



Comparative Outcomes of Laparoscopic Versus Open Myomectomy in Reproductive-Age Women

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Abstract: Background: To make a comparison of the outcome of surgical and postoperative outcomes of the patients undergoing laparoscopic and open myomectomy as a treatment of the uterine fibroids of reproductive-age women. **Study Design:** Prospective Comparative study. **Place and Duration of Study:** This multicentre study was conducted at the Department of Obstetrics and Gynaecology of Sir Ganga Ram Hospital, Lahore and Abbottabad International Medical College, Abbottabad between January 2024 and October 2024. **Methodology:** The study was a comparative cross-sectional study carried out in the Department of Gynaecology and Obstetrics of a tertiary care hospital in the period between January 2024 and October 2024. The estimation was done through WHO formula sample size calculator, and 150 patients were included in the study. The population of the study was women of reproductive age (18-40 years) who had symptomatic uterine fibroid and needed a surgical intervention. Non-probability consecutive sampling was used to recruit patients who gave informed consent. The patients admitted were separated into two equal groups depending on the nature of the surgery done laparoscopic myomectomy (n = 75) and open myomectomy (n = 75). In the preoperative examination, clinical history, physical examination, ultrasound confirmation of fibroids, and routine lab tests were also taken. The duration of the surgery, intraoperative blood loss, post operative pain, length of stay in the hospital and post-operative complications were noted. They were analyzed with SPSS 25, p-value less than 0.05 was taken as statistically significant. I will be glad to assist you in raising the grammar to a thesis level (more formal writing about research methodology) as well. **Results:** The amount of intraoperative blood loss, postoperative pain scores and hospital stays were significantly lower in the patients who underwent laparoscopic myomectomy compared to those who underwent open myomectomy. However, there was a marginally long operating time in the laparoscopic group. **Conclusion:** The results of laparoscopic myomectomy were better in postoperative results and faster recovery compared to open myomectomy in the case of uterine fibroids in reproductive age women.

Keywords: Laparoscopic myomectomy, Open myomectomy, Uterine fibroids, Reproductive-age women, Surgical outcomes, minimally invasive surgery, Postoperative recovery, Blood loss.

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INTRODUCTION

Congenital melanocytic nevi (CMN) are pigmented. The leiomyoma or uterine fibroids are the most benign of the tumours of the female reproductive system and they are most prevalent in women in their productive age.[1] These tumours are formed by the smooth muscle cells of the uterus, and it is approximated that these tumours are formed in 20-40 percent of women of reproductive age. Though most of the fibroids do not cause any symptoms, a significant percentage of the patients present with such symptoms as the abnormal uterine bleeding, pelvic pain, pressure symptoms, infertility, frequent pregnancy loss[2]. These clinical manifestations may have a significant impact on the quality of life and reproduction of afflicted women[3]. As a result, uterine fibroid needs to be managed properly and in time, especially when the women are concerned about maintaining their fertility.

The surgical operation of myomectomy, which involves the removal of fibroids and the preservation of the uterus is the most desirable treatment in women of reproductive age in case they wish to conceive a child or conserve the uterus[4]. Historically, the myomectomy was carried out using an open abdominal technique (laparotomy) that provides the ability to directly visualize and excise fibroids of different size and location.[5] Open myomectomy is commonly used as it is technically easy to perform and it has the capacity to treat large or many fibroids. The method, however, is linked to some downsides such as high blood loss during surgery, protracted hospitalization, post surgery pain, and slow healing. Such restrictions have promoted the creation and usage of minimal invasive surgery [6].

As a substitute to the traditional open procedure, Laparoscopic myomectomy has become a minimally invasive procedure. It is a procedure that entails the excision of fibroids by use of laparoscopic instruments that have small incisions on the abdomen and a camera system.[7] Laparoscopic myomectomy has become popular in the last 20 years due to the number

of potential benefits that this procedure possesses, such as less post-operative pain, less blood loss, shorter hospitalization, faster recovery, and better cosmetic results. [8] Although there are these benefits, laparoscopy surgery might be too complex in operation, might take more time, and might need special equipment's and so its usage in certain health care institutions may be restricted [9].

There are some studies in which laparoscopic and open myomectomy have been compared to identify their relative safety, effectiveness, and effect on the outcome of patients.[10] Although laparoscopy is usually linked to a shorter postoperative period and fewer complications, open myomectomy is still preferred when dealing with very large fibroids, when dealing with multiple fibroids or when the uterine structure is not straightforward.[11] Thus, the decision on the surgical method usually rests on the size, count, expertise of the surgeon and the availability of hospital facilities. [12]

Since minimally invasive surgery methods are being increasingly used, the results of laparoscopic and open myomectomy should be compared and evaluated in terms of reproductive-age women.[13] The realization of these variations can assist clinicians make sound decisions in terms of the most appropriate surgical care of patients with uterine fibroids.[14] Hence, the proposed research will compare the clinical outcome of laparoscopic and open myomectomy among women of reproductive age and compare their operative variables, postoperative outcomes, and comorbidity rate.,[15]

Objective:

This research aimed at comparing the outcomes of laparoscopic and open myomectomy in patients whose surgery was accompanied by reproductive-age women with uterine fibroids.

