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Frequency and obstetric complication of uterine leiomyoma in pregnancy

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ABSTRACT

Objectives: To determine the frequency of leiomyoma in pregnant females presenting for antenatal checkup.
 To determine the outcome of pregnancy complicated with leiomyoma.
Study design
Descriptive Study.: Setting This study was conducted at the Department of Obstetrics & Gynaecology, SMBBMU, Larkana, Pakistan.
Duration
Six months after the approval of the synopsis from January 31, 2023 to July 30, 2023.
Materials and methods
All patients who fulfilled the inclusion criteria and visited SMBBMU, Larkana were included in the study. Informed consent was taken after explaining the procedure, risks and benefits of the study. In our study, All the collected data were entered into the proforma attached at the end and used electronically for research purposes.
Results: The mean ± SD of age was 29.9±6.3 years. Leiomyoma was found in 49 (30.6%) women. In the distribution of complications spontaneous abortion was found in 6 (12.2%), intrauterine growth restriction in 17 (34.7%), the premature rupture of membranes was noted in 11 (22.5%) women, cesarean section in 29 (59.2%), vaginal delivery 20 (40.8%), preterm delivery 14 (28.6%) while stillbirth was noted in 5 (10.2%).
Conclusion: It is to be concluded that leiomyoma was commonly prevalent in pregnant females while cesarean section was noted as the most common leiomyoma complication followed by intrauterine growth restriction and premature rupture of membranes. More well-controlled prospective trials are needed to validate the current findings

Keywords: *Antenatal Checkup, Fibroids, Leiomyoma, Pregnancy.*

INTRODUCTION

Fibroids, or leiomyomas, are benign tumours of the smooth muscle layer of the uterus. The precise etiology of fibroids is still unknown, but it is clear that estrogen and progesterone can cause growth. They are common in women of childbearing age and have an overall incidence of 40-60% by 35 years of age [1,2]. The association between uterine leiomyoma and pregnancy is increasing due to the tendency of couples to delay the first pregnancy after age 30. The risk of uterine fibroids is greater with advancing age of the woman [3-5].

Uterine leiomyoma is often an incidental finding discovered during an ultrasound examination performed in early pregnancy. In pregnancy. their prevalence is estimated at 2.7-10.7% with most women being asymptomatic with uneventful pregnancies

[6,7]. However, leiomyoma can manifest during pregnancy with pain and discomfort due to torsion or degeneration. They have also been associated with early pregnancy failure as well as with obstetric complications such as preterm labour, abnormal fetal lie and presentation, placental abruption, post-partum haemorrhage and retained placenta [8-10].

Ortiz et al. conducted a study and reported the frequency of leiomyoma in 28.3% of pregnant females [4]. It has been reported in a study done in Pakistan that leiomyoma (>5 cm) was present in

pregnant females was 0.74%. Among them, abortion/miscarriage occurred in 10% of cases, preterm labour occurred in 10% of cases and IUGR was present in 6.25% of cases. Among all females, 20% had a preterm delivery and 70.3% had a caesarean section [11]. Another study reported that leiomyoma was present in 2.68% of cases. Among them adverse outcome was more frequent in females with leiomyoma

i.e. IUGR (7.9% vs. 7.0%), PROM (18.2% vs. 16.2%), preterm

delivery (9. 1% vs. 8.2%) and cesarean section (85.2% vs. 53.5%)

[12].

The rationale of this study is to determine the frequency of leiomyoma and leiomyoma-related complications during pregnancy. Generally, leiomyoma is detected incidentally while screening for pregnancy and fetal surveillance and it showed several adverse effects on pregnancy, especially on fetal growth. Through literature, it has been observed that the chances of leiomyoma occurrence varied in different populations, and it is more common in age >35 years when the chances of pregnancy reduce. Still, it has a negative impact on feto- maternal health. However, very few studies have been done in this regard. Therefore, we planned to conduct this study to find evidence regarding the complications that occur in pregnancy due to of leiomyoma in local population.

MATERIAL & METHODS

STUDY DESIGN

Descriptive Study.

STUDY SETTING

Department of Obstetrics & Gynaecology, SMBBMU, Larkana.

DURATION OF STUDY

Six months after the approval of the synopsis from ***January 31, 2023*** to ***July 30, 2023***.

SAMPLE SIZE

The sample size of 160 cases was calculated with a 95% confidence level, 7% margin of error and percentage of leiomyoma i.e. 28.3% during pregnancy.

SAMPLING TECHNIQUE

Non-Probability, Consecutive Sampling.

