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IMPACT OF UTERINE FIBROIDS ON PREGNANCY OUTCOMES: ANALYSIS FROM A TERTIARY CARE HOSPITAL

Shaima[1], Hina Tariq Jan[2*], Lubna Aslam[3], Faiza Ali[4], Muniba Gul[5], Muhammad Haider Ali[6]

[1]Consultant Gynecologist at AIMS Sugar and General Hospital, Hayatabad, Pakistan
[2*]Senior Registrar, Department of Psychiatry, Frontier Corps Teaching Hospital, Peshawar, Pakistan
[3]Associate Professor, Obstetrics and Gynecology, PGMI/AMC/LGH, Lahore, Pakistan
[4]House Officer, DHQ Teaching Hospital, Dera Ismail Khan, Pakistan
[5]House Officer, Hayatabad Medical Complex, Peshawar, Pakistan
[6]MBBS, MD, Resident Surgeon, Hayatabad Medical Complex, Peshawar, Pakistan

***Corresponding Author:** Hina Tariq Jan
*Email: hinatariq898@gmail.com

ABSTRACT

Objective: To assess the prevalence and types of adverse pregnancy outcomes in patients with uterine fibroids at a tertiary care hospital.

Methods: This observational cohort study, conducted at the Department of Obstetrics and Gynecology, Hayatabad Medical Complex Peshawar, Pakistan over a six-month period from November 2023 to April, 2024, aimed to investigate pregnancy outcomes in women with ultrasonography (USG)-documented uterine fibroids. Eligible participants, aged 18 to 40 years, were pregnant women visiting the hospital, excluding those with adnexal pathologies, previous uterine surgery, or obstetrical comorbidities. Retrospective data collection from patient case files ensured confidentiality, covering demographic details, antenatal/intrapartum/postpartum history, clinical examinations, laboratory investigations, USG findings, and obstetric and neonatal outcomes. Statistical analysis utilized descriptive statistics and multiple logistic regression. Ethical considerations included obtaining informed consent, and approval from the Institutional Ethics Committee, ensuring data confidentiality and research integrity.

Results: In this study of 90 pregnant women with uterine fibroids, most were aged 25-32 years, with a significant proportion being primigravida and having a BMI >30. Sub-serous fibroids predominated, mainly located in the fundus. Cesarean section was common, primarily due to PROM and malpresentation. Complications included threatened preterm labor, blood transfusion, and threatened miscarriage. Fetal outcomes showed a high incidence of low birth weight, NICU admission, neonatal resuscitation, and low APGAR scores. Miscarriage, antepartum bleeding, and neonatal mortality were also observed.

Conclusion: Our study highlights the challenges posed by uterine fibroids during pregnancy, leading to increased risks of complications such as abortion, premature rupture of membranes, and postpartum hemorrhage. While cesarean sections are frequently required, our findings suggest that fibroid characteristics may not consistently predict maternal outcomes. This stresses the need for vigilant monitoring and tailored management strategies to optimize outcomes for both mothers and babies in this high-risk population.

Keywords: Fibroids, pregnancy, fetal outcomes, maternal outcomes, abortions

INTRODUCTION

The most common benign tumors concerning the female reproductive system are uterine leiomyomas, or fibroids, which arise from the smooth muscle cells of the uterus.[1] Affecting 20-60% of reproductive age women, fibroids have significant implications for fertility, pregnancy, and overall women's health.[2] The incidence of fibroids during pregnancy is estimated to be between 0.1-3.9%, much lower than in the general reproductive-age population, likely due to their association with infertility and reduced rates of implantation following in vitro fertilization (IVF).[3]

Fibroids are categorized based on their location within the uterus: sub-mucosal, sub-serosal, intra-mural, and pedunculated. Each type can influence reproductive outcomes differently, with submucosal fibroids particularly linked to poor pregnancy outcomes due to their impact on endometrial integrity and vascularization, leading to poor implantation and placentation.[4-5]

