



Original Article

Pre- and Postoperative Evaluation of Operated Myoma Uteri Patients: a 5-Year Tertiary Care Experience

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ABSTRACT

Objective: This study aims to evaluate the pre- and postoperative outcomes of myomas operated in a tertiary clinic.

Material and Methods: We retrospectively evaluated data from a total of 378 cases operated for myomas between January 2014 and December 2018 in the Dicle University Medical Faculty Obstetrics and Gynecology Clinic.

Results: There were 169 cases of abdominal myomectomy (44.7%), 156 cases of total abdominal hysterectomy (41.3%), 15 cases of laparoscopic myomectomy (4%), 13 cases of total laparoscopic hysterectomy (3.4%), 12 cases of myomectomy during cesarean delivery (3.2%), 9 cases of hysteroscopic myomectomy (2.4%), and 4 cases of vaginal myomectomy (1.1%). Pathology results revealed 341 cases of leiomyoma (88.2%), 32 cases of concomitant leiomyoma and adenomyosis (8.4%), and 13 cases of STUMP (3.3%). There were 5 cases of intraoperative bowel injury, 1 case of bladder injury, and 1 case of postoperative wound infection.

Conclusion: Myomas can be surgically treated with satisfactory outcomes and low complication rates. The preferred surgical treatment will majorly depend on the patient's fertility expectations.

Keywords: Uterine Leiomyoma; Hysterectomy; Myomectomy; Hysteroscopy

ARTICLE INFO

Article history:

Received: 03 September 2019

Revision received 31 October 2019

Accepted 29 December 2019

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Introduction

Uterine leiomyomas are the most common pelvic tumors in women (1). Leiomyomas originate from uterine smooth muscle cells. A study, by using glucose-6-phosphate dehydrogenase isoenzymes, demonstrated that each leiomyoma originates from a single monoclonal cell (2). Leiomyomas present as abnormal uterine bleeding, or pelvic pain and pressure in women of reproductive age. Uterine leiomyomas can negatively impact fertility depending on their locations. Some patients may require surgery to address symptoms; such as infertility, abnormal uterine bleeding that may require a blood transfusion and is resistant to treatment, and pain, pressure, constipation, and pollakiuria.

This study aims to evaluate the pre- and post-operative features of surgically treated myoma patients.

Materials and methods

The study was granted ethical approval by the relevant ethics committee. We retrospectively evaluated data from a total of 378 patients operated for myomas between January 2014 and December 2018 in the Dicle University Medical Faculty Obstetrics and Gynecology Clinic. We obtained patient data through the hospital's information management system.

We evaluated any possible correlation between different types of operations and age, gravidity, parity, complaints at admission, the duration of hospitalization, and bleeding. We recorded any developed complications.

Statistical analysis

Data were analyzed using SPSS version 22 package program (Statistical Package for the Social Sciences). Numerical data were expressed as mean \pm standard deviation (SD). Categorical data were expressed as numbers and percentages (%). The normality of data distribution was tested with the Kolmogorov Smirnov test. Parametric data were analyzed with Student's t-test, and nonparametric data were analyzed with the Mann-Whitney U-test. Categorical data were analyzed with the chi-square test. $p < 0.05$ was statistically significant.

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Results

The mean age of the subjects was 40.81 ± 8.54 years, mean gravidity was 3.29 ± 3.6 , and mean parity was 2.85 ± 3.16 . Patients' complaints at the time of admission are presented in Table-1. The detailed distribution of the patients' operations is presented in Table-2. The average length of hospital stay was 3.06 ± 1.91 days. Pathology results revealed 341 cases (88.2%) of leiomyoma, 32 cases (8.4%) of concomitant leiomyoma and adenomyosis, and 13 cases (3.3%) of smooth uterine muscle of uncertain malignant potential (STUMPs). There were 5 cases of intraoperative bowel injury, 1 case of bladder injury, and 1 case of postoperative wound infection. Distribution of length of hospital stay as per the type of operation is presented in Table-3. The type of operation was not found to be associated with length of hospital stay. We evaluated hemoglobin (Hb) and hematocrit (Hct) outcomes of different types of operations. We found that the Hb and Hct outcomes of laparotomy and other types of operations were similar, and there was no statistically significant difference (Table-4).