SAMPLE SELECTION INCLUSION CRITERIA

Females of age 18-40 years, parity <5, presented at gestational age >16 weeks (as per LMP) for antenatal check-up and underwent routine ultrasound scan.

EXCLUSION CRITERIA

Multiple fetus (on ultrasound), h/o preterm delivery, h/o >2 abortions. chronic hypertension (BP≥160/100mmHg), diabetes (2-h OGTD186 mg/dl), anemia (Hb<10 g/dl), liver disease (AST & ALT>40IU. hepatitis), renal failure (creatinine>1.8 mg/dl).

DATA COLLECTION

160 females who fulfilled the inclusion and exclusion criteria were enrolled in the study from the OPD of the Department of Obstetrics and Gynecology. Shaikh Zaid Women Hospital, Larkana. Informed consent was obtained from all females before enrollment All basic demographic information of each patient (name, age, height (m), weight (kg), BMI (kg/m^2), gestational age at presentation, and parity) were also noted. Then females underwent ultrasonography for fetal surveillance. Uterine leiomyoma was also noted if detected during the ultrasound scan. Then females were followed up till delivery. Then females were asked to present in the labour room till delivery by the researcher. If the female had a spontaneous abortion, then it was noted and managed as per standard protocol. During follow-up, the ultrasound was done on each visit to determine the fetal weight and IUCR was noted if fetal weight $<25^{th}$ percentile. If the female had premature rupture of membranes before labour, then it was noted (as per operational definition). If no fetal movements or heart rate was observed and the fetus

was found to be dead inside the womb or at the time of delivery, then stillbirth was labelled. Gestational age was noted at delivery. If delivery occurred before the completion of 37 weeks, then preterm delivery was labelled. The mode of delivery was also noted. All this information was recorded on proforma.

DATA ANALYSIS

The collected data were analyzed statistically by using the SPSS version 22. The Shapiro-Wilk test was applied to check the normality of the data. Quantitative variables like age, BMI, gestational age, size of leiomyoma were presented as mean± standard deviation or Median (IQR). Qualitative variables like parity, leiomyoma, and outcome (spontaneous abortion, IUGR, PROM, stillbirth, preterm delivery and mode of delivery) were presented as frequency and percentage. The outcome was compared in females with or without leiomyoma by using the Chi-square test/Fischer exact test. P-value $\leq$ 0.05 was taken as significant. Data was stratified for age, gestational age, BMI, size of leiomyoma and parity.

RESULTS

In this study 160 patients were included to assess the frequency of leiomyoma and the outcome of pregnancy complicated with leiomyoma in pregnant females presenting for antenatal check-up and the result will be analyzed as:

The distribution of continuous variables was tested by applying the Shapiro-Wilk test for age (P=0.152), weight (P=0.220), height (P=0.521), body mass index (P=0.103), gestational age (P=0.315), size of leiomyoma (P=0.625) and parity (P=0.098) respectively as shown in **TABLE 1**.

The mean ± SD of age was 29.9±6.3 with C.I (28.90…….30.87) years

as shown in **TABLE 2**.

The mean ± SD of weight was 67.6±9.6 with C.I (66.10…….69.09) kg

as shown in **TABLE 3**.

The mean ± SD of height was 1.62±0.32 with C.I (1.57 1.66) meters as shown in **TABLE 4**.

The mean ± SD of body mass index was 26.4±5.4with C.I

(25.55…….27.24) kg/m^2 as shown in **TABLE 5**.

The mean ± SD of gestational age at delivery was 37.6±2.5 with C.I (37.20…….37.99) weeks as shown in **TABLE 6**.

The mean ± SD of parity was 2.6±0.3 with C.I (2.55……2.64) as shown in **TABLE 7**.

The mean ± SD of the size of leiomyoma was 2.7±1.3 with C.I

(2.49…….2.90) cm as shown in **TABLE 8**.

Leiomyoma was found in 49 (30.6%) women as shown in **FIGURE 2**. In the distribution of complications of leiomyoma spontaneous abortion was found in 6 (12.2%), intrauterine growth restriction in 17 (34.7%), the premature rupture of membranes was noted in 11 (22.5%) women, cesarean section in 29 (59.2%), vaginal delivery 20 (40.8%), preterm delivery 14 (28.6%) while stillbirth was noted in 5 (10.2%) women as shown in **TABLE 9**

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TABLE # 1: DESCRIPTIVE STATISTICS OF THE SHAPIRO-WILK TEST n=160

VARIABLE	MEAN±SD	P-VALUE
Age group	29.9±6.3	0.152
Weight	67.6±9.6	0.220
Height	1.62±0.32	0.521
Body Mass Index	26.4±5.4	0.103
Gestational Age	37.6±2.5	0.315
Size of Leiomyoma	2.7±1.3	0.625
Parity	2.6±0.3	0.098

