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ORIGINAL ARTICLE

Surgical Outcome of Laparoscopic Myomectomy Compared to Traditional Open Laparotomy

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ABSTRACT

Background: A number of factors, including hormones, smooth muscle injury, growth factors, and genetic predisposition, are linked to the creation of uterine fibroids, which are common benign tumors of the uterus made of smooth muscle and connective tissue. Myomectomy has historically been done as an open laparotomy; however, novel techniques, such as laparoscopic myomectomy (LM), have emerged in recent decades. Therefore, our goal was to compare the intraoperative and postoperative results of laparoscopic and abdominal approaches.

Methods: This cohort study was conducted at the Obstetrics and Gynecology Department, cytogenic and laparoscopic unit, Faculty of Medicine, Zagazig University, Egypt during the period from March 2023 to February 2024 on women having fibroid and complaining of heavy menstrual bleeding together with lower abdominal pain.

Results: Open myomectomy **(**O.M) time was significantly less than L.M. time. The hospital stays in O.M. were significantly longer than those in L.M. According to the VAS score, O.M. experienced much more postoperative pain than L.M. The difference between both groups was insignificant regarding procedural blood transfusion, surgical cost and complications.

Conclusion: Laparoscopic myomectomy is a safe and effective alternative to open myomectomy in women with fibroid who reported lower abdominal pain and heavy menstrual bleeding.

Keywords: Laparoscopic Myomectomy, Traditional Open Laparotomy, Fibroids.

INTRODUCTION

In their lifespan, 70–80% of females will have uterine fibroids [1]. The degree of the uterine myoma, the patient's age and reproductive status, and the symptoms they are experiencing all influence the available treatment options. Management can begin with observation (if the fibroids are tiny and asymptomatic) and progress to surgical procedures such as myomectomy or even hysterectomy in certain situations, depending on FIGO (The International Federation of Gynecology and Obstetrics) staging [2].

Different strategies can be used for people who want to retain their fertility, depending on whether they want to get pregnant soon or not [3]. The exact process by which leiomyomas affect fertility is still unknown. According to certain theories, a mechanical change brought on by uterine cavity deformation affects the sperm's cervical route and results in a tubal blockage [4].

The laparoscopic technique has been linked to positive results and lower rates of complications when leiomyoma is treated conservatively [5]. The benefits of using a laparoscopic procedure to treat uterine fibroids are widely known. Laparoscopy offers benefits such a shorter hospital stay, a less severe drop in hemoglobin levels, and less postoperative pain than laparotomy [6].

METHODS

From March 2023 to February 2024, a cohort study of women with fibroid who reported lower abdominal pain and heavy menstrual bleeding was carried out at the Obstetrics and Gynecology Department, Cytogenic and Laparoscopic Unit, Faculty of Medicine, Zagazig University, Egypt.
The institutional review board (IRB) code (#: 11199-15-10-2023) and research ethics committee of Zagazig University's Faculty of Medicine provided their approval. The work was conducted in compliance with the Declaration of Helsinki, which is the World Medical Association's Code of Ethics for human subjects research. Every patient provided written informed consent.

Sample size:

Assuming the mean difference in HB was2+_0.14 vs 2.36 +_0.52 in LM vs AM .At 80% power and 95% Cl , the estimated sample will be 36 cases ,18 in each group.

Inclusion criteria:

- Women aging from 18 to 39 years.
- Women complaining of heavy menstrual bleeding, lower abdominal pain, infertility or recurrent abortion due to fibroid.

Exclusion criteria:

- • Individuals with an uncorrected coagulation profile who have a predisposition to hemorrhage.
- • Patients who decline to take part in the research.
- • Any condition that precludes a laparoscopy, such as severe obesity, a big ventral hernia, infection of the abdominal wall, or impaired cardiorespiratory function.