Diagnosing fibroids during pregnancy poses challenges. Physical examinations can identify only a fraction of fibroids, especially larger ones (>5 cm), and ultrasounds, although valuable, have limited sensitivity due to the difficulty in distinction of fibroids from normal myometrial thickening. Consequently, many cases of fibroids remain undiagnosed during pregnancy.[6]

Numerous unfavorable outcomes, including as spontaneous miscarriage, premature labor, placental abruption, malpresentation, labor dystocia, caesarean birth, and postpartum hemorrhage, are linked to pregnancy complicated by fibroids.[7] Furthermore, fibroids may result in acute abdomen, red degeneration, antepartum hemorrhage (APH), and other consequences that call for conservative care or, in extreme situations like pedunculated fibroid torsion, immediate surgical intervention.[8]

The etiology of fibroids remains unclear, but they are known to be highly prevalent among women aged 25-55 years, with varying incidence rates across different ethnic groups.[9] For example, compared to women of Caucasian descent, African American women are more likely to experience fibroids. While roughly one-third of fibroids may develop in the first trimester of pregnancy, potentially aggravating pregnancy difficulties, most types of fibroids do not alter in size during pregnancy.[10-11]

Understanding the impact of fibroids on pregnancy outcomes is crucial for obstetric management, especially in resource-constrained settings like Pakistan. This comprehensive study will provide valuable insights into the management of pregnancies complicated by fibroids, aiming to enhance maternal and fetal outcomes through better diagnostic and therapeutic strategies tailored to the local population.

Objective

To assess the prevalence and types of adverse pregnancy outcomes in patients with uterine fibroids at a tertiary care hospital.

METHODOLOGY

Study Design and Setting

This observational study was conducted at the Department of Obstetrics and Gynaecology, Hayatabad Medical Complex Peshawar, Pakistan, over a six-month period from November, 2023 to April, 2024. The study received approval from the Institutional Ethics Committee.

Participants

The study enrolled pregnant women with ultrasonography (USG)-documented uterine fibroids, diagnosed either prenatally or antenatally.

Eligibility Criteria

Eligibility criteria for this study included pregnant patients with fibroids aged between 18 to 40 years visiting the hospital. Exclusion criteria were patients with co-existing adnexal pathologies, a previous history of uterine surgery, or other obstetrical comorbidities such as pregnancy-induced hypertension (PIH) and gestational diabetes.

Data Collection

Data for the study were obtained retrospectively from patient case files, ensuring the confidentiality of participants. The case record encompassed demographic details such as maternal age, parity, and gravida, along with antenatal, intrapartum, and postpartum histories, including gestational age at enrollment and delivery, and information regarding the number and size of fibroids. Clinical examination findings, laboratory investigations, and ultrasonography (USG) findings, covering fetal parameters, amniotic fluid volume, placental location, and any changes in fibroid size or complications, were also recorded. Obstetric outcomes, such as preterm birth, premature rupture of membranes (PROM), malpresentation, placenta previa, placental abruption, low birth weight, mode of delivery, and morbidity and mortality related to pregnancy management with fibroids, were documented. Additionally, neonatal outcomes, including birth weight, APGAR score, neonatal resuscitation, and neonatal intensive care unit (NICU) admission, were recorded to comprehensively evaluate the impact of uterine fibroids on maternal and neonatal health.

Statistical Analysis

The statistical analysis employed descriptive statistics. An import of data was made into IBM-SPSS (version 20.0). Numbers and percentages were used to represent discrete variables. The means and standard deviations of the quantitative data were computed. The study employed multiple logistic regression analysis to ascertain correlations between fibroid features and perinatal outcomes.

Ethical Considerations

We acquired informed consent from each individual. The Institutional Ethics Committee examined and approved the study methodology, guaranteeing that all data were used only for research and that patient anonymity was upheld throughout the investigation.

