

# Comparison of Outcome Between Laparoscopic Surgery and Laparotomy for Endometrial Carcinoma

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## Abstract

**Objectives:** To compare the outcome between laparoscopic surgery and laparotomy for endometrial Carcinoma.

**Methodology:** The study was conducted in Department of Obstetrics and Gynecology, Aziz Fatima Medical and Dental College Faisalabad, data of around six years from June 2015 to June 2021 was included. In this retrospective non-randomized clinical trial study information was acquired from hospital records for all women admitted with endometrial cancer confirmed by histopathology. These patients with endometrium carcinoma underwent laparoscopic surgery or laparotomy for endometriosis. Demographic information (including age, parity), clinical symptoms (pain, bleeding), and operative outcomes (like operation time, estimated blood loss, patient outcome, and hospital stay), and the number of lymph nodes harvested was recorded on a predesigned proforma.

**Results:** The mean age ( $46.25 \pm 12.45$  vs.  $46.25 \pm 12.45$  years) and parity ( $2.6 \pm 1.8$  vs.  $2.2 \pm 1.5$ ) had no significant ( $p$ -value  $> 0.05$ ) difference between laparoscopic and laparotomy group. The operation time was significantly ( $P$ -value  $< 0.05$ ) higher ( $276.8 \pm 32.5$  vs.  $213.6 \pm 42.3$  min) in laparoscopic group as compared to laparotomy group. The average estimated blood loss and average hospital stay ( $324.8 \pm 156.9$  vs.  $245.7 \pm 102.5$  ml) and ( $18.65 \pm 7.4$  vs.  $26.54 \pm 6.2$  days) was significantly ( $P$ -value  $> 0.05$ ) less in laparoscopic group. The comparison of complications showed that overall, more complications were associated with laparotomy group as compared to laparoscopic group.

**Conclusion:** The laparoscopic surgery of women with endometrial carcinoma has a shorter length of hospital stay, less blood loss, and fewer postoperative overall complication rates as compared to laparotomy.

**Keywords:** Endometrial Carcinoma, Laparotomy, Laparoscopic Surgery.

Cite this article as: Anwar S, Anwar S, Jadaan A, Bibi S. Comparison of Outcome Between Laparoscopic Surgery and Laparotomy for Endometrial Carcinoma. J Soc Obstet Gynaecol Pak. 2022; 12(1):27-31.

## Introduction

Among gynecological malignancy, the most common type is endometrial cancer in developed countries and the second most common type of gynecological malignancy in developing countries. Usually, it is diagnosed at an earlier stage in most cases and around 75% of the patients are diagnosed with this disease while this is confined to the uterus. The most common subtype of endometrial carcinoma is endometrioid which generally has a favorable prognosis.<sup>1</sup> Surgical staging is the primary management for this pathology. Total hysterectomy, bilateral salpingo-oophorectomy,

and dissection of pelvic and paraaortic lymph nodes are all options for women with early-stage endometrial cancer. There is ongoing debate over whether to do surgery with or without pelvic and paraaortic lymphadenectomy. Endometrial cancer surgical management is the first-line recommended treatment option all over the world.<sup>2</sup>

The fifth most common type of cancer worldwide is endometrial carcinoma among women up to 65 years of age. It is more common in high-income countries as compared to low-income countries. Hysterectomy and

Authorship Contribution: <sup>1</sup>Substantial contributions to the conception or design of the work, acquisition, analysis, or interpretation of data for the work, <sup>2</sup>Drafting the work or revising it critically for important intellectual content, <sup>3</sup>Active participation in active methodology, <sup>4</sup>Final approval of the version to be published.