The following procedures were performed on the chosen patients: general clinical examination for all systems or local gynecological examination; routine laboratory investigations (complete blood count, renal function test, liver function test, bleeding profile); ultrasound scan (TVS and pelviabdominal); estimation of blood loss using López-Picado's formula; and personal history taking (complaint, present history, past history, family history with stress on (previous medical diseases, previous pregnancy and its complications, drug intake and special habits). Blood loss(ml) = [EBV×(Hcti −Hctf)+transfused RBC volume] / Hct mean **[7].** Hcti (initial hematocrit) , Hctf (final hematocrit) EBV (estimated blood volume).
Patients with similar illnesses were compared for pain severity using the Visual Analogue Scale (VAS). **[8].**

Surgical interventions:

<u>Open myomectomy (OM) (Figure 1):</u>

The incision of Pfannenstiel is made. Layers of the open abdomen include the skin, peritoneum, sheath, and subcutaneous fat. The main feeding vessels' blood flow has been decreased by using rubber tourniquets. In eight cases, we employed hemostatic sutures and rubber tourniquets. Both uterine arteries must be sutured during uterine artery ligation. In nine cases, uterine artery ligation was performed. The first-line treatment for postpartum hemorrhage is always uterotonic agents (we utilized misotac and oxytocin). The most widely utilized uterotonic drug is oxytocin, and fibroid uteri have lately been shown to have oxytocin receptors. During the procedure, intravenous tranexamic acid was administered in every instance. In one instance, diluted ephiderin was injected intramyometrially. Over the fibroid's major bulk, a serosal incision was created. Diathermy and a scalpel incision were performed. After that, the incision is continued toward the myometrium until it reaches the fibroid capsule. After then, the fibroid is enucleated, as explained below.
It might be feasible to remove numerous fibroids with a single incision if they are located close to one another. The fibroid capsule or the fibroid myometrial plane should be identified once the incision has been done. Using a myoma screw to generate traction, a MacDonald dissector to separate the fibroid from the capsule, and a twisting force at the end of the enucleation procedure helped to facilitate the fibroid's enucleation. Diathermy or sutures can be used to stop bleeding from the feeding vessels during enucleation. Following the removal of the fibroids, the uterine defect must be properly closed, with sutures used to produce good apposition and successful hemostasis. Any dead space must be completely destroyed from the bottom up. Because it lowers the chance of scar dehiscence during a later pregnancy, careful uterine wall repair is crucial. Depending on how deep the myometrium was, the uterine defect was closed in

two or three layers. Interrupted sutures were taken into consideration for the deepest, innermost layers while repairing a major defect. In every situation, we use two layers of continuous interrupted sutures to seal the suture.

Laparoscopic myomectomy (LM) (Figure 1):

A uterine manipulator was placed to manipulate the uterus' position while the patient was in the lithotomy position with a 10-degree Trendelenburg tilt. Trocar placement and configuration (lee-Huang point, supraumbilical, halfway between xiphoid process and umbilicus). As a camera port, we position a 10-mm trocar known as the Lee-Huang point halfway between the xiphoid process and the umbilicus. Three 5-mm manipulation ports are positioned in the lower abdomen: a midline port is positioned midway between the top edge of the symphysis and the umbilicus, and the lateral ports are positioned bilaterally 4 to 5 cm cephalad and 4 or 5 cm medial to the iliac crest. Using two Kocher's forceps, the bottom of the umbilicus is gripped and dragged upward for the first trocar implantation. Between forceps, we make a deep incision of 5 or 10 mm till we reach the rectus fascia. The trocar is inserted after the peritoneum has been cut using Mayo scissors. Regarding the manipulation ports, I raise the abdominal wall and introduce powerful forceps from the lateral port so that I can use the trocar to puncture the midline without harming the larger uterus.

Vascular clamp bulldog over infudibulopelvic was used in five cases, uterine artery ligation was performed in nine cases, diluted ephedrine was injected in five cases, uterotonic agents (oxytocin and misotac were used in nine cases), and intravenous tranexamic acid was administered in all cases during the procedure to minimize blood loss.

We proceed to the myometrial incision. Regarding the incision's direction, both longitudinal and transverse cuts were made. The middle port is where the needle driver is inserted. The longitudinal incision is our preferred technique since it is simpler to use the needle driver than the transverse incision. The incision can be made anywhere, and the suture can be applied consistently throughout. The transverse incision is the recommended method when using a parallel port layout since suturing is simple. The bipolar cautery is used to incise the myometrium. to reduce the myometrium's exposure to heat. Choosing the right plane is crucial when it comes to the incision's depth. Instead of making a cut that is too shallow, it is preferable to cut into the fibroid and then locate the dissectible plane.

