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Feto-Maternal Outcomes in Pregnancy with Fibroids

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ABSTRACT

OBJECTIVE: To determine the fetal and maternal outcomes of pregnancy with fibroids.

METHODOLOGY: This prospective, case-series study was conducted at the Department of Obstetrics and Gynaecology, CMH Gujranwala, Pakistan, from July 2023 to June 2024. Females aged between 20-35 years, with singleton pregnancy, planned to undergo delivery with a diagnosis of single or multiple fibroids were analyzed. Maternal effects like pressure symptoms, urinary retention, abdominal pain, preterm delivery, and postpartum hemorrhage were noted. Fetal outcomes included miscarriage, oligohydramnios, intrauterine growth retardation, and abnormal presentation.

RESULTS: In a total of 81 women, the mean age was 26.22±3.56 years. The number of fibroids was 1, 2, 3, and more than 3 in 24(29.6%), 23 (28.4%), 19(23.5%), and 15(18.5%) women, respectively. Fibroids size ranged from 3 to 5 cm in 45(55.6%) women, while intramural fibroids were the most common type, noted in 51(63.0%) women. The location of fibroids was the anterior wall in 38(46.9%) women. Pressure-related symptoms were the most frequent types of complaints reported by 67(82.7%) women in pregnancy with fibroids. Oligohydramnios was found in 18(22.2%) babies, whereas intrauterine growth retardation was observed in 17(21.0%). There were 25 (31.6%) babies who were born preterm. Malpresentation was observed in 29(35.8%) cases.

CONCLUSION: Intramural fibroids were the most common type of fibroids in pregnancy, while the anterior wall was the most common location. Pressure-related symptoms were the most frequent complaints in pregnancy with fibroids. Nearly one-third of the newborns are at risk of preterm birth or malpresentation.

KEYWORDS: Intramural, fibroid, malpresentation, oligohydramnios, ultrasonography.

INTRODUCTION

Fibroids, also referred to as leiomyomas, are prevalent benign tumours that originate from the myometrium. Fibroids are estrogen-dependent and commonly affect 30-55% of women of reproductive age, while in around 25% females, these are clinically apparent.[1,2] Notably, only 50% of fibroids are symptomatic, suggesting that the actual prevalence may be higher.[2] The incidence of fibroids during pregnancy ranges from 0.1% to 10.7%.[3] The occurrence of fibroids increases with maternal age, particularly in women over 35 years old and those who have not given birth.[4]

Symptoms of fibroids vary based on their location and size, and they can cause menstrual irregularities, pelvic pain, pressure symptoms, and reproductive issues.[5] Pressure symptoms, primarily due to cervical or anterior wall fibroids, can lead to urinary issues such as acute retention. Fibroids located in the pouch of Douglas may cause constipation.[6] Diagnosing fibroids during pregnancy is challenging, as they can be mistaken for myometrial thickening, leading to an underestimation of their actual incidence.[7]

Approximately 10-30% of fibroids develop complications during pregnancy.[8] Common pregnancy complications associated with fibroids include abortion, antepartum hemorrhage, urinary retention, placental abruption, malpresentations, fetopelvic disproportion, premature rupture of membranes, retained placenta, postpartum hemorrhage, preterm delivery, low birth weight, dysfunctional labor, and increased operative delivery rates. Uterine fibroids can also lead to infertility, puerperal sepsis, and uterine inversion.[9]

Despite their common occurrence in women of reproductive age, the impact of fibroids on pregnancy and related outcomes remains not fully understood due to the complex interplay between fibroid characteristics and pregnancy physiology. By investigating both fetal and maternal outcomes, this study aimed to elucidate the risks and complications associated with the condition. Understanding these outcomes can contribute to better prenatal care, risk assessment, and treatment strategies, ultimately improving health outcomes for both mothers and their infants. The objective of this study was to determine the fetal and maternal outcomes of pregnancy with fibroids.

METHODOLOGY

This prospective, case-series study was conducted at the Department of Obstetrics and Gynaecology, CMH Gujranwala, Pakistan, from July 2023 to June 2024. Taking the proportion of fibroids in pregnancy as 12.3%,[10] with a 95% confidence level and 8% margin of error, the minimum sample size was calculated to be 65. Non-probability, consecutive sampling technique was adopted. Inclusion criteria were females aged between 20-35 years, with singleton pregnancy, planned to undergo delivery (either vaginal delivery or cesarean section), and a diagnosis of single or multiple fibroids with size > 2 cm as per ultrasonography (USG) were analyzed. Females with gestational hypertension, gestational diabetes, or those with obstetrical cholestasis (as per medical record) were excluded. Females with a history of any surgical procedures related to the uterus or those with uterine malformations were also not included. Approval from the Institutional Ethical Committee was taken for this study (ERB No. 22-2023). Informed as well as written consents were obtained from all women participating in this research.

