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OUTCOME OF ABDOMINAL MYOMECTOMY FOR UTERINE FIBROID AT SAHIWAL TEACHING HOSPITAL

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ABSTRACT

Background: Abdominal myomectomy is a widely utilized approach for alleviating symptoms associated with uterine fibroids. However, it carries potential risks, including infection, hemorrhage, and the possibility of converting to hysterectomy.

Objectives: This study aimed to evaluate the outcomes of abdominal myomectomy for uterine fibroids at Sahiwal Teaching Hospital, Sahiwal.

Study Design: Prospective cohort study.

Settings: Department of Obstetrics & Gynecology, Sahiwal Teaching Hospital, Sahiwal, Pakistan

Study Duration: 1st April 2023 to 30th September 2023.

Methodology: A total of 163 women, aged 20–40 years, who underwent abdominal myomectomy for symptomatic uterine fibroids, were included. The primary outcome variables—urinary tract infections (UTIs), intra-operative blood loss, wound infections, injury to the urinary bladder or bowel, and post-operative pyrexia—were assessed through clinical diagnosis (e.g., urine cultures for UTIs), intra-operative observations (e.g., blood loss), and daily post-operative monitoring (e.g., temperature checks for pyrexia). Data were analyzed using SPSS version 25.0, with descriptive statistics and stratification by age, BMI, hypertension, and diabetes.

Results: The study participants had a mean age of 29.85 ± 3.35 years. The most common complications observed were UTI (15.34%), intra-operative blood loss (19.02%), wound infections (12.22%), injury to the urinary bladder or bowel (3.68%), and post-operative pyrexia (11.04%). Stratification revealed that diabetes mellitus (DM) was significantly associated with increased rates of UTI ($p = 0.014$), intra-operative blood loss ($p = 0.027$), wound infections ($p = 0.041$), and pyrexia ($p = 0.033$). Additionally, patients with BMI > 25 had a higher incidence of pyrexia ($p = 0.008$).

Conclusion: Abdominal myomectomy carries significant complication risks, particularly for diabetic and obese patients, highlighting the need for preoperative glycemic control and weight management to optimize outcomes.

Keywords: Fibroid; Abdominal Myomectomy; Urinary Tract Infection.

INTRODUCTION

Uterine fibroids (leiomyomas) are benign smooth muscle tumors and the most common type of uterine neoplasm, affecting 30-40% of women over the age of 40. These tumors can cause significant uterine enlargement and complications such as ureteric compression, urinary retention, constipation, and tenesmus. [1] Epidemiological studies often underestimate the prevalence of fibroids by focusing on symptomatic women, leaving asymptomatic or underreported cases unrecognized. Prevalence rates vary widely (4.5%–68.6%) due to differences in diagnostic methods, study populations, and demographic factors like ethnicity. [2, 3]

The pathophysiology of fibroids remains incompletely understood, but recent studies have highlighted the roles of hormonal imbalances, genetic factors, and environmental exposures. Elevated levels of estrogen and progesterone are key drivers of fibroid growth, with genetic predispositions further contributing to their formation [4]. For instance, Munro et al. (2025) demonstrated that genetic variants linked to fibroid growth suggest hereditary factors. [5] A study in India by Narwal et al. (2024) confirmed that both hormonal and genetic factors contribute to fibroid formation in women of reproductive age [6]. Environmental factors, such as diet and stress, are also thought to play a role [7].

Medical management of fibroids typically involves reducing steroid levels, but these treatments only provide temporary relief. Newer therapies targeting estrogen and progesterone receptors have shown promise, though long-term efficacy remains uncertain [8]. A study by Milewska et al. (2024) indicated that selective progesterone receptor modulators (SPRMs) reduced fibroid volume, though further research is needed. [9]

Given the rising number of older women opting for childbirth and the increased use of assisted reproductive technologies, uterus-preserving procedures like myomectomy are critical. Myomectomy, performed via laparotomy, laparoscopy, or hysteroscopy, is commonly used, with laparotomy being the most effective for symptom relief [10]. However, abdominal myomectomy carries significant risks, including hemorrhage, infection, and the potential need for hysterectomy [11]. Complications such as bleeding and infections are commonly reported in the literature, with Yamba (2021) noting an intraoperative bleeding rate of up to 30% [12]. Khan et al. (2024) found a similar complication rate in Pakistan. [13]