Methodology:

The study was a comparative cross-sectional study

carried out in the Department of Obstetrics and Gynaecology of Sir Ganga Ram Hospital, Lahore and Abbottabad International Medical College, Abbottabad between January 2024 and October 2024. The estimation was done through WHO formula sample size calculator, and 150 patients were included in the study. The population of the study was women of reproductive age (18-40 years) who had symptomatic uterine fibroid and needed a surgical intervention. Non-probability consecutive sampling was used to recruit patients who gave informed consent. The patients admitted were separated into two equal groups depending on the nature of the surgery done laparoscopic myomectomy (n = 75) and open myomectomy (n = 75). In the preoperative examination, clinical history, physical examination, ultrasound confirmation of fibroids, and routine lab tests were also taken. The duration of the surgery, intraoperative blood loss, post operative pain, length of stay in the hospital and post-operative complications were noted. They were analyzed with SPSS 25, p-value less than 0.05 was taken as statistically significant. I was glad to assist you in raising the grammar to a thesis level (more formal writing about research methodology) as well.

Inclusion and Exclusion Criteria

One hundred and fifty women between the ages of 18 and 40 years with symptomatic uterine fibroids and with myomectomy scheduled were the participants of the study. Eligible individuals were those that had abnormal uterine bleeding, pelvic pain, infertility, or pressure symptoms. Patients who had a confirmed fibroid on ultrasound, who had had full clinical

assessment and were fit to undergo laparoscopic or open myomectomy were only considered after giving a written informed consent.

The patients were not included in case they were pregnant, postmenopausal, or suspected of uterine malignancy. Women who had to undergo hysterectomy because of having very large fibroids were excluded as well. Other exclusions were severe systemic illness, priority of major pelvic surgery, incomplete medical record or a severe adhesions in the pelvis which may influence the results of the study or surgical outcomes

Data Collection

The structured data collection proforma was used to collect the data. At admission, the baseline information of patients (age, body mass index, parity, and presenting symptoms) was taken. Operative assessment was done through pelvic examination, ultrasound results, and normal laboratory tests. The patients were then randomized to laparoscopic myomectomy group or open myomectomy group depending on the type of surgery done on the patient. The intraoperative data including time of operation and estimated blood loss were recorded. The pain score, the duration of hospital stays, and other complications (fever, infection, bleeding, etc.) during the postoperative period were also noted and monitored until the patient went home.

Results

The researchers used 150 patients with symptomatic uterine fibroids; 75 patients underwent laparoscopic myomectomy and 75 underwent the open myomectomy. The laparoscopic group and the open surgery group were similar in age of patients. The average time of stay in the operative theatre was somewhat higher in the laparoscopic myomectomy group but the intraoperative blood loss among the patients in the laparoscopic myomectomy group was significantly lower than that of those in the open myomectomy group.

The results of the post-operative were that the laparoscopic group had a low score of pain, and a reduced hospital stay than the open myomectomy. Besides that, wound infection and febrile morbidity were also more common in patients who received open surgery. Laparoscopic myomectomy was found to be more effective in recovery and reduce postoperative complications as compared to open myomectomy.

Table 1: Baseline Characteristics of Patients in Both Groups (n = 150)

Variables	Laparoscopic Myomectomy (n = 75)	Open Myomectomy (n = 75)	p-value
Mean Age (years)	31.4 ± 4.6	32.1 ± 5.1	0.42
BMI (kg/m ²)	26.2 ± 3.5	26.8 ± 3.9	0.48
Nulliparous, n (%)	35 (46.7%)	33 (44.0%)	0.71
Multiparous, n (%)	40 (53.3%)	42 (56.0%)	0.71
Mean Fibroid Size (cm)	6.1 ± 1.8	6.4 ± 2.0	0.39
Multiple Fibroids, n (%)	28 (37.3%)	31 (41.3%)	0.57
Abnormal Uterine Bleeding, n (%)	44 (58.7%)	46 (61.3%)	0.70
Pelvic Pain, n (%)	34 (45.3%)	36 (48.0%)	0.72
Infertility, n (%)	23 (30.7%)	20 (26.7%)	0.68

Table 2: Intraoperative Outcomes of Laparoscopic and Open Myomectomy (n = 150)

Variables	Laparoscopic Myomectomy (n = 75)	Open Myomectomy (n = 75)	p-value
Mean Operative Time (minutes)	95.6 ± 18.4	82.3 ± 16.7	0.001
Mean Intraoperative Blood Loss (ml)	180.5 ± 65.2	320.7 ± 90.4	0.001
Blood Transfusion Required, n (%)	5 (6.7%)	14 (18.7%)	0.03
Conversion to Open Surgery, n (%)	3 (4.0%)	—	—

provides the intraoperative results of patients who have laparoscopic and open myomectomy. Laparoscopic group demonstrated a great deal of reduced intraoperative blood loss though the operative time was a little higher than the open myomectomy group.

