

Laparoscopic Hysterectomy for Large Uteri: A Retrospective Analysis at a Tertiary Care Hospital

Dr. Parveen Akhter Shamsunnahar^{1*}, Dr. A N M Harunur Rashid², Dr. Raisa Naower³

¹Associate Professor, Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

²Associate Professor, Department of Orthopedic Surgery, Sir Salimullah Medical College, Dhaka, Bangladesh

³Medical Officer, Birdem Hospital, Dhaka, Bangladesh

DOI: [10.36348/sijog.2023.v06i12.010](https://doi.org/10.36348/sijog.2023.v06i12.010)

| Received: 15.11.2023 | Accepted: 23.12.2023 | Published: 30.12.2023

*Corresponding author: Dr. Parveen Akhter Shamsunnahar

Associate Professor, Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

Abstract

Background: Hysterectomy, widely performed for benign gynecologic conditions, is increasingly done laparoscopically due to reduced pain, quicker recovery, and lower blood loss. Recommended by AAGL and ACOG, laparoscopic hysterectomy requires advanced skills, especially for large uteri, with innovations like uterine morcellation enhancing feasibility while improving surgical precision and patient outcomes. **Aim of the study:** This study aims to evaluate the perioperative outcomes of laparoscopic hysterectomy for large uteri in a tertiary care hospital. **Methods:** This retrospective cohort study at the Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU) and two private Hospitals in Dhaka, Bangladesh, from February 2019 to January 2023 analyzed 120 patients undergoing laparoscopic hysterectomy for large uteri (>300g). Patients aged 18+ with benign gynecological conditions were included, excluding those with malignancies, laparoscopic contraindications, or prior extensive abdominal surgeries. Comprehensive preoperative assessments were conducted. Surgeries followed standardized laparoscopic-assisted vaginal hysterectomy protocols, addressing ovarian preservation/removal as needed. Intraoperative metrics included operating time and blood loss, while postoperative care emphasized early recovery and complication monitoring. Data were analyzed retrospectively, with outcomes reported as mean \pm SD. **Result:** This study analyzed 100 women undergoing laparoscopic hysterectomy, with a mean age of 46.5 years and a BMI of 23.3 kg/m². Most participants (58.3%) were parous, with a mean uterine weight of 585 grams. Uterine myoma (80%) was the leading preoperative diagnosis. The average operative time was 88.9 minutes, with 575.4 mL blood loss and a 1.5-day hospital stay. Hemoglobin drop averaged 1.7 g/dL, and 17.5% required transfusions. Major complications, including bowel, bladder, or ureter injuries, were absent. Mild postoperative complications affected a few patients, with no reoperations or wound infections, showcasing the procedure's safety and efficacy. **Conclusion:** Laparoscopic hysterectomy for large uteri proves safe and effective in tertiary care, offering minimal complications, reduced morbidity, and shorter hospital stays. While challenges, like increased operative time and blood loss, exist, the absence of major injuries or reoperations confirms its feasibility, showcasing the advantages of minimally invasive techniques in skilled hands.

Keywords: Laparoscopic Hysterectomy and Large Uteri.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Hysterectomy, the surgical removal of the uterus, is one of the most commonly performed gynecologic procedures worldwide [1]. It is frequently carried out for a variety of benign conditions such as uterine fibroids, endometriosis, and abnormal bleeding [2,3]. Approximately 90% of all hysterectomies are

performed for benign reasons, making it a critical part of gynecologic care [4]. The procedure can be approached via different routes abdominal, vaginal, or laparoscopic depending on factors such as the patient's clinical condition and the surgeon's expertise [5]. Among these, laparoscopic hysterectomy (LH) has gained popularity due to its minimally invasive nature. This technique, which involves laparoscopic ligation of the major vessels

