DOI: https://doi.org/10.53350/pjmhs20221612765

**ORIGINAL ARTICLE**

# Analysis of Indications and Different Surgical Approaches for Gynecological Hysterectomies and their Consequences

SIDRA ASIF[1*], SEEMAL TAJASAR[2], AMNA BIBI[3], MUHAMMAD ILYAS RIAZ[4], KHUSHBOO CHANDIO[5], OMER FAROOQ[6]
[1]*Consultant Gynecologist, Department of* Obstetrics and Gynaecology, *Isfandyar Bukhari District Hospital Attock*
[2]*Senior Registrar, Department of* Obstetrics and Gynaecology, *Sharif Medical City Hospital Lahore*
[3]*Women Medical Officer, Department of* Obstetrics and Gynaecology, *Isfandyar Bukhari District Hospital Attock*
[4]*Registrar surgery Farooq Hospital Islamabad*
[5]*Lecturer, Peoples Nursing School LUMHS Jamshoro*
[6]*Consultant Surgeon, Department of General Surgery District Hospital Attock*
*Correspondence to: Sidra Asif, Email: dr.sidra84@gmail.com*

## ABSTRACT

**Background:** Hysterectomy is one of the most common gynecological surgeries regardless of the surgeon's approach.
**Purpose:** This study was conducted to compare three hysterectomy techniques, viz abdominal, vaginal and laparoscopic hysterectomy, in terms of their effectiveness and low post-op complications.
**Methods:** The study's cohort included 631 women who underwent benign hysterectomies between 2018 and 2022 in tertiary care hospitals in three areas of Pakistan. The patients in Groups A, B, and C comprised 277, 43 and 311 patients, who were surgically operated by LHs, VHs, and AHs, respectively.
**Findings:** Most of the patients with BH were of age 39-50 years and multiparous with an average weight of 71.4+15 Kg. The major ($p<0.05$) underlying medical conditions were endometriosis, followed by uterine bleeding, fibroids, pelvic prolapse, adenomyosis and gynecological cancer having an incidence of 44.05, 36.45, 11.88, 5.38, 1.26 and 0.95%, respectively. The AH and VH had the highest incidence of surgical and post-operative problems ($p<0.05$) compared to the LH, with percentages of 56.59, 55.81, and 20.21%, respectively. Among complications, most often observed were thrombosis, post-operative infections, and bleeding ($p<0.05$).
**Practical implications:** It was recommended that the gynaecologist should pursue LH, which is less invasive and has a high success rate, for BH.
**Conclusion:** It was thus concluded that the laparoscopic hysterectomy was minimally invasive and was associated with a low incidence of intraoperative and postoperative complications.
**Keywords**: Endometriosis; Non-invasive hysterectomy; Laparoscopic hysterectomy; Intraoperative complications.

## INTRODUCTION

A substantial number of women undergo hysterectomy, each year and 70% of the hysterectomies are performed for benign indications, such as leiomyoma, adenomyosis, and polycystic ovarian syndrome [1-2]. Size and shape of the vagina and uterus, the extent of extrauterine disease, accessibility to the uterus, surgeon training and experience, available hospital facilities, need for concurrent procedure and the preference of the informed patient can influence the route of hysterectomy for benign causes [3].

Abdominal hysterectomy is associated with less favorable medical outcomes; therefore, the evidence only supports its use when documented pathologic conditions preclude the use of the vaginal route and its effectiveness. Frequently, surgeons disregard evidence-based formal practice guidelines for hysterectomy and opt for a hysterectomy technique based on personal preference. Historically, abdominal hysterectomy has been accepted as the treatment of choice for more severe diseases. Despite pathologic indications, surgeons are predisposed to choose the abdominal route due to traditional training. Compared to laparotomy, laparoscopic hysterectomy is associated with lower postoperative morbidity, improved quality of life, a shorter hospital stay, and less blood loss [4]. Developing clinical guidelines based on accurate physical findings is the first step in ensuring that women receive the most appropriate, cost-effective, and high-quality hysterectomy procedure [5].