Utilizing claw forceps, we gripped the fibroid and pulled it while utilizing forceps or an aspiration nozzle to push the myometrium away. The myometrium is subjected to countertraction by the assistant. Traction of the myometrium by the assistance is crucial for a smooth dissection of the fibroid. If we come across hard, fibrous tissue during enucleation, we use a monopolar knife or scissors to cut it, and then we proceed with blunt dissection. Until the fibroid can be extracted, this sequence of acute and blunt dissection is repeated. In cases of subserosal fibroids, extra myometrium must be trimmed. Synthetic suture 1.0 (Vicryl CT1(ethicon)) was what we typically utilized. Following the removal of the myoma, we use continuous suture to re-approximate (Figure 2S). For continuous suture, the length of the suture is 30 cm. Multiple sutures would be needed into the abdominal cavity if a suture shorter than 30 cm was utilized.

Through the port location, the suture was inserted into the intraperitoneal cavity. We stitch in multiple layers when the defect is deep. We make sure the needle is inserted into the tissue at a 90-degree angle during suturing. Additionally, we make sure that every suture penetrates the tissue deeply enough to secure and shield the organ from harm. The suturing repair gets more challenging the deeper the myoma bed. When a defect is really deep, the helper uses sutures to follow the defect's edge. This is to prevent hematoma by making sure there is no dead space when the incision is closed. It is frequently necessary to suture these profound flaws in four or five layers.

Baseball suture or seromuscular reapproximation are used for superficial reapproximation. We choose seromuscular reapproximation because it inverts the incision's edge, preventing subserosal hemorrhage and reducing the possibility of intestinal adhesion to the wound. Large bite seromuscular suturing also has the benefit of tightly compressing the uterus, which reduces the risk of hematoma and bleeding after surgery.

In the event of an endometrial perforation, which happened in one patient. To avoid interuterine adhesion, we use 4.0 monofilament suture to continuously close the uterine cavity opening in cases when the endometrium is pierced. When this is not possible, we reapproximate the myometrium after inserting a Surgicel into the uterus.

Using a long scalpel, the specimens were extracted through the center umbilical port (for very large fibroids) by morcellation (Figure 3S). The fibroid may occasionally be too big to fit into the tiny pelvic space. In order to morcellate the fibroid, we remove the trocar from the center abdominal port site and use a long, 19-cm knife to enter the abdominal cavity through this port. To allow the fibroid to descend, we reconstruct it without severing it. After being chopped in parallel, the fibroid eventually took on the shape of an accordion before being inserted into the little pelvis. Using long scissors, we grabbed the fibroids by the vagina and morcellate. Serious organ damage may result if the scalpel is pointed at nearby organs.

As a result, we waited to start slicing until the scalpel was fully inserted into the flesh and controlled. Constricted grasping of the scalpel is crucial because it could fall into the abdominal cavity and injure organs inside. Cutting must be done in an upward manner, toward the area where the abdominal wall and fibroid meet. It becomes challenging to retrieve the fibroid if it has been sliced into fragments. We decided to reconstruct the fibroid in order to guarantee its total elimination for this reason.

Statistical analysis

Version 25 of the SPSS program (Statistical Package for Social Sciences) was used to code, tabulate, and statistically analyze the data that had been gathered. The Chi-square test, paired sample t test, and independent sample t test were employed.

RESULTS

The difference between both groups was insignificant regarding age, weight, height and BMI (Table 1). The difference between both groups was insignificant regarding past history of abdominal surgery and medical disorders (Table 2). The difference between both groups was insignificant regarding FIGO types. No cases of submucus fibroid were done in this study (Table 3). The difference between both groups was insignificant regarding number and size of fibroids. The largest size of fibroid removed with L.M was 8 cm, while the largest size of fibroid removrd with O.M was 14 cm. the largest number of fibroids removed during L.M was 4, while the largest number of fibroids removed during O.M was 15 (Table 4). The difference between both groups was insignificant regarding pre & post operative Hb (Table 5).

O.M. time was substantially less than L.M. time ($P<0.05$). Three hours was the longest time spent during O.M., and five and a half hours during LM. Regarding blood transfusion, there was no discernible difference between the two groups. Two RBCs and two FFP were the most packed RBCs and fresh frozen plasma transfused during and after L.M., while four RBCs and three FFP were the most packed RBCs and fresh frozen plasma transfused during and after O.M. The surgical cost difference between the two groups was negligible. The hospital stays in O.M. were noticeably longer than those in L.M. Three days was the longest hospital stay during L.M., and seven days was the longest during O.M. According to the VAS score, O.M. experienced much more postoperative pain than L.M (Table 6).

