



LAPAROSCOPIC HYSTERECTOMY FOR WOMEN WITH BENIGN GYNECOLOGICAL DISEASES: A REVIEW ARTICLE

Osama Ahmed Mohammed¹, Ahmed Abdelbaky Moubarak², Mostafa Mohamed Khodary³, Ahmed Hashem Abdellah⁴, Yasser Ahmed Abuelwafa Abdellatif⁵

*Obstetrics and Gynecology Department, Faculty of Medicine, Qena University, Qena, Egypt

Corresponding Author: Ahmed Abdelbaky Moubarak, Email ID: Drahmedabdelbaky5@gmail.com

Abstract

Benign gynecological diseases, including uterine fibroids, endometriosis, adenomyosis, ovarian cysts, pelvic organ prolapse, and other reproductive tract disorders, are common conditions that may cause abnormal bleeding, pelvic pain, infertility, and reduced quality of life. Laparoscopic hysterectomy (LH) has become an important minimally invasive approach for definitive treatment of selected benign gynecological diseases. This review article aims to summarize the common benign gynecological conditions and illustrate the role of LH by discussing its types, indications, contraindications, surgical techniques, advantages, complications, and clinical outcomes. The article highlights that LH provides reduced surgical trauma, lower blood loss, shorter hospital stay, faster recovery, less postoperative pain, and improved visualization of pelvic anatomy compared with conventional abdominal surgery. With proper patient selection and surgical expertise, laparoscopic hysterectomy represents an effective and safe approach for managing benign gynecological diseases and improving women quality of life.

Keywords: Laparoscopic hysterectomy; Benign gynecological diseases; Minimally invasive surgery

Introduction

Hysterectomy is one of the most commonly performed gynecological surgical procedures after cesarean section. Different surgical approaches are available, including vaginal hysterectomy (VH), laparoscopic-assisted vaginal hysterectomy (LAVH), laparoscopic supracervical hysterectomy (LSH), total laparoscopic hysterectomy (TLH), conventional abdominal hysterectomy, and mini laparotomy hysterectomy (MLH) (Lefebvre et al., 2018).

The selection of hysterectomy technique depends on several factors, including the surgical indication, surgeon expertise, disease characteristics, patient factors, cost considerations, and patient preference. The distribution of hysterectomy approaches varies between countries due to differences in healthcare systems and clinical practices (Cohen et al., 2014; Aboelezz et al., 2024).

Laparoscopic-assisted vaginal hysterectomy (LAVH) is commonly performed when a vaginal approach is preferred but additional laparoscopic assessment or procedures are required. It is particularly useful in patients with previous pelvic surgery, endometriosis, previous cesarean section, suspected adnexal pathology, uterine fibroids, or ectopic pregnancy. Successful LAVH requires adequate vaginal access with sufficient anatomical laxity and width to facilitate removal of the uterus (Cohen et al., 2014).

Compared with abdominal hysterectomy (AH), laparoscopic hysterectomy (LH) and vaginal hysterectomy (VH) have demonstrated advantages in reducing morbidity and healthcare costs. However, Nieboer et al. (2010) reported that the main limitation of LH is the longer operative time required for benign gynecological conditions. In contrast, Song et al. (2015) demonstrated that both total laparoscopic hysterectomy (TLH) and laparoscopic-assisted vaginal hysterectomy (LAVH) are safe and feasible procedures with comparable surgical outcomes.



This review article aims to summarize the common benign gynecological conditions and illustrate the role of LH by discussing its types, indications, contraindications, surgical techniques, advantages, complications, and clinical outcomes.

Benign Gynecological Diseases

Benign gynecological diseases are non-cancerous disorders affecting the female reproductive tract, including the uterus, ovaries, fallopian tubes, cervix, vagina, and supporting tissues. They include infections, cysts, fibroids, endometriosis, adenomyosis, pelvic inflammatory disease (PID), pelvic organ prolapse, and endocrine disorders. These conditions commonly cause abnormal uterine bleeding, pelvic pain, vaginal discharge, infertility, and reduced quality of life. Diagnosis usually begins with clinical assessment and pelvic ultrasonography, followed by additional investigations when required (AlAshqar et al., 2021).

Common Benign Gynecological Diseases

Uterine Fibroids (Leiomyomas)

Uterine fibroids are the most common benign tumors of the uterus, arising from smooth muscle cells. They vary in size, number, and location (submucosal, intramural, or subserosal). Although many women remain asymptomatic, fibroids may cause heavy or prolonged menstrual bleeding, pelvic pain or pressure, urinary frequency, constipation, infertility, and pregnancy complications (Bulun et al., 2025).

Endometriosis and Adenomyosis

Endometriosis is characterized by endometrial-like tissue outside the uterine cavity, commonly affecting the ovaries, pelvic peritoneum, and ligaments. It is associated with chronic inflammation, severe dysmenorrhea, chronic pelvic pain, dyspareunia, and infertility. Adenomyosis results from endometrial tissue invading the myometrium, causing uterine enlargement, heavy menstrual bleeding, painful menstruation, and pelvic discomfort, especially in multiparous women (Bulun et al., 2023).