At the time of enrollment, age, parity, body mass index (BMI), gestational age, number, size, type and location of fibroids were noted. Maternal outcomes like pressure symptoms, urinary retention, abdominal pain, preterm delivery, and postpartum hemorrhage were noted. Fetal outcomes included miscarriage, oligohydramnios, intrauterine growth retardation, and abnormal presentation. Gestational age below 37 weeks was termed as preterm. All deliveries were performed as per standard institutional protocols. A special proforma was designed to record all study data.

Data analysis was performed using IBM SPSS Statistics, version 26.0. Qualitative data were shown as frequencies and percentages. Quantitative variables were represented as mean and standard deviation (SD). The chi-square test was used to compare categorical data, with p-values of less than 0.05 considered statistically significant.

RESULTS

In a total of 81 women in pregnancy with fibroids, the mean age was 26.22±3.56 years (ranging from 20 to 35 years). Specifically, 66 (81.5%) of the women were aged between 20 and 29 years. Forty-five (56.8%) women were primiparous, whereas the BMI of 48 (59.3%) women was overweight. The residential status of 53 (65.4%) women was rural. **Table I** shows baseline characteristics of women in pregnancy with fibroids.

Table I: Characteristics of women with pregnancy fibroids (n=81)

Characteristics		Number (%)
Age (years)	20-29	66 (81.5%)
	30-35	15 (18.5%)
Parity	Primiparous	46 (56.8%)
	Multiparous	35 (43.2%)
Body mass index	Underweight	1 (1.2%)
	Normal	25 (30.9%)
	Overweight	48 (59.3%)
	Obese	7 (8.6%)
Residence	Urban	28 (34.6%)
	Rural	53 (65.4%)

The number of fibroids was 1, 2, 3, and more than 3 in 24 (29.6%), 23 (28.4%), 19 (23.5%), and 15 (18.5%) women, respectively. The sizes of the fibroids were 3-5 cm, 6-8 cm, and more than 8 cm in 45 (55.6%), 28 (34.6%), and 8 (9.9%) women, respectively. Intramural fibroids were the most common type of fibroids, noted in 51 (63.0%) women, while subserosal fibroids and submucosal fibroids were found in 23 (28.4%) and 7 (8.6%) women, respectively. The locations of fibroids were the anterior wall, posterior wall, fundus, broad ligament, and cervix in 38 (46.9%), 24 (29.6%), 14 (17.3%), 3 (2.7%), and 2 (2.5%) women, respectively. **Table II** presents details of the comparisons between age and delivery and the characteristics of fibroids, with no statistically significant associations found ($p > 0.05$).

Table II: Characteristics of women with pregnancy fibroids

Fibroids-related characteristics		Age (years)		P-value	Delivery*		P-value
		21-29 (n=66)	30-35 (n=15)		Vaginal delivery (n=7)	Cesarean section (n=72)	
Number of fibroids	1	21 (31.8%)	3 (20.0%)	0.616	4 (57.1%)	20 (27.8%)	0.310
	2	17 (25.8%)	6 (40.0%)		2 (28.6%)	19 (26.4%)	
	3	15 (22.7%)	4 (26.7%)		1 (14.3%)	18 (25.0%)	
	>3	13 (19.7%)	2 (13.3%)		-	15 (20.8%)	
Size of fibroids (cm)	3-5	35 (53.0%)	10 (66.7%)	0.327	5 (71.4%)	38 (52.8%)	0.525
	6-8	23 (34.8%)	5 (33.3%)		2 (28.6%)	26 (36.1%)	
	>8	8 (12.1%)	-		-	8 (11.1%)	
Type of fibroids	Subserosal	18 (27.3%)	5 (33.3%)	0.638	1 (14.3%)	22 (30.6%)	0.079
	Intramural	43 (65.2%)	8 (53.3%)		4 (57.1%)	46 (63.9%)	
	Submucosal	5 (7.6%)	2 (13.3%)		2 (28.6%)	4 (5.6%)	
Location of fibroids	Fundal	11 (16.7%)	3 (20.0%)	0.442	1 (14.3%)	13 (18.1%)	0.942
	Anterior wall	33 (50.0%)	5 (33.3%)		4 (57.1%)	33 (45.8%)	
	Posterior wall	17 (25.8%)	7 (46.7%)		2 (28.6%)	21 (29.2%)	
	Broad ligament	3 (4.5%)	-		-	3 (4.2%)	
	Cervical	2 (3.0%)	-		-	2 (2.8%)	