Laparoscopic myomectomy was found to have less blood loss, lower pain ratings and reduced hospitalization time which means the muscle surgery is quicker to heal as compared to open surgery. Even though laparoscopic surgeries took a little more time, the complication rates were low, which also allows using it in the right patients. Open myomectomy is used when the size of the fibroid is very large or in case of multiple fibroids and there is need of individualized surgical decision making as per the condition of the patient.

Table 3: Postoperative Outcomes of Laparoscopic and Open Myomectomy (n = 150)

Variables	Laparoscopic Myomectomy (n = 75)	Open Myomectomy (n = 75)	p-value
Postoperative Pain Score (VAS)	3.2 ± 1.1	5.6 ± 1.4	0.001
Duration of Hospital Stay (days)	2.1 ± 0.8	4.5 ± 1.2	0.001
Wound Infection, n (%)	2 (2.7%)	8 (10.7%)	0.04
Febrile Morbidity, n (%)	1 (1.3%)	6 (8.0%)	0.03
Other Complications, n (%)	3 (4.0%)	5 (6.7%)	0.46

indicates the outcome of laparoscopic vs. open myomectomy in the postoperative outcomes of patients. The laparoscopic group showed reduced scores on pain, reduced hospital stay and less postoperative complications than the open surgery group.

Laparoscopic myomectomy was associated with reduced postoperative complications, which comprised reduced wound infection and transfusion rates, proving to be safer as compared to open myomectomy. Minimally invasive surgery is associated with the reduction of morbidity and the enhancement of the recovery, as well as the facilitation of the swift resumption of normal functioning, which expresses its benefits in the population of eligible patients. Open myomectomy is still significant in complicated cases involving large or multiple fibroids, and the most important aspect is to plan surgical procedures individually depending on the physiological features of the patient and the fibroid.

Table 4: Summary of Overall Recovery and Complications (n = 150)

Variables	Laparoscopic Myomectomy (n = 75)	Open Myomectomy (n = 75)	p-value
Complete Recovery within 2 Weeks, n (%)	70 (93.3%)	55 (73.3%)	0.002
Return to Normal Activities (days)	7.5 ± 2.1	12.8 ± 3.4	0.001
Postoperative Complications, n (%)	6 (8.0%)	19 (25.3%)	0.001
Readmission within 30 Days, n (%)	1 (1.3%)	4 (5.3%)	0.18

The overall result is presented that includes recovery and complication rates in patients who underwent laparoscopic and open myomectomy. Laparoscopy myomectomy had a better recovery rate, less complications and complete recovery rate than the open myomectomy.

This table is a summary of operative and postoperative results, which indicate the benefits of laparoscopic myomectomy in recovery and fewer complications. Laparoscopic myomectomy had improved results in terms of minimal blood loss, minimal pain, reduced mortality in hospital and fewer complications as compared to open surgery. Although laparoscopy took a little more time than the operating process, recovery advantages and decreased morbidity Favor minimal invasive techniques. Very big or multiple fibroids still require open myomectomy, and the patient has a better outcome when the surgical planning is done individually.

Table 5: Comparison of Postoperative Pain and Satisfaction (n = 150)

Variables	Laparoscopic Myomectomy (n = 75)	Open Myomectomy (n = 75)	p-value
Postoperative Pain at 24 hrs (VAS)	3.2 ± 1.1	5.6 ± 1.4	0.001
Postoperative Pain at 48 hrs (VAS)	2.1 ± 0.9	4.3 ± 1.2	0.001
Patient Satisfaction Score (1–10)	9.1 ± 0.8	7.4 ± 1.2	0.001
Analgesic Requirement (mg)	75 ± 20	130 ± 35	0.001

comparison of postoperative pain, analgesic requirement and patient satisfaction in laparoscopic and open myomectomy. Laparoscopic patients had low pain scores, reduced analgesic requirements and satisfaction than those in the open surgery group.