Ovarian Cysts

Ovarian cysts are fluid-filled sacs that develop within or on the ovaries. Functional cysts are the most common and usually resolve spontaneously, while dermoid cysts and endometriomas are other common types. Symptoms include pelvic pain, abdominal bloating, menstrual irregularities, and acute abdominal pain following rupture or ovarian torsion (Mobeen & Apostol, 2020).

Pelvic Inflammatory Disease (PID)

PID is an infection of the upper female genital tract involving the uterus, fallopian tubes, and ovaries, usually caused by ascending sexually transmitted infections. Common manifestations include lower abdominal pain, abnormal vaginal discharge, fever, dyspareunia, and irregular bleeding. Untreated PID may result in infertility, ectopic pregnancy, and chronic pelvic pain (Hillier et al., 2021; Ahmed et al., 2024).

Pelvic Organ Prolapse

Pelvic organ prolapse develops due to weakness of the pelvic floor muscles and connective tissues, allowing the uterus, bladder, or rectum to descend into or outside the vaginal canal. Major risk factors include childbirth, aging, obesity, and chronic increased intra-abdominal pressure. Symptoms include vaginal bulging, pelvic pressure, urinary or fecal incontinence, and sexual dysfunction (Collins & Lewicky-Gaupp, 2022).

Vaginal Infections (Vaginitis)

Vaginitis is inflammation of the vagina caused by bacterial vaginosis, Candida, trichomoniasis, or non-infectious factors. Common symptoms include vaginal itching, abnormal discharge, unpleasant odor,



burning, dysuria, and discomfort during intercourse. Early diagnosis and treatment reduce recurrence and complications (Leclair & Stenson, 2022).

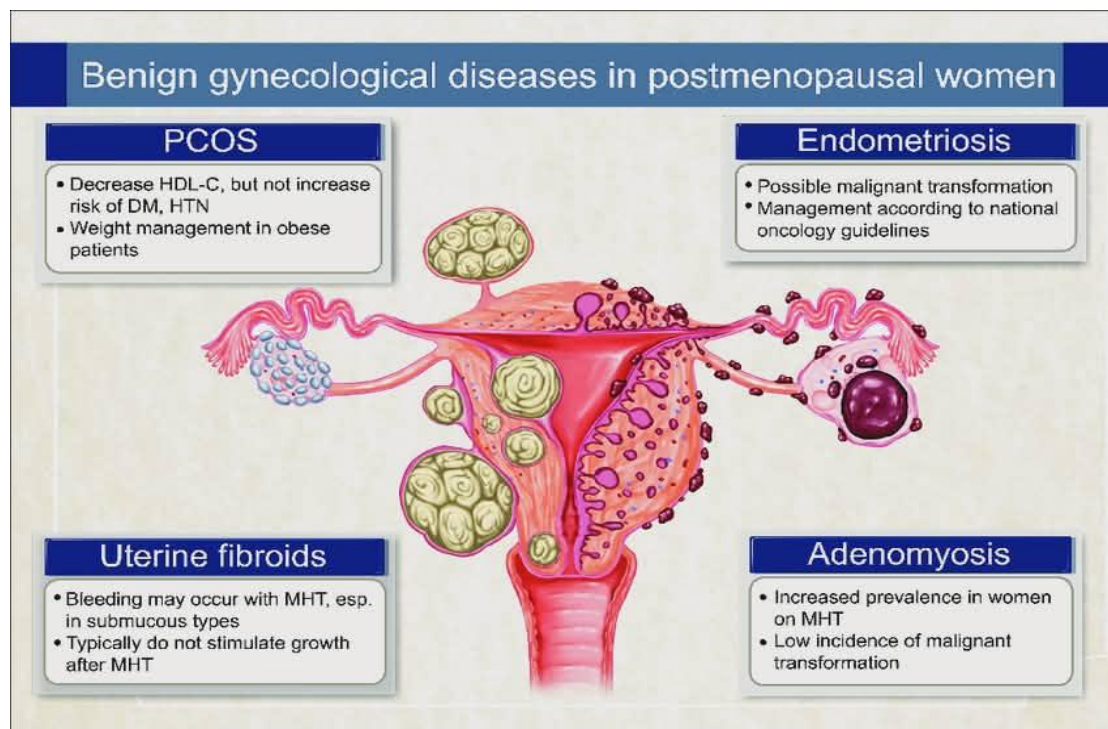


Figure 2: Illustrated summary of benign gynecological conditions in postmenopausal women (Yu et al., 2024).

Common Symptoms

Symptoms vary according to the underlying condition but commonly include abnormal or heavy menstrual bleeding (HMB), prolonged menstruation, irregular cycles, passage of clots, pelvic pain or pressure, dysmenorrhea, dyspareunia, and lower abdominal fullness. Women may also develop urinary frequency, urgency, stress urinary incontinence, fecal incontinence, infertility, recurrent miscarriage, or preterm labor. Chronic heavy bleeding can lead to iron-deficiency anemia, causing fatigue, weakness, dizziness, and decreased physical performance (Ozoda & Azamat o'g'li, 2024; Pynnä et al., 2021).

