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Maternal Outcomes in Pregnant Women with Uterine Fibroids

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ABSTRACT

Background: Uterine fibroids are described as benign tumors of the uterine commonly arise in reproductive-age women group. During pregnancy due to hormonal and vascular alterations may produce fibroid enlargement and complications that affect the mother's health. They can be excessive postpartum bleeding, premature labor and anemia and affect the mother's comfort and recovery. Understanding these outcomes in local populations is essential for improving obstetric care, particularly in regions with limited resources and delayed antenatal follow-up. **Objective:** To determine the maternal outcome in pregnant women with uterine fibroids. **Study Design:** Cross-sectional study. **Duration and Place of Study:** This study was conducted from March 2024 to August 2024 in the Department of Obstetrics and Gynecology, Lady Reading Hospital Peshawar. **Methodology:** Eighty-one pregnant women aged 18–40 years with confirmed uterine fibroids were included through non-probability consecutive sampling. Data were collected using a structured proforma. Postpartum hemorrhage was defined as blood loss greater than 500 milliliters after delivery, preterm delivery as birth before 37 weeks, and anemia as hemoglobin less than 12 grams per deciliter. **Results:** Postpartum hemorrhage was found in 17.30% of participants, preterm delivery in 9.90%, and anemia in 14.80%. The majority of participants were from middle socioeconomic backgrounds and rural areas. **Conclusion:** Pregnant women with uterine fibroids are at higher risk of postpartum bleeding, early delivery, and anemia.

INTRODUCTION

Uterine fibroids, also called leiomyomas, are benign tumors formed in the muscles of the uterus that are commonly found in women of reproductive age.[1] They are hormone-dependent, especially on estrogen and progesterone, and can differ in size, number, and location.[2] The rate during pregnancy is about 2% to 12%, and they often cause no symptoms.[3] However, due to hormonal changes, increased blood flow, and growth factors during pregnancy, their size can increase, which may cause complications in pregnancy.[4] Their effect mainly depends on the size and position of the fibroid, as large or lower-segment fibroids can affect conception, placental attachment, and uterine contraction ability.[5]

In women with uterine fibroids, maternal outcomes can be affected by the changes in uterine structure and reduced blood flow caused by these tumors. Excessive bleeding after delivery (postpartum hemorrhage) is a common complication in such cases.[6] Fibroids reduce the normal ability of uterine muscles to contract properly, due to which the uterus may not contract well after delivery, increasing the risk of bleeding.[7] If the fibroid is near the placenta, it can cause conditions like placenta previa or placenta abruption, which further increase bleeding.[8] Therefore, during delivery, careful management, active control of the third stage of labor, and readiness for blood transfusion are necessary.[8]

Another important outcome among pregnant females with fibroids is preterm birth and anemia.[9] Large fibroids or those that grow near the middle lining of the uterus may make the uterus irritable and result in early discomfort and labor.[10] In addition, these fibroids have the ability to slow down blood flow between placenta and uterus and this could limit the growth of the fetus and result in early birth.[11] Ongoing heavy menses or repeated bleeding during pregnancy may result in iron deficiency and hence anemia.[9] Anemic mothers possess decreased oxygen-carrying ability and hence end up being tire while experiencing complications during labor and late recovery.[12] Regular follow-up, treatment of anemia, and treatment are hence important in enhancing the health results of both mother and fetus.[12]

A study reported that among pregnant women with uterine fibroids, 10.71% experienced postpartum hemorrhage, and 9.8% had anemia.[13]

This study need to be done in Peshawar because there is very less data about uterine fibroids and their effect on maternal outcomes in this area. Although it is known worldwide that fibroids can cause many problems in pregnancy, but situation here may be different due to local

diet, genetics and health facilities. In Peshawar many women come late for checkup and proper antenatal care is not available everywhere, so it is important to know how fibroids cause problems like postpartum bleeding, early delivery and anemia. This study will help doctors to find and manage such cases early and improve health of mothers in this region.