supplying the uterus using electrosurgical desiccation, suture ligation, or staples, was first introduced in 1988 [6]. Since then, LH has become a safe and effective method for managing benign uterine conditions, offering numerous advantages, such as reduced postoperative discomfort, shorter hospital stays, quicker recovery, and faster return to daily activities [7]. The primary rationale behind laparoscopic hysterectomy (TLH) is to transform the traditional abdominal hysterectomy into a laparoscopic procedure, thereby minimizing trauma and reducing morbidity [8]. The 2010 position statement from the American Association of Gynecologic Laparoscopists (AAGL) and the American Congress of Obstetricians and Gynecologists (ACOG) emphasized that minimally invasive techniques should be the preferred route for most benign cases [9,10]. Over the years, studies have shown that even large uteri (greater than 500 grams) can be successfully removed through laparoscopic means, with outcomes comparable to those seen with smaller uteri [11]. Several studies have highlighted the significant advantages of laparoscopic hysterectomy (LH) over abdominal hysterectomy (AH) [12]. The benefits of laparoscopic surgery are undeniable, including reduced blood loss, decreased postoperative pain due to minimal disruption to the abdominal wall, and faster mobilization and recovery. This approach not only offers advantages to patients but also enhances the surgeon's experience by providing a magnified view of the deep pelvic structures, thereby facilitating more precise and detailed surgical procedures [13]. However, the challenges posed by large uteri, such as difficulties in accessing uterine vascular pedicles, risk of hemorrhage, and impaired visibility due to large fibroids, have led to concerns about the feasibility of laparoscopic approaches for such cases [8]. The risk of injury to surrounding structures, such as the bowel and urinary tract, also increases with the difficulty of performing surgery on larger uteri [14]. Despite these challenges, various reports have highlighted that laparoscopic hysterectomy for large uteri is technically feasible, particularly when performed by experienced surgeons. Modifications in surgical techniques, such as the use of uterine morcellation and advanced instrumentation, can improve the safety and success of the procedure [15]. This study aims to evaluate the perioperative outcomes of laparoscopic hysterectomy for large uteri in a tertiary care hospital.

METHODOLOGY & MATERIALS

This retrospective cohort study was conducted at in the Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU) and two private Hospitals in Dhaka, Bangladesh, from February 2019 to January 2023. The hospital serves as a major referral center, providing advanced gynecological services, including minimally invasive surgeries. The institutional review board approved this study, and all procedures were performed in accordance with ethical guidelines. A total of 120

patients who underwent laparoscopic hysterectomy for large uteri were included in this study.

Inclusion criteria

- Patients aged 18 years or older.
- Diagnosed with benign gynecological conditions, such as fibroids or adenomyosis, warranting hysterectomy.
- A uterine weight of (>300 grams) confirmed intraoperatively.

Exclusion criteria

- Patients with suspected or confirmed malignant uterine or adnexal conditions.
- Patients with contraindications to laparoscopic surgery.
- Prior extensive abdominal surgeries could complicate laparoscopic access.

Preoperative Assessment and Preparation

All patients underwent comprehensive preoperative assessments, including a thorough medical history, pelvic examination, and ultrasonography to evaluate uterine size and anatomy. Patients were admitted on the day of surgery and received a second-generation cephalosporin intravenously 30 minutes before the operation as a prophylactic antibiotic. Standard bowel preparation was administered before surgery.

Surgical Technique

Laparoscopic-assisted vaginal hysterectomies (LAVH) were conducted with patients under general anesthesia in the modified lithotomy position. The procedure began with electrocoagulation and transection of the bilateral round ligaments using a Force Triad LigaSure device (Valley Lab, Boulder, USA). For patients opting to preserve their ovaries, the fallopian tubes and ovarian ligaments were transected. For those choosing ovary removal, the infundibulopelvic ligaments were isolated, coagulated, and transected. The vesicouterine peritoneum was then opened. A Teflon-coated, heat-resistant yellow colpotomizer (Kerala, India) was inserted through the vagina to facilitate anterior colpotomy with monopolar electrocautery. Posterior colpotomy followed the same protocol. The vaginal phase involved clamping, transecting, and suturing the vesicocervical, uterosacral, and cardinal ligaments, as well as the uterine vessels. When necessary, vaginal myomectomy was performed before removing the uterus. Closure of the vaginal vault concluded the procedure. All specimens were weighed post-removal.

Intraoperative and Postoperative Care

Operating time was recorded from the initial incision to the final wound dressing. Blood loss was assessed by measuring aspirated blood, weighing all swabs, and estimating blood collected in the perineal bag

during vaginal operations. Postoperative care involved removing urinary catheters 6 hours post-surgery and allowing liquid intake after bowel peristalsis was confirmed. Postoperative fever was defined as a body temperature of at least 38°C, recorded in two measurements at least 6 hours apart after the first 24 hours. Analgesia requirements, febrile morbidity, and hospital stay duration were documented, with patients discharged upon establishing bowel peristalsis, apyrexia, and independence from narcotic analgesics. A follow-up appointment was conducted 7 days post-discharge.

Data Collection and Statistical Analysis

Data for this study were collected retrospectively. Outcomes included operating time, blood loss, hospital stay, complications, and postoperative recovery metrics. Results are presented as mean \pm standard deviation (SD).