Results

Ninety pregnant women with USG-documented fibroids were enrolled in this study. The mean age was 29.33 ±3.76 years. Age distribution: 21 (23.3%) were 18-24 years, 39 (43.3%) were 25-32 years, and 30 (33.3%) were 33-40 years. Gravida status: 37 (41.1%) were primigravida, 34 (37.8%) were gravida 2-3, and 19 (21.1%) were gravida ≥4. Most patients (57.8%) had a BMI >30, indicating a higher prevalence of obesity, while 24.4% had a BMI of 26-30, and 17.8% had a BMI <25. The distribution, shown in table 1, highlights the need to consider BMI and gravida status in managing pregnancies complicated by fibroids.

Table 1: Characteristics of the study participants

Variables		Number of Patients (N=90)	Percentage (100%)
Age Groups (years)	18-24	21	23.3%
	25-32	39	43.3%
	33-40	30	33.3%
Gravidity/Parity	Primigravida	37	41.1%
	Gravida 2-3	34	37.8%
	Gravida ≥ 4	19	21.1%
BMI (Kg/m^2)	<25	16	17.8%
	26-30	22	24.4%
	>30	52	57.8%

Among 90 pregnant women with confirmed fibroids, the majority had sub-serous fibroids (65.56%), followed by sub-mucous (25.56%) and intra-mural (8.89%) types. Most fibroids were located in the fundus (77.78%), with smaller percentages found in the cervix (4.44%), tubes (cornual) (5.56%), and pedunculated (12.22%) areas. Regarding the number of fibroids, 51.11% of the women had two to

three fibroids, 26.67% had a single fibroid, and 22.22% had four or more fibroids. This is depicted in table 2.

Table 2: Different features of Fibroids

Fibroids features	Number of Patients (N=90)	Percentage (100%)
Fibroids' Types		
Intra=mural	8	8.89%
Sub=mucous	23	25.56%
Sub-serous	59	65.56%
Location of Fibroid		
Cervical	4	4.44%
Fundal	70	77.78%
Tubal(cornual)	5	5.56%
Pedunculated	11	12.22%
Number of Fibroids		
One	24	26.67%
Two to three	46	51.11%
4 and more	20	22.22%

Table 3 summarizes pregnancy outcomes, delivery modes, and indications for cesarean section among the study participants. Most pregnancies (75.56%) terminated between 37 to 40 weeks gestation, with a smaller proportion ending before 20 weeks (2.22%). Cesarean section was the most common delivery mode (62.22%), followed by vaginal normal delivery (26.67%). Indications for cesarean section primarily included PROM with a poor Bishop score (33.93%) and malpresentation (14.29%). These findings provide insights into the distribution of pregnancy outcomes and delivery methods among women with uterine fibroids.

Table 3: Various pregnancy outcomes

Pregnancy Outcomes	Number of Patients (N=90)	Percentage (100%)
Age of Gestation at Term		
≤20 weeks	2	2.22%
21 to 32 weeks	3	3.33%
33 to 37 weeks	11	12.22%
37 to 40 weeks	68	75.56%
≥40 weeks	6	6.67%
Mode of Delivery		
C-Section	56	62.22%
Normal Vaginal Delivery (NVD)	24	26.67%
Delivery with instrumental aid	3	3.33%
Assisted Delivery for Breech	2	2.22%
Hysterotomy	3	3.33%
Suction and Evacuation	2	2.22%
C-Section indications (n=56)		
PROM + (Bishop Score= poor)	19	33.93%
Placenta Previa	5	8.93%
Uterine Inertia	9	16.07%
Fetal Distress	9	16.07%
Non-Progressive Labor	6	10.71%
Malpresentation	8	14.29%

This table 4 illustrate the complications observed in pregnant women with fibroids, with a total of 90 cases analyzed. The most common complication was threatened preterm labor, occurring in 22.22% of cases, followed by blood transfusion (20.00%) and threatened miscarriage (17.78%). Antepartum bleeding accounted for 11.11% of cases, while postpartum hemorrhage occurred in 8.89% of cases. Additionally, admission for abdominal pain was observed in 6.67% of cases.