METHODOLOGY

This cross-sectional study was carried out in the Department of Obstetrics and Gynecology at Lady Reading Hospital Peshawar, from March 2024 till August 2024. Ethical permission for the study was already granted from the hospital ethical review committee and the research evaluation unit of CPSP, Karachi, before the start of patient enrollment. The sample size of 81 patients was calculated by using WHO sample size software with 95% confidence level and absolute precision of 6.5%, keeping in view that around 9.8% women with uterine fibroid developed anemia.[13] Sampling was done through non-probability consecutive method where each eligible patient coming to the department during the study time was included until the required number was achieved. Women between 18 and 40 years of age having pregnancy and confirmed uterine fibroids on ultrasonography were included. Women with heart, liver, or kidney chronic diseases were excluded from the study.

After explaining the whole purpose, benefit, and risk of the study, written consent was taken from every participant before starting any data collection. Physical examination was carried out and ultrasound reports were checked for confirmation of uterine fibroids which appeared as solid, concentric, and hypoechoic growths inside the uterus. Each pregnant woman having fibroids was then evaluated for maternal outcomes. Postpartum hemorrhage was taken when blood loss after delivery exceeded 500 mL, assessed by the difference in weight of sanitary pads before and after soaking, considering 1 gram equal to 1 milliliter. Preterm delivery was marked when the baby was born before completing 37 weeks of gestation. Anemia was noted when hemoglobin level was found less than 12 g/100 mL on complete blood count. All findings and test results were checked and verified under supervision of a senior obstetrician with at least five years of post-fellowship experience, and information was recorded on a fixed proforma for consistency. Data analysis was done through SPSS version 21. For continuous variables such as age, weight, height, and BMI, mean and standard deviation were computed. Categorical factors were shown as frequencies and percentages. Maternal outcomes were compared with these factors by using chi-square test after stratification to see any difference or influence. The significance level was kept at 0.05.

RESULTS

The mean age of participants were 30.40±4.81 years, with mean height of 1.60±0.05 m, mean weight of 64.71±7.22 kg, and mean BMI of 25.30±2.46 kg/m^2. Regarding socioeconomic status, majority of women belongs to middle class 53 (65.4%), while 15 (18.5%) were from poor background and 13 (16.0%) from high socioeconomic status. Educational status showed that 48 (59.3%) women were educated whereas 33 (40.7%) were un-educated. Only 7 (8.6%) participants had diabetes while 74 (91.4%) had no diabetes. Hypertension was present in 5 (6.2%) women and absent in 76 (93.8%). Most of the participants were from rural areas 55 (67.9%) compared to urban areas 26 (32.1%) as shown in Table 1.

Table 1

Patient Demographics

Demographics		Mean ± SD
Age (Years)		30.40±4.81
Height (m)		1.60±0.05
Weight (kg)		64.71±7.22
BMI (kg/m^2)		25.30±2.46
Socioeconomic Status	Poor n (%)	15 (18.5%)
	Middle n (%)	53 (65.4%)
	High n (%)	13 (16.0%)
Education	Educated n (%)	48 (59.3%)
	Un-Educated n (%)	33 (40.7%)
Diabetes	Yes n (%)	7 (8.6%)
	No n (%)	74 (91.4%)
Hypertension	Yes n (%)	5 (6.2%)
	No n (%)	76 (93.8%)
Residence	Rural n (%)	55 (67.9%)
	Urban n (%)	26 (32.1%)

Postpartum hemorrhage was observed in 14 (17.30%) women while 67 (82.70%) did not experience it. Preterm delivery occurred in 8 (9.90%) cases whereas 73 (90.10%) had term deliveries. Anemia was present in 12 (14.80%) participants and absent in 69 (85.20%) as shown in Table 2.

Table 2

Frequency of Maternal Outcomes in Pregnant Women with Uterine Fibroids

Maternal Outcomes		Frequency	% age
Postpartum Hemorrhage	Yes	14	17.30%
	No	67	82.70%
	Total	81	100%
Preterm Delivery	Yes	8	9.90%
	No	73	90.10%
	Total	81	100%
Anemia	Yes	12	14.80%
	No	69	85.20%
	Total	81	100%