RESULT

A total of 100 women who underwent laparoscopic hysterectomy were included in this study. The mean age of participants was 46.5 ± 4.5 years, and the average BMI was 23.3 ± 3.9 kg/m². The study included 58.3% parous women and 41.7% nulliparous women. The mean uterine weight among participants

was 585 ± 156 grams. The most common preoperative diagnosis was uterine myoma, which affected 80% of the patients, followed by adenomyosis (15%) and cervical dysplasia (5%) (Table 1). In terms of surgical outcomes, the average operative time was 88.9 ± 25.8 minutes. The estimated blood loss was 575.4 ± 501.9 mL, and the mean postoperative hospital stay was 1.5 ± 0.9 days. The difference between preoperative and postoperative hemoglobin levels was 1.7 ± 1.0 g/dL (Table 2). Intraoperative findings and interventions revealed that 17.5% of patients required an intraoperative transfusion, while intraoperative consultation was necessary in 4.17% of cases (Table 3). Anesthetic complications were minimal, occurring in only 0.83% of the cohort. Notably, there were no cases of bowel, bladder, or ureter injuries reported, indicating a low incidence of severe intraoperative complications (Table 3). Postoperative complications were generally infrequent in this study. Reoperation and postoperative transfusion were not required in any cases. However, a small proportion of patients experienced mild complications, such as ileus and inadequate pain control, both affecting 0.92% of the cohort, leading to delayed discharge. Additionally, 2.92% of patients developed fever of unknown origin, and 1.75% experienced pneumonia. Notably, there were no instances of nerve injury, readmission, or postoperative wound infection (Table 4).

Table 1: Baseline demographic and clinical characteristics of the Study Cohort (N=120)

Variable	Frequency (n)	Percentage (%)
Age		
Mean ±SD	46.54 ± 4.5	
BMI (kg/m2)		
Mean ±SD	23.34 ± 3.9	
Parity		
Parous	70	58.33
Nulliparous	50	41.67
Uterine weight		
Mean ±SD	585 ±156	
Preoperative symptoms		
Uterine myoma	96	80.00
Adenomyosis	18	15.00
Cervical dysplasia	6	5.00

Table 2: Surgical outcome of the study population

Outcome	Mean \pm SD
Operative time	88.9 ± 25.8
Estimated blood loss, mL,	575.4 ± 501.9
Postoperative stay	1.5 ± 0.9
The difference in preoperative and postoperative hemoglobin, g/dL	1.7 ± 1.0

Table 3: Intraoperative Findings and Interventions

Intraoperative complications	Frequency (n)	Percentage (%)
Intraoperative transfusion	21	17.50
Intraoperative consultation	5	4.17
Anesthetic complications	1	0.83
Bowel injury	0	0.00
Bladder injury	0	0.00
Ureter injury	0	0.00

Table 4: Postoperative complication of the study population

Postoperative complications	Frequency (n)	Percentage (%)
Reoperation	0	0.00
Postoperative transfusion	0	0.00
Ileus	1	0.92
Poor pain control delays discharge	1	0.92
Fever of unknown origin	4	2.92
Pneumonia	3	1.75
Nerve injury	0	0.00
Readmission	0	0.00
Postoperative wound infection	0	0.00

DISCUSSION

Laparoscopic hysterectomy, particularly for large uteri, remains a topic of debate. However, compared to abdominal hysterectomy, laparoscopy offers distinct advantages, such as better anatomical visualization, enhanced access to uterine vessels, and effective hemostasis [16]. Additionally, patients experience benefits like reduced hospitalization, faster recovery, and lower infection rates, although limited studies have addressed the feasibility and complication rates in women with very large uteri undergoing this procedure [17]. In our study, we assessed the feasibility and safety of laparoscopic hysterectomy in patients with large uteri in a tertiary care hospital setting. The baseline demographic characteristics of the study cohort demonstrated a mean patient age of 46.54 ± 4.5 years, with a majority of participants being parous (58.33%) and an average BMI of 23.34 ± 3.9 kg/m². These findings are consistent with those reported in similar studies [18]. For instance, Wang *et al.*, (2004) documented an average patient age of 46 years among individuals undergoing laparoscopic hysterectomy, alongside a similar BMI distribution [19]. Uterine weight was a significant variable in our analysis, with a mean weight of 585 ± 156 g, aligning with previous research that has investigated the safety and effectiveness of laparoscopic hysterectomy for large uteri. As indicated by Wu *et al.*, (2011), uterine weight is a critical factor influencing surgical complexity [20]. In our study cohort, uterine myoma was the most frequent indication for surgery, accounting for 80% of cases, followed by adenomyosis at 15%. This high prevalence of uterine myomas aligns with findings in previous studies, such as those reported by Stewart *et al.*, (2017), where fibroids were also identified as the leading indication for hysterectomy [21]. Surgical outcomes in our cohort indicated a mean operative time of 88.9 ± 25.8 minutes, consistent with previous literature suggesting that laparoscopic hysterectomy generally requires more time than abdominal hysterectomy, particularly in cases with larger uteri. Wang *et al.*, reported similar findings, with a mean operative time of 91.1 minutes for laparoscopic-assisted vaginal hysterectomy in patients with increased uterine size [19]. Another study by Macciò *et al.*, also analyzed the impact of large uterine size, finding it was associated with longer operative times [22]. The estimated blood loss in our cohort was 575.4 ± 501.9 mL, which is comparable to the findings of previous studies,