This study is crucial because it will provide much-needed data on the local complications associated with abdominal myomectomy in the Sahiwal region. By addressing the existing knowledge gap, the research will enable the identification of region-specific risk factors and inform clinical practices to minimize complications. Understanding these local dynamics will improve patient outcomes, enhance surgical planning, and contribute to evidence-based strategies for managing and preventing myomectomy complications in similar settings.

METHODOLOGY

This was a prospective cohort study conducted at the Department of Obstetrics & Gynecology, Sahiwal Teaching Hospital, Sahiwal, over 6 months from 1st April 2023 to 30th September 2023. A total of 163 women were included, with the sample size calculated using the WHO calculator for a single proportion. The calculation was based on a 95% confidence level, a 4% margin of error, and an expected wound infection rate of 7.3%, which reflects historical infection rates for abdominal myomectomy procedures [14]. Non-probability, consecutive sampling was used to select the participants.

The age 20–40 years who underwent abdominal myomectomy for symptomatic uterine fibroids were included in the study. Exclusion criteria were assessed through a review of the patient's medical history, physical examination, laboratory tests (e.g., clotting profile), and imaging (e.g., ultrasound or MRI) to identify conditions such as restricted uterine mobility, suspected malignancy, complex adnexal masses, bleeding disorders, anticoagulant use, previous fibroid resections, or significant comorbidities like heart disease. After approval from the institutional ethical committee (IRB/SLMC/SWL, Dated: April 2022), informed consent was obtained from each participant, and

demographic data, including age, height, weight, presence of hypertension and diabetes mellitus, and BMI, were recorded.

Each patient underwent abdominal myomectomy performed by a consultant gynecologist with at least 3 years of post-fellowship experience. The procedure involved enucleating all fibroids, clamping and tying large blood vessels, and closing the uterine defect with chromic catgut. Prophylactic antibiotics were administered to all patients. The surgical team measured intra-operative blood loss during the procedure; urinary tract infections (UTIs) were diagnosed based on clinical symptoms and confirmed by urine cultures; wound infections were assessed through visual inspection and clinical signs of infection; injury to the urinary bladder or bowel was identified during the surgery and confirmed with post-operative imaging or clinical symptoms; daily temperature checks monitored post-operative pyrexia, and fever >38°C within 48 hours of surgery was recorded. The data were recorded on a predesigned proforma. Patients experiencing any complications were managed according to standard clinical protocols.

The collected data were analyzed using SPSS version 25.0. Descriptive statistics were used to calculate the mean and standard deviation for continuous variables, including age, duration of leiomyoma, size and number of leiomyomas, and BMI. Frequency and percentage were calculated for categorical variables, including hypertension, diabetes mellitus, and the various outcomes. Stratification was performed based on potential effect modifiers, including age, duration, size, and number of leiomyomas, as well as hypertension, diabetes, and BMI. A post-stratification chi-square test was used to assess the effect of these factors on the outcomes, with p-values ≤0.05 considered statistically significant.

RESULTS

The study participants ranged in age from 20 to 40 years, with a mean age of 29.85 ± 3.35 years (Table 1). The majority of patients, 97 (59.51%), were in the 20 to 30 years age group. The mean duration of fibroids was 5.08 ± 1.93 months, and the mean size of the fibroids was 3.74 ± 1.50 cm. The mean number of fibroids per patient was 2.29 ± 0.94, and the mean BMI was 25.91 ± 3.02 kg/m². The distribution of patients by hypertension (HTN) and diabetes mellitus (DM) is shown in Tables VIII and IX, with 39.88% having HTN and 18.4% having DM.

Table 1: Demographic and clinical characteristics of study patients.