There were 5 cases of intraoperative bowel injury, 1 case of bladder injury, and 1 case of postoperative wound infection.

Table 1: Table-1: Uterine Myoma Patients Complaints at the Time of Admission

	Number (n, 378)	Percentage, %
Bleeding	164	43.5
Abdominal Pain	140	37.0
Infertility	36	9.5
Bleeding + Abdominal Pain	24	6.3
Irregular Menstruation	13	3.4
Habitual Abortion	1	0.3

Discussion

Uterine leiomyoma is the most common cause of hysterectomy. Leiomyoma leads to approximately 140,000 hysterectomies and 20,000 myomectomies annually in the US alone (3). Only 20% to 50% of all reported cases of leiomyoma present with symptoms, the remainder being asymptomatic. The incidence and severity of symptoms are directly proportional to the size, number, and localization of the leiomyoma (4). The most common symptom is menorrhagia, and it occurs in 30% of all cases (4-5). The frequency of menorrhagia significantly increases with age. Although menorrhagia is also seen in younger women, the frequency of menorrhagia significantly increases in women over 40 years of age. The main reason for this increase is the high prevalence of uterine pathologies such as leiomyoma or polyps in this age group (6). Lacey et al. state that 30% of cases with large leiomyomas develop abdominal and/or pelvic pain. The leiomyoma itself is not painful, pain occurs either due to the subsequent pressure on surrounding tissues or secondary changes in the leiomyoma (4,7). Although the prevalence of uterine myoma is relatively high among infertile patients, its correlation with

subfertility is 5% to 10%, and this rate is as low as 2% to 3% when other possible causes are excluded (8). Leiomyomas have been associated with reproductive dysfunction, spontaneous abortion, preterm delivery, placental abruption, placenta previa, intrauterine growth restriction, malpresentation, and increased cesarean rates (9). In our study, the complication outcomes of patients operated for myoma were as follows: bleeding, 164 (43.5%); abdominal pain, 140 (37.0%); infertility, 36 (9.5%); bleeding and abdominal pain, 24 (6.3%); irregular menstruation, 13 (3.4%). Our results are consistent with the literature.

Table 2: Surgical treatments of uterine myomas

	Number (n,378)	Percentage, %
Hysterectomy	156	41.3
Myomectomy	169	44.7
Cesarean Section + Myomectomy	12	3.2
Total laparoscopic hysterectomy	13	3.4
Laparoscopic Myomectomy	15	4.0
Hysteroscopic Myomectomy	9	2.4
Vaginal Myomectomy	4	1.1

Leiomyomas can be followed up without treatment if they are asymptomatic. When they are symptomatic, the course of treatment will largely depend on the patient's age, reproductivity, desire to preserve the uterus, the size and localization of the myoma, the severity of the symptoms, and whether the patient has been treated before (10). In our clinic, we made the treatment decision based on whether the condition was symptomatic, and the patient's age, fertility, and desire to preserve the uterus. The treatment methods in order of frequency were as follows: myomectomy with laparotomy, 44.7%; total abdominal hysterectomy and/or bilateral salpingo-oophorectomy, 41.3%; laparoscopic myomectomy, 4%; laparoscopic hysterectomy, 3.4%; myomectomy during cesarean delivery, 3.2%; hysteroscopic myomectomy, 2.4%; vaginal hysterectomy, 1.1%.