Diagnosis

Diagnosis combines medical history, pelvic examination, and imaging. Pelvic examination assesses uterine size, tenderness, masses, and prolapse. Transvaginal ultrasonography is the primary imaging technique for identifying fibroids, ovarian cysts, adenomyosis, and PID (El-Habibi et al., 2022). Hysteroscopy allows direct visualization of the uterine cavity to detect polyps and submucosal fibroids, while hysterosalpingography (HSG) evaluates uterine cavity abnormalities and fallopian tube patency in infertility cases (Соатова & Эпрашева, 2020).

Prevention

Prevention of benign gynecological diseases focuses on maintaining reproductive health through healthy lifestyle practices, safe sexual behavior, good hygiene, and regular medical care. A balanced diet rich in fruits, vegetables, whole grains, and dietary fiber while limiting processed and high-fat foods may reduce inflammation and hormonal imbalance associated with conditions such as PCOS and uterine fibroids (Yu et al., 2024).

Regular physical activity helps maintain a healthy weight, improves insulin sensitivity, and reduces menstrual irregularities and pelvic pain. Effective stress management, including yoga, meditation, and mindfulness, supports hormonal balance, while avoiding smoking and limiting alcohol intake lowers



the risk of gynecological and reproductive disorders (GOLIA D'AUGE et al., 2023; Naidoo & Moodley, 2022).

Good personal hygiene also reduces infection risk. Women should use mild soap and water, avoid vaginal douching and harsh chemicals, wear breathable cotton underwear, and practice proper wiping techniques (front to back). Safe sexual practices, especially consistent condom use, help prevent sexually transmitted infections, the leading cause of pelvic inflammatory disease (PID) (Nilufar et al., 2023).

Routine gynecological examinations, including pelvic examinations and Pap smear screening, enable early detection of abnormalities. Women should promptly report menstrual changes, pelvic pain, abnormal vaginal discharge, or contraceptive concerns. Lifestyle modification combined with regular follow-up improves outcomes in women at risk of PCOS, endometriosis, and uterine fibroids (Ciebiera et al., 2021).

Treatment

Treatment depends on the specific disease, symptom severity, age, reproductive plans, and overall health. Medical management is usually the first-line approach and includes combined oral contraceptives, progestins, gonadotropin-releasing hormone (GnRH) analogs, nonsteroidal anti-inflammatory drugs (NSAIDs), and other analgesics to regulate menstruation, reduce bleeding, and relieve pain. The levonorgestrel-releasing intrauterine system (LNG-IUS) effectively controls heavy menstrual bleeding while preserving fertility (Coatova & Эпрамева, 2020).

When medical therapy fails or symptoms are severe, surgical management may be required. Fertility-preserving procedures include myomectomy for uterine fibroids and cystectomy for ovarian cysts. In advanced or refractory cases, minimally invasive surgery, hysterectomy, or pelvic reconstructive surgery may be performed depending on the underlying condition and future fertility wishes. A multidisciplinary, patient-centered approach is essential to improve quality of life, minimize complications, and achieve optimal clinical outcomes (Włodarczyk et al., 2024; Metgud et al., 2023).

Laparoscopic Hysterectomy

Hysterectomy is among the most frequently performed gynecological surgeries worldwide. With advances in minimally invasive techniques, laparoscopic hysterectomy (LH) has become an important alternative to abdominal hysterectomy. It provides reduced surgical trauma, faster recovery, improved pelvic visualization, and lower postoperative morbidity. LH is widely used for benign and selected malignant gynecological conditions (Housmans et al., 2020).

Definition and Types of Laparoscopic Hysterectomy

Laparoscopic hysterectomy involves removal of the uterus using laparoscopic instruments, with or without removal of the cervix and adnexa. According to the extent of laparoscopic involvement, it is classified into several types.

Laparoscopic-Assisted Vaginal Hysterectomy (LAVH)

LAVH combines laparoscopic and vaginal approaches. Laparoscopy allows pelvic inspection, management of adnexal pathology, division of upper uterine pedicles, and uterine mobilization. The uterus is then removed vaginally. This method is useful in patients unsuitable for vaginal hysterectomy due to limited uterine mobility, previous pelvic surgery, or adnexal disease while maintaining minimally invasive benefits (Ioana et al., 2024).

