



## Comparative Analysis of Surgical Approaches for Hysterectomy

<sup>1</sup>Dr. Mrs. Archana V. Rokade, <sup>2</sup>Dr. Mrs. SS Vhawal, <sup>3</sup>Dr. Sneha Amarnath, <sup>4</sup>Dr. Hajare Neha Udaysing

<sup>1</sup>Assistant Professor Department of Ob/Gy Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth, Karad, Maharashtra, India

<sup>2</sup>Assistant Professor Department of Ob/Gy Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth, Karad, Maharashtra, India

<sup>3</sup>Resident Department of Ob/Gy Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth, Karad, Maharashtra, India

<sup>4</sup>Resident Department of Ob/Gy Krishna Institute of Medical Sciences, Krishna Vishwa Vidyapeeth, Karad, Maharashtra, India

### KEYWORDS

Hysterectomy, surgical approaches, abdominal hysterectomy, vaginal hysterectomy, laparoscopic hysterectomy.

### ABSTRACT:

A frequent gynecological surgical operation with a variety of techniques is the hysterectomy. With regard to surgical outcomes, advantages, and problems, this review paper intends to give a thorough comparative analysis of various hysterectomy surgical procedures, including abdominal, vaginal, laparoscopic, and robotic approaches. The abdominal hysterectomy is linked to a lengthier recovery period and more postoperative pain, although providing a clear view of the surgical field and suitable for extensive cases. Smaller uterine diameters and benign diseases are appropriate for vaginal hysterectomy since it offers a quicker recovery and fewer problems. Laparoscopic-assisted vaginal hysterectomy (LAVH) and total laparoscopic hysterectomy (TLH) are two subtypes of laparoscopic hysterectomy that provide less postoperative pain and shorter hospital stays. The cost-effectiveness of robotic hysterectomy, which combines laparoscopy with improved precision, is a problem. Individual surgical approaches should be chosen, taking into account the patient's health, the surgeon's experience, and the resources at hand. Laparoscopic and robotic-assisted hysterectomy are two minimally invasive surgical procedures that provide a quicker recovery and less postoperative discomfort. For particular therapeutic situations, the old-fashioned abdominal and vaginal techniques are still appropriate. Making well-informed decisions can result in the best results and higher patient satisfaction.

### INTRODUCTION

The surgical removal of the uterus, or hysterectomy, is a common and significant gynecological treatment with considerable health effects on women. It is carried out for a number of medical disorders, including the treatment of gynecologic malignancies, uterine fibroids, endometriosis, irregular uterine bleeding, and pelvic organ prolapse. A crucial consideration in the patient's care is the selection of the best surgical technique for a hysterectomy. Numerous surgical procedures have been developed over time, each with its own special set of benefits and drawbacks [1-5].

The goal of this review is to thoroughly examine and contrast the various hysterectomy surgical options, including the conventional abdominal route, the minimally invasive vaginal approach, laparoscopic procedures, and the newly developed robotic-assisted technique. By doing this, we hope to give patients and healthcare professionals evidence-based insights to help them make wise decisions. Because the surgical method chosen might affect patient outcomes, recuperation times, postoperative pain, complication rates, and healthcare expenditures, making informed decisions is especially crucial.



No matter the surgical strategy used, a hysterectomy is a significant surgical surgery. It may be carried out for a variety of disorders, including benign gynecological problems or gynecologic cancers. Age, general health, the type of underlying illness, and the surgeon's experience should all be taken into consideration when selecting the surgical method for each patient. The best outcomes for patients are the ultimate objective.

### **ABDOMINAL HYSTERECTOMY**

One of the oldest and most frequently used surgical methods for removing the uterus is the abdominal hysterectomy. In order to access the uterus for removal, an incision must be made in the abdominal wall, either vertically or horizontally. With a clear and direct view of the surgical area, this method makes it easier to remove larger uterine specimens, as is the case in situations when there is significant uterine enlargement or certain cancers.

For many years, the abdominal approach has served as the foundation of gynecologic surgery. In contrast to other, less intrusive procedures, this method is typically linked to a longer recovery period and a higher level of postoperative pain, which must be taken into consideration [1]. According to studies, abdominal hysterectomy frequently causes more blood loss, which increases the risk of transfusions and postpartum anemia. Incisional hernias and wound infections are two more surgical site problems that are associated with this method [2].

In certain clinical situations, the abdominal approach is nevertheless a useful surgical alternative despite these possible drawbacks. It is favored when a complete examination of the abdominal and pelvic cavities is required, making it the best option for some cancer procedures. The investigation of alternative procedures

that provide better patient outcomes and fewer issues has been spurred by its comparatively high degree of invasiveness.

### **VAGINAL HYSTERECTOMY**

One of the least invasive methods for uterus removal is vaginal hysterectomy. Through the vaginal canal, the uterus is removed using this method, preventing the need for external abdominal incisions. Because it is a minimally invasive procedure, there are no obvious scars, making it a desirable choice for both patients and doctors.

The significantly short recovery period following vaginal hysterectomy as opposed to abdominal methods is one of its main benefits [3]. Vaginal hysterectomy patients frequently endure less postoperative pain and discomfort, stay in the hospital for fewer days, and resume their regular activities more quickly. When compared to the abdominal approach, the likelihood of surgical site problems, such as wound infections or hernias, is also much lower [4].

