

## Intra and Postoperative Morbidity Associated with Myomectomy

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**Background:** Abdominal myomectomy is a known treatment modality for uterine fibroid in women who wish to retain their fertility. The procedure is associated with bleeding and eventual hysterectomy.

**Objective:** To evaluate the intraoperative morbidity and postoperative complications of abdominal myomectomy.

**Design:** A Retrospective Data Analysis.

**Setting:** University of Dammam Teaching Hospital, Saudi Arabia.

**Method:** Myomectomy patients between 1 December 2007 to 30 November 2012 were reviewed. The relation of weight and size of myoma to complications, anesthesia type, duration of operating time and estimated blood loss (EBL), Hb drop, blood transfusion, duration of hospital stay and postoperative complications were documented.

**Results:** One hundred thirty-seven procedures were reviewed. The median operating time was 1 hour and 40 minutes. The size of fibroid had a significant effect on the type of abdominal incision. Median estimated blood loss during the procedure was 500 ml with 23% of patients losing  $\geq 1$  liter. There was a significant positive relation between the size of fibroid and estimated blood loss, but this did not affect the Hb drop postoperatively nor blood transfusion rate. The median length of hospital stay was five days. Three cases were converted to hysterectomy.

Postoperative complications were seen in 15 (11%) patients, which include hemorrhage, febrile morbidity and paralytic ileus. The weight of the myoma had no relationship to postoperative complications. Midline vertical incision was associated with higher postoperative complications.

**Conclusion:** The larger the fibroid, the more likely the abdominal incision would be midline and more blood loss. Regional anesthesia significantly reduces operating time. Midline incision led to higher postoperative morbidity.

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Myomectomy as an organ-preserving procedure has become an established alternative to hysterectomy<sup>1-3</sup>. An increasing number of women in their fourth to fifth decade request conservative surgery to preserve their reproductive potential<sup>2,3</sup>. New advances in assisted reproductive techniques permit women in later reproductive years to bear a child if the uterus is still intact.

Submucous and intramural myoma decreases fertility and its removal is beneficial and necessary when the myoma is

symptomatic and resistant to medical management or interferes with female reproduction<sup>1,4</sup>. A current management strategy involves surgical intervention depending on the patient's age, the desire for fertility preservation or avoidance of radical surgery, such as hysterectomy<sup>1,5,6</sup>. Myomectomy could be performed abdominally, laparoscopically or by robotic surgeries<sup>1,4,7</sup>.

Open abdominal myomectomy for uterine fibroids could be technically challenging and may be associated with the risks

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of hemorrhage, anemia, wound sepsis, pelvic adhesions, a uterine rupture on subsequent pregnancies and hysterectomy. However, recent studies have shown that the morbidity of myomectomy and hysterectomy is comparable. Newer conservative surgical techniques with minimally invasive approach including laparoscopic myomectomy, uterine artery embolization and magnetic resonance-guided focused ultrasound have evolved, however, are not readily available in developing countries<sup>1,8</sup>.

The presence of a uterus carries a symbolic meaning to many women who associate it with femininity and could feel a diminished sense of self-esteem if it is removed. In fact, some women view the uterus as the regulator of important physiological functions, a sexual organ, a source of energy and vitality and a maintainer of youth and attractiveness<sup>3,8</sup>. Thus, many women might wish to avoid a hysterectomy, even when their families are fully established<sup>3,8</sup>.

Myomectomy is associated with excessive hemorrhage, pyrexia, visceral damage, thrombo-embolism, conversion to hysterectomy, blood transfusions and uterine scar dehiscence<sup>4</sup>. In one study, uterine rupture was found in 2.5% of patients who had a myomectomy, and in another study, no uterine rupture was found in 120 patients<sup>9</sup>.

Blood loss could be associated with two major future risk of fertility and demand attention during the surgical procedure; intraoperative blood loss and tissue damage could lead to pelvic adhesions and infertility<sup>1,2,8</sup>. Furthermore, bleeding into an insufficiently adapted nucleated wound could impair the integrity of the uterine wall, potentially causing uterine ruptures with serious consequences in future pregnancies. There are no limitations on size and number of fibroids, which should be removed. Furthermore, it is possible to perform reconstructive, microsurgical surgery of tubal damages. Abdominal myomectomy using microsurgical technique prevents tissue damage, reduces blood loss and restores the anatomy and function of the uterine wall<sup>2</sup>.

The aim of this study is to evaluate the intraoperative morbidity and postoperative complications of abdominal myomectomy.

**METHOD**

The records of patients who had abdominal myomectomy between 1 December 2007 and 30 November 2012 were reviewed. The relationship of weight and size of myoma with complications, anesthesia type, duration of operating time and EBL, postoperative Hb drop, blood transfusion and duration of hospital stay were documented.