The surgical technique of hysterectomy is the most significant contributor to postoperative morbidity. Until now, hysterectomies have been performed via vaginal, abdominal, laparoscopic, and robotic-assisted laparoscopic methods. A vaginal hysterectomy is associated with a shorter hospital stay, a quicker recovery, and fewer unspecified infections than an abdominal hysterectomy. Since Reich performed the first laparoscopic hysterectomy (LH) in 1989, numerous laparoscopic techniques and instruments have been developed, resulting in the widespread use of LH, including laparoscopic-assisted vaginal hysterectomy (LAVH) and total laparoscopic hysterectomy (TLH). Gynecologists perform LAVH or TLH based on their preference, and it is safe to assume that gynecologists who perform LH rarely perform VH [6]. There are multiple reasons for the widespread adoption of LH. In cases of severe endometriosis or a history of pelvic inflammatory disease, LH provides a more accurate anatomical view than VH. Second, LH facilitates the separation of the uterus from its attachment to the pelvic wall in cases of large uterine size and uteruses with little or no descent. There are numerous methods for performing a hysterectomy, each with its advantages and disadvantages [7]. The benefits of MIS for benign hysterectomy (BH) are well documented. Patients who undergo MIS experience fewer medical and surgical complications, a higher quality of life, and overall lower medical costs. Major professional societies in gynecology now recommend MIS as an alternative to laparotomy to avoid morbidity. LH and RH are generally considered safe and feasible in the outpatient setting [8].

Minimally invasive hysterectomies are associated with decreased postoperative intravenous analgesia requirements, a quicker return to daily activities, and shorter hospital stays compared to abdominal hysterectomies. Due to the longer operating times but shorter hospital stays associated with minimally invasive surgery, the overall hospital cost is similar. The optimal surgical route is determined by multiple factors, including uterine size, accessibility, mobility, adhesions, uterine shape, uterine pathology, and surgeon experience [9].

The purpose of this study was to determine the frequency of use, analyze and compare the most appropriate surgical method for hysterectomy and evaluate the efficacy and safety of the three approaches for hysterectomy: abdominal hysterectomy (AH), vaginal hysterectomy (VH), and laparoscopic hysterectomy (LH) for women with benign gynecological conditions examine trends in surgical approaches and care settings among Pakistani patients who underwent BH between 2018 and 2022.

## MATERIALS AND METHODS

**Study Locale:** The retrospective observational cross-sectional descriptive study was conducted in the Gynecology Departments of Government tertiary care hospitals in three districts of Pakistan (Multan, Peshawar and Islamabad) from the year 2018 to 2022 (05 years).

**Study Design:** The primary emphasis of the study was aimed to improve women's health literacy in the general community because the hysterectomy is the most often gynecological surgical operation. The cohort included 631 women who underwent benign hysterectomies between 2018 and 2022. Surgical techniques for BH included abdominal hysterectomy (AH), vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH). By care environment and surgical technique, quarterly frequencies were determined. We examined the impact of patient-, physician-, and hospital-level preoperative variables and surgical methods on outpatient migration [8].

Patients were categorized into three groups; Group A, B and C operated vide LHs, VHs, and AH, respectively, their surgery reports and clinical files of the maneuvers were prospectively analyzed for the indication of surgery, patient's age, parity, weight, time for surgery, surgical difficulty, blood loss, intra-operative complications, postoperative analgesia, hospital stay (days), adverse events or satisfaction rate and recuperation time.

**Study Outcome:** The primary endpoint of this study was the occurrence of intraoperative and postoperative complications. The Dindo classification of surgical problems was used to categorize operative complications. Secondary outcomes were rate of laparotomy, blood loss, surgical and post-surgical complications, infections and perforation of bowels, urinary bladder and damage to the ureters during the surgical intervention [7].

**Inclusion and Exclusion Criteria:** Women with benign gynecological diseases referred to as hysterectomies were included in the study. The patients were perimenopausal and postmenopausal between the ages of 35 and 50 and required surgical intervention for benign gynecological illness. Women with cancer were excluded from the trial, regardless of whether they were diagnosed during or after the study procedure. Patients with a medical condition, such as cardiac lesions, that would impede the decision to conduct a certain technique of hysterectomy and aged below 18 years were excluded from the study.

**Ethical Approval:** The study was commenced after acquiring ethical clearance from the Ethical Review Committee of Nishtar Hospital Multan vide Order No. 4512/2018/GWNHM, Dated 02-03-2018.

**Statistical Analysis:** All data were entered into an Excel spreadsheet and analyzed by SPSS 20 using suitable statistical techniques such as averages, frequency, percentage, p-value, etc and the data was analyzed using Online ANOVA and Chi-square test.

## RESULTS

The study's cohort included 631 women who underwent benign hysterectomies between 2018 and 2022 in Gynecology Departments of Government tertiary care hospitals in three areas of Pakistan (Multan, Peshawar and Islamabad). Groups A, B, and C comprised 277, 43, and 311 patients, respectively, and were surgically operated by LHs, VHs, and AH, respectively (Figure 1).