The difference between both groups was insignificant regarding procedural complications. In our study wound infection presented only in O.M which inturn increases hospital stay (Table 7).

Table (1): Basic characteristics of the studied groups:

Characteristic	**Group I (Laparoscopic approach) (n=18)**	**Group II (Abdominal approach) (n=18)**	**t**	**P value**
Age Mean ±SD Range	30.72±3.03 (25-37)	32.5±5.16 (26-39)	-1.261	NS*
Weight Mean ±SD Range	79.11±12.81 (60-105)	73.39±11.74 (58-96)	1.397	NS*
Height Mean ±SD	161.28±3.72 (154-168)	163.06±4.72 (154-170)	-1.254	NS*

Characteristic	**Group I (Laparoscopic approach) (n=18)**	**Group II (Abdominal approach) (n=18)**	**t**	**P value**
Range				
BMI Mean ±SD Range	30.57±4.95 (22.3-35)	27.7±5.01 (21.5-42)	1.727	NS*

(t) Independent Sample Test, (P>0.05) *.

Table (2): Past history of abdominal surgery and past medical disorder between studied group:

Characteristic			**Group I (Laparoscopic approach) (n=18)**	**Group II (Abdominal approach) (n=18)**	**X^2**	**P value**
	None	**N**	7	3	7.029	NS*
		%	38.9%	16.7%		
	Appendectomy	**N**	4	3		
		%	22.2%	16.7%		
	hysteroscopic myomectomy	**N**	1	0		
		%	5.6%	0%		
	lap myomectomy	**N**	0	3		
		%	0.0%	16.7%		
	laparoscopic cholecystectomy	**N**	1	0		
		%	5.6%	0%		
	open cholecystectomy	**N**	0	1		
		%	0.0%	5.6%		
	previous cesarean	**N**	6	8		
		%	33.3%	44.4%		
Past medical disorder	**None**	**N**	16	16	5.032	NS*
		%	88.9%	88.9%		
	Diabetes mellitus	**N**	0	2		
		%	0.0%	11.1%		
	Hypertension	**N**	2	0		
		%	11.1%	0.0%		

(X^2) Chi-Square Tests (t) Independent Sample Test, (P>0.05) *. N = number.

Table (3): FIGO types of operation of the studied groups:

Characteristic			**Group I (Laparoscopic approach) (n=18)**	**Group II (Abdominal approach) (n=18)**	**t**	**P value**
FIGO subtypes	**I**	**N**	0	0	0.678	NS*
		%	0%	0%		
	II	**N**	0	0		
		%	0%	0%		
	III	**N**	2	3		
		%	9.1%	10.7%		
	IV	**N**	4	5		
		%	18.2%	17.9%		
	V	**N**	7	7		
		%	31.8%	25.0%		
	VI	**N**	6	7		
		%	27.3%	25.0%		
	VII	**N**	3	6		
		%	13.6%	21.4%		

(t) Independent Sample Test, (P>0.05) *. N = number.

Table (4): Number and size of fibroids (in cm) in the studied groups:

Characteristic	**Group I (Laparoscopic approach) (n=18)**	**Group II (Abdominal approach) (n=18)**	**t**	**P value**
Number of fibroids Mean ±SD range	 1.28±0.46 (1-4)	 1.18±0.39 (1-15)	0.698	NS*
Size of fibroids Mean ±SD	 5.00±1.76	 6.10±1.52	0.676	NS*

(t) Independent Sample Test, (P>0.05) *.

Table (5): Pre versus post operative Hb within the studied groups:

Characteristic	**Group I (Laparoscopic approach) (n=18)**	**Group II (Abdominal approach) (n=18)**	**t**	**P value**
Pre-operative Hb Mean ±SD Range	 11.01±1.35 (9.3-13.8)	 10.32±0.61 (9.7-12)	1.921	NS*
Post-operative Hb Mean ±SD Range	 10.13±0.62 (9-11)	 10.24±0.36 (9.3-10.9)	-0.593	NS*

(t) Independent Sample Test, (P>0.05) *.

