

## What is Robotic Surgery?

Robotic surgery with the daVinci system combines the benefits of laparoscopic surgery with the dexterity of traditional open surgery. This allows a surgeon to perform complex procedures laparoscopically, which would previously have required a large open incision to perform.

After the patient is asleep and positioned, laparoscopic ports (small 8mm access holes with sleeves) are placed into the patient's abdomen as in traditional laparoscopy. The daVinci surgical cart is then attached to the ports and specialized laparoscopic instruments are inserted. Unlike traditional laparoscopic instruments which have limited freedom of movement, these instruments are designed like a human wrist, with the ability to bend, rotate, flex, etc. The surgeon controls the movements of these instruments from a console located next to the patient. By manipulating hand grips within the console, the computer translates these movements into movements by the laparoscopic instruments. At no time does the computer "robot" perform any motion on its own- all actions are directly controlled by the surgeon. For a similar example, with some of today's advanced cars, when you press on the gas or brake, you aren't directly controlling a brake lever or throttle - you are telling the car's computer how much you want to press the brake or open the throttle.

## Patient benefits

- **Shorter Hospital Stay.** With traditional open surgery, patients have to stay an average of 3-5 days in the hospital recovering. With robotic laparoscopic surgery, most of our patients are able to go home the next morning.
- **Faster recovery.** After open surgery, most patients require 4-6 weeks before they are back to their normal activities, return to work, etc. After robotic laparoscopic surgery, most are able to return to normal activities within 1-2 weeks.
- **Less pain.** Instead of a large 12-14" incision, most patients only have 4 to 6 small (~1/4") incisions. Additionally, because less bleeding and tissue manipulation is required on the inside of the abdomen, there is less pain from this as well. Many patients do not require any narcotic use after surgery.
- **Less blood loss and transfusion.** Because of excellent visualization and precise dissection, blood loss can be as little as 1/10th that of traditional surgery.
- **Better oncology outcomes.** With the excellent visualization and precise dissection possible with robotic surgery, we are able to dissect lymph nodes more thoroughly, with preservation of important nerves and blood vessels that are normally not well visualized with open surgery.
- **Better Cosmesis.** Instead of a large 12-14" vertical abdominal incision, patients only have a few small laparoscopic incisions.
- **Less wound infection and wound complications.** Many patients with cancer have other illnesses that predispose them to wound healing complications- such as diabetes, obesity, hypertension, peripheral vascular disease. Some reports note a wound infection/complication rate for these patients as high as 20% after traditional surgery. By eliminating the large open incision, most of these wound complications are avoided. Even if a wound infection develops, it is much easier to treat a small 1/2" infected wound, than a large 12" infected wound.
- **Better Visualization.** Traditional laparoscopy uses a small camera on the end of an instrument with the image projected onto a standard TV monitor. With this system, there is no depth perception. The daVinci system utilizes 2 cameras located side-by-side within a single instrument. Each image is then projected to a separate screen that is dedicated to either the right or left eye. What the physician sees is a true 3-D image with excellent depth perception. This allows safer, more precise tissue dissection. In addition, the image is magnified 10x before being projected, thus allowing the surgeon to see structures never before visualized adequately with open surgery.
- **Better precision.** While no surgeon likes to admit it- there is always a bit of tremor when operating with long open instruments. Try it yourself- see how much fine control you have using a 12" long instrument at the end of your fingers. Robotic surgery completely eliminates this- all tremor and extraneous movement is removed by the computer before being communicated to the instruments. In addition, scaling features are available- allowing one to program the instrument to move only 1" for every 5" the surgeon moves the controls.

## Procedures and conditions treatable with Robotic Surgery

- Hysterectomy for:
  - Endometrial cancer and hyperplasia (pre-cancer)
  - Cervical dysplasia and cancer
- Complex ovarian masses suspicious for cancer
- Severe endometriosis
- Vaginal vault suspension for pelvic floor prolapse
- Staging/lymphadenectomy for gynecologic malignancies