The demographic values of the study population revealed that most of the patients with BH were of age 39-50 years (89.22%), followed by an age range of 26-38 years and over 50 years ($p<0.05$), while the incidence of BH was found least in the patients of age less than 25 years. Significantly different parity was obvious from the study ($p<0.05$), whereby Multiparous patients were affected at the most and Nulliparous women had the lowest frequency. The majority of the affected population was educated ($p<0.05$) and resided in the urban areas of Multan, Islamabad, and Peshawar. The average weight of the affected population was 71.4+15 Kg. There were statistically significant differences ($p<0.05$) in the ethnicity of the presented BH patients, the majority of whom spoke Punjabi, followed by Saraiki and Urdu. Further examination of the data revealed that the incidence of BH was considerably elevated in women with menopause ($p<0.05$) and in patients with a history of gynecological problems ($p<0.05$) and cesarean delivery ($p<0.05$) (Table 1).

A study of the indications which rendered the patients to hysterectomy was the most essential component of this research and it was found that the major ($p<0.05$) underlying medical conditions were endometriosis, followed by uterine bleeding, fibroids, pelvic prolapsed, adenomyosis and gynecological cancer with the incidence of 44.05, 36.45, 11.88, 5.38, 1.26 and 0.95%, respectively (Table 2).

The frequency of surgical and post-surgical problems in patients undergoing hysterectomy was comparable across all hysterectomy procedures and study groups. The abdominal and vaginal hysterectomies had the highest incidence of surgical and post-operative problems ($p<0.05$) compared to the laparoscopic hysterectomy, with percentages of 56.59, 55.81, and 20.21%, respectively. Among these complications, thrombosis, post-operative infections, and bleeding had the highest ratio ($p<0.05$), followed by anesthetic issues, urinary tract and intestinal impairments, and perforations (Table 3). Blood loss was observed as a surgical complication in all study groups, and it was determined that abdominal hysterectomy was associated with considerably higher ($p<0.05$) blood loss than a vaginal and laparoscopic hysterectomy (Table 4).

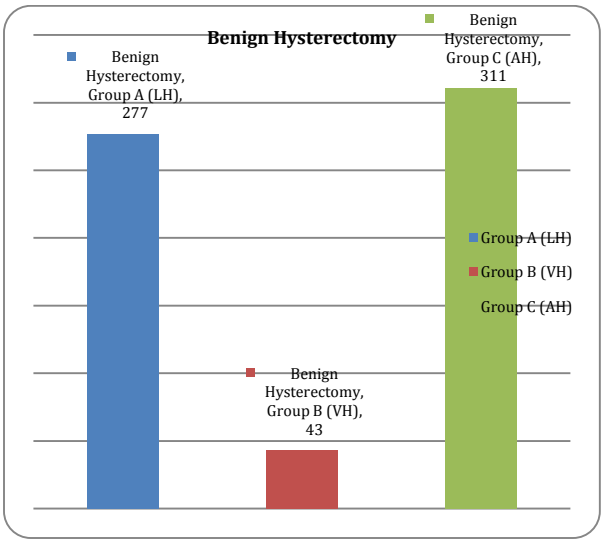


Figure 1: Group allocation of the patients of benign hysterectomy

Table 1: Demographic values of the patients who underwent surgical procedures for hysterectomy

| S. No | Variable | Number of patients (n) | Percentage (%) or Mean+SD | p-value |
|---|---|---|---|---|
| 1 | Age (Years) | | | |
| | <25 | 12 | 1.90 | |
| | 26-38 | 49 | 7.76 | 0.0000 |
| | 39-50 | 563 | 89.22 | 1* |
| | >50 | 7 | 1.10 | |
| 2 | Parity | | | 0.0000 |
| | Nulliparous | 52 | 8.24 | 1* |
| | Primiparous | 87 | 13.78 | |
| | Multiparous | 492 | 77.97 | |
| 3 | Weight (Kg) | 631 | 71.4+15.1 | - |
| 4 | Education | | | |
| | Illiterate | 222 | 35.18 | 0.0000 |
| | Literate | 409 | 64.81 | 1* |
| 5 | Ethnicity | | | |
| | Punjabi | 275 | 43.58 | |
| | Pashtoon | 41 | 6.49 | 0.0000 |
| | Urdu | 76 | 12.04 | 1* |
| | Saraiki | 198 | 31.37 | |
| | Others | 41 | 6.49 | |
| 6 | Geography | | | |
| | Rural | 298 | 47.22 | 0.2762 |
| | Urban | 333 | 52.77 | |
| 7 | Reproductive | | | |

| | | | | |
|---|---|---|---|---|
| | Cycle<br>Menstruation<br>Menopause | 210<br>421 | 33.28<br>66.71 | 0.0000<br>1* |
| 8 | Prior Delivery Status<br>Vaginal<br>Cesarean | 276<br>355 | 43.74<br>56.25 | 0.0116 |
| 9 | Prior gynecological complications<br>Yes<br>No | 443<br>188 | 70.20<br>29.79 | 0.0000<br>1* |