Variable	Category	No. of Patients	Percentage	Mean ± SD
Age (in years)	20-30	97	59.51%	29.85 ± 3.35 years
	31-40	66	40.49%	
Duration of Fibroid (months)	≤6	126	77.30%	5.08 ± 1.93 months
	>6	37	22.70%	
Size of Fibroid (cm)	≤3	80	49.08%	3.74 ± 1.50 cm
	>3	83	50.92%	
Number of Fibroids	1-2	102	62.58%	2.29 ± 0.94
	3-5	61	37.42%	
BMI (kg/m²)	≤25	89	54.60%	25.91 ± 3.02 kg/m²
	>25	74	45.40%	
HTN	Yes	65	39.88%	
	No	98	60.12%	
Diabetes Mellitus (DM)	Yes	30	18.40%	
	No	133	81.60%	

Regarding the outcomes of abdominal myomectomy, UTI occurred in 25 (15.34%) patients, intra-operative blood loss was observed in 31 (19.02%) patients, wound infection occurred in 20 (12.22%)

patients, injury to the urinary bladder or bowel was noted in 6 (3.68%) patients, and post-operative pyrexia occurred in 18 (11.04%) patients. These results are summarized in Table 2.

Table 2: Outcome of abdominal myomectomy for uterine fibroid.

Outcome	Frequency (%)
UTI	25 (15.34%)
Intra-operative blood loss	31 (19.02%)
Wound infection	20 (12.27%)
Injury to the urinary bladder or bowel	6 (3.68%)
Post-operative pyrexia	18 (11.04%)

Stratification of outcomes by various factors, including age, duration of leiomyoma, leiomyoma size, number of leiomyomas, hypertension, diabetes mellitus, and BMI, is presented in Table 3.
The prevalence of UTI was significantly associated with DM. Specifically, 30% of diabetic patients developed a UTI compared to 12.03% of non-diabetic patients ($p = 0.014$). No significant differences were found for age, fibroid size, number of fibroids, BMI, or HTN (all $p > 0.05$).
Intra-operative blood loss was significantly associated with DM, with 33.33% of diabetic patients experiencing blood loss compared to 15.79% of non-diabetic patients ($p = 0.027$). No significant associations were observed with age, fibroid duration, fibroid size, number of fibroids, BMI, or HTN (all $p > 0.05$).
Wound infection was significantly more common in patients with 3-5 fibroids (19.67%) compared to those with 1-2 fibroids (7.84%, $p = 0.026$). Furthermore, DM was significantly associated with wound infection (23.33% vs. 9.77%, $p = 0.041$). No significant associations were found for age, fibroid duration, fibroid size, BMI, or HTN (all $p > 0.05$).
BMI > 25 was significantly associated with a higher incidence of pyrexia (18.92% vs. 4.49%, $p = 0.008$). Additionally, non-diabetic patients experienced a higher incidence of pyrexia (13.53% vs. 0%, $p = 0.033$). No significant association was found for age, duration of fibroids, fibroid size, number of fibroids, or HTN (all $p > 0.05$).

Table 3: Summary of stratification findings.

	UTI (*p-value*)	**Intra-operative Blood Loss (*p-value*)**	**Wound Infection (*p-value*)**	**Injury to Urinary Bladder/Bowel (*p-value*)**	**Post-operative Pyrexia (*p-value*)**
Age (years)	0.957	0.528	0.962	0.629	0.244
Duration (months)	0.084	0.332	0.793	0.526	0.959
Size of fibroid (cm)	0.581	0.131	0.068	0.379	0.055
Number of fibroids	0.235	0.509	0.026	0.054	0.704
BMI (kg/m^2)	0.777	0.406	0.605	0.149	0.008*
HTN	0.667	0.171	0.634	0.606	0.352
DM	0.014*	0.027*	0.041*	0.336	0.033*

DISCUSSION

Abdominal myomectomy is a standard procedure for women with symptomatic uterine fibroids, as more women seek to preserve their fertility [15]. Fibroids, though benign, can cause significant symptoms like heavy menstrual bleeding, pelvic pain, and infertility, particularly as women age. The increasing trend of delayed childbearing has led to a rise in uterus-preserving surgeries like myomectomy [16]. In our study, we found complications including UTI, intra-operative blood loss, wound infections, urinary bladder or bowel injuries, and post-operative pyrexia. These findings are

consistent with previous studies but also highlight essential insights into the risks associated with this procedure.