TABLE # 2 DESCRIPTIVE STATISTICS OF AGE

MEAN	29.9 (Years)
±SD	6.3
95% CONFIDENCE INTERVAL	28.90…….30.87
MINIMUM	18
MAXIMUM	40
RANGE	22

TABLE # 3 DESCRIPTIVE STATISTICS OF WEIGHT

MEAN	67.6 (kg)
±SD	9.6
95% CONFIDENCE INTERVAL	66.10…….69.09
MINIMUM	50
MAXIMUM	95
RANGE	45

TABLE # 4 DESCRIPTIVE STATISTICS OF HEIGHT

MEAN	1.62 (meters)
±SD	0.32
95% CONFIDENCE INTERVAL	1.57…….1.66
MINIMUM	1.38
MAXIMUM	1.86
RANGE	0.48

TABLE # 5: DESCRIPTIVE STATISTICS OF BODY MASS INDEX

MEAN	26.4 (kg/m^2)
±SD	5.4
95% CONFIDENCE INTERVAL	25.55…….27.24
MINIMUM	18
MAXIMUM	36
RANGE	18

TABLE # 6: DESCRIPTIVE STATISTICS OF GESTATIONAL AGE

MEAN	37.6 (weeks)
±SD	2.5
95% CONFIDENCE INTERVAL	37.20…….37.99
MINIMUM	31
MAXIMUM	42
RANGE	11

TABLE # 7 DESCRIPTIVE STATISTICS OF PARITY

MEAN	2.6
±SD	0.3
95% CONFIDENCE INTERVAL	2.55…….2.64

MINIMUM	1
MAXIMUM	5
RANGE	4

TABLE # 8: DESCRIPTIVE STATISTICS FOR SIZE OF LEIOMYOMA

MEAN	2.7 (cm)
±SD	1.3
95% CONFIDENCE INTERVAL	2.49…….2.90
MINIMUM	1
MAXIMUM	5
RANGE	4

FIGURE # 2 FREQUENCY OF LEIOMYOMA

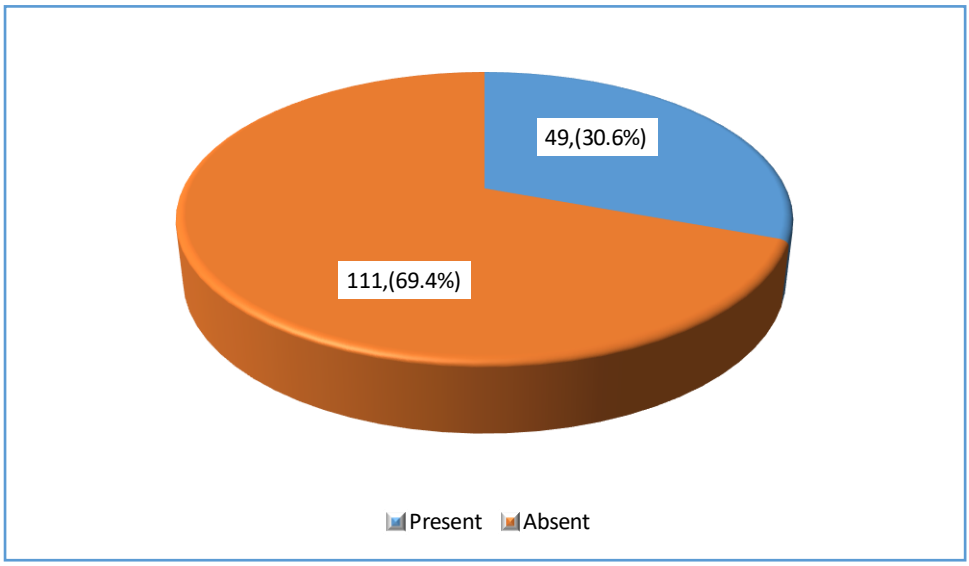

TABLE # 9: FREQUENCY OF PREGNANCY COMPLICATION WITH LEIOMYOMA

COMPLICATION	FREQUENCY	PERCENTAGE
Spontaneous abortion	6	12.2%
Intrauterine Growth Restriction	17	34.7%
Premature Rupture of Membranes	11	22.5%

Cesarean Section	29	59.2%
Vaginal Delivery	20	40.8%
Preterm delivery	14	28.6%
Still birth	5	10.2%

DISCUSSION

Leiomyomas are benign uterine tumours found in 25–35% of females of reproductive age [13]. The risk of having fibroids increases with increasing age. Since more and more couples are delaying childbirth, fibroids are being encountered in pregnancy increasingly. Most fibroids do not alter their size during pregnancy, but one-third seem to increase in size in the first trimester. Although the data are conflicting and most women with fibroids have uneventful pregnancies, the weight of evidence in the literature suggests that uterine fibroids are associated with an increased risk of spontaneous miscarriage, preterm labour, intrauterine growth restriction, dysfunctional labour, foetal malposition, postpartum haemorrhage and retained placenta [14,15] patients in whom the placenta is implanted near a leiomyoma are more likely to be affected.

