avoid a traditional open procedure.

The Future

Minimally invasive surgery is evolving to treat even hard-to-reach organs like the pancreas. [Jason Sicklick, MD](#), surgical oncologist at UC San Diego Health recently reported a three-fold increase in the use of minimally invasive surgery across the nation for patients with pancreatic disease. Although adaptation of minimally invasive surgery for this difficult-to-reach gland is recent, the growing trend points to improved patient outcomes, such as reduced bleeding and infections. His team's peer-reviewed paper will appear this month in the print edition of *JAMA Surgery*.

"For the first time, we show a nationwide tripling of keyhole pancreatic surgery rates for benign and malignant pancreatic disease, from 2.4 percent in 1998 to 7.3 percent in 2009. Both laparoscopic and robotic approaches for distal pancreas removal are associated with lower rates of inpatient complications and shorter hospital stays," said Sicklick. "Patients should know that select approaches for minimally invasive pancreatic operations are safe depending upon the lesion's size and location in the pancreas."

One of his patients, Kathleen T., was recently treated for pancreatic cysts that were considered precancerous. If she had not had the minimally invasive laparoscopic approach, an open procedure resulting in a large scar would have been the alternative.

"I had four small incisions and one was hidden in my belly button," said Kathleen. "The recovery was good and I was not in a lot of pain. Afterwards, I was still able to get up and make coffee. For me it was a fantastic outcome."

Sicklick added that minimally invasive surgery may also become an option for more types of cancer surgeries.

"In general, I see minimally invasive surgery expanding. However, some operations will never lend themselves to an MIS approach. Ultimately, it should be done for the right reasons. The approach has to be determined by each patient's specific need."

His advice to patients in need of any kind of surgery is to ask their surgeon for the full range of possible surgical options and their potential risks. Patients should ask their surgeons about their specific training and how many procedures they have performed.

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