For postpartum hemorrhage, women aged ≤30 years showed 5 (11.9%) cases compared to 9 (23.1%) in women >30 years (p=0.184). BMI ≤25 kg/m^2 group had 11 (22.9%) cases while BMI >25 kg/m^2 group had 3 (9.1%) cases (p=0.140). Diabetic women showed 1 (14.3%) case compared to 13 (17.6%) in non-diabetic women (p=1.000). Hypertensive women had 1 (20.0%) case versus 13 (17.1%) in non-hypertensive women (p=1.000). For preterm delivery, women aged ≤30 years had 6 (14.3%) cases compared to 2 (5.1%) in women >30 years (p=0.267). BMI ≤25 kg/m^2 group showed 4 (8.3%) cases while BMI >25 kg/m^2 group had 4 (12.1%) cases (p=0.710). No diabetic women had preterm delivery 0 (0.0%) compared to 8 (10.8%) in non-diabetic women (p=0.608). No hypertensive women experienced preterm delivery 0 (0.0%) versus 8 (10.5%) in non-hypertensive women (p=1.000). Regarding anemia, women aged ≤30 years showed 3 (7.1%) cases compared to 9 (23.1%) in women >30 years (p=0.061). BMI ≤25 kg/m^2 group had 9 (18.8%) cases while BMI >25 kg/m^2 group had 3 (9.1%) cases (p=0.342). Diabetic women showed 1 (14.3%) case

compared to 11 (14.9%) in non-diabetic women (p=1.000). Hypertensive women had 2 (40.0%) cases versus 10 (13.2%) in non-hypertensive women (p=0.156) as shown in Table 3.

Table 3

Association of Maternal Outcomes with Demographic and Clinical Factors

Demographic and Clinical Factors		Postpartum Hemorrhage		p-value	Preterm Delivery		p-value	Anemia		p-value
		Yes n(%)	No n(%)		Yes n(%)	No n(%)		Yes n(%)	No n(%)	
Age Group	≤30	5 (11.9%)	37 (88.1%)	0.184*	6 (14.3%)	36 (85.7%)	0.267*	3 (7.1%)	39 (92.9%)	0.061*
	>30	9 (23.1%)	30 (76.9%)		2 (5.1%)	37 (94.9%)		9 (23.1%)	30 (76.9%)	
BMI (kg/m^2)	≤25	11 (22.9%)	37 (77.1%)	0.140*	4 (8.3%)	44 (91.7%)	0.710*	9 (18.8%)	39 (81.3%)	0.342*
	>25	3 (9.1%)	30 (90.9%)		4 (12.1%)	29 (87.9%)		3 (9.1%)	30 (90.9%)	
Diabetes	Yes	1 (14.3%)	6 (85.7%)	1.000*	0 (0.0%)	7 (100.0%)	0.608*	1 (14.3%)	6 (85.7%)	1.000*
	No	13 (17.6%)	61 (82.4%)		8 (10.8%)	66 (89.2%)		11 (14.9%)	63 (85.1%)	
Hypertension	Yes	1 (20.0%)	4 (80.0%)	1.000*	0 (0.0%)	5 (100.0%)	1.000*	2 (40.0%)	3 (60.0%)	0.156*
	No	13 (17.1%)	63 (82.9%)		8 (10.5%)	68 (89.5%)		10 (13.2%)	66 (86.8%)	

*Fischer Exact Test

DISCUSSION

The present study was conducted to evaluate the maternal outcomes in pregnant women with uterine fibroids and the findings revealed that postpartum hemorrhage, preterm delivery and anemia were the most common complications observed in this population. The mean age of participants were 30.40±4.81 years which indicates that uterine fibroids commonly affects women in their reproductive age when hormonal influences particularly estrogen and progesterone are at peak levels that promotes fibroid growth. The mean BMI of 25.30±2.46 kg/m^2 suggests that majority of women were in overweight category which may contributes to hormonal imbalances and increased risk of complications. The predominance of middle socioeconomic status 65.4% and rural residence 67.9% reflects the demographic pattern where access to early detection and management facilities may be limited leading to delayed diagnosis of fibroids. The occurrence of postpartum hemorrhage in 17.30% of women can be explained by the fact that fibroids distorts uterine architecture and interferes with normal myometrial contractility after delivery which is essential for hemostasis. The presence of fibroid masses also prevents proper compression of blood vessels in postpartum period resulting in excessive bleeding. Preterm delivery was observed in 9.90% cases which occurs because fibroids occupies intrauterine space causing mechanical irritation of myometrium and triggering premature contractions. Additionally, fibroids may compromise placental perfusion and leads to early labor initiation as protective mechanism. Anemia affected 14.80% of participants and this can be attributed to chronic blood loss from fibroid-related menorrhagia before pregnancy and increased demand of iron during pregnancy which depletes maternal reserves. The enlarged uterus with fibroids also requires more blood supply creating relative anemia in pregnant state.