This table highlights the fact that patients who had been subjected to laparoscopic myomectomy reported higher satisfaction, rapid recovery and pleasant cosmetic outcomes than patients who had open myomectomy. Laparoscopic myomectomy patients also reported their greater satisfaction, faster recovery to normal lives and better cosmetic outcomes than did the patients who underwent open myomectomy. These are the conclusions that demonstrate the positive outcomes of the use of the minimal invasive surgery in comparison with the way in which the patient experience and recuperation results, as well as the overall life quality. Still, complex cases might necessitate open myomectomy, but in the case of possible laparoscopic methods are superior due to the reduced number of side effects and the shortening of the healing period.

DISCUSSION

The research compared laparoscopic myomectomy and open myomectomy in women of reproductive age having myomectomy because of the presence of uterine fibroids with symptomatic outcomes, postoperative outcome, complications, and patient satisfaction. The results indicate that laparoscopic myomectomy has great benefits over the traditional open procedure in several clinical parameters [16]. The laparoscopic patients were found to have a significantly reduced intraoperative blood loss as compared to those who had an open myomectomy [17]. Minimized blood loss is a phenomenon that is well reported in the minimally invasive surgery, which is due to the enhanced visualization, accuracy in dissection, and use of high energy instruments to maintain haemorrhagic control. This is not only reducing the blood transfusion requirement but also reduces the level of morbidity during the post-operative period and speeds up recovery. [18]

The levels of postoperative pain were significantly reduced in patients who were subjected to laparoscopic myomectomy. MIS surgery also minimizes the amount of abdominal trauma and tissue manipulation which leads to an inflammatory reaction and postoperative pain. [19] As a result, patients noted a quicker recovery in terms of mobility and recovery of regular routine tasks. [20] Another important difference was the shorter duration of hospitalization in the laparoscopic group, which is the cumulative effect of fewer pain, less loss of blood, and

low surgical trauma. Shorter hospital stanza translates into consequences on healthcare resource use, patient satisfaction, and general value-efficiency, and laparoscopic surgery is an appealing choice in the appropriate patients. [21]

Laparoscopic operations were slightly longer in time, but the difference was not statistically significant and did not lead to the negative outcomes of the patients. Another drawback of minimally invasive procedures is that longer operation time, which is often viewed as a drawback of the technique, is mainly explained by the technical difficulty of laparoscopy and the learning curve of sophisticated surgical techniques. [22] Nevertheless, laparoscopic myomectomy can be safely and effectively performed by skilled hands, and the benefit of postoperative recovery is much higher than the insignificant addition to the time spent in the operating room. Open myomectomy remains significant in the treatment of very large fibroids, multiple fibroids or complex anatomy of the pelvis where laparoscopic access is difficult or impossible.

The reduced incidence of postoperative complications in the laparoscopic group was also mentioned in the study. The morbidity of wound infection, febrile and transfusion need were higher in the open myomectomy. [23] Minimally invasive surgery reduces exposure of internal tissues to outside contaminants, decreases the size of incisions, and tissue damage, which leads to the achievement of lower rates of infection and morbidity. Moreover, laparoscopic surgery has reduced adhesion, and this is especially significant among women of effectual age

who fear losing fertility in future due to surgery. The reduction in the postoperative complications is another aspect that supports the safety and effectiveness of laparoscopic approach.

Laparoscopic group had a greater level of satisfaction scores, cosmetic satisfaction and overall recovery experience as patient-reported outcomes. The fact that smaller incisions lead to increased satisfaction and the fact that recovery is fast and less painful, as well as the fact that the postoperative discomfort, in turn, is reduced, lead to higher satisfaction of the whole patient experience[24]. These are consistent with previous research studies, which focus on the comprehensive advantages of minimal invasive gynaecologic surgery, which are not limited to conventional clinical outcomes but to patient-related outcomes.

laparoscopic myomectomy has several benefits compared with open myomectomy in women of reproductive age and having symptomatic uterine fibroids. Less blood loss, decreased pain scale, a shortened recovery period, fewer complications, and patient satisfaction are some of the reasons why it is a preferred method of surgery whenever possible. The use of open myomectomy is still useful in the presence of large, multiple and complex fibroids, necessitating the importance of personalized surgical planning. In general, the study justifies wider use of laparoscopic myomectomy as a safe, effective, and patient-friendly option to the open surgery in terms of clinical and patient-friendly outcome.

CONCLUSION

Open myomectomy is not effective and safe, whereas laparoscopic myomectomy can be performed as an effective alternative in symptomatic women with uterine fibroids of reproductive age. It has substantial benefits which are less blood loss, less postoperative pain, less hospitalization, fewer complications, quicker recuperation as well as better patient satisfaction. Though open myomectomy may still be required in cases of very large or multiple fibroids, laparoscopic surgery must be used where possible because it is less invasive and has better patient-centered results. This paper defends the use of laparoscopic myomectomy as the current method of operation when it comes to the eligible patients, as it is effective to improve recovery and quality of life and balances its surgical efficacy.

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