Funding Source: none  
Conflict of Interest: none

Received: Sept 30, 2021  
Accepted: Mar 18, 2022

removal of both fallopian tubes along with ovaries is the current standard treatment for women with endometrial cancer. Radiotherapy and chemotherapy are secondary treatments for this disease. Traditionally, staging for endometrial carcinoma is done through laparotomy that is with an open cut in the abdomen.<sup>3,4</sup>

All the guidelines by the European Society for Medical Oncology (ESMO), European Society for Radiotherapy and Oncology (ESTRO), and European Society for Gynecological Oncology (ESGO) recommend surgical management for treatment of high risk, high intermediate risk, and/or advanced endometrial cancer. Laparotomy was the traditional method to perform the surgery for patients with endometriosis. Minimally invasive surgery is getting popularity due to fewer complication rates and shorter hospital stays without compromising survival outcomes.<sup>5,6</sup>

The minimally invasive surgery that is laparoscopy has many advantages over laparotomy. A smaller incision, better visibility of the operational field, less intraoperative blood loss, less postoperative pain, and a shorter hospital stay result in an earlier return to work are just a few of the benefits.<sup>7</sup> Laparoscopy is equally effective in obese and elderly women. Many randomized controlled trial studies and meta-analyses have established the efficacy and safety of the laparoscopic approach for the treatment of endometrial cancer.<sup>8</sup> This literature has been published by prominent oncologic centers with a significant experience of endoscopic use. Although most of this work has been done in early-stage endometrial carcinoma management.<sup>9</sup>

Additionally, several studies have demonstrated that laparoscopy is a better choice for the management of endometrial cancer as compared to laparotomy in terms of reduced postoperative ileus with many other advantages. Our study aimed to compare the efficacy of a laparoscopic versus laparotomy approach in women with early-stage endometrial carcinoma.

## Methodology

This retrospective non-randomized clinical trial study was conducted in the Department of Obstetrics and Gynecology, Aziz Fatima Medical and Dental College Faisalabad. Information was acquired from hospital records for all women admitted with endometrial cancer confirmed by histopathology and women who underwent extrafascial hysterectomy and bilateral salpingo-oophorectomy with or without

lymphadenectomy. The data of around six years from June 2015 to June 2021 was included in the study. In this study period around 73 patients' data was found to be eligible to be included in the study. In which 32 underwent laparotomy hysterectomy, bilateral salpingo-oophorectomy, lymphadenectomy and the remaining 41 underwent laparoscopic total hysterectomy (TLH), bilateral salpingo-oophorectomy, lymphadenectomy. The data collection procedure of this study was started after taking approval from the hospital ethical review committee. Confidentiality regarding medical and non-medical details was maintained.

These patients with endometrium carcinoma were usually referred from different hospitals, then any consultant level gynecologist report reviewed the reports and confirmed the operation date and procedure based on the patient's medical background and findings. These medical procedures were done by an experienced medical specialist under the supervision of a consultant. Demographic information (including age, parity), clinical symptoms (pain, bleeding), and operative outcomes (like operation time, estimated blood loss, patient outcome, and hospital stay), and the number of lymph nodes harvested was recorded on a predesigned proforma.

For analysis, all of the data was entered into SPSS v. 25. Quantitative variables were reported as mean and standard deviation, whereas qualitative variables were presented as frequency and percentages. The Chi-square test was used to compare qualitative data between the two groups, whereas the independent sample t-test was used to analyze quantitative data. Significance level was considered at a P-value  $\leq 0.05$ .

## Results

In this retrospective study it was found that in the study period 41 patients underwent laparoscopic hysterectomy and 32 patients had total abdominal hysterectomy (laparotomy). Based on FIGO 1988 staging criteria it was observed that there was no significant (P-value  $> 0.05$ ) difference in the number of patients in each stage of cancer in both groups. Most of the patients in both groups presented with stage I endometrioid adenocarcinoma, (78.05% vs. 75.0%) followed by stage II (9.76% vs. 12.50%) in the laparoscopic versus laparotomy group. The grading also showed no significant (P-value  $> 0.05$ ) difference between patients included in both groups based on grade. An almost equal number of patients were given

adjuvant radiotherapy in both groups (26.83% vs. 28.13%) as elaborated in Table I.