Table 4: Complications observed

Complications	Number of Patients (N=90)	Percentage (100%)
Threatened preterm labor	20	22.22%
Blood transfusion	18	20.00%
Threatened miscarriage	16	17.78%
Antepartum bleeding	10	11.11%
Postpartum hemorrhage	8	8.89%
Admission for abdominal pain	6	6.67%

Among the 90 cases reviewed, fetal outcomes revealed a notable occurrence of low birth weight in 22.22% of cases, followed closely by the necessity for NICU admission in 20.00% of cases and neonatal resuscitation in 17.78% of cases. Additionally, 15.56% of newborns exhibited a low APGAR score at 5 minutes. Miscarriage or abortion was reported in 8.89% of cases, while antepartum bleeding occurred in 6.67% of cases. Neonatal mortality was observed in 4.44% of cases. These fetus related outcomes are shown in table 5 below.

Table 5: Fetus related outcomes

Fetal Outcome	Number of Cases (N=90)	Percentage (100%)
Low birth weight	20	22.22%
Required NICU admission	18	20.00%
Required neonatal resuscitation	16	17.78%
Low APGAR Score at 5 minutes	14	15.56%
Abortion/miscarriage	8	8.89%
Antepartum bleeding	6	6.67%
Neonatal mortality	4	4.44%

Discussion

Our study, involving a cohort of 90 pregnant women with uterine fibroids, adds significant insights into the complexities of pregnancy outcomes in this population. The mean age of our participants, 29.33±3.76 years, aligns with previous findings indicating that fibroid incidence peaks during the reproductive years, as noted in studies such as Ciavattini et al.[12]

Primigravida (41.1%) and gravida 2-3 cases (37.8%) were prevalent in our cohort, consistent with research by Ciavattini et al., which reported elevated rates of adverse obstetric outcomes in women with multiple fibroids.[12] Fibroid characteristics, including type, location, and number, were crucial determinants of pregnancy outcomes in our study. Subserous fibroids (65.56%) predominated, with the majority located in the fundus (77.78%), reflecting their propensity to grow outward from the uterine wall. Multiple fibroids (50.91%) were prevalent, potentially influencing obstetric management decisions, as observed in prior studies.

Our study revealed various pregnancy complications, including threatened preterm labor (21.82%), blood transfusion (20%), and postpartum hemorrhage (9.09%), consistent with findings by Pullemalla et al. and Dasgupta et al., highlighting the multifaceted risks faced by pregnant women with fibroids.[13-14] Fetal outcomes were also concerning, with low birth weight (22.22%), NICU admission (20%), and neonatal resuscitation (17.78%) identified as significant concerns, emphasizing the need for vigilant monitoring and timely interventions, as noted in previous research.

Comparing our results with existing literature, our study corroborates previous findings regarding the increased risk of cesarean section and adverse perinatal outcomes associated with uterine fibroids in pregnancy, consistent with studies by Pullemalla et al. and Dasgupta et al.[13-14] However, discrepancies exist regarding the association between fibroid characteristics and specific obstetric complications, as noted in studies by Ciavattini et al.[12] and Zhao et al.[15], highlighting the need for further research to elucidate these relationships conclusively.

Despite limitations such as a small sample size and retrospective data collection, our study provides valuable insights into the intricate interplay between uterine fibroids and pregnancy outcomes. Larger prospective studies are warranted to unravel the complexities of these associations and inform evidence-based management strategies for pregnant women with fibroids, ultimately improving maternal and neonatal health outcomes in this vulnerable population.

Conclusion

In summary, our study highlights the heightened risks associated with uterine fibroids during pregnancy, including adverse outcomes like abortion, preterm rupture of membranes, and postpartum hemorrhage. While cesarean sections are often necessary, our findings suggest that specific fibroid characteristics may not directly correlate with maternal complications. This accentuates the importance of diligent monitoring and tailored care for pregnant individuals with fibroids to optimize both maternal and fetal well-being. Further investigation is warranted to refine our understanding and enhance management approaches in this high-risk population.

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