*indicated that the p-value is significant at p<0.05

Table 2: Surgical indications for hysterectomy

| S. No | Medical Condition | No. of subjects (n) | Percentage (%) | p-value |
|---|---|---|---|---|
| 1 | Endometriosis | 278 | 44.05 | 0.00001*<br><br>(p-value is significant at p<0.05) |
| 2 | Fibroids | 75 | 11.88 | |
| 3 | Pelvic prolapse | 34 | 5.38 | |
| 4 | Uterine bleeding | 230 | 36.45 | |
| 5 | Adenomyosis | 8 | 1.26 | |
| 6 | Gynecological cancer | 6 | 0.95 | |

Table 3: Comparative incidence of surgical and post-surgical complications in patients who underwent a hysterectomy in different ways

| S. No | Variable | Laparoscopic hysterectomy (n= 277) | | Vaginal hysterectomy (n= 43) | | Abdominal hysterectomy (n= 311) | | p-value |
|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | n | % | |
| 1 | General anesthetic complications | 6 | 2.16 | 1 | 2.32 | 11 | 3.53 | 0.00053* |
| 2 | Bleeding | 8 | 2.88 | 7 | 16.27 | 45 | 14.46 | 0.00001* |
| 3 | Ureter damage | 1 | 0.36 | 0 | 0 | 10 | 3.21 | 0.00001* |
| 4 | Bladder damage | 2 | 0.72 | 1 | 2.32 | 9 | 2.89 | 0.00038* |
| 5 | Bowel damage | 1 | 0.36 | 0 | 0 | 12 | 3.85 | 0.00001* |
| 6 | Post-operative infections | 19 | 6.85 | 9 | 20.93 | 41 | 13.88 | 0.00001* |
| 7 | Thrombosis | 19 | 6.85 | 6 | 13.95 | 48 | 15.43 | 0.00001* |
| | Total | 56 | 20.21 | 24 | 55.81 | 176 | 56.59 | 0.00036* |

Table 4: Comparative blood losses in BH patients operated through different techniques

| S. No | Technique | Blood loss (ml) | Mean+SD |
|---|---|---|---|
| 1 | Laparoscopic hysterectomy | 198-342 | 270 ±50.912 |
| 2 | Vaginal hysterectomy | 245-312 | 278.5 ±23.688 |
| 3 | Abdominal hysterectomy | 301-637 | 469 ±118.794 |

## DISCUSSION

Hysterectomy is one of the most common gynecological surgeries regardless of approach. There are variances between various procedures in terms of indications, benefits, and drawbacks [10]. The transition from laparotomy to laparoscopy is one of the most amazing developments in surgical practice. In 1989, Harry Reich reported the first laparoscopic hysterectomy for endometriosis. Laparoscopic hysterectomy has since been regarded as an alternative to abdominal hysterectomy. The aspiration for minimally invasive surgery and physicians' ability to update surgical skills have contributed to the substantial recent breakthroughs in laparoscopic surgery [11].

Contrary to our findings, a study reported that abdominal hysterectomy is the most established procedure that enables the surgeon to treat any malignant pathology and has the advantage of direct contact with the tissues. It also provides a direct three-dimensional view of the operating field and does not necessitate pricey specialized instruments. Laparoscopic surgery is contraindicated for malignant disease due to the risk of malignant cell dissemination by the gas (CO2) used to inflate the abdominal cavity, the lack of direct tissue contact, and the need for specialist surgeons and costly instruments and types of equipment. But despite limitations, the laparoscopic procedure had the lowest incidence of adhesions, less pain, significantly less scarring and shorter hospital stays [10].

A comprehensive review compared AH and VH with a laparoscopic hysterectomy and evaluated their possible positive and negative impacts on women with benign gynecological diseases. It was reported that laparoscopically assisted vaginal hysterectomy procedures were associated with fewer fever episodes or unexplained infections and shorter operation times than Total Laparoscopic Hysterectomy (TLH) procedures, while, abdominal and vaginal hysterectomies were associated with the lengthier operation and more bleeding. It was further added that fibroid was the most common reason for abdominal hysterectomy (40%), vaginal hysterectomy (36%), and laparoscopic hysterectomy (48%) [3]. Research revealed the MLR results in a trend analysis. It was reported that when all preoperative characteristics were included, RH was substantially related to a higher likelihood of outpatient BH compared to LH. Overall, the likelihood was increased for patients with complications, and it was highest for such patients at hospitals with robotic equipment. Intriguingly, VH was related to a lower likelihood of an outpatient operation across all subgroups. In addition, the large decline of VH, particularly in nonteaching institutions, implies that despite professional society guidelines, there may be practical obstacles to the use of VH [8].