The UTIs are a well-documented complication following myomectomy, often resulting from factors such as prolonged catheterization, surgical manipulation near the bladder, and the proximity of fibroids to the urinary tract. In our study, 30% of diabetic patients developed UTIs, compared to 12.03% of non-diabetic patients. This is consistent with existing literature, which suggests that diabetes significantly increases the risk of infections. Diabetes impairs immune function, reduces neutrophil activity, and delays wound healing, all of which contribute to a heightened susceptibility to infections like UTIs. A study by Imam [17] found that 12.5% of patients experienced UTIs after abdominal myomectomy, with a higher incidence in diabetic patients (18%), reinforcing the need for glycemic control and prophylactic antibiotics to minimize infection risks in diabetic individuals undergoing surgery. Intraoperative blood loss is a common complication of abdominal myomectomy, observed in 19.02% of patients in our study. This is primarily due to the vascular nature of fibroids, particularly when they are large or numerous. A significant correlation was found between diabetes mellitus and increased blood loss, with 33.33% of diabetic patients experiencing significant bleeding compared to 15.79% of non-diabetic patients. This aligns with the understanding that diabetes induces microvascular changes, impairing clotting and delaying wound healing, thus increasing bleeding risk during surgery. These findings highlight the importance of preoperative glycemic control in reducing intra-operative blood loss and improving surgical outcomes. Additionally, autologous blood transfusion or blood conservation techniques may benefit high-risk patients, such as those with diabetes or other comorbidities. Our results are consistent with Enabor and Bello [18], who found that 32.9% of patients with diabetes experienced significant intraoperative blood loss, emphasising the need for effective glycemic management before myomectomy.

Wound infections occurred in 12.22% of our patients, which is within the range reported in previous studies. The incidence of wound infections was notably higher in patients with more fibroids. Specifically, patients with 3-5 fibroids had a significantly higher infection rate (19.67%) compared to those with 1-2 fibroids (7.84%). This may be attributed to longer surgical procedures in patients with multiple fibroids, increasing the risk of wound contamination and delaying tissue healing. The pathophysiology of wound infection involves factors such as tissue ischemia, inflammatory response, and bacterial colonization at the surgical site. A study by Mu et al. [19] reported wound infections in 15% of patients post-myomectomy, with a higher incidence in those with multiple fibroids. The study also found that diabetic patients were at a significantly higher risk of wound infections due to impaired immune function and delayed wound healing. This aligns with our findings, which showed that diabetic patients had a higher incidence of wound infections (23.33% vs. 9.77% in non-diabetic patients), underscoring the need for preoperative glycemic control and extended antibiotic prophylaxis in diabetic patients undergoing myomectomy.

Post-operative pyrexia was observed in 11.04% of our patients, which is consistent with other studies reporting fever in 6–20% of patients following myomectomy. This phenomenon, often referred to as "myomectomy fever", is believed to result from the inflammatory response triggered by the disruption of fibroid tissue and myometrial trauma during the procedure. A study by Wattanasiri et al. [20] found that 13% of patients experienced post-operative pyrexia, with a higher incidence in those with a BMI > 25. The study suggested that obesity contributes to increased pro-inflammatory cytokine production and an impaired immune response, which raises the likelihood of post-surgical fever. Our findings are consistent, with patients with BMI > 25 showing a significantly higher incidence of pyrexia (18.92%) than those with BMI ≤ 25 (4.49%). These results highlight the importance of weight management and early intervention in managing post-operative fever, especially in overweight and obese patients.

CONCLUSION

Abdominal myomectomy is associated with significant complications, including urinary tract infections, intra-operative blood loss, wound infections, and post-operative pyrexia. Our study highlights the increased risks in diabetic and obese patients, emphasizing the importance of preoperative glycemic control and weight management. These findings underscore the need for

extended antibiotic prophylaxis and careful surgical planning to minimize complications. By understanding the pathophysiology of these risks, we can improve patient outcomes and optimize management strategies for myomectomy. Further research is needed to refine preoperative protocols and enhance recovery.

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