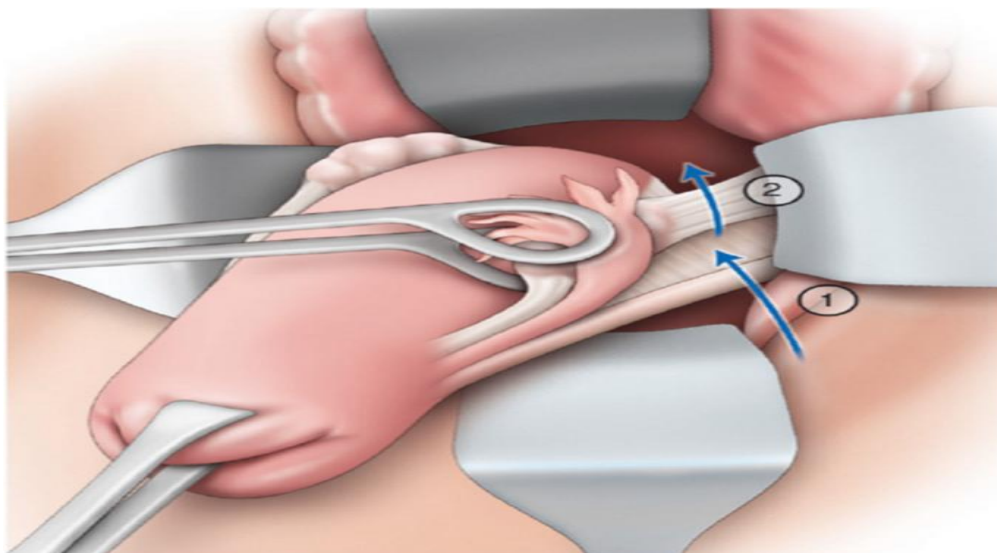


Figure 3: Vaginal hysterectomy in pelvic organ prolapse (de Tayrac & Cosson, 2024).

Total Laparoscopic Hysterectomy (TLH)

TLH involves complete laparoscopic removal of the uterus and cervix. All steps, including pelvic dissection, uterine artery ligation, colpotomy, uterus removal, and vaginal cuff closure, are performed laparoscopically. It provides precise anatomical visualization and is commonly used for fibroids, adenomyosis, and endometriosis. TLH is associated with reduced blood loss, faster recovery, and less postoperative pain (Alkatout, 2022).

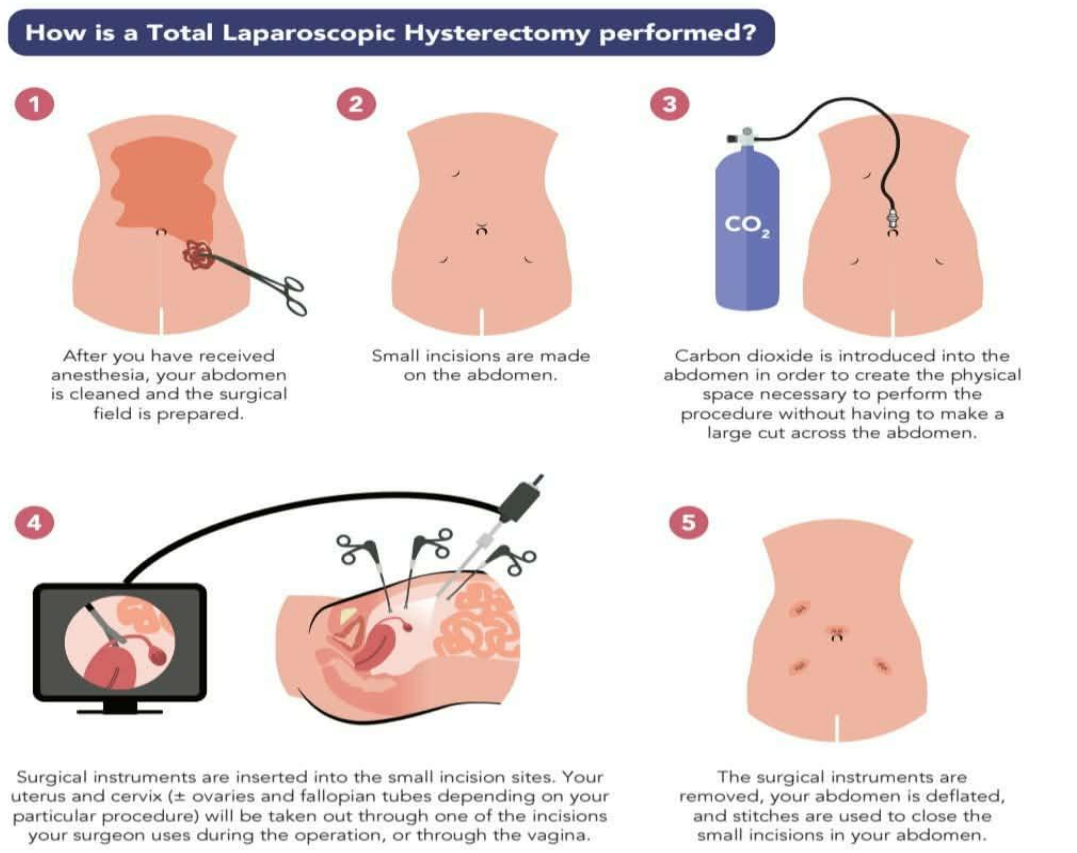


Figure 4: Total Laparoscopic-Hysterectomy procedure.



Subtotal (Supracervical) Laparoscopic Hysterectomy (SLH)

SLH removes the uterine body while preserving the cervix. The uterus is transected above the cervix laparoscopically. It may reduce operative time and limit bladder and ureteric dissection. However, patients require continued cervical screening and may experience persistent cyclic bleeding (Marchand et al., 2021).