In our findings, most of the patients with BH were educated and belonged to urban areas. Comparable research was conducted and reported that the educated population's comprehension of hysterectomy surgery and fibroids, in general comprehension was poor. The numerous methods of performing a hysterectomy and uterine fibroids were particular areas where expertise was lacking [9].

A study compared the VH with LH for postoperative problems, operative time, hospital stay, and recovery, there were few randomized trials. Their meta-analysis revealed no difference between the two groups in terms of the overall rate of complications, including grade I, II, and III complications of intraoperative blood loss, intraoperative conversion, hospital stay duration, and recovery time following surgery. VH was related to a quicker operative time and less discomfort than LH, post-24 hours of surgery [7].

## CONCLUSION

Regardless of the approach (abdominal, vaginal, or laparoscopic), hysterectomy remained the gold standard in the treatment of many benign uterine pathological conditions, but we must encourage new techniques (laparoscopic hysterectomy) that utilize modern technologies and have results that are promising and comparable to hysterectomy in many cases. Our study demonstrated that laparoscopic hysterectomy was minimally invasive and was associated with a low incidence of intraoperative and postoperative complications. Compared to abdominal and even vaginal hysterectomy, laparoscopic hysterectomy has a shorter recovery period, shorter hospital stay, less pain or discomfort, and fewer problems and post-op complications. Minimally invasive hysterectomies are associated with decreased postoperative intravenous analgesia requirements as compared to abdominal

hysterectomies. However, this form of surgery demands the experience and skill of a surgeon.

**Acknowledgment:** All authors contributed equally to this research.
**Conflict of Interest:** Declared none.

## REFERENCES

1. Antosh DD, High R, Brown HW, et al. Feasibility of prophylactic salpingectomy during vaginal hysterectomy. Am J Obstet Gynecol 2017;217:601–605.
2. Obermair HM, Borg EJ. 2019. Salpingectomy at the time of hysterectomy for benign gynaecological disease: A comparison of surgical approaches. Aust N Z J Obstet Gynaecol 2019;1–5.
3. Ali SA, Farahat MM, ElShafei MAM. Surgical Approach to Hysterectomy for Benign Gynecological Diseases. Egyp J Hospital Med 2019;77(3):5279-5286.
4. Panda S, Das A, Das R, Sharma N, Shullai W, Jante V, Sharma A, Singh K, Baruah P, Makakmayum R. Analysis of Different Routes of Hysterectomy Based on a Prospective Algorithm and Their Complications in a Tertiary Care Institute. Minimally Invasive Surg 2022;pp 1-7.
5. Walsh, CA, Walsh SR, Tang TY, Slack M. Total abdominal hysterectomy versus totallaparoscopic hysterectomy for benign disease: a meta-analysis. Europ J Obstet Gynecol Repro Biol 2009;144(1):3–7.
6. Moen MD, Richter HE. Vaginal hysterectomy: past, present, and future. Int Urogynecol J 2014;25(9):1161–5.
7. Lee SH, Oh SR, Cho YJ, Han M, Park JW, Kim SJ, Yun JH, Choe SY, Choi JS, Bae JW. Comparison of vaginal hysterectomy and laparoscopic hysterectomy: a systematic review and meta-analysis. BMC Women's Heal 2019;19:83.
8. Moawad G, Liu E, Song C, Fu AZ. Movement to outpatient hysterectomy for benign indications in the United States, 2008-2014. PLOS ONE 2017;12(11):e0188812.
9. Belilovets A, Gopal N, Stockwell E, Pedroso J, Brotherton J, Volker KW, Howard D. Patient understanding of uterine fibroids and the different surgical approaches to hysterectomy, Women's Heal Report 2020;1:252–258.
10. Papadopoulos MS, Tolikas AC, Miliaras DM. Review Article Hysterectomy—CurrentMethods and Alternatives for Benign Indications. Obstet Gynecol Int 2010;1-10.
11. Tamrakar SR. A Comparative Study Of Surgical Outcome In Different Approaches For Hysterectomy. J Nepalgunj Med Colleg 2019;17(1):28-33.