## Pictures

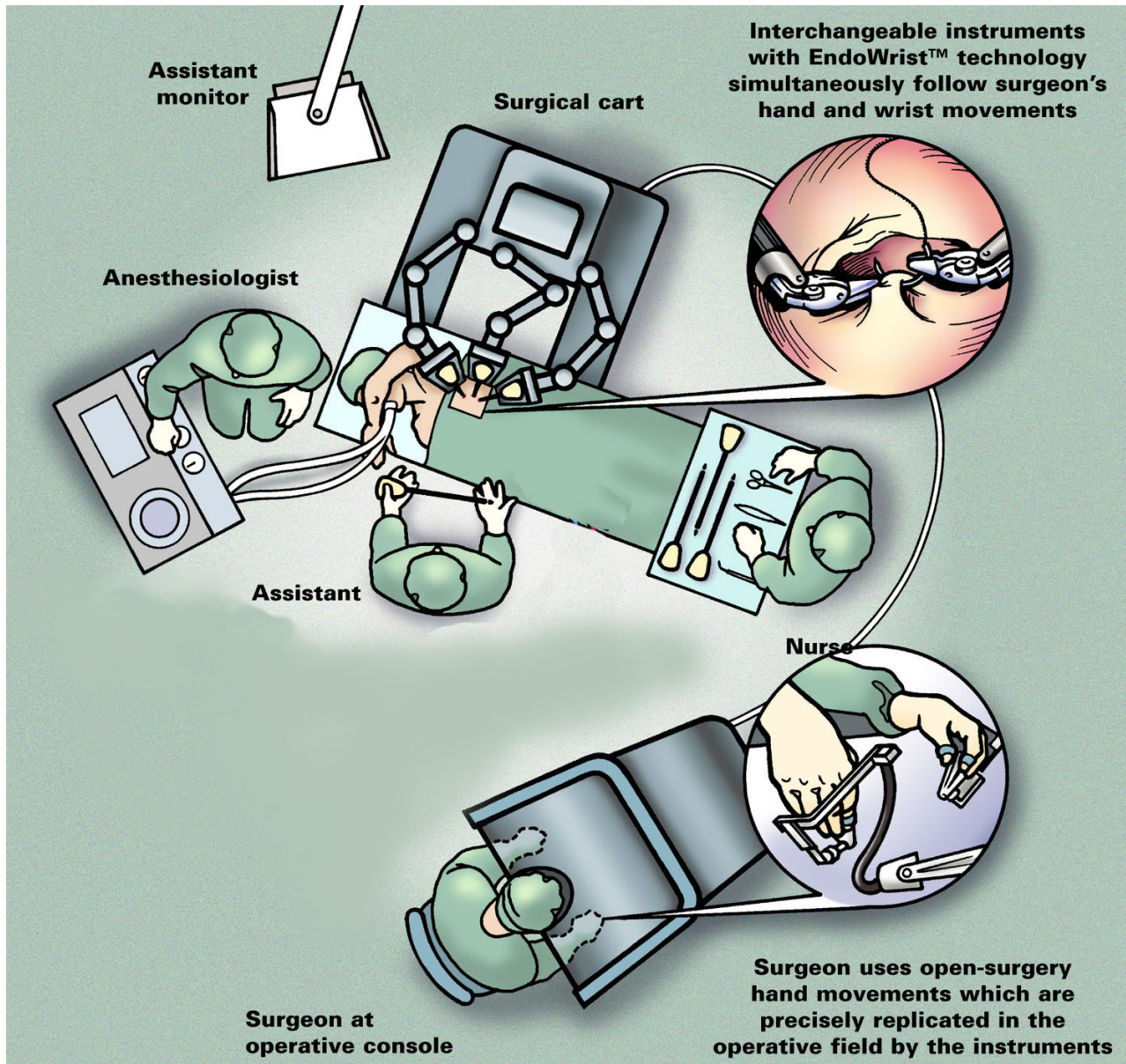
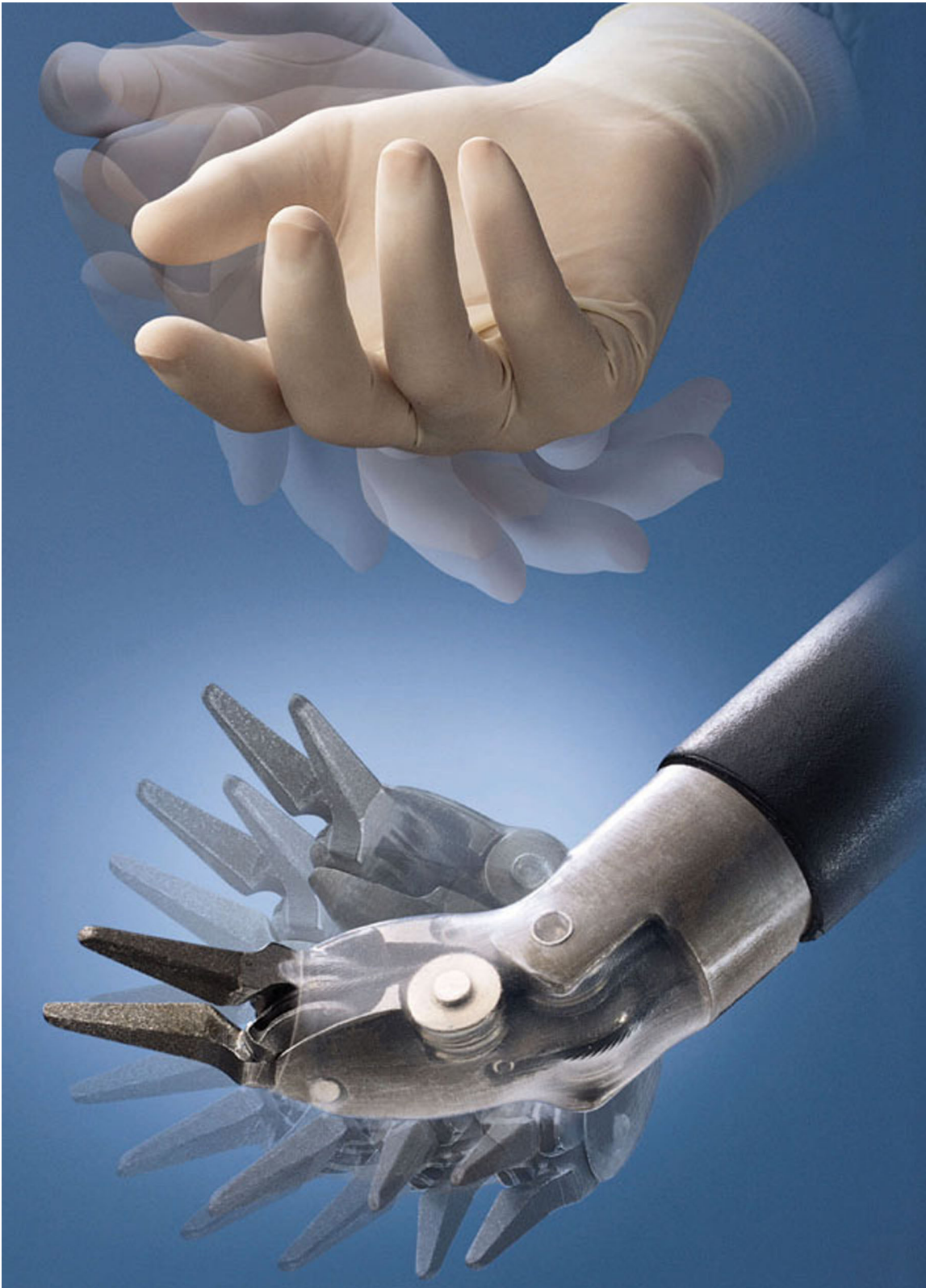