In addition, postoperative complications including reopening of surgery, fever, paralytic ileus, deep venous thrombosis (DVT), wound infection, hemorrhage and death were documented.

The abdomen was explored through a Pfannenstiel or midline vertical incision depending on the uterine size. Fibroid cavities were closed with delayed absorbable sutures. Prophylactic antibiotics were administered to all patients either preoperative, postoperative or both. Duration of operation was defined as the time between the skin incision and skin closure as indicated on the anesthetist operation charts. EBL was recorded from the operative notes as reported by the surgeons.

Hemorrhage was defined as bleeding that affects the hemodynamic status of the patient that occurs within twenty-four hours to seven

days after surgery. Wound infection is the discharge of pus from incision occurring five to seven days after the surgery, and febrile morbidity was pyrexia of thirty-eight degrees or above occurring twenty-four hours after surgery. The data were analyzed using StatsDirect software.

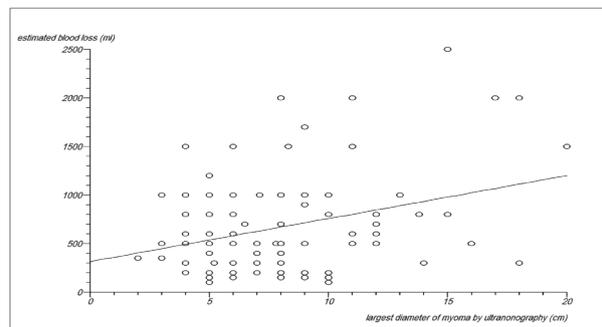
**RESULT**

One hundred thirty-seven patients had abdominal myomectomy. Median operating time was 1:40 hours (range was 00:30 to 05:50). Myomectomies performed under regional anesthesia took significantly less time P=0.03. General anesthesia was used in 91 (66.4%) patients with a median operating time of 1:50 hours (range of 00:45 to 05:50). Regional anesthesia including spinal anesthesia alone or combined with an epidural was used in 46 (33.6%) patients with a median operating time of 01:30 (range of 00:30 to 02:45), see table 1.

**Table 1: Type of Anesthesia and Operating Time**

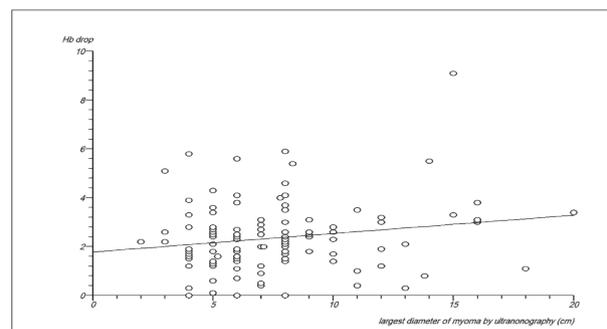
	General Anesthesia	Regional Anesthesia
<b>Number of Cases</b>	91	46
<b>Time Median (hours:minutes)</b>	01:50 (00:45 to 05:50)	01:30 (00:30 to 02:45)
<b>Mann-Whitney U test</b>	<b>P=0.03</b>	

Median EBL by the surgeons was 500 ml (range 100 to 2500 ml). Thirty-one (23%) patients had EBL more than or equal to one liter. There was a significant positive relation between the size of fibroid on ultrasound and estimated blood loss during surgery P=0.0001, see figure 1.



**Figure 1: Size of Fibroid and Estimated Blood Loss**

The positive relation between EBL and size of fibroid matches the relation between Hb drop and fibroid size. However, linear regression analysis did not show statistical significance P=0.05, see figure 2.



**Figure 2: Size of Fibroid and Hb Drop**

Not a significant relation between the size of fibroid and the rate of blood transfusion was revealed, see table 2.

**Table 2: Blood Transfusion Rate and Size of Fibroid**

	≤ 5 cm	6 cm to 8 cm	9 cm to 12 cm	≥ 12 cm
<b>Number of Cases</b>	39	61	23	14
<b>Transfusion Rate</b>	9 (23%)	14 (23%)	2 (9%)	1 (7%)
<b>Fisher-Freeman-Halton Exact</b>	<b>P=0.3</b>			

The median length of hospital stay for patients was five days (range 2 to 13 days). Postoperative complications including hemorrhage, febrile morbidity and paralytic ileus were seen in 15 (11%) patients. Some patients had one or more complications. Febrile morbidity was seen in 15 (11%) patients, paralytic ileus in 1 (0.73%) patient and postoperative hemorrhage in 2 (1.46%) patients. None of the patients had deep venous thrombosis (DVT) or a wound infection after the surgery. Three (2.2%) patients were converted to hysterectomy due to the size of the myoma, age of the patient and the wish not to conceive in the future. No patient needed reopening and/or re-operating and no mortality were recorded. No relationship between the weight of the myoma and postoperative complications was found. No significant difference between the median weight of the myoma with or without complications P=0.75, see table 3.