The mean age ( $46.25 \pm 12.45$  vs.  $46.25 \pm 12.45$  years) and parity ( $2.6 \pm 1.8$  vs.  $2.2 \pm 1.5$ ) had no significant ( $p$ -value  $> 0.05$ ) difference between laparoscopic and laparotomy group. There was no statistically significant ( $p$ -value  $> 0.05$ ) difference in body mass index of patients in the laparoscopy group ( $24.3 \pm 2.7$ ) as compared to the laparotomy group ( $25.6 \pm 3.4$ ). According to the results, it was noted that operation time was significantly ( $P$ -value  $< 0.05$ ) higher ( $276.8 \pm 32.5$ ) in laparoscopic group as compared to ( $213.6 \pm 42.3$ ) laparotomy group. The average estimated blood loss was observed in laparotomy group ( $324.8 \pm 156.9$  ml) as compared to ( $245.7 \pm 102.5$ ) laparoscopic group. Similarly, the average hospital stay was significantly ( $p$ -value  $< 0.05$ ) higher in laparotomy group ( $26.54 \pm 6.2$  days) as compared to ( $18.65 \pm 7.4$  days) laparoscopic group as shown in table II.

**Table I: Baseline characteristics of the patients**

Characteristics	Laparoscopy (n=41)		Laparotomy (n=32)		P-value
	N	%	N	%	
<b>FIGO 1988 Stage</b>					
I	32	78.05%	24	75.00%	0.946
II	4	9.76%	4	12.50%	
III	3	7.32%	3	9.38%	
IV	2	4.88%	1	3.13%	
<b>Grade</b>					
I	27	65.85%	17	53.13%	0.524
II	10	24.39%	10	31.25%	
III	4	9.76%	5	15.63%	
<b>Adjuvant Radiotherapy</b>					
Yes	11	26.83%	9	28.13%	0.902
No	30	73.17%	23	71.88%	

**Table II: Comparison of demographic and operative findings of the patients**

Laparoscopy (n=41)		Laparotomy (n=32)		P-value
Mean	SD	Mean	SD	
<b>Age of the patients (years)</b>				
46.25	12.45	48.65	9.35	0.35
<b>Parity</b>				
2.6	1.8	2.2	1.5	0.304
<b>Body Mass Index</b>				
24.3	2.7	25.6	3.4	0.081
<b>Operation Time (minutes)</b>				
276.8	32.5	213.6	42.3	0.000
<b>Estimated Blood Loss</b>				
245.7	102.5	324.8	156.9	0.016
<b>Hospital Stay (days)</b>				
18.65	7.4	26.54	6.2	0.000

The comparison of complications showed that overall more complications were associated with laparotomy group as compared to laparoscopic group. The complications as lymphedema and postoperative fever were noted to be significantly ( $P$ -value  $< 0.05$ ) associated with laparotomy group as compared to laparoscopic group. The incidence of lymphedema (25% vs. 7.32%) and postoperative fever (31.25% vs. 9.75%) was significantly higher (19.51%) in laparotomy group as compared to (3.12%) in laparoscopic group. However, bladder injury was found to be significantly higher in laparoscopic group as compared to laparotomy group. There was no significant ( $p$ -value  $> 0.05$ ) difference in other complications rates between both groups (Table III).

**Table III: Comparison of postoperative complications of the patients**

Complications	Laparoscopy (n=41)		Laparotomy (n=32)		P-value
	N	%	N	%	
<b>Lymphoedema</b>	3	7.32	8	25.0	0.036
<b>Wound breakdown</b>	2	4.88	5	15.62	0.122
<b>Vault haematoma</b>	1	2.44	2	6.25	0.413
<b>Bleeding</b>	3	7.32	1	3.12	0.435
<b>Seroma</b>	2	4.88	1	3.12	0.708
<b>Lymphocyst</b>	7	16.91	5	15.62	0.868
<b>Bladder Injury</b>	8	19.51	1	3.12	0.035
<b>Postoperative fever</b>	4	9.75	10	31.25	0.021