Table (6): Time of surgery, Blood transfusion, Cost of operation and Post-operative hospital stays and Pain (VAS score)* between the studied groups:

Characteristic			Group I (Laparoscopic approach) (n=18)	Group II (Abdominal approach) (n=18)	t	P value
Time of operation Mean ±SD Range			2.56±0.68 (1.5-5.5)	2.03±0.48 (1-3)	2.615	0.013*
Blood transfusion	**Yes**	**N**	3	5	0.643	NS*
		%	16.7%	27.8%		
	No	**N**	15	13		
		%	83.3%	72.2%		
Cost of operation Mean ±SD			1200	600	-0.145	NS*
Post-operative hospital stay (days) Mean ±SD			1±0.3	3.2±1	3.4	<0.001*
Pain (VAS score)* Mean ±SD			1.5±0.5	2.3±0.3	2.9	<0.001*

(t) Independent Sample Test, (X^2) Chi-Square Tests
(P>0.05)*.N = number. **VAS score = visual analogue scale. [8].**

Table (7): Procedural complications among the studied groups:

Characteristic			Group I (Laparoscopic approach) (n=18)	Group II (Abdominal approach) (n=18)	X^2	P value
	Abscent	**N**	14	13	0.148	NS*
		%	77.8%	72.2%		
	present	**N**	4	5		
		%	22.2%	27.8%		
	Nausea and vomiting	**N**	4	5	0.210	NS*
		%	22.2%	27.7%		
	Headache	**N**	2	4		
		%	11.1%	22.2%		
	Wound infection	**N**	0	2		
		%	0%	11.1%		
	Blood loss	**N**	3	4		
		%	16.6%	22.2%		
	Blood transfusion	**N**	3	5		
		%	16.6%	27.7%		
	Fever	**N**	1	3		
		%	5.5%	16.6%		

(X^2) Chi-Square Tests, (P>0.05)*.


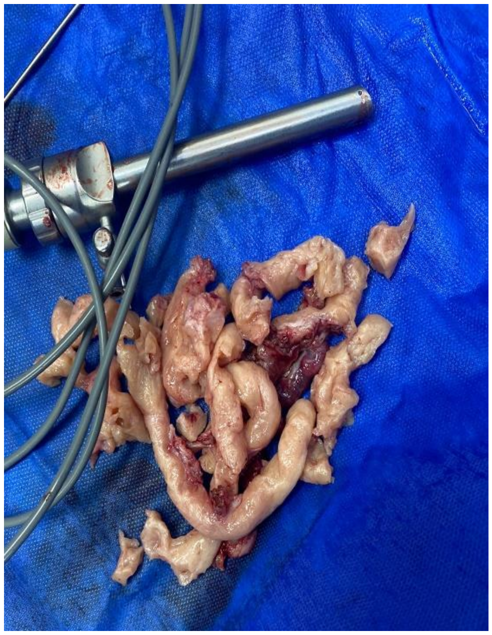

Figure (1S): picture in left side shows 9 fibroids removed by open myomectomy while picture in right side shows shredded myoma removed by laparoscopy using morcellator.

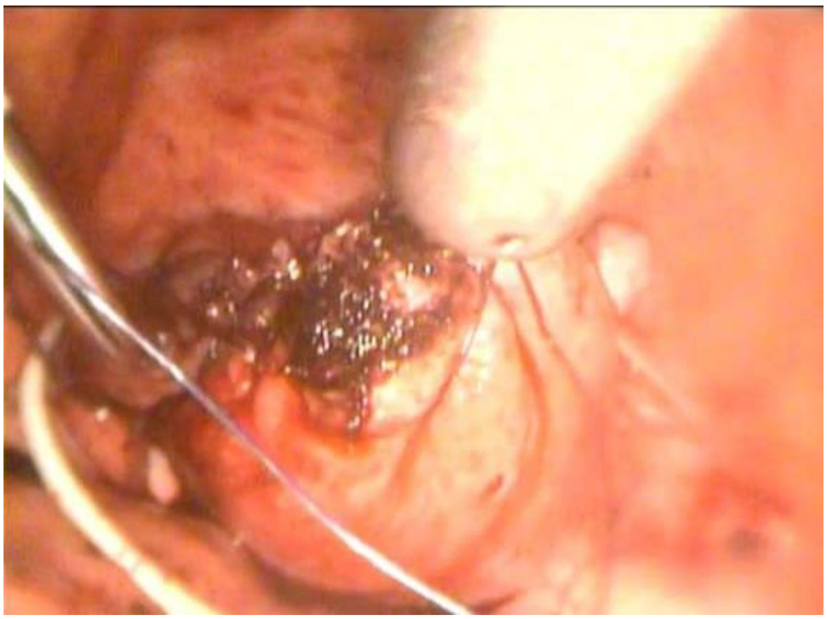

Figure (2S): Suturing of myoma bed by continuous suture.