***2 cases were excluded from the mode of delivery analysis as these cases had miscarriage, so they did not undergo delivery.**

Pressure-related symptoms were the most frequent types of complaints reported by 67 (82.7%) women in pregnancy with fibroids, whereas abdominal pain and urinary retention were documented in 42 (51.9%) and 11 (13.6%) women, respectively. Abdominal pain was significantly more common among women with fibroids in the broad ligament and cervical region (p = 0.019). A relatively higher number of fibroids were associated with abdominal pain (p=0.039). Pressure symptoms were found to have a significant association with fibroid size above 8 cm (p=0.040), and subserosal fibroid type (p=0.048). Details about the comparison of maternal outcomes related to fibroids' characteristics are shown in **Table III**.

Table III: Comparison of maternal outcomes concerning fibroids-related characteristics (N=81)

Maternal effects	Fibroid location					P-value
	Fundal (n=14)	Anterior wall (n=38)	Posterior wall (n=24)	Broad ligament (n=3)	Cervical (n=2)	
Pressure symptoms	12 (85.7%)	31 (81.6%)	19 (89.2%)	3 (100%)	2 (100%)	0.848
Urinary retention	4 (28.6%)	2 (5.3%)	4 (16.7%)	-	1 (50.0%)	0.097
Abdominal pain	10 (71.4%)	20 (52.6%)	7 (29.2%)	3 (100%)	2 (100%)	0.019
Maternal effects		Number of fibroids				P-value
		1 (n=24)	2 (n=23)	3 (n-19)	>3 (n=15)	
Pressure symptoms		18 (75.0%)	17 (73.9%)	17 (89.5%)	15 (100%)	0.112
Urinary retention		5 (20.8%)	2 (8.7%)	-	4 (26.7%)	0.081
Abdominal pain		14 (58.3%)	9 (39.1%)	7 (36.8%)	12 (80.0%)	0.039
Maternal effect			Fibroid size (cm)			P-value
			3-5 (n=45)	6-8 (n=28)	>8 (n=8)	
Pressure symptoms			33 (73.3%)	26 (92.9%)	8 (100%)	0.040
Urinary retention			2 (4.4%)	6 (21.4%)	3 (37.5%)	0.014
Abdominal pain			19 (42.2%)	16 (57.1%)	7 (87.5%)	0.048
Maternal effects			Fibroid type			P-value
			Subserosal (n=23)	Intramural (n=51)	Submucosal (n=7)	
Pressure symptoms			22 (95.7%)	41 (80.4%)	4 (57.1%)	0.048
Urinary retention			2 (8.7%)	9 (17.6%)	-	0.319
Abdominal pain`			14 (60.9%)	27 (52.9%)	1 (14.3%)	0.094

Miscarriage was reported in 2 (2.5%) cases, so these women did not undergo delivery and their data were excluded from the fetal and post-delivery outcomes (**Table IV**).

Table IV: Comparison of fetal and post-delivery outcomes with fibroid-related characteristics (n=79)

