Endometriosis Robotic Surgery

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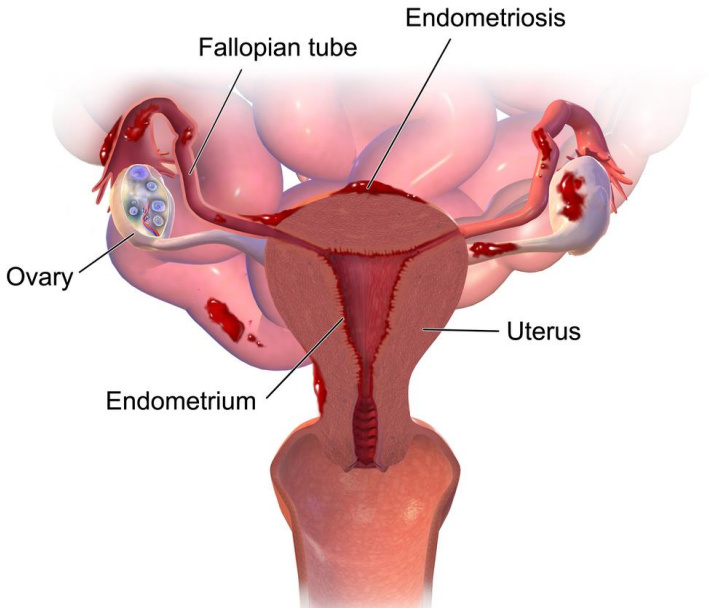
The Surgery – to remove Endometriosis

Endometriosis is a condition, that affects women, where tissue that is similar to the lining of the uterus grows on other parts of the body. When this tissue grows in the wrong places, it can cause painful symptoms that can impact not only menstrual cycle but also daily life. Some people with endometriosis have trouble getting pregnant due to scarring and fallopian tube blockage as well.



Endometriosis symptoms may include chronic pelvic pain, heavy menstrual bleeding, pain during sex, pain with bowel movements or urination, and fertility issues

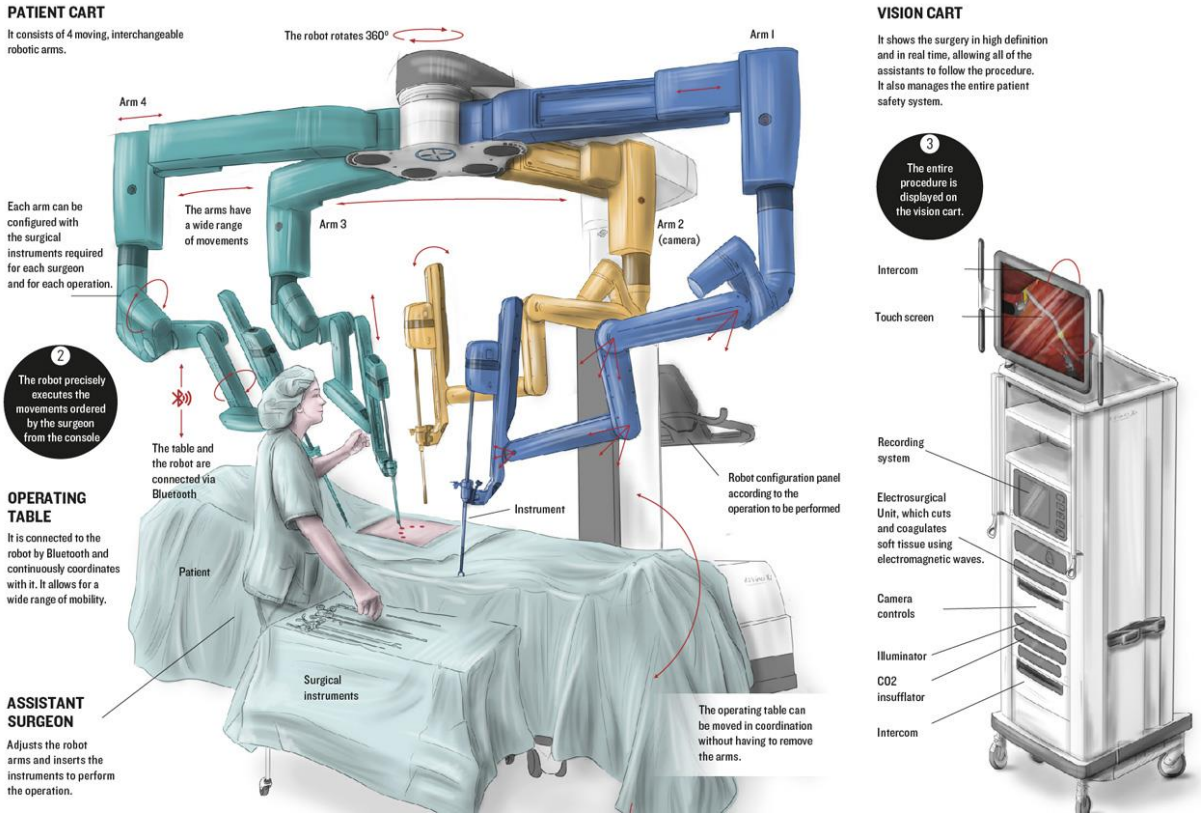
An endometriosis cyst, also called an endometrioma or "chocolate cyst", is a type of ovarian cyst formed when endometrial tissue—the lining of the uterus—grows in the ovary. This is a form of endometriosis, a condition where endometrial-like tissue grows outside the uterus. These cysts are characterized by a thick, dark brown fluid containing old blood and tissue, giving them their common name.