Myomectomy can be done in four different surgical ways: with laparotomy, with laparoscopy, vaginally or with hysteroscopy. Myomectomy is an option for women with childbearing potential, or those who request the preservation of their uterus. Myomectomy is also an effective treatment for menorrhagia and pelvic pressure; however, it brings along the risk of developing leiomyoma through new clones of abnormal myocytes. Due to the lack of high quality and reliable data, prophylactic myomectomy is not recommended to prevent pregnancy complications (11). Hysteroscopic myomectomy is mostly preferred for submucosal myomas. Hysteroscopic fibroid resection is the preferred method especially in submucous myomas that are smaller than 4-5 cm or protruding more than 50% into the cavity, mainly due to low postoperative bleeding, complications, and postoperative pain, and rapid recovery (12). In our study, 66.7% of 9 hysteroscopic myomectomy patients were aged between 30-39 years, and 33.3% were aged between 40-49 years. Fibroid size was between 0-5 cm in 88.8% and between 6-10 cm in 11.1%. We observed that hysteroscopic

myomectomy patients had comparatively less bleeding, a shorter hospital stay, a smaller myoma size, and were younger. Our findings are consistent with the literature.

Table 3: Distribution of length of hospital stay as per the type of operation

Type of Operation	Length of Hospital Stay		P value
	3 Days and Less	4 Days and More	
Abdominal Hysterectomy	115 (73.7%)	41 (26.3%)	0.428
TLH+L/S Myomectomy	18 (64.3%)	10 (35.7%)	
Myomectomy with Laparotomy	147 (75.8%)	47 (24.2%)	
Total	280 (74.1%)	98 (25.9%)	

TLH: total laparoscopic hysterectomy, L/S: laparoscopy

Abdominal myomectomy should be considered as the primary treatment option for myomas bigger than 5 cm, when there are more than three fibroids, or for a uterine size above an 18-week pregnancy (13). The probability of myomectomy turning into an unplanned hysterectomy is less than 1% when performed by an experienced surgeon. Laparoscopic myomectomy is an option that can be performed in a patient with a uterus smaller than a uterine size below an 18-week pregnancy, when the myoma is 5-cm or smaller, or if there are 3 or fewer intramural or subserous myomas. Studies report a higher risk of conversion from laparoscopic to open surgery in patients with myomas with intramural or anterior localization, myomas larger than five centimeters, and patients that were preoperatively administered GnRH (13-14). Advancements in laparoscopic suture techniques and instruments have made it possible to use laparoscopy for most myomectomies. The outcomes are comparable to laparotomy. As a matter of fact, the laparoscopic approach provides more rapid healing and less adhesion formation. However, failure to repair the defect in the uterus with adequate suturing can cause the risk of uterine rupture during subsequent pregnancies or delivery. This procedure requires multilayer closure and meticulous hemostasis (13). Laparoscopic myomectomy should only be performed by surgeons that are experienced in laparoscopy. One study compared 396 myomectomy patients and found that, while a myomectomy operation took longer than hysterectomy, it resulted in less blood loss and a shorter length of hospital stay (15). Studies indicate that laparoscopic myomectomy is superior to abdominal myomectomy in morbidity, complication rates, and length of hospital stay (16-17). In our study, 44.7% of all patients were treated with abdominal myomectomy, 4% with laparoscopic myomectomy, and 1.1% with vaginal myomectomy. Vaginal and laparoscopic myomectomy outcomes could not be statistically evaluated due to the low number of subjects. Subserosal and intramural fibroids are traditionally removed with laparotomy. However,

researchers suggest that laparoscopic and robot-assisted methods will become increasingly common over time. Guarnaccia et al. reported the risk of blood transfusion requirement to be approximately 15% during or immediately after a myomectomy (7). One of the most significant risks of a myomectomy is bleeding (intra- or postoperative). In our clinic, we apply uterine tourniquet to reduce the risk of bleeding. We evaluated our subjects that had bleeding complications under two groups: laparotomy patients and others. We did not find that the pre- and postoperative hematocrit or hemoglobin values were significantly different. The blood transfusion patients were made up mostly of myomectomy patients (58.8%), followed by hysterectomy patients (26.5%) ($p = 0.045$).

