

**Emerging Technologies in
Women's Health**

Robotic Surgery for Hysterectomy



**Mahatma Gandhi
Cancer Hospital &
Research Institute**



**Greetings from
Mahatma Gandhi Cancer Hospital & Research Institute!**

MAHATMAGANDHI CANCER HOSPITAL & RESEARCH INSTITUTE, VISAKHAPATNAM is proud to have implemented (in the year 2017) and operationalized successfully an advanced, minimally invasive Robotic Surgery Technology, a multi-disciplinary vertical in the name and style of “**SUNRISE INSTITUTE OF ROBOTIC SURGERY**”, the FIRST of its kind in the state of Andhra Pradesh, Odisha and Chhattisgarh. We are also proud to have performed nearly 100 robotic surgeries with complete satisfaction and full and quick recovery of the patients, in this short span of time.

da Vinci® advanced level of Robotic technology takes surgery beyond the limits of the human hand by enhanced 3D, high-definition vision of operative field with upto 10x magnification, superior visual clarity of tissue and anatomy, surgical dexterity and precision far greater than even the human hand, able to reach the deepest parts of surgical site, better modality for complex surgeries in high risk patients than traditional laparoscopic. This Robotic system can be employed to perform all the FDA approved procedures in **Oncology, Urology, Gastrointestinal (GI) Surgery, Gynaecology, Bariatric Surgery, General Surgery and Cardiothoracic Surgery.**

Robotic surgery offers many benefits to patients compared to open/laparoscopic surgery. These technological advancements provide our surgeons with **unparalleled precision, dexterity and control** that enable a minimally invasive approach for many complex surgical procedures.

We strongly believe that the features of the *da Vinci*® Robotic Surgical System has been helping us to provide the best possible outcomes and is proof of our commitment to provide our community access to the latest advancements in minimally invasive surgery. Along with our practice of evidence based medicine, arrival of these technologies have been enabling us to stand out and to be on par with global standards.

Sincerely yours,

Dr. Murali Krishna Voonna

Chief Surgical Oncologist & Managing Director

OVERVIEW OF TECHNOLOGY

The current robotic surgical system consists of four components:



SURGEON CONSOLE where the surgeon sits, views the screen and controls the robotic instruments and camera via finger graspers and foot pedals

ROBOTIC CART with three or four interactive arms that hold Instruments through trocars attached to the patient.



VISION CART WITH CAMERA that allows for a three-dimensional image of the surgical field using image synchronizers and illuminators.

WRISTED INSTRUMENTS with computer interfaces that translate the mechanical movements within patient. The robotic arm with its wristed joint and seven degrees of freedom, allows far greater dexterity than with laparoscopic instruments and decreases normal hand tremors.



OPEN SURGERY: With open surgery, doctor operates through a long incision often extending across the entire abdomen.

LAPAROSCOPIC SURGERY: In Laparoscopic surgery, the surgeon operates while standing, using hand-held instruments that cannot bend or rotate. The surgeon must look up and away to a nearby standard 2D video monitor to see an image of the target anatomy.

ROBOTIC SURGERY: In Robotic surgery, the surgeon is able to operate from a comfortable, seated position at a console, with eyes and hands in line with the instruments, and a magnified, high -definition 3D view of the target anatomy.

Here the primary surgeon sits at the console, away from the operating room table and at some distance from the patient, using finger graspers to control the instruments. Foot pedals and a clutch are used for camera control, activation of energy sources, focusing and switching the robotic arm. Four to five trocars are used, including one through which a three dimensional endoscope is placed. Instruments are passed through three to four ports, which can be controlled by the robotic arms.

One additional arm, not controlled by the robot may be placed as an “assistant” port. Assistant surgical team members pass robotic instruments and sutures through these ports for use by the primary surgeon. These ports also provide suction, irrigation, and counter- traction. The console provides three-dimensional imaging with improved depth perception, and the surgeon has autonomous control of the camera and instruments.

POTENTIAL BENEFITS OF THE ROBOTIC SURGICAL SYSTEM FOR SURGEONS INCLUDE:

Greater surgical precision
Increased range of motion
Improved dexterity

Enhanced visualization, including areas that may not be seen by the naked eye (10x magnification, 3-D image)

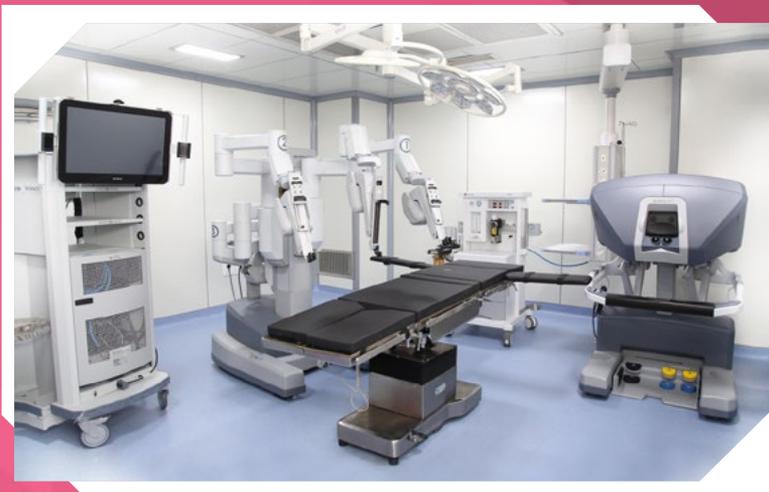
Improved access to hard-to-reach areas
Improved ability to spare healthy tissue not impacted by disease
Easy inside the body suturing.

Endo Wrist instruments lend extra dexterity because of :

- 7 degrees of freedom
- 90 degrees of articulation
- Intuitive motion and finger-tip control
- Motion scaling and tremor reduction enhancing surgical precision

POTENTIAL BENEFITS OF THE ROBOTIC SURGICAL SYSTEM FOR PATIENTS INCLUDE:

- Reduced pain
- Lower risk of infection or complications
- Less blood loss (fewer transfusions)
- Shorter hospital stays
- Less scarring due to smaller incisions
- Faster return to normal activities (e.g., sexual function, urinary continence)
- Early return to professional work





ADVANTAGES OF ROBOTIC SURGERY IN GYNECOLOGICAL CONDITIONS

Endometrial Cancer:

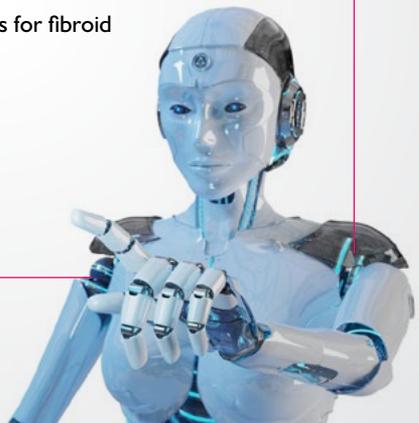
- Lesser blood loss
- Reduced conversion rate (as compared to laparoscopy)
- Reduced hospital stay
- Better for obese patients
- Better for older patients
- Lesser complications like bowel and bladder injuries
- Less pain

Cervical Cancer:

- Better margins
- Higher nodal yield
- Lesser complications like ureteric injuries, incontinence, bowel injuries
- Less pain
- Reduced blood loss and need for transfusions
- Early return to daily activities

Benign gynecological Conditions where robotic surgery is very helpful :

- Complicated myomectomies for fibroid
- Sacrocolpopexy
- Endometriosis





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