Diagram showing positioning of the robotic cart and surgeon console

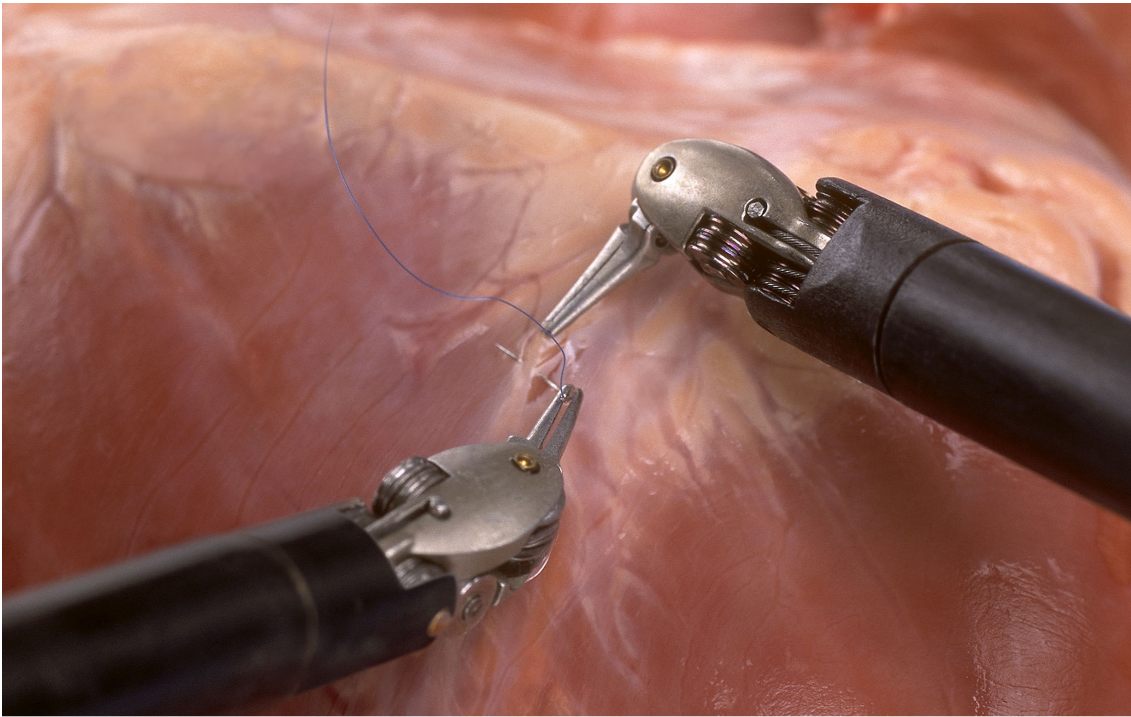


*Surgeon console containing binocular stereoscopic screens*





*Dexterity of daVinci laparoscopic instrument (instrument view magnified)*



*Robotic instruments emulating surgeon movements*