Fetal and post-delivery outcomes	Fibroid location					P-value
	Fundal (n=14)	Anterior wall (n=38)	Posterior wall (n=24)	Broad ligament (n=3)	Cervical (n=2)	
Oligohydramnios	3 (21.4%)	8 (21.6%)	5 (21.7%)	2 (66.7%)	-	0.415
Preterm	7 (50.0%)	9 (24.3%)	5 (21.7%)	2 (66.7%)	2 (100%)	0.038
IUGR	4 (28.6%)	6 (16.2%)	5 (21.7%)	2 (66.7%)	-	0.268
Mal-presentation	5 (35.7%)	12 (32.4%)	9 (39.1%)	1 (33.3%)	2 (100%)	0.431
Post-delivery maternal infection	4 (28.6%)	4 (10.8%)	2 (8.7%)	1 (33.3%)	-	0.331
Postpatrum hemorrhage	4 (28.6%)	11 (29.7%)	7 (30.4%)	1 (33.3%)	1 (50.0%)	0.982
ICU admissions	6 (42.9%)	17 (45/9%)	11 (47.8%)	2 (66.7%)	2 (100%)	0.593
Fetal and post-delivery outcomes	Number of fibroids					P-value
	1	2	3	>3		
Oligohydramnios	4 (16.7%)	2 (9.5%)	4 (21.1%)	8 (53.3%)		0.014
Preterm	9 (37.5%)	6 (28.6%)	3 (15.8%)	7 (46.7%)		0.236
IUGR	4 (16.7%)	3 (14.3%)	3 (15.8%)	7 (46.7%)		0.073
Mal-presentation	9 (37.5%)	5 (23.8%)	7 (36.8%)	8 (53.3%)		0.348
Post-delivery maternal infection	2 (8.3%)	2 (9.5%)	2 (10.5%)	5 (33.3%)		0.118
Postpatrum hemorrhage	5 (20.8%)	5 (23.8%)	3 (15.8%)	11(73.3%)		0.001
ICU admissions	8 (33.3%)	9 (42.9%)	9 (47.4%)	12(80.0%)		0.038
Fetal and post-delivery outcomes	Fibroid size (cm)					P-value
	3-5	6-8	>8			
Oligohydramnios	8 (18.6%)	7 (25.0%)	3 (37.5%)			0.475
Preterm	9 (20.9%)	11 (39.3%)	5 (62.5%)			0.038
IUGR	6 (14.0%)	8 (28.6%)	3 (37.5%)			0.174
Malpresentation	12 (27.9%)	13 (46.4%)	4 (50.0%)			0.204
Post-delivery maternal infection	3 (7.0%)	5 (17.9%)	3 (37.5%)			0.055
Postpatrum hemorrhage	9 (20.9%)	12 (42.9%)	3 (37.5%)			0.131
ICU admissions	19 (44.2%)	15 (53.6%)	4 (50.0%)			0.737
Fetal and post-delivery outcomes	Fibroid type					P-value
	Subserosal (n=23)	Intramural (n=51)	Submucosal (n=7)			
Oligohydramnios	5 (21.7%)	11 (22.0%)	2 (33.3%)			0.814
Preterm	8 (34.8%)	15 (30.0%)	2 (33.3%)			0.916
IUGR	7 (30.4%)	8 (16.0%)	2 (33.3%)			0.289
Malpresentation	6 (26.1%)	20 (40.0%)	3 (50.0%)			0.405
Post-delivery maternal infection	5 (21.7%)	6 (12.0%)	-			0.317
Postpatrum hemorrhage	5 (21.7%)	19 (38.0%)	-			0.091
ICU admissions	9 (39.1%)	29 (58.0%)	-			0.016

Oligohydramnios was found in 18 (22.2%) babies, whereas intrauterine growth retardation was observed in 17 (21.0%). There were 25 (31.6%) babies who were born preterm. Malpresentation was observed in 29 (35.8%) cases. Oligohydramnios was associated with a significant number of fibroids (> 3) (p=0.014). Preterm birth was significantly associated with fibroid size greater than 8 cm (p = 0.038). Postpartum hemorrhage was found in 24 (29.6%) women. Post-delivery infections were documented in 11 (13.6%) women. Postpartum haemorrhage was significantly related to the number of fibroids greater than 3 (p = 0.001). ICU admissions were substantially more common in women with fibroids count above 3 (p=0.038). ICU admissions were significantly more prevalent in women with intramural fibroid types (p=0.016).

DISCUSSION

This study showed that the size of fibroids was 3-5 cm in 55.6% pregnant women. A study by Sankaran and Pillai showed that most of the pregnant women with uterine fibroids (44.6%) had fibroid sizes below 5 cm.[11] **Handa and Anjali,** [12] analyzing women with fibroids in pregnancy, reported that 60% of women had fibroid sizes between 4 and 7 cm. Intramural fibroids were the most common type of fibroids, noted in 63.0% of the women. This finding is consistent with regional data, which report intramural fibroids as the most common finding among pregnant females.[13] Our findings are different to what was reported by another local study, where the authors reported subserous fibroids to be the most standard (65.6%).[14] This study also found that the most common location of fibroids in pregnancy was anteroir wall (46.9%), and these findings aligned with the regional data, where it was found that 50% pregnant women had anterior wall fibroids.[15] Size, number, location, and types of fibroids can vary across different populations. Fibroid characteristics may also vary depending on the specific time of fibroid screening during pregnancy. The present study provides valuable insights into various aspects of fibroids in pregnancy among the local population.

