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Original Research Article

Feto maternal outcomes of fibroid in pregnancy: a retrospective observational study

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ABSTRACT

Background: Uterine fibroid is one of the most common intrauterine masses among females at the reproductive age. Although most of the uterine fibroids are asymptomatic during pregnancy, serious complications may occur. Aim of this study was to assess the obstetric outcome (maternal and fetal) in pregnancy with fibroid.
Methods: A retrospective observational study was performed at Obstetrics and Gynecology Department in ABVIMS and RML hospital. 50 pregnant patients with >2 cm size fibroids were taken in the study. Maternal age, parity, size of the fibroid, complications during pregnancy, and mode of delivery were noted.
Results: The 20% of pregnancies ended up in spontaneous abortions. 60% of them had to undergo caesarean section out of which, 10% was for non-progress of labor (NPOL), 5% for outlet obstruction, 5% with malpresentation, 16% patients with APH, 4% patients had elective LSCS for placenta previa and 10% with previous cesarean who were not willing for vaginal delivery. Other complications; placenta previa 16% and low lying placenta 10% patients, pre-eclampsia 20%, malpresentation 20%. Post-partum hemorrhage (PPH) was seen in 24% of the cases. 4% cases had red degeneration which were managed conservatively. Neonatal outcomes included 30% of babies born preterm, 40% being small for gestational age, 10% having low 1-minute APGAR score and 4% with low APGAR at 5 and 10 min. 30% had NICU admission for varied reasons.
Conclusions: Fibroids in pregnancy may be associated with complications affecting the course of pregnancy and labor. So, pregnancy must be cautiously monitored in the antenatal period, through regular follow-up.

Keywords: Fetal growth restriction, Postpartum hemorrhage, Preterm premature rupture of membranes, Small for gestational age

INTRODUCTION

Uterine fibroid (also known as leiomyomas) is one of the most common intrauterine masses prevalent among women in reproductive age.

As most fibroids are asymptomatic, the true prevalence of fibroids is not known, but it is estimated that it affects 40-60% of women at the age of 35 years and up to 80% of women at the age of 50.[1,2]

Prevalence and diagnosis in pregnancy

Prevalence of uterine fibroids during pregnancy reported in some studies ranges from 1.6 to 10.7%.[1-3] Only less than half of the large fibroids (>5 cm) can be revealed on physical examination.[4] Smaller fibroids (3-5 cm) have only a 12.5% chance to be detected by physical examination.[5] Ultrasonography can diagnose only 1.4-2.7% of uterine fibroids during pregnancy. [4]

Appearance on USG: appearance can be variable but usually are symmetrical, well defined, hypo echoic and heterogeneous masses. Areas of calcification or hemorrhage may appear hyper echoic, while cystic degeneration appears anechoic.[6]

Sign and symptoms

Pain is the most common presentation during pregnancy.[7,8] When uterine fibroids expand in size, they exert a mass effect on their blood vessels, leading to a mismatch between the vascular demand of the tissue and the available blood supply hence causing ischemia, anoxia, and necrosis.[8] Torsion of pedunculated sub-serosal uterine fibroids also has similar effect.[5] Cell necrosis and damage are associated with increased prostaglandin release and subsequently localized pain.

Anterior cervical fibroids compress the urinary bladder leading to frequent micturition. Sometimes, partial obstruction may result if compression occurred on bladder neck leading to urine retention. Other less common symptoms include pelvic pressure, vaginal bleeding and constipation.[1,7]

Effect of pregnancy on uterine fibroids

The main effect of pregnancy on fibroid is related to the size of the uterine fibroids. Majority of studies have reported that up to 78% of uterine fibroids do not show significant growth during pregnancy. The remaining ~22% increased 12.5-25% of their initial size during the first 10 weeks of gestation.[9,10] but studies conducted by Benaglia et al, Neiger et al have shown significant increase in fibroid size during pregnancy, especially in first trimester.[11,12]

Some studies have shown that fibroids grow in pregnancy irrespective of the initial size whereas other studies have suggested that small and large fibroids (≥6cm) have different growth patterns in the second trimester (small fibroids grow whereas large fibroids remain unchanged or decrease in size), but all decrease in size in the third trimester.[8,13,14] 7.8% will decrease in volume by up to 10% in puerperium.[13,15]

The pregnancy causes change in size of uterine fibroids is largely attribute to the hormonal changes occurring during pregnancy. Estrogen being the principal hormone involved.[16]

However, sex hormones are not the only hormones involved. This is because the growth of uterine fibroid does not follow the same pattern of progressively increasing secretion of estrogen and progesterone i.e., a linear relationship between fibroid growth rate and sex hormone secretion had never been established.[11,16] Also although estrogen and progesterone increase steadily during pregnancy, fibroids shrink in size during second and third trimesters.[11,16-18]

Increase in fibroid size in first trimester has been linked to rapid rise of beta HCG during this period in some studies.[9]

Effects of uterine fibroids on pregnancy

Most of the uterine fibroids are asymptomatic and result in uneventful pregnancy and labor. But serious complications can occur.