Surgery for endometriosis can be an effective way to relieve pain and, in some cases, improve fertility. The goal of surgery is to remove the endometriosis tissue. Robotic surgery can be undertaken to address endometriosis cysts, when

- surgically removing deeply embedded endometrial lesions
- addressing conditions like extragenital endometriosis or extensive pelvic involvement where conventional laparoscopy might be limited.
- excising lesions and removing ovarian cysts to preserve fertility

Observations: The Robotic Surgery System

The da Vinci Xi is a fourth-generation, multiport robotic surgical system that enables surgeons to perform complex, minimally invasive procedures with enhanced vision, dexterity, and precision. The Xi's slender arms, extended instrument reach, and integrated features like Firefly® fluorescence imaging provide greater anatomical access, improved OR efficiency, and more precise, tremor-filtered movements, leading to faster recovery for patients.



Key Components of the da Vinci Xi system are:

Surgeon Console: The surgeon's workstation, where they sit and view a magnified, 3D high-definition image of the surgical field. They use telemanipulation handles and pedals to control the robotic arms and instruments.

Patient-Side Cart: A mobile unit with four slender, articulated robotic arms, which comprise one arm that holds the endoscopic camera and three arms that hold surgical instruments across

- Clip Appliers
- Monopolar Instruments for control at the surgeon console for multi-functional dissection, coagulation and cutting.
- Bipolar Instruments, for control at the surgeon console for multi-functional dissection, grasping, retracting, and coagulation
- Needle drivers with wristed articulation enables suturing at multiple angles.

Vision Cart: Houses the image processing and energy technologies, supporting the visual and functional capabilities of the system during surgery.

Observations: Conducting the Robotic Endometriosis Surgery

When the patient was brought into the Operation Theatre, preliminary tests were undertaken to ensure general well-being, checking for heart rate stabilized between 68-82 bpm and SPO2 at 100.

Upon entry into the surgical suite, the patient received a sedative through an intravenous (IV) catheter. This induced general anaesthesia, which is then maintained using an anesthetic/oxygen mixture carried to the lungs through an endotracheal tube.

When the patient was fully anaesthetized, the surgical team positioned her appropriately with legs up at 40 degrees and head down for the surgery and oriented the robotic arms of the da Vinci Xi surgical system.

The surgeon positioned himself at the surgeon's console to perform the robotic procedure and the surgical team was by the patient's side to monitor vitals and provide other assistance.

The surgeon used the hand and foot controls to control the robotic arms to make the initial incisions and position the magnifying camera is placed inside the patient's abdomen. The surgeon proceeded to identify the cysts and excise the lesions and adhesions using the relevant robotic arms for dissection, cutting and coagulation. The Surgeon coordinated with the surgical team using the vision cart.

The surgeon then positioned dissolvable supports for the uterus, using the robotic arm. These serve to correct pelvic organ prolapse. While not a physical "support" in the traditional sense, these sutures secure the vaginal apex or other tissues by suspending them from the uterosacral ligaments, which are the natural supports of the uterus. The "dissolvable" aspect refers to the sutures gradually dissolving over time, which can reduce scar formation compared to permanent sutures.

The surgical team performed a hysterosalpingogram (HSG), where Contrast Dye was pushed through the patient's cervix to check flow of both fallopian tubes and to confirm that the tubes are open and functioning correctly, indicating the surgery was successful. At the end of the surgery, the incisions were closed using the robotic needle drives for suturing.

The patient was then taken to a special recovery area to emerge from anaesthesia administered.

The surgery was completed in 90 minutes.

Observations: Benefits of Robotic Surgery

To the Surgeon, Robotic surgery provides significant benefits through improved ergonomics, increased precision in operation of surgical instruments (incision, cauterizing, suturing etc.) and ability to work in hard-to-access, highly contoured areas inside the human body,

To the Patient, Robotic surgery provides highly targeted and accurate corrective surgical action. It also provides the patient accelerated recovery with its optimally invasive nature and use-of-dissolvable supports.

Citations:

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2. *Robot-Assisted Surgery - IVO - Instituto Valenciano de Oncología*. 9 May 2022, www.ivo.es/en/cancer/treatment/surgery/robot-assisted-surgery/
3. "Da Vinci XI." *Intuitive.com*, 2023, www.intuitive.com/en-us/products-and-services/da-vinci/xi.

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