including Wang *et al.*, (2004), who reported a similar blood loss of 570 mL in laparoscopic procedures involving large uteri [19]. The average postoperative stay in our study was 1.5 ± 0.9 days, notably shorter than the typical duration observed following abdominal hysterectomy. In terms of intraoperative complications, we observed a 17.5% rate of intraoperative transfusions, which is consistent with other studies investigating laparoscopic hysterectomy for large uteri [19,22]. However, no major injuries, such as bowel, bladder, or ureteral injuries, were encountered in our cohort, further supporting the safety of laparoscopic hysterectomy, even in challenging cases involving larger uteri. The absence of major complications in our study aligns with the findings of Yamamoto *et al.*, (2021), who also reported a lack of significant injuries in their cohort of patients undergoing laparoscopic hysterectomy for large uteri [23]. Regarding postoperative complications, our study found a 0% reoperation rate, which is consistent with the low reoperation rates reported in other laparoscopic hysterectomy studies). These findings are consistent with those reported in other studies, which have similarly documented minor complications such as fever and pneumonia in patients undergoing laparoscopic hysterectomy.

Limitations of the study: This retrospective study is inherently limited by its reliance on preexisting data, which may only capture some relevant variables or outcomes. Selection bias is possible, as only patients with benign conditions and no significant contraindications were included. The exclusion of patients with prior extensive abdominal surgeries or malignancies further narrows applicability. Additionally, uterine weight was the sole measure of surgical complexity, overlooking factors like anatomical variations or comorbidities.

CONCLUSION

In conclusion, laparoscopic hysterectomy for large uteri demonstrates safety and efficacy in a tertiary care setting. The study highlights favorable perioperative outcomes, including minimal intraoperative complications, reduced postoperative morbidity, and shorter hospital stays, consistent with the benefits of minimally invasive techniques. Despite challenges associated with larger uterine sizes, such as increased operative time and blood loss, the absence of major

injuries or reoperations underscores the procedure's feasibility when performed by experienced surgeons.