**Table 3: Myoma Weight and Complication**

	<b>Complication Group</b>	<b>No Complication</b>
<b>Median Weight of Myoma</b>	320 gm	310 gm
<b>Range</b>	100 to 1240 gm	30 to 4590 gm
<b>Mann-Whitney U test</b>	<b>P=0.75</b>	

A higher incidence of complications was seen in patients who lost more than 1000 ml intraoperatively, but this was not statistically significant. The complication rate for patients who lost less than 1 liter was 14 (10%) compared to 22 (16%) in patients who lost more than 1 liter, see table 4.

**Table 4: Intraoperative Blood Loss and Complication**

<b>Intraoperative Blood Loss</b>	< 1 liter	≥ 1 liter	<b>Total</b>
<b>No Complications</b>	94	27	121
<b>Complications Present</b>	11	5	16
<b>Total</b>	<b>105</b>	<b>32</b>	<b>137</b>
<b>Fisher-Freeman-Halton Exact</b>	<b>P=0.53</b>		

Midline vertical incision was associated with higher postoperative complications. Out of 42 (30.6%) patients who had midline vertical incision, 9 (6.6%) patients had complications postoperatively. Ninety-five (69.3%) patients had transverse Pfannenstiel incision, only 7 (5.1%) had postoperative complications P=0.02, see table 5.

**Table 5: Abdominal Incision and Complication**

	<b>Midline Incision</b>	<b>Pfannenstiel</b>	<b>Total</b>
<b>No Complications</b>	33	88	121
<b>Complications</b>	9	7	16
<b>Total</b>	<b>42</b>	<b>95</b>	<b>137</b>
<b>Chi-square Test</b>	<b>P=0.02</b>		

**DISCUSSION**

Uterine leiomyomas are benign tumors which arise in the uterine myometrial smooth muscle and are clinically apparent in about 20% to 25% of women in reproductive age<sup>6,10,11</sup>. Surgical intervention may be indicated in women with large, symptomatic uterine leiomyomas<sup>7,12</sup>.

In this study, the median operating time was 1:40 hours (range 00:30 to 05:50) which was less than what was reported by other studies<sup>12,13</sup>. Myomectomies performed under regional anesthesia took significantly less time P=0.03.

Medline incision was performed in one-third of patients compared to 14% reported by Pundir et al<sup>14</sup>. In our study, midline incision was performed more frequently due to large fibroids to have a better surgical field. Median EBL during surgery was 500 ml (range 100 to 2500 ml) which was similar to other studies<sup>12,14,15</sup>.

In our study, 32 (23%) of patients had EBL ≥ one liter. There was a significant positive relation between the size of fibroid on ultrasound and estimated blood loss during surgery P=0.0001. Oladapo et al found that 17.9% of patients had EBL ≥ one liter<sup>12-15</sup>.

The median length of hospital stay was five days (range 2 to 13 days), which is similar to the study by Pundir et al<sup>14</sup>. Oladapo et al reported hospital stay of 8 days (range 4 to 27 days)<sup>12-14</sup>. The hospital stay could be as short as 1 day as reported by West et al (mean of 1.8 days, range 1 to 5 days)<sup>12-14</sup>.

Hemorrhage, febrile morbidity and paralytic ileus were seen in 15 (11%) patients in this study. Previous studies reported rates between 0.8% and 26%. Hemorrhage occurred in 2 (1.5%) of our patients similar to what was reported in other studies<sup>14-16</sup>. Paralytic ileus occurred in 0.07% of our patients. Wound infection could be 1.5% in the literature; none of our patients had wound infection<sup>14-16</sup>.

In our study, the conversion to hysterectomy rate was 2.2%, which was similar to 1% reported by Pundir et al and none of our patients needed to return to the theatre<sup>14</sup>.

Our study revealed a higher incidence of complications in patients who had lost ≥ 1000 ml intraoperatively; however, this was not statistically significant.

Midline vertical incision was associated with higher postoperative complications. Similar findings were reported by Pundir et al who found that major complications were

significantly increased in midline incision<sup>14</sup>. Midline vertical incisions usually performed for larger fibroid when blood loss is expected to be high with difficult access and longer operating time. All these factors would automatically increase the risk of complications.

Our study is limited because of the retrospective nature; we found a restriction in our ability to discuss other crucial factors related to the procedure. In addition, we should have measured the BMI, which could affect the duration of surgery and postoperative complications.

## CONCLUSION

**The larger the fibroid, the more likely the incision would be midline. Median estimated blood loss was 500 ml; there was a significant positive relation between the size of fibroid on ultrasound and estimated blood loss.**

**Postoperative complications including hemorrhage, febrile morbidity and paralytic ileus were present in 11%. A higher incidence of complications was found in patients who lost more than 1000 ml intraoperatively but this was not statistically significant.**

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**Competing Interest:** None.

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