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Original Article

Comparison of Outcomes of Open versus Laparoscopic Hysterectomy at a Tertiary Care Military Hospital

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ABSTRACT

Objective: To compare the outcomes of open versus laparoscopic hysterectomy in women at a tertiary care military hospital.
Study Design: Prospective comparative study.
Place and Duration of Study: Department of Gynecology, Combined Military Hospital, Lahore Pakistan, from Jul 2021 to Jun 2023.
Methodology: All patients who were advised to undergo hysterectomy for any gynecological reason at our teaching unit were recruited for this study. They were divided into two groups via block randomization. Group I underwent laparoscopic hysterectomy, while Group II underwent open hysterectomy. Clinical parameters such as operative time, blood loss, and fall in hemoglobin, postoperative pain, and hospital stay were compared between the two groups.
Results: Out of 618 women recruited, 64(10.4%) were premenopausal, 242(39.2%) were peri menopausal, and 312(50.5%) were postmenopausal. The mean age of the study participants was 50.14±8.48 years. Mean blood loss (p-value =0.011), mean fall in hemoglobin (p-value <0.001), mean pain score (p-value <0.001), and mean duration of hospital stay (p-value <0.001) were all statistically significantly less in women who underwent laparoscopic hysterectomy compared to those who underwent open hysterectomy.
Conclusion: Laparoscopic hysterectomy was found to be the superior procedure in terms of blood loss during surgery, postoperative pain, and duration of hospital stay.

Keywords: Laparoscopy, Open Hysterectomy, Pain, Postmenopausal Women.

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INTRODUCTION

Surgical intervention for gynecological problems may have certain adverse effects, including mild to severe bleeding, which warrants an appropriate management strategy. Timely intervention by the treating team can save the patient from serious, life-threatening consequences.[1,2] Gynecologists routinely perform hysterectomies in their clinical settings. Abdominal hysterectomies remain the usual mode of hysterectomy in most clinical settings, especially in developing countries such as Pakistan. A number of factors related to the anatomy of the patient's gynecological tract, the patient's demographic profile, and the expertise of the treating team may influence the team's decision regarding the route of hysterectomy. Recent studies have shown that hysterectomies performed via a minimally invasive technique may be more beneficial than the abdominal route, but the expertise of the treating team and the availability of machinery are crucial in this regard.[3,4]

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Laparoscopy was initially introduced to manage surgical emergencies but later became popular for a number of surgical procedures. Gynecologists across the globe have used this effective and safe surgical technique for a variety of surgeries.[5] A recent trial comparing the laparoscopic and conventional abdominal methods of hysterectomy revealed that operative time, blood loss, and pain after the surgery were significantly lower in patients undergoing laparoscopic hysterectomy compared to those undergoing abdominal hysterectomy. Recent studies on patients suffering from small, benign, and early-stage tumors requiring hysterectomy compared open and laparoscopic methods and concluded that the laparoscopic method was better in terms of the overall health-related quality of life for women undergoing surgery.[6,7] In a recent study, compared the two methods for hysterectomy and revealed that overall quality of life and sexual satisfaction after surgery were better in individuals who underwent the laparoscopic procedure compared to open hysterectomy.[8]

A recent local study evaluated patients undergoing laparoscopic hysterectomies and found it

to be a safe alternative to conventional hysterectomies. The rationale for this study is to compare the outcomes of open versus laparoscopic hysterectomy in females. Laparoscopic hysterectomy is a minimally invasive surgical procedure and can be performed safely instead of open surgery.[9] While some literature shows controversial data and even supports open surgery in terms of the amount of blood loss and operative time, there is a need to conduct this study to generate data for the local population.[10] This will provide updated findings on a more effective and successful method of hysterectomy to implement for future use. Thus, this study was planned to provide evidence for the local population to improve our knowledge and practice regarding the type of hysterectomy that will help achieve greater patient satisfaction and earlier discharge from the hospital, which will also align with reducing the burden on hospital administration.

METHODOLOGY

This Prospective comparative study was conducted at the gynecological department of Combined Military Hospital, Lahore, from July 2021 to June 2023. A sample size of (n=618) was calculated using the WHO Sample Size Calculator for two groups.[11] Non-probability consecutive sampling was used to gather the sample.

Inclusion Criteria: Women over 30 years of age with an American Society of Anesthesiologists (ASA) status of I, II, and III, undergoing hysterectomy for any gynecological cause, were included in this comparative study.

Exclusion Criteria: Women who were pregnant or less than 35 years of age were not recruited. Patients who declined conventional hysterectomy were not included. Women with any history of hematopoietic disorders of any type were also not included in the study.

After obtaining ethical approval from the ethical review board committee (letter number 447/2023) and written informed consent from potential participants, patients undergoing hysterectomy were recruited. The decision for hysterectomy was made by a team after a detailed diagnosis and consideration of all possible clinical factors. Block randomization was performed to divide the patients into two groups. For the sake of comparison, Group-I included subjects who underwent laparoscopic hysterectomy by a trained laparoscopic gynecologist, while Group-II included subjects who underwent conventional hysterectomy by a consultant gynecologist following set protocols. Women in both groups were followed up for 48 hours by the team to monitor for any complications. Hemoglobin was measured 24 hours after surgery and compared with preoperative hemoglobin levels. A Visual Analogue Scale score was used to assess pain 24 hours after surgery. All pre-surgical, surgical, and post-surgical parameters for all patients were entered into a separate sheet for accurate data analysis.[12-14]

All statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 24.0. Frequency and percentage were calculated for menopausal status and the indication for which the hysterectomy was performed. Mean and standard deviation were calculated for the age of the patients, surgical time, and blood loss during surgery, fall in hemoglobin, and duration of hospital stay. Both groups were compared for outcome parameters using an independent samples t-test, with a p-value of <0.05 considered statistically significant.