Funding: No funding sources

Conflict of interest: None declared

REFERENCES

- Sutton, C. (1997). 1 Hysterectomy: a historical perspective. *Bailliere's clinical obstetrics and gynaecology*, 11(1), 1-22.
- Garry, R. (2005). The future of hysterectomy. *BJOG: An International Journal of Obstetrics & Gynaecology*, 112(2), 133-139.
- Whiteman, M. K., Hillis, S. D., Jamieson, D. J., Morrow, B., Podgornik, M. N., Brett, K. M., & Marchbanks, P. A. (2008). Inpatient hysterectomy surveillance in the United States, 2000-2004. *American journal of obstetrics and gynecology*, 198(1), 34-e1.
- Wu, J. M., Wechter, M. E., Geller, E. J., Nguyen, T. V., & Visco, A. G. (2007). Hysterectomy rates in the United States, 2003. *Obstetrics & Gynecology*, 110(5), 1091-1095.
- Aarts, J. W., Nieboer, T. E., Johnson, N., Tavender, E., Garry, R., Mol, B. W. J., & Kluivers, K. B. (2015). Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane database of systematic reviews*, (8).
- Reich, H., Decaprio, J. O. H. N., & McGLYNN, F. R. A. N. (1989). Laparoscopic hysterectomy. *Journal of Gynecologic Surgery*, 5(2), 213-216.
- Reich, H., & Roberts, L. (2003). Laparoscopic hysterectomy in current gynecological practice. *Reviews in gynaecological practice*, 3(1), 32-40.
- Wattiez, A., Soriano, D., Fiaccavento, A., Canis, M., Botchorishvili, R., Pouly, J., ... & Bruhat, M. A. (2002). Total laparoscopic hysterectomy for very enlarged uteri. *The Journal of the American Association of Gynecologic Laparoscopists*, 9(2), 125-130.
- Worldwide, A. A. M. I. G. (2011). AAGL position statement: route of hysterectomy to treat benign uterine disease. *Journal of minimally invasive gynecology*, 18(1), 1-3.
- ACOG Committee on Gynecologic Practice, 2009. ACOG Committee opinion no. 444: Choosing the route of hysterectomy for benign disease. *Obstetrics & Gynecology*, 114(5), pp.1156-1158.
- O'Hanlan, K. A., McCutcheon, S. P., & McCutcheon, J. G. (2011). Laparoscopic hysterectomy: impact of uterine size. *Journal of Minimally Invasive Gynecology*, 18(1), 85-91.
- Uccella, S., Cromi, A., Bogani, G., Casarin, J., Formenti, G., & Ghezzi, F. (2013). Systematic implementation of laparoscopic hysterectomy independent of uterus size: clinical effect. *Journal of minimally invasive gynecology*, 20(4), 505-516.
- Kluivers, K. B., Hendriks, J. C., Mol, B. W., Bongers, M. Y., Bremer, G. L., de Vet, H. C., ... & Brolmann, H. A. (2007). Quality of life and surgical outcome after total laparoscopic hysterectomy versus total abdominal hysterectomy for benign disease: a randomized, controlled trial. *Journal of minimally invasive gynecology*, 14(2), 145-152.
- Sinha, R., Sundaram, M., Lakhotia, S., Mahajan, C., Manaktala, G., & Shah, P. (2009). Total laparoscopic hysterectomy for large uterus. *Journal of gynecological endoscopy and surgery*, 1(1), 34.
- Köhler, C., Hasenbein, K., Klemm, P., Tozzi, R., & Schneider, A. (2003). Laparoscopic-assisted vaginal hysterectomy with lateral transection of the uterine vessels. *Surgical Endoscopy and Other Interventional Techniques*, 17, 485-490.
- Reich, H. (2007). Total laparoscopic hysterectomy: indications, techniques and outcomes. *Current Opinion in Obstetrics and Gynecology*, 19(4), 337-344.
- Kehde, B. H., van Herendael, B. J., Tas, B., Jain, D., Helsen, K., & Jochems, L. (2016). Large uterus: what is the limit for a laparoscopic approach?. *Autopsy & Case Reports*, 6(1), 51.
- Jahan, S., Jahan, A., Joarder, M., Habib, S. H., Sharmin, F., & Nayer, R. (2015). Laparoscopic hysterectomy in large uteri: Experience from a tertiary care hospital in Bangladesh. *Asian Journal of Endoscopic Surgery*, 8(3), 323-327.
- Wang, C. J., Yen, C. F., Lee, C. L., Tashi, T., & Soong, Y. K. (2004). Laparoscopically assisted vaginal hysterectomy for large uterus: a comparative study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 115(2), 219-223.
- Wu, K. Y., Lertvikool, S., Huang, K. G., Su, H., Yen, C. F., & Lee, C. L. (2011). Laparoscopic hysterectomies for large uteri. *Taiwanese Journal of Obstetrics and Gynecology*, 50(4), 411-414.
- Stewart, E. A., Cookson, C. L., Gandolfo, R. A., & Schulze-Rath, R. (2017). Epidemiology of uterine fibroids: a systematic review. *BJOG: An International Journal of Obstetrics & Gynaecology*, 124(10), 1501-1512.
- Macciò, A., Chiappe, G., Kotsonis, P., Nieddu, R., Lavra, F., Serra, M., ... & Madeddu, C. (2016). Surgical outcome and complications of total laparoscopic hysterectomy for very large myomatous uteri in relation to uterine weight: a prospective study in a continuous series of 461 procedures. *Archives of gynecology and obstetrics*, 294, 525-531.
- Yamamoto, A., & Suzuki, S. (2021). Successful surgical treatment of a giant uterine leiomyoma: a case report. *International Journal of Surgery Case Reports*, 87, 106416.
- Walsh, T. M., Sangi-Haghighi, H., Ng, V., Zurawin, R., & Guan, X. (2015). Hand-assisted laparoscopic hysterectomy for large uteri. *Journal of Minimally Invasive Gynecology*, 22(7), 1231-1236.