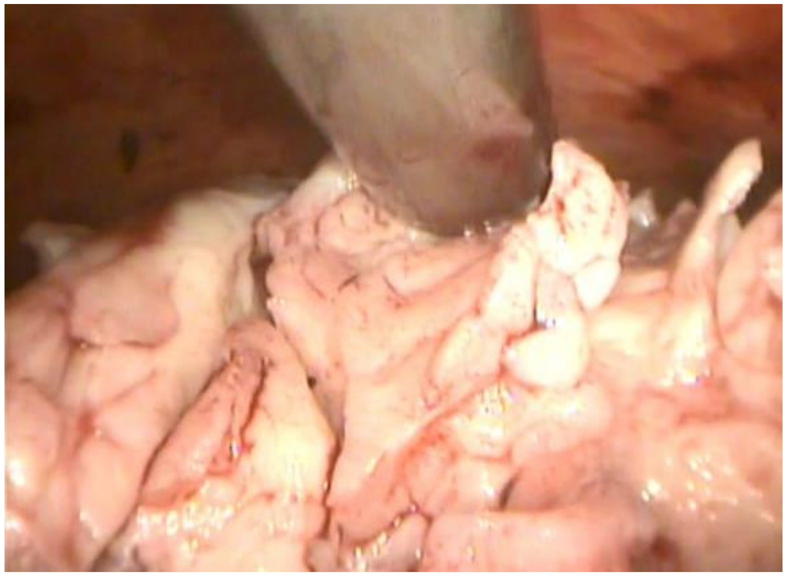

Figure (3S): Morcellation of myoma.

DISCUSSION

The most prevalent benign solid tumors in women are uterine fibroids, which develop from the smooth muscle tissue of the uterus and multiply when stimulated by progesterone and estrogen. Although 70% of cases are asymptomatic and are discovered by chance during radiologic tests, the frequency in premenopausal women varies between 20% and 40% [1].

Bulk symptoms (pelvic pressure, back or abdominal pain, fullness), dysmenorrhea, bladder or bowel symptoms, and sexual dysfunction are all possible outcomes of uterine fibroids, depending on their size and location. They may also be linked to infertility or other unfavorable obstetrical outcomes, such as an increased risk of preterm labor, cesarean delivery, antepartum hemorrhage, fetal malpresentation, and growth restriction. Furthermore, uterine fibroids can lower a woman's productivity at work and quality of life [9]. If fertility is to be preserved, myomectomy is advised. As a result, laparoscopic myomectomy and other minimally invasive surgical methods have gained popularity [10].

The purpose of the current study was to compare the morbidity of open myomectomy (OM) and laparoscopic myomectomy (LM) with respect to complications, length of hospital stay, and surgical time.

Regarding demographic data, Age, height, weight, BMI, prior history of abdominal surgery, and medical conditions did not significantly differ between the two groups. Same was adopted by Kan et al. [11] was no discernible differences between the groups in terms of demographic characteristics such as age, diabetes, hypertension, and hyperlipidemia. The validity of comparisons is strengthened by the uniformity of baseline features.

There was no significant difference between the two groups regarding FIGO classification system of fibroid, with types V and VI accounting for the majority of fibroids. This aligns with other research findings in the meta-analysis of Martinez et al. [12], who also compared the two ways and found that interstitial fibroids were more common.

According to the current study, there was no discernible difference in the quantity or size of fibroids between the two groups. Patnaik, [13] further stated that there was no difference in the quantity or size of myomas between the groups that underwent abdominal myomectomy and those that underwent laparoscopic surgery.

D'Silva et al. [14] demonstrated that laparoscopic myomectomy (LM) was the recommended method for removing fibroids up to 10 cm in diameter, while open myomectomy (OM) was utilized for bigger fibroids over 10 cm. This suggests that there is a cutoff myoma size beyond which open myomectomy is desirable. We discovered that a laparoscopic myomectomy up to 8 cm is the ideal size.