Radical Laparoscopic Hysterectomy

Radical laparoscopic hysterectomy is mainly performed for early-stage gynecological cancers, especially cervical cancer. It includes removal of the uterus, cervix, upper vagina, parametrial tissues, and, when required, pelvic lymphatic structures. This approach provides better pelvic visualization and lower morbidity than open surgery while maintaining oncological safety in selected patients (Haddad et al., 2021; Khalaf-Awad et al., 2021).

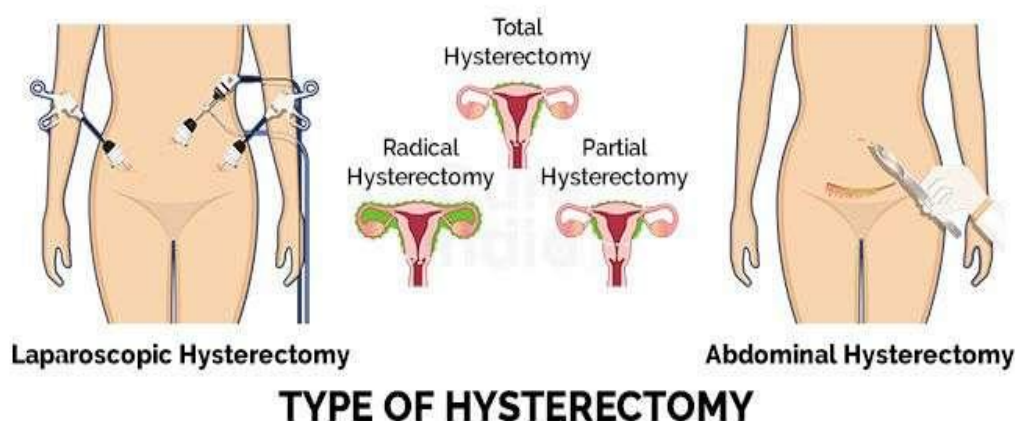


Figure 5: Illustration of the main types of hysterectomy (total, partial, and radical) and the surgical approaches, highlighting the differences between laparoscopic and abdominal hysterectomy techniques (Lenfant et al., 2023).

Indications

The main indications for LH are benign gynecological disorders. It is commonly performed for symptomatic uterine fibroids causing heavy menstrual bleeding, pelvic pain, pressure symptoms, or fertility problems. It is also indicated for abnormal uterine bleeding that does not respond to medical treatment or when conservative therapy is unsuitable (Madueke-Laveaux et al., 2021).

Other indications include adenomyosis, endometriosis, and chronic pelvic pain associated with uterine pathology when other treatments fail. LH may also be used for pelvic organ prolapse, precancerous cervical or endometrial lesions, and selected cases of early-stage endometrial and cervical cancers. In experienced hands, it reduces surgical morbidity, hospital stay, and recovery time while maintaining oncological safety (Mereu et al., 2021; Histerektomi, 2022).

Contraindications

Absolute contraindications to laparoscopic hysterectomy are rare but include severe cardiopulmonary instability and inability to tolerate pneumoperitoneum, which is required for laparoscopic visualization and manipulation. Relative contraindications include extensive intra-abdominal adhesions and a very large uterus, although advances in surgical techniques have expanded the feasibility of laparoscopy in such cases (Li et al., 2020).

Severe obesity may increase technical difficulty and operative complexity, while advanced gynecological malignancies may require open surgery for adequate oncological clearance. Careful



patient selection, preoperative assessment, and individualized surgical planning are essential for reducing risks and improving outcomes (Alkatout, 2022).

Preoperative Evaluation and Preparation

Preoperative assessment includes medical history, pelvic examination, and imaging, especially transvaginal ultrasonography, to evaluate uterine size, adnexal abnormalities, and pelvic anatomy. Laboratory investigations include complete blood count, coagulation profile, and additional tests when required. Management of comorbidities, correction of anemia, bowel preparation when indicated, and prophylactic antibiotics are important components of preparation (Mereu et al., 2021).

Surgical Technique

Laparoscopic hysterectomy is usually performed under general anesthesia. The procedure begins with carbon dioxide (CO₂) pneumoperitoneum creation, followed by placement of laparoscopic trocars to provide access and visualization. The abdominal and pelvic cavities are inspected, and associated pathology is assessed. Early identification and protection of the ureters are essential to prevent urinary tract injury (Ioana et al., 2024).

The round ligaments are coagulated and divided to mobilize the uterus. The bladder flap is dissected to separate the bladder from the lower uterine segment and cervix. The uterine vessels are coagulated and ligated to achieve hemostasis. A colpotomy is then performed, allowing removal of the uterus vaginally or by morcellation when appropriate. The procedure is completed by laparoscopic vaginal cuff closure.

Advanced energy devices have improved surgical accuracy, reduced blood loss, and shortened operative time, increasing the safety and efficiency of laparoscopic procedures (Kaya et al., 2022).