RESULTS

Out of 618 women recruited in the study, 64(10.4%) were premenopausal, 242(39.2%) were perimenopausal, and 312(50.5%) were postmenopausal. The mean age of the patients who underwent hysterectomy at our unit and were included in the study was 50.14±8.48 years. Table-I showed the general characteristics of the women who were included in the comparison. As randomization was performed in blocks, 309(50.0%) patients were included in each group. Table-II showed comparison of various outcome parameters.

Table-I: Characteristics of patients undergoing hysterectomy at of our unit (n=618)

Study Parameters	Values
Age (years)	
Mean + SD	50.14±8.48 years
Menopausal status	
Premenopausal	64(10.4%)
Peri-menopausal	242(39.2%)
Post-menopausal	312(50.5%)
Indications	
Dysfunctional uterine bleeding	46(7.4%)
Adenomycosis	161(26.1%)
Fibroids	211(34.1%)
Hyperplasias	165(26.7%)
Malignant cases	25(4.0%)
Others	10(1.6%)
Types of hysterectomy	
Open	309(50.0%)
Laparoscopic	309(50.0%)
Body Mass Index	
Normal	313(50.6%)
Overweight	194(31.4%)
Obese	111(18.0%)

Table-II: Comparison of Various Outcome Parameters in Women managed with Open vs Laparoscopic Cholecystectomy (n=618)

Outcome parameters	Laparoscopic hysterectomy	Open hysterectomy	*p*-value
Time of surgery (minutes)	100.55±21.30	100.22±18.12	0.832
Blood loss during surgery (ml)	212.75±73.01	232.14±68.12	0.011
Drop in hemoglobin level in 24 hours (g/dl)	1.03±0.49	1.18±0.67	<0.001
Pain score after 24 hours	3.70±1.13	5.09±1.81	<0.001
Hospital stay (days)	2.16±0.45	2.57±0.89	<0.001

Mean blood loss (*p*-value =0.011), mean fall in hemoglobin (*p*-value <0.001), mean pain score (*p*-value <0.001), and mean duration of hospital stay (*p*-value <0.001) were statistically significantly less in women who underwent laparoscopic hysterectomy compared to those who underwent open hysterectomy.

DISCUSSION

Most surgeries involving the abdominal and pelvic region are now performed by minimally invasive techniques, and laparoscopy is one of the most commonly practiced. It has become a worldwide consensus that laparoscopic methods of surgery are not only as efficacious as conventional methods but also safer than them. In a country like ours, general surgeons have been using laparoscopic methods for abdominal surgeries for a long time, but gynecologists have not been using them as often due to a number of reasons. Hysterectomy is usually performed via the abdominal route, but developed countries are shifting this trend toward the laparoscopic method. This study aimed to compare the outcomes of open versus laparoscopic hysterectomy in women managed at Combined Military Hospital, Lahore, for various gynecological health-related problems.

In a 2018 study, Lv *et al.*,[15] published a study from China that compared open and laparoscopic methods for hysterectomy among Chinese women. They compared the early, short-term outcomes after the surgical procedure. They concluded that hospital stay was shorter in patients who underwent the laparoscopic method, and blood loss was not statistically significantly different between the two groups. Our results, however, demonstrated that hospital stay was significantly different, and blood loss was greater in the open hysterectomy group compared to the laparoscopic hysterectomy group. The drop in hemoglobin after the surgery was also greater in women who underwent open hysterectomy. This suggests that adverse effects related to bleeding occur more in women undergoing the conventional abdominal procedure.

Patients with early-stage endometrial cancer were compared for outcomes after laparoscopic and conventional hysterectomy by Ruan *et al.*, in a 2018 study.[16] It was revealed that the pain score was lower in patients who underwent laparoscopic hysterectomy, as was blood loss. Patients who underwent the open method had a longer hospital stay in their study. Our findings are in line with those generated by Ruan *et al.*, (2018), as blood loss, pain, and hospital stay were all significantly less in patients who underwent laparoscopic surgery in our study compared to open surgery.

A retrospective study involving more than 250 cases of hysterectomy published by Uccella *et al.*,[17] compared laparoscopic versus open hysterectomy for benign diseases of the uterus. They found that the laparoscopic method was better in terms of mean hospital stay, mean blood loss, and mean pain scores after the surgery. As a result, the findings of our study showed that laparoscopic hysterectomy was the better procedure in terms of blood loss during the surgery, postoperative pain, and duration of hospital stay.

In a 2022 study, Li *et al.*,[18] analyzed patients with early-stage cervical cancer to compare open and laparoscopic methods of hysterectomy. They concluded that blood loss was less in patients who underwent the laparoscopic method of hysterectomy, but it did not offer any additional benefit in terms of surgical time and long-term disease survival. We did not follow up with patients for the long term for this study, as the objective was to compare short-term outcomes. Blood loss during surgery, fall in hemoglobin at 24 hours, pain scores at 24 hours, and hospital stay were all better in the group that underwent laparoscopic surgery compared to those who underwent open surgery.

LIMITATION OF STUDY

A number of factors could be responsible for complications, such as more blood loss or postoperative pain, in addition to the method of surgery.

CONCLUSION

Laparoscopic hysterectomy was found to be the superior procedure in terms of blood loss during surgery, postoperative pain, and duration of hospital stay after the surgery.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

QA & JN: Data acquisition, data analysis, critical review, approval of the final version to be published.

NM & FA: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

Z & ST: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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