Regarding suturing technique and material, Gardella et al. [15] and Ateş Tatar et al. [16] employed the serrated (barbed) suturing approach for laparoscopic myomectomy because of its benefits, which include: facilitating the suturing procedure; cutting down on the amount of time needed to stitch the uterine wall defect; and minimizing blood loss and the need for blood transfusions after surgery. However, because barbed suture material was expensive and unavailable, we employed continuous conventional sutures (Vicryl 1.0: ethicon) in this investigation.

Using a vascular clamp positioned over the infudibulopelvic, uterine artery ligation, injection of diluted ephedrine, uterotonic agents (oxytocin and misotac), intravenous tranexamic acid, and other techniques, we were able to minimize blood loss during either an open or laproscopic myomectomy, OpokuAnane et al. [17] who also employed the same techniques to minimize blood loss during laprascopic and open myomectomy.

Regarding the reduction of hemoglobin level pre & post operatively. The difference between the two groups was determined to be negligible in the current study. Buhur & Öncü [18] , Putra et al. [19] , Bechev et al. [20] showed that there was reduced blood loss and a postoperative drop in hemoglobin (Hgb) and hematocrit (Hct) following laparoscopic myomectomy.

However in other studies ; Andrews et al. [21], Chang & Chen [22] and D'Silva et al. [14] found that LM had less blood loss than OM. This disparity may result from our study's comparatively smaller sample size. Kim et al. [23] revealed that open or abdominal myomectomy carries a greater risk of blood transfusion than laparoscopic myomectomy. Blood transfusion rates for myomectomy surgeries were 10% overall, with open/abdominal procedures having the highest rate at 16.4%. According to this study, the overall blood transfusion rate in L.M. was 16.7%, whereas the rate in O.M. was 27.8%.

Blood transfusions were clearly linked to a roughly threefold higher risk of serious postoperative complications, which clearly benefits L.M. Operative time was substantially greater in laparoscopic myomectomy than in open myomectomy. The mean operating time was 2.56 ± 0.68 hours for the LM group and 2.03 ± 0.48 hours for the OM group.

When comparing laparoscopic versus open myomectomy, numerous studies revealed comparable substantial differences in operating time, including a meta-analysis by Putra et al. [19] and Bechev et al. [20] which reported longer operative time for LM. The reason for the longer duration in LM is that the laparoscopic process necessitated a high level of precision and focus to enucleate, morcellate, and suture.

putra et al. [24] added that compared to the abdominal approach, the laparoscopic method required more time to complete the surgery. The two surgical techniques did not significantly alter the volume of blood lost. Chang & Chen [22] demonstrated that the median (range) surgical time and blood loss were significantly lower in the LM group compared to the OM group (100 min [73-120 min] versus 120 min [90-146 min], and 100 mL [100-200 mL] versus 150 mL [100-305 mL], respectively). However, other studies indicated that the operative time was shorter in L.M. than O.M. Similarly, Kan et al. [11] shown that laparoscopic surgery takes noticeably less time, most likely as a result of the surgeons' experience or the huge number of cases they have performed.

In our investigation, as operational skills and the learning curve increased, operative time gradually decreased.Our study's final two cases took 1.5 and 2 hours, respectively.

LM and OM do not significantly differ from one another regarding cost of operation. Cost-effectiveness is a critical consideration when making healthcare decisions, so this is a significant discovery. This can be explained by the fact that all procedures are funded by the university and performed in our university hospital. Chang, [25] showed that laparoscopic myomectomy was more expensive than open myomectomy in a private facility. Additionally, they pointed out that although laparoscopic myomectomy has greater upfront expenses, it frequently leads to shorter hospital stays and faster recovery periods. Early return to regular activities by patients may lower overall healthcare expenses associated with recuperation and lost productivity. Laparoscopic myomectomy's minimally invasive technique may result in fewer problems and improved postoperative pain control. This can improve general satisfaction and quality of life, which are significant aspects to take into account in addition to monetary expenses.

We recorded that Post-operative hospital stay was significantly shorter for the LM group compared to the OM group (1 ± 0.3 days vs. 3.2 ± 1 days).This finding aligned with numerous other studies, including a meta-analysis by Giannini et al.