Postoperative Care and Recovery

Recovery after LH is generally rapid. Standard care includes early ambulation, oral intake within hours, and effective pain management. Most patients are discharged within 24–48 hours, with a return to normal activities usually achieved within 2–4 weeks, which is faster than recovery after abdominal hysterectomy (Bouattour et al., 2025).

Advantages of Laparoscopic Hysterectomy

Compared with abdominal hysterectomy, LH provides several benefits (Ionescu et al., 2025):

- Reduced postoperative pain
- Shorter hospital stay
- Faster return to daily activities
- Lower intraoperative blood loss
- Reduced risk of wound infection and incisional hernia
- Improved cosmetic results
- Better visualization of pelvic anatomy

Complications

Although LH is generally safe, possible complications include (Madhvani et al., 2022):

- Intraoperative bleeding
- Urinary tract injury, including bladder or ureter damage
- Bowel injury
- Vaginal cuff dehiscence
- Infection
- Thromboembolic events



Comparison with Other Surgical Approaches

Studies show that LH provides better outcomes than abdominal hysterectomy and outcomes comparable to vaginal hysterectomy, while offering improved visualization of pelvic structures. Vaginal hysterectomy remains preferred when technically feasible; however, laparoscopy expands minimally invasive options for patients who are unsuitable candidates for vaginal surgery (Margulies et al., 2020).

Role in Benign Gynecological Diseases

LH is an important treatment option for benign gynecological conditions that affect quality of life. It provides definitive management for symptomatic fibroids, adenomyosis, and refractory abnormal uterine bleeding while minimizing surgical morbidity (Manandhar et al., 2020).

Conclusion

Laparoscopic hysterectomy is a major advancement in modern gynecological surgery. Its minimally invasive nature, safety, and favorable clinical outcomes have established it as a preferred approach for many benign and selected malignant gynecological conditions. Continuous surgical training, technological improvements, and evidence-based practice will further enhance its role in gynecology.

References

1. Aboelezz, SN., Mohamed, AK., & Ibrahim, AS. (2024). The impact of obesity on total laparoscopic hysterectomy outcomes: A retrospective analysis comparing class I, II obese women versus nonobese in Benha university hospital. *SVU-International Journal of Medical Sciences*, 7(2), 169-182. <https://doi.org/10.21608/SVUIJM.2024.295602.1888>
2. Ahmed, AA., Asida, SM., Ibrahim, G., & Ismail, M. (2024). The Effect of Addition of Magnesium Sulfate on Neutrophil/lymphocyte Ratio in Patients Undergoing Lower Abdominal Surgery Under General Anesthesia. *SVU-International Journal of Medical Sciences*, 7(2), 259-272. <https://doi.org/10.21608/SVUIJM.2023.186419.1489>
3. AlAshqar, A., Reschke, L., Kirschen, G. W., & Borahay, MA. (2021). Role of inflammation in benign gynecologic disorders: From pathogenesis to novel therapies. *Biology of Reproduction*, 105(1), 7–31. <https://doi.org/10.1093/biolre/roab054>
4. Alkatout, I. (2022). Laparoscopic hysterectomy: Total or subtotal? Functional and didactic aspects. *Minimally Invasive Therapy & Allied Technologies*, 31(1), 13–23. <https://doi.org/10.1080/13645706.2020.1769675>
5. Bouattour, K., Louis-Sylvestre, C., Berry, R., Levy-Zauberman, Y., Lacombe, JM., Cherruault, M., et al. (2025). Recovery after low-impact laparoscopic hysterectomy: A randomized controlled clinical trial. *American Journal of Obstetrics and Gynecology*, 234(2), 449-460. <https://doi.org/10.1016/j.ajog.2025.08.090>
6. Bulun, SE., Yildiz, S., Adli, M., Chakravarti, D., Parker, JB., Milad, M., et al. (2023). Endometriosis and adenomyosis: Shared pathophysiology. *Fertility and Sterility*, 119(5), 746–750. <https://doi.org/10.1016/j.fertnstert.2023.03.006>
7. Bulun, SE., Yin, P., Wei, J., Zuberi, A., Iizuka, T., Suzuki, T., et al. (2025). Uterine fibroids. *Physiological Reviews*, 105(4), 1947–1988. <https://doi.org/10.1152/physrev.00010.2024>
8. Ciebiaera, M., Esfandyari, S., Siblini, H., Prince, L., Elkafas, H., Wojtyła, C., et al. (2021). Nutrition in gynecological diseases: Current perspectives. *Nutrients*, 13(4), 1-33. <https://doi.org/10.3390/nu13041178>
9. Cohen, SL., Vitonis, AF., & Einarsson, JI. (2014). Updated hysterectomy surveillance and factors associated with minimally invasive hysterectomy. *JSLs: Journal of the Society of Laparoendoscopic Surgeons*, 18(3), 1-12. <https://doi.org/10.4293/JSLs.2014.00096>
10. Collins, S., & Lewicky-Gaupp, C. (2022). Pelvic organ prolapse. *Gastroenterology Clinics*, 51(1), 177–193. <https://doi.org/10.1016/j.gtc.2021.10.011>