Dramatic increase in size leads to compromising the blood supply and subsequent ischemic necrosis of the tumor. Prostaglandins that release resulting from tissue damage result in further increase in pain and uterine contractions.[7,8]

Mechanical effects of uterine fibroids on fetal sac leading to growth restriction. Sub serosal fibroids are at risk for torsion and red degeneration. Fibroid torsion occurs during the first trimester when there is an adequate intrauterine space for peduncular twist. Red degeneration results from this torsion and is estimated to have a prevalence of 5% during pregnancy.[20]

Submucosal fibroids are associated with higher miscarriage rates, 14% in pregnant females with fibroids in comparison to 7.6% in healthy pregnant women. Large-sized fibroids (>5 cm) are associated with uterine cavity distortion, abnormal fetal position, and presentation.[21,23]

Breech presentation and oblique lie are the most common abnormalities encountered; and they are associated with large (>5cm), multiple, and lower-lying fibroids.[23,24]

The study also suggested 19% risk for pre-term labor and premature rupture of membranes, 49% risk for cesarean delivery, and 8% risk for abortion, antenatal hemorrhage, postpartum hemorrhage, abruptio placentae, and labor dystocia.[23] Lower-located fibroids (i.e., near cervix) might result in obstructed labor.

The principal aim of this study was to inspect obstetric outcomes (maternal and fetal) of pregnancies with fibroids and any associated complications. Furthermore, the secondary aim was about the modification of antenatal care of such patients to improve the outcomes.

METHODS

A retrospective observational study was performed over a period from May 2019 to July 2021 at Obstetrics and Gynecology Department in ABVIMS and RML hospital. 50 pregnant patients with >2cm fibroid was taken in the study.

Inclusion criteria

Inclusion criteria was the pregnant females presenting to OPD at ABVIMS and RML hospital with fibroid more than 2 cm.

Exclusion criteria

Patients with previous LSCS, myomectomies, uterine malformations and any other co morbidity leading to termination of pregnancy before term, were excluded from the study.

A detailed history regarding symptoms of fibroid, previous treatment for infertility including surgery if any, clinical and USG findings before and during pregnancy if available from records were reviewed. Serial clinical examination and imaging during pregnancy were also noted. Obstetric complications like caesarean delivery, malpresentation, preterm delivery, placenta previa, abruptio placentae, premature rupture of membranes, incidental myomectomy, postpartum hemorrhage, blood transfusion, postoperative complications, duration of surgery and duration of hospital stay were studied. Any increase or decrease in size of fibroid, fetal complications like incidence of IUGR, malpresentations, low birth weight, NICU admission were also studied. Qualitative data were expressed as number and percentage, and quantitative data as mean and standard deviation.

RESULTS

In this study as shown in Table 1 out of total 50 women, 15 patients (30%) had single fibroid, 10 patients (20%) had <3 fibroids and 25 patients (50%) had multiple (>3) fibroids. 40 (80%) females had fibroid in body of uterus posterior wall (25 patients) being more common that anterior wall (15 patients). 15 females (30%) had fundal fibroids and 25 (50%) had fibroids in lower uterine segment. 30 patients (60%) had fibroids with largest dimension of 4-7 cm. 30% had fibroids of size 8-10 cm and 5 females (10%) had fibroid of size >11cm (maximum18 cm). 70 % of patients had 1 or more intramural fibroids, 60 % had 1 or more submucosal fibroids and 40 % had 1 or more subserosa fibroid.

Table 1: Characteristics of fibroid.

Characteristics of fibroids	
Number of fibroids	**Number of patients (%)**
1	15 (30)
2-3	10 (20)
>3(multiple)	25 (50)
Site (not mutually exclusive)	
Fundal	15 (30)
Body	40 (80)
Lower segment	25 (50)
Depth (not mutually exclusive)	
Submucosal	30 (60)
Intramural	35 (70)
Subserosal	20 (40)
Size (largest dimension)	
4-7 cm	30 (60)
8-10cm	15 (30)
>11cm	5 (10)

Table 2: Outcomes.

