

ROBOTIC SURGERY

Robotic surgery is one of the next frontiers of minimally invasive surgery. Similar to traditional laparoscopy, surgeons make small incisions through which they insert trocars, which provide access for miniature, robot-controlled instruments and a camera. While assistants remain at the patient's bedside, the surgeon moves to a nearby console to manipulate the instruments and camera remotely. UCSF Medical Center at Mission Bay and Parnassus now offer robotic surgery, which can provide superior access and facilitate faster recovery in many cases.

Colorectal Surgery

"Our entire group is well versed in performing operations laparoscopically," said colorectal surgeon Ankit Sarin, MD, MHA. "While the patient experience is similar whether they undergo a laparoscopic or robotic approach, robotic surgery can offer a distinct advantage in cases involving the pelvis." This anatomy presents specific challenges to which the robot is especially well suited, including limited visualization, narrow working space and challenging angles from operating in the body's midline.

Since 2012, UCSF Medical Center has used the robot to treat several colorectal conditions, including:

- **Rectal cancer:** To resect rectal tumors, surgeons may perform low anterior resection, removing the rectum and connecting the colon directly to the anus, or abdominoperineal resection, removing the entire rectum and creating a colostomy.
- **Inflammatory bowel disease involving the pelvis:** Removing the rectum for ulcerative colitis or Crohn's disease can also be done robotically.
- **Rectal prolapse:** Surgeons perform rectopexy, mobilizing the entire rectum and securing it to the sacral bone to prevent rectal prolapse.



Ankit Sarin, MD, MHA



Johannes Kratz, MD



David Jablons, MD

- **Sigmoid procedures:** The robot can be useful for procedures occurring close to the rectum, such as surgical treatment of diverticulitis or cancer of the sigmoid.

"With the robot, we get a three-dimensional picture, instruments that allow articulation and rotational ability within the abdominal cavity – rather than just the up-and-down motion of laparoscopic instruments – and the robot never tires of retracting tissue or holding the camera steady," said Sarin.

Thoracic Surgery

Thoracic surgeons use video-assisted thoracoscopic surgery (VATS) to perform some procedures through minimally invasive approaches, but many surgeries benefit from an open approach due to technical complexity and the risk of operating near the heart. UCSF Medical Center recently acquired the Intuitive Surgical da Vinci Xi robot, which now allows some thoracic procedures to be performed minimally invasively.

"Robotic surgery offers several advantages over VATS, and allows us to do more complex operations with greater ease and accessibility in the chest," said cardiothoracic surgery fellow Johannes Kratz, MD, who is completing his training as an American Association for Thoracic Surgery Graham Foundation Intuitive Surgical Robotics Fellow. "Compared with open surgery, minimally invasive approaches result in less postoperative pain, fewer days in the intensive care unit and hospital, and fewer days with chest tubes."

Kratz and David Jablons, MD, chief of the section of General Thoracic Surgery, are experienced in robotic applications for thoracic surgery, including:

- **Lobectomy:** Surgeons create several small ports in the chest, separate the lobe from the rest of the lung, and slightly extend one port incision at the end of the operation to allow removal of the lobe and tumor. This eliminates the need for a rib-spreading thoracotomy, which can contribute to postoperative pain.

- **Esophagectomy:** This is typically done jointly with general surgeon Stanley Rogers, MD, who uses a laparoscopic approach through the abdomen to mobilize the esophagus from the stomach. Thoracic surgeons now use a robot-assisted minimally invasive approach in the chest to complete the operation.

- **Thymectomy:** The robot is well suited to the tight confines of the thymus, which is located between the heart and the sternum, and enables easier removal of the thymus without requiring a sternal split to access it.

"We're just in the beginning era of computer-assisted minimally invasive surgery," said Kratz. "Significant advances are in the pipeline, including instruments with haptic feedback and multiple instruments that use a single port and branch out within the chest or belly. UCSF Medical Center is poised to become the leading robotic thoracic center in Northern California, and the best is yet to come."

CONSULTATIONS AND REFERRALS

To refer a colorectal patient, call 415-885-3798 or visit colorectal.surgery.ucsf.edu. To refer a thoracic patient, call 415-885-3882 or visit thoracic.surgery.ucsf.edu.