11. de Tayrac, R., & Cosson, M. (2024). Vaginal hysterectomy and pelvic organ prolapse: History and recent developments. *International Urogynecology Journal*, 35(7), 1363–1373. <https://doi.org/10.1007/s00192-024-05783-7>
12. El-Habibi, MF., Megdad, MM., Al-Qadi, MH., AlQatrawi, MJ., Sababa, RZ., & Abu-Naser, SS. (2022). A proposed expert system for obstetrics & gynecology diseases diagnosis. *International Journal of Academic Multidisciplinary Research*, 6(5), 305–321.
13. GOLIA D'AUGE, T., Giannini, A., Bogani, G., Di Dio, C., DI DONATO, V., Caserta, D., et al. (2023). Prevention, screening, treatment and follow-up of gynecological cancers. State of the art and future perspectives. *Clinical and Experimental Obstetrics & Gynecology*, 50(8), 1–8. <https://doi.org/10.31083/j.ceog5008160>
14. Haddad, S., Ghadimi, K., Abrishamkar, R., & Asl, NSM. (2021). Comparing laparoscopy and laparotomy procedures in the radical hysterectomy surgery for endometrial cancer: A basic review. *American Journal of Translational Research*, 13(4), 1-6.
15. Hillier, S. L., Bernstein, K. T., & Aral, S. (2021). A review of the challenges and complexities in the diagnosis, etiology, epidemiology, and pathogenesis of pelvic inflammatory disease. *The Journal of Infectious Diseases*, 224(2), S23–S28. <https://doi.org/10.1093/infdis/jiab116>
16. Histerektomi, BEYTL. (2022). Evaluation of total laparoscopic hysterectomy operations in benign indications. *Health and Sport*, 3(1), 11-27. <https://doi.org/10.29228/tjhealthsport.57410>
17. Housmans, S., Noori, N., Kapurubandara, S., Bosteels, JJA., Cattani, L., Alkatout, I., et al. (2020). Systematic review and meta-analysis on hysterectomy by vaginal natural orifice transluminal endoscopic surgery (vNOTES) compared to laparoscopic hysterectomy for benign indications. *Journal of Clinical Medicine*, 9(12), 1-16. <https://doi.org/10.3390/jcm9123959>
18. Ioana, J. T. M., Voiță-Mekereș, F., Motofealea, A. C., Ciprian, D., Fulger, L., Alexandru, I., et al. (2024). Surgical outcomes in laparoscopic hysterectomy, robotic-assisted, and laparoscopic-assisted vaginal hysterectomy for uterine and cervical cancers: A systematic review. *Diagnostics*, 14(24), 1-19. <https://doi.org/10.3390/diagnostics14242782>
19. Ionescu, S., Madge, O.-L., & Simion, L. (2025). Advantages and disadvantages of the different methods to perform radical hysterectomy (open, laparoscopic, robotic) for cervical cancer. *IntechOpen*, 1(1), 1-5. <https://doi.org/10.5772/intechopen.1013465>
20. Kaya, C., Yıldız, Ş., Alay, İ., Aslan, Ö., Aydın, İE., & Yaşar, L. (2022). The comparison of surgical outcomes following laparoscopic hysterectomy and vNOTES hysterectomy in obese patients. *Journal of Investigative Surgery*, 35(4), 862–867. <https://doi.org/10.1080/08941939.2021.1927262>
21. Khalaf-Awad, MA., Abdallah, AH., Mohamed, AO., & Abdelrazek, GM. (2021). The role of uterine artery embolization in management of abnormal uterine bleeding. *SVU-International Journal of Medical Sciences*, 4(2), 203–211. <https://doi.org/10.21608/SVUIJM.2021.84539.1192>
22. Leclair, C., & Stenson, A. (2022). Common causes of vaginitis. *JAMA*, 327(22), 2238–2239. <https://doi.org/10.1001/jama.2022.6375>
23. Lefebvre, G., Allaire, C., Jeffrey, J., & Vilos, G. (2018). RETIRED: No. 109-Hysterectomy. *Journal of Obstetrics and Gynaecology Canada*, 40(7), e567–e579. <https://doi.org/10.1016/j.jogc.2018.04.031>
24. Lenfant, L., Canlorbe, G., Belghiti, J., Kreaden, US., Hebert, AE., Nikpayam, M., et al. (2023). Robotic-assisted benign hysterectomy compared with laparoscopic, vaginal, and open surgery: A systematic review and meta-analysis. *Journal of Robotic Surgery*, 17(6), 2647–2662. <https://doi.org/10.1007/s11701-023-01724-6>
25. Li, P., Liu, P., Yang, Y., Wang, L., Liu, J., Bin, X., et al. (2020). Hazard ratio analysis of laparoscopic radical hysterectomy for IA1 with LVSI-IIA2 cervical cancer: Identifying the possible contraindications of laparoscopic surgery for cervical cancer. *Frontiers in Oncology*, 10(1), 1-9. <https://doi.org/10.3389/fonc.2020.01002>