Outcomes	Number (N) (%)	Fibroid depth	Fibroid location
Spontaneous abortions	10 (20%)	10 (100%) associated with submucosal and intramural fibroids	10 (100%) had fibroids on body of uterus, 5 (50%) had fundal fibroids also
Vaginal deliveries (VD)	15 (30%)	15 (100%) patients had submucosal fibroid. 5 (33.3%) also had sub serosal fibroid.	10 (20%) fundal. 5 (10%) lower segments
Caesarean sections (LSCS)	30 (60%) NPOL -5 (10%) Outlet obstruction -10 (5%) Malpresentation -10 (5%) APH 8 (16%) Elective section for placenta previa -2 (4%) Previous LSCS not willing for TOLAC-5 (10%)		10% located at body of uterus, 90% lower segment
Pre-eclampsia	10 (20%)		
Placenta previa	3 (6%)		
Low lying placenta	5 (10%)		
Placental abruption	5 (10%)		
Malpresentations	10 (20%) 7 breech (14%) 3 transverse lie (6%)		

Continued.

Outcomes	Number (N) (%)	Fibroid depth	Fibroid location
PPH	12 (24%)	11 (90%) submucosal 1 (10 %) also had intramural fibroid	
Degenerative changes /torsions	2 (4%)	100% sub serosal	
No. of myomectomies	2 (4%) (only the fibroids in incision line)		

Looking at the pregnancy outcomes according to Table 2, 10 (20%) pregnancies ended up in spontaneous abortions. All the patients that landed up in spontaneous abortions had intramural and submucosal fibroids, or a combination. fibroid's location was consistent being body of uterus in all (100%) the cases along with fundal in 5 (50%) patients. 30 patients (60%) had to undergo caesarean out of which, 5, (10%) was for non-progress of labor (NPOL), 10 patient (5%) for outlet obstruction, 10 patients (5%) with malpresentation, 8 (16%) patients with APH, 2 (4%) patients had elective LSCS for placenta previa and 5 patients (10%) with previous cesarean who were not willing for vaginal delivery. Out of 8 patients that underwent LSCS for APH, 5 (10%) had abruption and 2 (4%) had low lying placenta and 1 patient (2%) had placenta previa. 15 patients (30%) had vaginal delivery out of which 5 patients had lower segment fibroid, and 10 had fundal fibroid. i.e., out of the 25 patients who had fibroid in lower uterine segment, 20 underwent cesarean and 5 had normal vaginal delivery. 3 patients (16%) had placenta previa all of which were delivered by cesarean. 5 patients (10%) had low lying placenta out of which 2 underwent LSCS for APH and 3 were delivered vaginally. 10 patients (20%) developed pre-eclampsia. 10 patients (20%) had malpresentation out of which, 7 (14%) were breech and 3 (6%) were transverse lie (6%) all were associated with lower segment fibroid and were delivered with cesarean.

Table 3: Neonatal outcomes.

Neonatal outcomes		
Outcomes	**Number (n)**	**Percentage (%)**
Congenital anomalies	1	2
Preterm births	15	30
PROM	10	20
Preterm labor pains	5	10
SGA/low birth weight	20	40
FGR	5	10
APGAR		
<7 at 1 minute	5	10
<7 at 5 minute	2	4
<7 at 10 minute	2	4
NICU admissions	15	30

Post-partum hemorrhage (PPH) was seen in 12 (24%) cases, 11 (90%) percent of which was associated with submucosal fibroids. 2 out of 50 patients (4%) underwent red degeneration, were managed conservatively.

According to Table 3, only 1 fetus (2%) had congenital anomaly detected in antenatal period, which could not be attributed completely to presence of fibroid as patient presented late and had not undergone screening for fetal anomalies in second trimester. Among the 30% preterm births i.e., 15 patients out of 50, 10 had PPROM and 5 came with preterm labor. There were no iatrogenic preterm births. 20 babies overall (40%) were small for gestational age. None had doppler changes. 5 babies (10%) had low 1 minute APGAR score, owing to meconium and APH, delivered via caesarean section. 2 babies (4%) had low APGAR at 5 min and 10 min. 15 babies (30%) overall had NICU admission for varied reasons.