The risk of preterm labour and delivery also seems to be slightly elevated in these patients. Huge fibroids situated near the placenta may place pregnant patients at slightly increased risk during labour, particularly for hysterectomy and postpartum haemorrhage (PPH). The association with placenta abruption is weak with great variation from study to study. Most evidence supports a causative role for leiomyomas in higher rates of caesarean delivery, particularly in

women with bigger fibroids. Despite its adequate size and prospective documentation of leiomyomas in pregnancy, Exacoustos et al [16], did not find a higher rate of caesarean deliveries; however, every other study that assessed mode of delivery found a higher caesarean rate among women with fibroids, 48.8% compared with 13.3%. The most common cause of the higher caesarean rates appears to be malpresentation [17].

Pregnancy with a fibroid is a high-risk pregnancy, which may lead to complications. The potential effects of these tumours on pregnancy and that of pregnancy on the tumours are important clinical concerns since fibroids are commonly detected in women of reproductive age [17]. Uterine fibroids have long been associated with adverse pregnancy events [13].

Uterine fibroids are the most common benign tumours of the female reproductive tract [18]. According to the trimester of assessment and the size threshold used, the prevalence of uterine fibroids among pregnant women ranges from less than 1% to 10.7% [19,20]. As more and more women delay childbearing later in life, the prevalence of uterine fibroids during pregnancy is likely to increase. The incidence of uterine fibroids increases with age [21]. At present, although there is a lot of research on the prevention and treatment of uterine fibroids [22- 24], the etiopathogenesis of uterine fibroids is still unclear [25,26].

There are conflicting data on the relationship between obstetric outcomes and uterine fibroids, and the mechanism by which fibroids influence obstetric outcomes is unclear. Some studies have shown a relationship between uterine fibroids and pregnancy complications, such as preterm birth, premature rupture of membranes (PROM), fetal malpresentation, placental abruption and intrauterine fetal demise [27-29]. In addition, uterine fibroids have been linked to labour dystocia, puerperal infection, operative vaginal delivery, cesarean delivery and postpartum haemorrhage (PPH) [30]. In contrast, other studies have reported no increased risks for these adverse obstetric outcomes with uterine fibroids [31]. More recent studies have attempted to clarify these conflicting results by grouping fibroids by size and location [32,33], but those studies still obtained conflicting results due to their small sample sizes.

In our study, leiomyoma was found in 49 (30.6%) women. Ortiz FM, et al conducted a study and reported the frequency of leiomyoma in 28.3% of pregnant females [3]. A study conducted in Pakistan that leiomyoma was present in 0.74% of pregnant females [11]. Another study reported that leiomyoma was present in 2.68% of cases [12].

In my study, in the distribution of complications spontaneous abortion was found in 6 (12.2%), intrauterine growth restriction in 17 (34.7%), the premature rupture of membranes was noted in 11 (22.5%)

women, cesarean section in 29 (59.2%), vaginal delivery 20 (40.8%),

preterm delivery 14 (28.6%) while stillbirth was noted in 5 (10.2%) women. Navid S, et al found that abortion/miscarriage occurred in 10% of cases, preterm labour occurred in 10% of cases and IUGR was present in 6.25% of cases. Among all females, 20% had a preterm delivery and 70.3% had a caesarean section [11]. The study of Zhao R, et al noted that adverse outcome was more frequent in females with leiomyoma i.e. IUGR (7.9% vs. 7.0%), PROM (18.2% vs. 16.2%),

preterm delivery (9. 1% vs. 8.2%) and cesarean section (85.2% vs.

53.5%) [12].

In this study, the stratification of confounders/effect modifiers with respect to leiomyoma, the insignificant difference was noted in age group (P=0.075), gestational age (P=0.784), body mass index (P=0.704), size of leiomyoma (P=0.352), parity (P=0.401).

CONCLUSION

It is to be concluded that leiomyoma was commonly prevalent in pregnant females while cesarean section was noted as the most common leiomyoma complication followed by intrauterine growth restriction and premature rupture of membranes. More well-controlled prospective trials are needed to validate the current findings.

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