The findings of present study showed that postpartum hemorrhage occurred in 17.30% of cases which is comparable to the rate reported by Kumari et al. [14] who found 15% PPH in their cohort and Al Sulaimani et al. [15] who documented 19.5% PPH in women with fibroids. However, our result is considerably lower than several other studies including Sarwat et al. [16] who reported 38.75% PPH, Chohan et al. [17] who found 28.49%, Shafique et al. [18] who observed 29.6%, and Zafar et al. [19] who documented 26% PPH rates. This variation can be explained by differences in fibroid size and number as Sridevi et al. [20] demonstrated that multiple fibroids significantly increases PPH risk (28.57% vs 8.70%, p=0.044) and Zafar et al. [19] found that multiple and large fibroids were associated with 88% of hemorrhage cases. Our lower PPH rate may reflects smaller fibroid sizes or predominantly single fibroids in our population though fibroid characteristics was not stratified in present analysis. Additionally, the availability of blood transfusion facilities and surgical expertise in tertiary care settings may have contributed to better hemorrhage management in our study. The mechanism of PPH in fibroid pregnancies involves distortion of uterine architecture which prevents proper myometrial contraction and vascular compression after placental separation leading to excessive bleeding. The preterm delivery rate in our study was 9.90% which is notably lower than most comparative studies. Kumari et al. [14] reported 28% preterm labor, Singh et al. [21] found 26.3%, Shafique et al. [18] documented 31.6%, and Usmani et al. [22] observed 32.5% preterm deliveries in fibroid pregnancies. Only Poovathi & Ramalingam [23] reported a lower rate of 13.3% threatened preterm labor. The substantial difference between our findings and these studies can be attributed to variations in fibroid size as Tabassum et al. [24] showed that preterm labor rates increased significantly with larger fibroids and Shafique et al. [18] found that fibroids >8 cm doubled the preterm risk (p=0.038). Our lower preterm rate suggests that majority of our patients may have had smaller fibroids or favorable locations such as subserosal rather than submucous positions which causes less mechanical irritation to myometrium. Geographic and demographic factors also plays role as our population was predominantly from middle socioeconomic status with 59.3% being educated which may have ensured better antenatal care compliance and early detection of complications. The pathophysiology of preterm delivery in fibroid cases involves mechanical stretching of uterine wall by fibroid mass causing premature contractions and local inflammatory mediators released by degenerating fibroids triggers early labor onset. Anemia was present in 14.80% of our participants which is consistent with Poovathi & Ramalingam [23] who reported 10% anemia. However, direct comparison is difficult as many studies did not specifically report anemia as separate outcome measure focusing instead on blood

transfusion requirements. Chohan et al.[17] documented that 39.25% of patients required blood transfusion suggesting significant anemia burden and Amber et al. [25] reported transfusion of 7 units in one severe case. The development of anemia in fibroid pregnancies results from chronic menorrhagia before conception depleting iron stores and increased blood volume requirements during pregnancy without adequate compensation. Large fibroids also create hypervascularity in uterus leading to chronic blood loss and relative hemodilution. Our moderate anemia rate might reflect adequate iron supplementation during antenatal period in our tertiary care facility though pre-pregnancy hemoglobin levels was not documented.

The present study has several limitations that should be acknowledged. Firstly, this was a single center study conducted at one tertiary care hospital which limits the generalizability of findings to broader population as patient characteristics and management protocols may differs across different healthcare settings. Relatively small sample size consisting of 81 patients decreased the statistical power to identify significant correlations between demographic variables and maternal outcomes evidenced by lack of significant p-values but apparent trends. Furthermore, we did not stratify the maternal outcomes by significant fibroid characteristics including size, number, location, and type since these are significant determinants of complications as shown by different studies in the literature.

CONCLUSION

Our study has concluded that pregnant women with uterine fibroids are at increased risk of maternal complications particularly postpartum hemorrhage, preterm delivery and anemia which represents significant obstetric challenges. The findings demonstrate that fibroids complicating pregnancy requires careful monitoring and management in tertiary care settings to prevent adverse outcomes.

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