DISCUSSION

In our study we found that most common type of fibroid were intramural located on the body of the uterus (posterior wall mainly). This is in contrast with a study done by Wise et al in which most common leiomyoma was of submucosal type.[25] Approximately one third of women with leiomyoma uteri may develop complications during pregnancy.[26]

Incidence of spontaneous miscarriage in pregnant females in our study is 20%, which is found to be higher than in pregnant females without fibroid uterus according to a study by Patki et al.[27] The proposed mechanism is compressed endometrial vascular supply, affects the fetus adversely resulting in abortion. Evidence based literature suggests that though the size of the leiomyoma may not affect the miscarriage rate but the number of it could affect it. It has been seen that multiple leiomyomas are more associated with pregnancy losses, which was so in the present study.[28] Also in this study miscarriages are associated with fibroid in uterine corpus and fundus, rather than in lower uterine segment which was reconfirmed by many studies.[28]

Red degeneration was found to be in 4% of patients in our study. It is thought to be result of effect of progesterone on fibroids and occurs more commonly in pregnancy also seen in study done by Gupta et al.[29]

Malpresentations are common with leiomyomas. Important risk factors for fetal malpresentation are large,

multiple, and lower uterine segment leiomyoma. The incidence of malpresentation in our study was 20% and all of them had lower segment fibroid. Incidence was slightly lower than 22% that was found in various studies.[30,31]

In our study 20% patients developed pre-eclampsia and 16% patients had placenta previa and low-lying placenta. Fibroids can lead to ineffective placentation and placentation in lower uterine segment leading to pre-eclampsia and placenta previa as seen in study by Singh et al.[32]

High BP records along with distorted uterine cavity and premature contractions can lead to abruption and ante partum hemorrhage.[32,33] In our study total 8 (16%) patients had APH out of which 3 were placenta previa and 5 were abruption.

Preterm labor is often complicating a pregnant woman who is harboring leiomyoma uteri.[34] Incidence of preterm labor in study in question is 30% mainly due to PPROM consistent with study done by Sarwar et al in which the incidence of preterm labor was 33% and PPROM was 10%.[35]

Regarding the mode of delivery, 30% had vaginal delivery out of which 10% patient had lower segment fibroid, and rest had fundal fibroid. 60% underwent caesarean. The incidence is comparable to a prospective study done by Roy P.[36]

Indications for cesarean were as follows- 10% was for non-progress of labor (NPOL), 5% for outlet obstruction, 5% with malpresentation, 6% patients with APH, 4% patients had elective LSCS for placenta previa and 10% with previous cesarean who were not willing for Vaginal delivery. Out of the 25 patients who had fibroid in lower uterine segment, 20 underwent cesarean and 5 had normal vaginal delivery. 10 patients (20%) had malpresentation out of which, 7 (14%) were breech and 3 (6%) were transverse lie (6%) all were associated with lower segment fibroid and were delivered with cesarean. In a recent study done by Roy P indications for LSCS were, malpresentation (25.45%), post-cesarean pregnancy (16.36%), placenta previa (16.36), premature rupture of membranes (PROM) with poor bishops scores in (12.73%), uterine inertia in (14.55%), and non-progressive labor in (14.55%).[36] Results were almost similar in terms of cesarean for malpresentation, and uterine inertia.

The 16% had placenta previa all of which were delivered by cesarean. 10% had low lying placenta out of which 2 underwent LSCS for APH and 3 were delivered vaginally. Incidence in our study is like studies by Klatsky et al, but it was higher in other studies.[35,37]

PPH is a common finding in pregnancies complicated with fibroids. Primary reason for it, is the inability of uterus to contract properly, leaving placental blood vessels open. Also, fibroids can sometimes lead to retained bits of placenta that can lead to both primary and secondary hemorrhage. In our study 24% patients had PPH, which is slightly higher than a study done by Poovathi et al in which the incidence was 18.5%, and 14% in the study by Lam et al.[38]

In our study, 40% were small for gestational age (SGA). None had doppler changes. This is higher as compared to study done by Mani et al in which the incidence of SGA was 29.25%.[39] In ours study only 10% had low 1 minute APGAR score, owing to fetal distress, delivered via caesarean section. 30% babies overall had NICU admission for varied reasons.

This study has some limitations. More studies with larger sample size are required to further asses the burden of fibroid uterus in pregnancy and associated complications.

CONCLUSION

Even most of fibroids in pregnancy are asymptomatic but may be associated with some complications affecting the course of pregnancy and labor. So, pregnancy must be cautiously monitored in the antenatal period, through regular follow-up, to detect any adverse obstetric complications and to improve the outcome. The main risk factors for complications are related to the fibroid number, size, volume, location, and type. Large, multiple, retroplacental, submucosal, sub serosal, pedunculated, or low-lying fibroids carries the highest risk for complications during pregnancy.

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