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UCLA pushes the boundaries of minimally invasive colorectal surgery with robotic technology

Colorectal robotic-assisted surgery (CRS) is the latest advance in minimally invasive procedures for colon and rectal diseases including colorectal cancers, diverticulitis and inflammatory bowel disease (ulcerative colitis and Crohn's disease).

While laparoscopic surgical techniques have provided an alternative to the large abdominal incision and long recovery period required by conventional open surgery, laparoscopy has presented technical challenges with limited, two-dimensional visualization and tight pelvic space in which to maneuver instruments.

Robotic-assisted laparoscopic surgery — using the da Vinci Surgical System — offers a minimally invasive alternative to both open and standard laparoscopic colorectal-related interventions.

The colon and rectal robotic surgical team at UCLA is one of the most experienced in Southern California and UCLA is among the top centers in CRS volume nationwide.

How colorectal robotic-assisted surgery works

State-of-the-art robotic arms — three tipped with specially designed laparoscopic surgical instruments and one with a light and fiber-optic camera — are inserted through tiny abdominal incisions. The robotic tools enable a three-dimensional, high-definition view of the entire surgical area and enhanced 360-degree wrist and finger micro-movements.

A major advance in colorectal surgery

Overcoming the challenges and limitations of traditional open and laparoscopic surgery, colorectal robotic-assisted surgery using the da Vinci Surgical System is becoming the approach of choice for the surgical treatment of both benign and malignant colorectal diseases.

"The application of robotic surgery in treatment of complex conditions of the colon and rectum has revolutionized the field of colorectal surgery," says Kevork Kazanjian, MD, associate professor of surgery and chief of the Section of Colon and Rectal Surgery. "With this innovative, minimally invasive technique, surgeons gain more vision, precision and control while making smaller, less invasive incisions."

"The continued evolution of robotic technology will further facilitate the widespread application of robotic surgery to colorectal disease," says Dr. Kazanjian. "We are seeing the tip of the iceberg. What we thought was impossible 10 years ago is now commonplace."

The surgeon, who is seated at a nearby console throughout the procedure, controls every movement. The system cannot be programmed or act in any way without his or her direct input. This interface allows the surgeon to operate with unmatched precision, dexterity and visualization.

Improved outcomes

Several recent studies comparing the safety and efficacy of colorectal robotic surgery to open and standard laparoscopic surgery, including a 2014 meta-analysis in the *World Journal of Surgical Oncology*, found that CRS patients experienced less post-operative pain and blood loss, a shorter hospital stay, lower rate of complications, better cosmetic results and quicker recovery.

Moreover, robotic-assisted surgery, particularly for rectal cancer patients, may enhance the surgeon's ability to preserve the anal sphincter and reduce the need for permanent colostomy. Trauma to important nerves is also minimized, helping preserve quality-of-life factors such as bladder control and sexual function.

The da Vinci Surgical System is effective for performing any complex colorectal surgery that would take place in a traditional colorectal surgical setting. In addition to performing robotic, sphincter-sparing, low anterior resection (LAR) and abdominoperineal resection (APR) for rectal cancer, UCLA robotic surgeons offer transabdominal rectopexy to repair rectal prolapse. Transabdominal repair of rectal and pelvic-organ prolapse may be performed in tandem with gynecologic surgery.

Collaborative, individualized treatment plan

The colorectal surgery team works in close collaboration with colleagues in digestive diseases, cancer and pelvic health to ensure that each patient receives a comprehensive and individualized treatment plan. Appointments with multiple specialists are scheduled for the same day whenever possible.

A care coordinator ensures that all lab work and tests are scheduled within a week of referral. The UCLA team works to provide effective communication to the referring physician.

UCLA's skilled physicians, nurses and technologists also work to advance the field of colorectal robotic-assisted surgery through research and education. UCLA CRS experts train physicians from across the country in advanced robotic techniques.

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