26. Madhvani, K., Garcia, SF., Fernandez-Felix, BM., Zamora, J., Carpenter, T., & Khan, KS. (2022). Predicting major complications in patients undergoing laparoscopic and open hysterectomy for benign indications. *CMAJ*, 194(38), E1306–E1317. <https://doi.org/10.1503/cmaj.220914>
27. Madueke-Laveaux, O. S., Elsharoud, A., & Al-Hendy, A. (2021). What we know about the long-term risks of hysterectomy for benign indication—A systematic review. *Journal of Clinical Medicine*, 10(22), 1-19. <https://doi.org/10.3390/jcm10225335>
28. Manandhar, T., Sitaula, S., Thapa, BD., Agrawal, A., & Thakur, A. (2020). Prevalence of hysterectomy among gynecological surgeries in a tertiary care hospital. *JNMA: Journal of the Nepal Medical Association*, 58(232), 1-6. <https://doi.org/10.31729/jnma.5315>
29. Marchand, GJ., Azadi, A., Sainz, K., Masoud, A., Anderson, S., Ruther, S., et al. (2021). Systematic review, meta-analysis and statistical analysis of laparoscopic supracervical hysterectomy vs. endometrial ablation. *Journal of the Turkish German Gynecological Association*, 22(2), 1-10. <https://doi.org/10.4274/jtgga.galenos.2021.2020.0185>
30. Margulies, SL., Vargas, MV., Denny, K., Sparks, AD., Marfori, CQ., Moawad, G., et al. (2020). Comparing benign laparoscopic and abdominal hysterectomy outcomes by time. *Surgical Endoscopy*, 34(2), 758–769. <https://doi.org/10.1007/s00464-019-06825-8>
31. Mereu, L., Dalprà, F., & Tateo, S. (2021). Laparoendoscopic single site hysterectomy: Literature review and procedure description. *Journal of Clinical Medicine*, 10(10), 1-9. <https://doi.org/10.3390/jcm10102073>
32. Metgud, SC., Prabhu, GA., & Renuka, PM. (2023). A 5-years cross-sectional study of peripartum hysterectomy at a tertiary care hospital in South India. *SVU-International Journal of Medical Sciences*, 6(1), 130–139. <https://doi.org/10.21608/SVUIJM.2022.146531.1328>
33. Mobeen, S., & Apostol, R. (2020). Ovarian cyst. StatPearls Publishing.
34. Naidoo, K., & Moodley, Y. (2022). Incidence and microbiology of surgical site infection following hysterectomy at a South African quaternary hospital. *SVU-International Journal of Medical Sciences*, 5(2), 308–317. <https://doi.org/10.21608/SVUIJM.2022.135351.1303>
35. Nieboer, TE., Spaanderman, ME., Bongers, MY., Vierhout, ME., & Kluivers, KB. (2010). Gynaecologists estimate and experience laparoscopic hysterectomy as more difficult compared with abdominal hysterectomy. *Gynecological Surgery*, 7(4), 359–363. <https://doi.org/10.1007/s10397-010-0592-1>
36. Nilufar, R., Khushnoza, T., Madina, O., & Nodira, R. (2023). Early diagnosis and prevention of gynecological diseases. *Science and Innovation*, 2(8), 790–792. <https://doi.org/10.5281/zenodo.8366342>
37. Ozoda, A., & Azamat o'g'li, SA. (2024). Gynecological diseases are a common problem for women. *Journal of Modern Educational Achievements*, 3(1), 366–370.
38. Pynnä, K., Räsänen, P., Sintonen, H., Roine, RP., & Vuorela, P. (2021). The health-related quality of life of patients with a benign gynecological condition: A 2-year follow-up. *Journal of Comparative Effectiveness Research*, 10(8), 685–695. <https://doi.org/10.2217/cer-2020-0243>
39. Song, T., Kim, M. K., Kim, M. L., Jung, YW., Yun, BS., & Seong, SJ. (2015). A randomized comparison of laparoendoscopic single-site hysterectomies: Total laparoscopic hysterectomy versus laparoscopically assisted vaginal hysterectomy. *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 25(7), 541–547. <https://doi.org/10.1089/lap.2014.0524>
40. Włodarczyk, M., Ciebiera, M., Nowicka, G., Łoziński, T., Ali, M., & Al-Hendy, A. (2024). Epigallocatechin gallate for the treatment of benign and malignant gynecological diseases—Focus on epigenetic mechanisms. *Nutrients*, 16(4), 1-35. <https://doi.org/10.3390/nu16040559>
41. Yu, E., Lee, H., Joo, J., & Na, Y. (2024). Management of common benign gynecologic diseases in postmenopausal women. *Journal of Menopausal Medicine*, 30(3), 1-8. <https://doi.org/10.6118/jmm.24017>



-
42. Соатова, НЭ., & Эргашева, ЗА. (2020). Diagnosis, treatment and prevention of gynecological diseases. *Re-health Journal*, (3–2), 56–67. <https://doi.org/10.24411/2181-0443/2020-10123>