[26] and Bechev et al. [20] which reported shorter hospital stays for LM. The reduced hospital stay can be attributed to the minimally invasive nature of laparoscopic surgery, resulting in less post-operative pain and faster recovery. This also agrees with D'Silva et al., [14], Kan et al. [11], Buhur & Öncü [18] and Silva et al. [24] They observed that, in comparison to the abdominal technique, the laparoscopic approach led to a shorter hospital stay and a lower demand for postoperative intravenous opioids.

Regarding post operative pain; when using the Visual Analogue Scale (VAS), patients in the LM group reported far lower pain scores than those in the OM group (1.5 ± 0.5 vs. 2.3 ± 0.3). The results of Kan et al. [11], Putra et al. [19], and Buhur & Öncü [18], who also noted reduced pain scores in LM patients, are in line with this. Less tissue manipulation and smaller incisions are responsible for the decreased pain in LM.

This also was noted in Giannini et al. [26] According to a meta-analysis, laparoscopic myomectomy has several advantages to abdominal myomectomy, including a lower requirement for postoperative analgesics.

In the current study, group LM's pain scores were (4.21±0.83), (2.56±0.67), and (1.63±0.55) at 3, 6, and 18 hours following surgery, while group OM's pain scores were (8.23±0.94), (5.54±0.85), and (3.70±0.61) at 3, 6, and 18 hours following surgery, respectively. In terms of intra-group comparison, there was a statistically significant drop in the two groups' VAS scores from T0 to T2.

According to Kan et al. [11], patients in group B (open myomectomy) had a greater pain Visual Analogue Scale (VAS) score when comparing the two groups' scores after three, six, and twelve hours. The findings indicated that, in comparison to standard transabdominal surgery, laparoscopic surgery resulted in reduced postoperative pain.

By successfully lowering the oxidative stress response of postoperative uterine fibroids, laparoscopic myomectomy may be less painful than laparotomy [27]. According to Chittawar et al. [28], laparoscopic myomectomy was less painful than standard laparotomy.

Overall, there was no substantial difference in the incidences of complications between LM and OM. This is a significant finding because it implies that, in the hands of skilled surgeons, LM is just as safe as OM. It is important to note, too, that our sample size might have been insufficient to identify uncommon problems. Nausea and vomiting were the most frequent side effects in both groups, followed by headaches and blood loss that needed transfusion. The OM group had a little higher infection rate, which raises hospital stays in those situations.

In accordance, Giannini et al. [26] stated that the rates of intraoperative and postoperative complications did not differ statistically significantly. Chang & Chen [22] showed that the two groups did not differ in terms of complications or recurrences. According to Ordás et al. [29], LM and AM did not significantly differ in their rates of intraoperative and postoperative complications.

These findings are generally consistent with those reported by Andrews et al. [21] Myomectomy via laparotomy showed higher cumulative minor problems in their study on LM complications; the adjusted OR was 2.80 for a lesser fibroid load and 3.41 for a bigger fibroid burden. Adjusted OR 2.40 for greater fibroid burden, laparotomy showed increased cumulative serious complications. Griebel et al. [30] found that the incidence of complications was lower with laparoscopic myomectomy than with standard abdominal myomectomy. Kan et al. [11] demonstrated that patients treated with laparoscopic myomectomy had a substantially reduced incidence rate of problems than those treated with standard laparotomy.

It is important to recognize the various limits of our research. First off, the small sample size might have made it more difficult for us to identify minute variations between the groups that underwent open myomectomy and those that underwent laparoscopic surgery. Second, because this was a single-center study, our findings might not be as applicable to different populations or healthcare settings. Thirdly, because we are concentrating on short-term results, we are unable to discuss significant long-term factors that are critical to myomectomy treatments, such as fibroid recurrence rates or effects on fertility. Lastly, the distribution of patients between the two surgical techniques may have been impacted by selection bias brought about by the lack of randomization in our study design.

Conclusion

Laparoscopic myomectomy had advantages in terms of a shorter hospital stay and less post-operative pain, while having longer operating durations compared to open myomectomy. There was no significant difference between both groups regarding complications. According to these results, laparoscopic myomectomy is a safe and effective alternative to open myomectomy in women with fibroid who reported lower abdominal pain and heavy menstrual bleeding. To validate these results and assess long-term effects, larger, randomized studies with longer follow-up are required.

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Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interest.

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citation

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