

# Advances in Robotic Surgery Make Treatment Safer, Less Invasive

by Alberto Maldonado, MD

Robotic surgery came onto the medical scene more than two decades ago, but rapid technological advancements mean that many of today's procedures are even more sophisticated than they were five years ago. That's good news for patients who are seeking less-invasive treatment options and a faster return to their daily activities.

Many physician specialists in gynecology, urology, thoracic, and general surgery are using this technology to treat a wide range of diseases and conditions. Here are answers to some commonly asked questions:

### WHAT IS ROBOTIC SURGERY?

This surgery is a type of minimally-invasive procedure that uses high-tech equipment to enhance a surgeon's capabilities. With a

robotic system, doctors operate through a few incisions usually less than a centimeter wide, compared with the larger ones used in traditional "open" operations. Some procedures, such as gallbladder removal, can be performed via one incision in the belly button, a method known as "single-site" surgery.

The equipment features a magnified 3D, high-definition vision system and tiny wristed instruments that bend and rotate more widely than the range of the human hand. This technology translates a surgeon's hand motions into smaller movements inside a patient's body. As a result, doctors can operate with enhanced vision, precision, and control.

### WHEN IS IT USED?

Doctors are using these techniques to

treat an increasing number of procedures across a range of diseases and conditions – from removing tumors to repairing valves in the heart. Currently, it is most commonly used in cardiac, colorectal, gynecologic, head and neck, thoracic, and urologic procedures – as well as general surgery, such as hernia repair.

Advancements in the field mean that robotic surgery is now feasible for more patients, including those who have had previous operations and other medical conditions, as well as those who are overweight.

Still, robotic surgery is not ideal for every procedure, and not every patient will be a qualified candidate. Doctors will recommend the best course of treatment, based on a variety of factors such as age, severity of condition, and other options available.

### WHAT ARE THE BENEFITS?

Generally speaking, robotic techniques allow for smaller incisions, less pain, and shorter hospitalizations. Smaller incisions can reduce the risk of infection, cause less "tissue trauma," and leave smaller scars (or in some cases, no scars). They also reduce blood loss and the need for transfusions. Recovery time for a robotic procedure is a fraction of that for traditional surgery, allowing patients to return to normal activities more quickly.

The future of robotic surgery may include augmented reality and artificial intelligence capabilities that allow doctors to more accurately visualize, diagnose, and treat conditions inside the patient's body. As the field continues to evolve, it will become a viable option for more patients than ever before.

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