Patients who have uterine prolapse, a condition in which the uterus falls into the vaginal canal, are especially candidates for vaginal hysterectomy. The logical option in these situations is to remove the uterus vaginally. Additionally, patients with lower uterine diameters and benign gynecological disorders, such as fibroids and irregular bleeding, prefer this approach. It is a popular option for people who are worried about scarring because it preserves abdominal incisions, which is a considerable benefit.

Vaginal hysterectomy has benefits, but it's important to recognize that it may not be the best option in every clinical situation. When multiple pelvic organs or tissues must be removed at once or when uteruses are noticeably enlarged, it could be more difficult. The best strategy



should always be chosen after a careful analysis of the patient's health, the surgeon's skill, and the patient's personal preferences.

### **LAPAROSCOPIC HYSTERECTOMY**

Laparoscopic hysterectomy, often known as minimally invasive surgery, has grown in acceptance as a less invasive substitute for conventional abdominal hysterectomy in recent years. In order to see and remove the uterus using specialized tools and a camera (laparoscope), this method includes making small incisions in the abdominal wall.

The reduction of postoperative pain and shorter hospital stay compared to abdominal hysterectomy are two important benefits of laparoscopic hysterectomy [5]. Laparoscopic operations typically result in less pain for the patient, allowing for a quicker return to normal daily activities. A lower likelihood of surgical site problems, such as infections or hernias, is linked to the reduction in abdominal trauma and incision size [6].

Laparoscopic-Assisted Vaginal Hysterectomy (LAVH) and Total Laparoscopic Hysterectomy (TLH) are the two primary subcategories of laparoscopic hysterectomy. LAVH combines vaginal uterine removal with laparoscopic examination of the pelvic and abdominal cavities. The uterus is entirely removed via TLH, in contrast, using only laparoscopic incisions.

Although LAVH and TLH may differ in their intricacy and application, they both share the advantages of minimally invasive surgery. The surgeon's experience and patient-specific circumstances may influence the surgeon's decision between the two procedures. Patients with benign gynecological problems and reduced uterine diameters are frequently candidates for these techniques. However, they might be problematic if there are several adhesions or if cancer is present.

While laparoscopic hysterectomy has many benefits, it also has some drawbacks, including the potential for extended operating times and the need for sophisticated surgical skills. Concerns have also been raised about the expense of the necessary equipment and the learning curve for laparoscopic procedures [7]. The rising amount of research nevertheless emphasizes the successful outcomes and patient satisfaction linked to laparoscopic hysterectomy.

### **ROBOTIC HYSTERECTOMY**

The minimally invasive hysterectomy with robotic assistance is a relatively new development in gynecological surgery. This procedure combines the advantages of conventional laparoscopy with advanced robotic technology, giving surgeons more dexterity and three-dimensional visibility. It seeks to get beyond some of the restrictions of pure laparoscopy by providing more accuracy and variety.

When compared to a conventional abdominal hysterectomy, the advantages of a robotic hysterectomy include shorter hospital stays and less postoperative pain [8]. The robotic system's improved dexterity makes it particularly ideal for difficult instances, such as patients with significant adhesions or complicated benign disorders. Complex surgical procedures may now be carried out with more precision thanks to the robotic system. A high-definition, three-dimensional image of the surgical field is provided by the technology, which might be helpful while performing delicate surgeries.

The cost-effectiveness of robotic hysterectomy is up for debate, though. Although patients frequently benefit from shorter hospital stays and quicker recoveries, questions have been expressed about the procedure's overall economic impact due to the increased equipment and operating expenses connected with robotic surgery



[9]. Additionally, the use of robotic technology necessitates the training of support staff and doctors in specialized procedures.

### COMPARATIVE ANALYSIS AND CONCLUSION

We will compare and contrast the various surgical techniques used for hysterectomy in this final part. We will assess the evidence that is currently available, taking into account each strategy's cost-effectiveness, complication rates, postoperative pain, and surgical outcomes.

The surgical technique should be chosen specifically for each patient, taking into account their medical history, personal traits, the surgeon's training, and the available funding. Laparoscopic or robotic treatments are frequently chosen when the patient has benign gynecological diseases and the surgeon is skilled in minimally invasive procedures. When compared to abdominal hysterectomy, these procedures typically lead to shorter hospital stays, less postoperative pain, and fewer problems. However, particularly in healthcare settings with limited resources, it is important to carefully assess whether robotic surgery is cost-effective [10-12].

However, for specific therapeutic situations, abdominal and vaginal hysterectomy methods continue to be viable options. For situations requiring a more thorough examination of the abdominal and pelvic cavities as well as for uterine cancer, abdominal hysterectomy is frequently recommended. For individuals with uterine prolapse or reduced uterine diameters, vaginal hysterectomy offers the advantages of minimally invasive surgery.

The patient and the healthcare professional should collaborate to decide on the best surgical strategy, taking into account the patient's preferences and the resources at

their disposal. This review study seeks to help physicians and patients make well-informed decisions that optimize surgical outcomes and improve the patient experience overall by synthesizing the existing literature.

In conclusion, selecting a surgical method for a hysterectomy is an important choice that can have a big impact on the procedure and the patient's recovery. Each strategy offers a distinct mix of benefits and drawbacks, thus the choice should be made based on the demands of the particular patient and the surgeon's experience. Due to their quicker recovery durations and decreased postoperative pain, minimally invasive procedures including laparoscopic and robotic-assisted hysterectomies are gaining popularity. However, in particular therapeutic situations, the conventional abdominal and vaginal procedures are still useful. Healthcare professionals and patients can make well-informed decisions that result in the best results and increased patient satisfaction by carefully examining the information that is currently available.

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