The present study reported pressure-related symptoms as the most frequent types of complaints reported by 82.7% women in pregnancy with fibroids. In contrast, abdominal pain and urinary retention were documented in 51.9% and 13.6% women, respectively. Pain is generally the most commonly associated symptom of fibroids in pregnancy.[15] Abdominal pain in as many as 66% pregnant women with fibroids has been reported recently in another study by Bhat et al.[16] High prevalence of symptoms in this study is consistent with the literature. Still, it is associated primarily with larger or multiple fibroids.[15,16]

Uterine fibroids are also thought to distort the shape of the uterine cavity, which in turn may contribute to relatively higher preterm deliveries and malpresentation. In this study, 31.6% babies were born preterm, whereas malpresentation was observed in 35.8% cases. These findings exhibit that nearly one-third of the newborns are at risk of preterm birth and/or malpresentation. An increased risk of intrauterine growth restriction has been associated with fibroids, particularly those that are large or multiple, which can distort the uterine cavity, thereby affecting fetal development.[17,18]

This study further reported that preterm birth had a significant association with relatively large-sized fibroids, findings consistent with those of others.[19] A systematic review and meta-analysis performed by Landman et al concluded that the presence of fibroids in pregnancy exposes females to enhanced risk of preterm birth.[20] This study also showed that postpartum hemorrhage was significantly related to multiple fibroids ($p=0.001$), and need for ICU admissions ($p=0.038$). Multiple and large-sized fibroids are known to be associated with obstetrical complications.[21]

The present study provides valuable insights into various aspects of fibroids in pregnancy among the local population. This study reinforces that intramural fibroids, particularly those located on the anterior wall of the uterus, are the most common type encountered during pregnancy. This study consisted of relatively younger women compared to many previously published studies, highlighting that fibroid-related complications are not confined to older reproductive age groups. The predominance of small to medium-sized fibroids, along with a high frequency of pressure-related symptoms, underscores the impact that even modest fibroids can have on maternal well-being. Of particular concern, nearly one-third of newborns were at risk of preterm birth or malpresentation, reaffirming the substantial fetal risk associated with

fibroids in pregnancy. These findings underscore the need for early identification and vigilant antenatal monitoring of pregnant women with fibroids, especially in younger populations. By recognizing the unique patterns observed in our local cohort, including the high frequency of anterior wall intramural fibroids, clinicians can better anticipate and manage both maternal and fetal complications, ultimately improving pregnancy outcomes in this setting.

This study had some inherent limitations. The relatively modest sample size and single-centre study design limit the generalizability of this research and warrant further investigation. Non-probability, consecutive sampling technique might have introduced some selection bias. Absence of a control group may weaken the attribution of the observed outcomes solely to fibroids. Potential confounding factors such as maternal comorbidities, fibroid vascularity, and treatment interventions were not accounted for, which could have influenced the outcomes.

CONCLUSION

The present study concludes that most pregnant women with fibroids have relatively small fibroids, with intramural types being the most common and the anterior wall serving as the predominant site. Pressure-related symptoms were the most frequently reported complaints among these women. Notably, the findings indicate that nearly one-third of newborns born to mothers with fibroids are at risk of preterm birth or malpresentation. These results highlight the need for heightened clinical vigilance and careful antenatal monitoring of pregnant women with fibroids. Early identification and close follow-up can enable timely interventions to mitigate maternal discomfort and anticipate potential complications, ultimately improving both maternal and fetal outcomes. By integrating these findings into routine obstetric practice, healthcare providers can better support women with fibroids throughout pregnancy and reduce the risk of adverse outcomes.

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AUTHOR CONTRIBUTION

Shafique S: Data Collection, drafting, responsible for data, proofreading.
Ibrahim N: Data Collection, drafting, responsible for data, proofreading.
Akram U: Data Collection, drafting, responsible for data, proofreading.
Pervaiz E: Data Collection, drafting, responsible for data, proofreading.
Riaz T: Literature Review, Critical Revisions, responsible for data.
Waseem Z: Literature Review, Critical Revisions, accountable for data.

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