Table 4: Postoperative hemoglobin and hematocrit levels according to the operation type

Type of Operation		n	Mean±std	P value
Preoperative Hb	Laparotomy	337	12.36±1.91	> 0.05
	Other	41	12.74±1.89	
Pre-op Hct	Laparotomy	337	38.74±20.57	
	Other	41	38.14±5.37	
Post-op Hb	Laparotomy	337	11.38±3.76	
	Other	41	11.88±2.42	
Post-op Hct	Laparotomy	337	34.29±5.07	
	Other	41	34.45±6.16	

Even though hysterectomy is a permanent solution to leiomyomas, the risks of this major surgery should be evaluated together with other treatment alternatives. 30-35% of the operations result in minor complications. Hysterectomy can be considered as an option for patients that do not want to have children after all alternatives are reviewed and eliminated (18). Hysterectomy can be performed abdominally, vaginally and laparoscopically (18). The American Gynecologist and Obstetricians Association (ACOG) indicates that a hysterectomy is the correct course of action for the treatment of uterine myomas only for a uterine size of around a 12-week pregnancy (19). One study of 140 cases of myoma-related hysterectomy found that 91 cases (65%) underwent total abdominal hysterectomy and bilateral salpingo-oophorectomy (TAH + BSO), 5 cases (3.5%) underwent vaginal hysterectomy (VH), and 44 cases (31.5%) underwent TAH (20). Johnson, Oscarsson, and Benassi all reported a comparatively short length of hospital stay for vaginal hysterectomy, and that these patients were able to return to their normal lives sooner than patients treated with other methods (21-23). A US study of 1427 cases investigated the average length of hospital stay of vaginal and abdominal uterine interventions. They found that the mean length of stay was 4 days for an abdominal intervention and 2.7 days for a vaginal procedure (24). We did not find a significant difference between the hospitalization durations of hysterectomy and myomectomy cases. The length of hospital stay was 3 days or less in 73.7% of hysterectomy patients, 75.8% of myomectomy patients, and 64.3% of total laparoscopic hysterectomy (TLH) patients ($p = 0.428$).

One study reported a total of 2 cases of bladder injury; one of which underwent a vaginal hysterectomy (0.8%) and the other, abdominal hysterectomy (0.12%). Bowel injury occurred in 0.52% of all cases. 21 (2.21%) patients developed wound dehiscence and were treated with secondary suturing (25). Johns et al. found that laparoscopy-assisted vaginal hysterectomy had the longest operation time, and vaginal hysterectomy had the shortest. Also, abdominal hysterectomy patients were the most likely to develop complications. The average hospital stay was longer for abdominal hysterectomy (26). In a comprehensive review, Harris stated that the complication rate of hysterectomy was approximately 50%, the most common complications being infection, hemorrhage and adjacent organ injuries (27). Lambordine et al. evaluated a series of 1604 hysterectomies and reported that urinary and intestinal system injuries and bleeding were the most common complications (28). In our study, one patient developed ureter dilatation during TAH and BSO operation while under general anesthesia. Consequently, a double-J stent was inserted into the ureter. Their postoperative fluid consumption and excretion were followed up. They were prescribed antibiotherapy for postoperative wound infection. The patient did not develop any further complications during the follow-up and was discharged following secondary wound closure. One other patient developed bladder injury while opening the intraabdominal adhesions. The bladder was primarily repaired. Four patients developed intraoperative bowel injury. While three of these were primarily repaired, the remaining patient required bowel resection and end-to-end anastomosis. In addition, 4 TLH patients required open surgery due to bleeding (n = 2) and adhesions (n = 2).

Uterine leiomyomas are the most common pelvic tumors in women; they present with abnormal uterine bleeding or pain. Many cases of leiomyomas are asymptomatic. The most common symptom is menorrhagia, which occurs in 30% of all cases. Leiomyomas can be followed up without treatment if they are asymptomatic. When they are symptomatic, the course of treatment will largely depend on the patient's age, reproductivity, desire to preserve the uterus, the size and localization of the myoma, the severity of the symptoms, and whether the patient has been treated before. Surgery is the main treatment approach for leiomyomas. Myomectomy is generally preferred for younger patients or those who want to preserve their reproductive functions, and hysterectomy is preferred for older patients that have completed fertility.

Disclosure

Authors have no potential conflicts of interest to disclose.

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