## Discussion

Laparoscopic surgical staging has got higher acceptance from last decade as first line choice of surgery for early endometrial cancer. A two-dimensional view, dependency on assistance skill, restricted range of motion and degree of freedom of equipment, and ergonomic limits for the surgeon are all disadvantages of the laparoscopic technique. Despite these short-term drawbacks, doctors can adapt Laparoscopic technique of surgery with adequate training.<sup>10</sup>

Several studies have shown that laparoscopic endometrial cancer treatment has many advantages over open surgery, less postoperative pain, improved visualization of the surgical field, and a shorter hospital stay are the key advantages. After laparoscopy, postoperative complications appear to be reduced or similar. The advantages of laparoscopic surgery have made it more appealing as a therapeutic option for gynaecological malignancies, particularly endometrial cancer, than traditional techniques.<sup>11</sup>

Hysterectomy is one of the best methods in patients with non-metastatic endometrial cancer. Hysterectomy could be associated with other surgical procedures such as oophorectomy. These surgeries could be performed using both laparoscopic and laparotomy.<sup>13</sup> There are also different success and recurrence rates for both procedures, reported in different studies. Studies believe that laparoscopic procedures are associated with better results especially by cosmetic evaluations but on the other hand, laparotomy hysterectomy might have better long-term results.<sup>14, 15</sup>

In the present study, most of the patients in both groups presented with stage I and stage II endometrioid adenocarcinoma without any statistically considerable difference between the two groups. There were no significant difference with respect to grades of cancer between the two groups. Similar results were found in a study by Palomba S et al, whose results showed no significant difference in stage and grade of cancer.<sup>16</sup> The grade of the tumour had no effect on the surgical method in our study.

In the present study, the mean age and parity had no significant difference between laparoscopic and laparotomy groups. There was no statistically significant difference in the body mass index of patients in the laparoscopy group as compared to the laparotomy group. Results are parallel with the study of Bige O, et al who showed similar results of both procedures with respect to body mass index.<sup>17</sup>

According to the results of this present study, it was noted that operation time was significantly (P-value < 0.05) higher in laparoscopic group as compared to laparotomy group. The average estimated blood loss was observed higher in laparotomy group as compared to laparoscopic group. Similarly, the average hospital stay was significantly (p-value < 0.05) higher in laparotomy group as compared to laparoscopic group.

Many other studies have demonstrated that the laparoscopic approach minimizes blood loss, postoperative stay, and complications. The body may be able to focus on battling the leftover tumour with or without adjuvant treatment since patients will be less morbid and will recover quickly.<sup>18</sup> In the laparotomy group, postoperative complications were more prevalent. Patients in this group are at a higher risk for negative outcomes due to larger wounds, such as blood loss and infection. A larger incision takes longer to heal, is more traumatic, and is more vulnerable to

infection. All of these issues can be addressed well with laparoscopic procedure.<sup>19,20</sup>

In the present study, the comparison of complications showed that overall more complications were associated with laparotomy group as compared to laparoscopic group. The complications as lymphedema and postoperative fever were noted to be significantly (P-value < 0.05) associated with laparotomy. However, bladder injury was found to be significantly higher in laparoscopic group as compared to laparotomy group. These results of the previous study also support the laparoscopic technique with fever complication rate.<sup>21</sup>

Laparoscopy is a safe and effective technique for treating endometrial cancer patients, with some advantages over laparotomy. Laparoscopy led to significantly less blood loss, which could be related to better visualisation of deep vascular structures and possibly more accurate and precise surgery. Similarly, there were fewer postoperative complications in the laparoscopy group, and patients treated with laparoscopy required less time in the hospital. As a result, laparoscopy is a viable alternative to laparotomy for endometrial cancer.

## Conclusion

It can be concluded that laparoscopic surgery of women with endometrial carcinoma has a shorter length of hospital stay, less blood loss, and fewer postoperative overall complication rates as compared to laparotomy. These advantages of laparoscopic surgery make it a favorable, safe, and effective technique to be considered for the management of endometrial carcinoma in women.

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