

The Advent of Minimally Invasive Gynecology

Minimally invasive gynecology involves the use of technology that enables gynecologists to treat pelvic health disorders without resorting to large open abdominal surgery. Less invasive approaches are now available for many gynecologic procedures that once required major surgery, with advantages including reduced risk of infection, minimized scarring, less blood loss, decreased post-operative pain and generally quicker recovery time. New advances in minimally invasive diagnosis and treatment continue to expand the boundaries of gynecologic care.¹

Laparoscopy Defined

Laparoscopy is a modern technique in which an operation in the abdomen is performed through a few small incisions (usually 0.5 – 1.5cm) as compared to larger incisions needed in traditional surgical procedures. The key element in laparoscopic surgery is the use of a laparoscope. Laparoscopes are medical instruments used to explore areas such as the abdomen, gallbladder, colon, kidney, stomach, intestines, pancreas, bladder, spleen and all the female organs as well as the prostate in men. A laparoscope gives the surgeon an exceptionally clear view of the inside of the abdominal cavity.²

The Laparoscopic Approach to Hysterectomy

Hysterectomy -- surgical removal of the uterus -- is performed either through a large incision in the abdominal wall (abdominal hysterectomy), an incision at the top of the vagina (vaginal hysterectomy) or by making a few tiny incisions in the abdomen where surgical instruments and a laparoscope are inserted (laparoscopic hysterectomy).³

From a surgical perspective, the laparoscopic approach is a more minimally invasive type of hysterectomy as compared to an open procedure. The laparoscope consists of a miniature camera attached to the end of a slender telescopic instrument that is inserted through a small incision in the abdomen, usually the navel. What it sees inside the body is projected onto a video screen, giving the surgeon a close-up view of the female reproductive organs. The uterus is detached by laparoscopic surgical instruments inserted through other small incisions in the abdomen and then removed through a small incision at the top of the vagina or through the navel area.³

Types of Laparoscopic Hysterectomy

There are two primary types of laparoscopic hysterectomy: total laparoscopic hysterectomy (TLH) and laparoscopic supracervical hysterectomy (LSH). TLH involves laparoscopically detaching the entire uterine cervix and body from the surrounding supporting structures and suturing the vaginal cuff. The uterus and cervix are then removed through the vagina or abdomen. LSH involves laparoscopically detaching the body of the uterus while leaving the cervix intact, and then abdominally removing the uterus.⁴

Advantages of Laparoscopic Hysterectomy

There are several advantages of this procedure, as compared to abdominal open surgery, including reduced overall trauma, less postoperative pain and faster healing results -- allowing patients to recover faster. An additional advantage includes reduced infection rate since delicate tissues are not exposed to the air of the operating room over long periods of time -- as they are when the body is open in traditional operations.⁵ Because the procedure is minimally invasive, recovery time is shorter than with open abdominal procedures. The hospital stay may be less than one day and the patient can usually resume her normal activities after about one or two weeks.³

Challenges to Greater Acceptance of Laparoscopic Hysterectomy

Laparoscopic surgery is widely used in procedures such as gallbladder removal and other abdominal procedures. In fact, according to the National Institutes of Health, "nearly all gallbladder procedures are performed with laparoscopy."⁶

The rate of laparoscopy is also high in gastric banding procedures for obesity (100%); tubal ligation for contraceptive purposes (70%); and appendectomy (60%).⁷

Laparoscopic hysterectomy is a less common laparoscopic procedure. Some sources indicate that it accounts for only about 15% of all hysterectomies performed in the United States.⁸ Other sources cite a higher figure of 40%, which is still less than other common laparoscopic abdominal procedures.⁷ Abdominal hysterectomy still remains the most common surgical approach to hysterectomy.⁹

A number of opinions have been offered for the slow adoption of laparoscopic hysterectomy. Some observers point to the greater familiarity that ob-gyns have with open abdominal surgery, based on years of performing abdominal C-sections for women in childbirth.¹⁰ Others point to the limited training that ob-gyns experience during residency.¹¹ The physician and patient relationship can also play a role in the challenges to greater acceptance of laparoscopic hysterectomy. According to Franklin Loffer, MD, of the American Association of Gynecologic Laparoscopists, "Women have a relationship with their ob-gyns. They trust them and tend to stay loyal to them. That makes ob-gyns less motivated to change what they are accustomed to doing."¹⁰

Advancing Technology for Laparoscopy

As a leader in laparoscopic technology, Olympus, pioneered and was the first to advance this technology with the introduction of its EndoEYE[®] Video Laparoscopes. These videoscopes offer an optimized image integrated with a distally mounted camera chip inside the scope along with the light-guide cable to deliver a lightweight device that delivers superior imaging performance. More recently, the EndoEye has been further developed to incorporate a flexible tip design, which provides an impressive 100° field of view in four directions to visually capture the desired location and allow visual access to areas not previously accessible with standard laparoscopes.

Olympus also is the only company offering a CO2 Endoluminal Insufflation System for advanced laparoscopic procedures. The UCR system allows intra-operative endoscopy to be performed prior to, during or immediately after a procedure to identify bleeds and check for anastomotic leaks without bowel distension impairing the laparoscopic view.

In the field of laparoscopic hysterectomy, Gyrus ACMI¹², now part of the Olympus family, is a leader offering advanced technologies that enable gynecologists to perform a wide range of surgical procedures with a high degree of flexibility, precision and control. The company's proprietary PK Technology delivers a pulsing ultra-low (110V) and high-current RF energy waveform to create a broad range of tissue effects, and allows the tissue and device tip to cool during the "energy off" phase, minimizing sticking and charring. It is the most comprehensive bipolar energy platform available with a full line of multifunctional instruments designed to shorten procedure times and help improve patient outcomes for laparoscopic hysterectomy. Specifically, these instruments are designed to reduce blood loss, improve operating room efficiency and minimize post-operative pain while providing surgeons with the ability to seal, transect, coagulate, dissect, vaporize, resect and mobilize tissue all with precision and control from one workstation.

In 2009, Olympus formally introduced an advanced technology platform that now allows surgeons the ability to perform minimally invasive single-site surgery through the navel with just one incision. The platform is called LESS (Laparo-Endoscopic Single-Site) surgery (sometimes also referred to as Single Port Access or Single Incision Laparoscopic Surgery). The platform combines advanced laparoscopic technology that includes a unique 5mm deflectable tip giving surgeons a new way to observe the anatomy and perform minimally invasive laparoscopic hysterectomy through the bellybutton.

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References:

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⁹ Einarsson, J, Suzuki, Y. Total Laparoscopic Hysterectomy: 10 Steps Towards a Successful Procedure. *Clinical Obstetrics and Gynecology*. 2009; Winter; 2(1): 57-64

¹⁰ www.more.com/4488/2382-the-endangered-uterus

¹¹ Reich H. Total laparoscopic hysterectomy: indications, techniques and outcomes. *Current Opinions in Obstetrics and Gynecology*. 2007;19:337–344

¹² On February 1, 2008, Olympus Corporation completed the acquisition of Gyrus Group PLC, a global medical device business specializing in minimally invasive surgery, including leading edge visualization and tissue management systems