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Obstetric Outcomes among Fibroid Complicating Pregnancy

Dr Sreena M[1], Dr Nandini V R[2], Dr Takhe Rillung[3]

Abstract: ***Background: Due to demographic shift towards delayed age of childbearing, many pregnancies occurring after the treatment of fibroids, this study on obstetric outcomes as well as characteristics of fibroids will help us to identify the high risk cases and prevent anticipated complications. Objective: To study the obstetric outcomes among fibroid complicating pregnancy and the relationship between different characteristics of uterine fibroids and their corresponding obstetric outcomes. Methodology: It is a prospective observational study carried out in SAT Hospital, among 170 patients who presented with fibroid >3cm during pregnancy from December 2018 to May 2020. Results: 66% of patients gave history of threatened abortion, 45% patients had caesarean section. Atonic PPH and preterm labour was noted in 48% and 39% cases respectively. Two third cases of malpresentations had fibroid larger than 6cm. Subinvolution of uterus was noted in 23% out of which 73% had fibroids size >6cm.52 cases of preterm labor, 22 cases of IUGR, 44% of Failure to progress was noted when the fibroid size was >6cm. Subserosal fibroids were found to have 2.4 times higher odds of having failure to progress.59% of IUGR had > 1 fibroids. Conclusion: Pregnancy with fibroids of size more than 6cm in third trimester lead to significant increase in preterm labour, IUGR, malpresentation and failure to progress. Atonic PPH, although not resulting in significant anaemia, was noted in about half the number of cases.***

Keywords: fibroid, pregnancy, obstetric outcome, caesarean section, preterm labour

1. Introduction

Fibroids comprise the most common benign tumours of the female genital tract in the reproductive age group. The incidence being approximately 5 - 20%. Nowadays due to demographic shift towards delayed age of childbearing, obesity, and many pregnancies occurring after the treatment of fibroids, this study on obstetric outcomes as well as characteristics of fibroids will help us to identify the high risk cases and prevent anticipated complications.

Objective

Primary objective

- To study the obstetric outcomes among fibroid complicating pregnancy.

Secondary objective

- To study the relationship between different characteristics of uterine fibroids and their corresponding obstetric outcomes

2. Methodology

It is a prospective observational study carried out in SAT Hospital, Trivandrum, by collecting data of all patients who presented with fibroid (size>3cm) in pregnancy, during 18 months, i. e., from December 2018 to May 2020. A total of 170 patients, as per eligibility criteria, were enrolled in the study. Data was recorded on a proforma and analysed using SPPS - 25 applying relevant and appropriate statistical tests.

3. Results

One hundred and seventy patients were diagnosed to have fibroids (size>3cm) during pregnancy and were taken up for the study. The age of 63% cases was from 26 to 35 years, and 30% cases were >35years old. Ninety (53%) belonged to middle socioeconomic status. One hundred and twelve participants gave history of threatened abortion (66%). Sixty one percent patients reached up to term pregnancy. Seventy eight participants (46%) had reported fibroids even in pre - pregnancy state. Seventy seven (45%) patients were delivered by caesarean section. Atonic PPH and preterm labour was noted in 48% and 39% cases respectively. About two third cases (68%) had fibroids of size 6 - 8cm in the third trimester.

Table 1: Malpresentation and No. of fibroids

			alpresentations				Total
			Breech	Transverse lie	Oblique lie	No	
Total number of fibroid	One	Count	4	2	1	95	102
		% within Malpresentation	28.6%	40.0%	50.0%	63.8%	60.0%
	Two	Count	9	3	1	48	61
		% within Malpresentation	64.3%	60.0%	50.0%	32.2%	35.9%
	Three	Count	1	0	0	6	7
		% within Malpresentation	7.1%	0.0%	0.0%	4.0%	4.1%
Total		Count	14	5	2	149	170
		% within Malpresentation	100.0%	100.0%	100.0%	100.0%	100.0%

X^2=7.09, df=1, p=0.007

Table 2: Malpresentation and size of fibroid in third trimester.

Malpresentations						
Size of fibroid in third trimester		Breech	transverse	oblique	vertex	total
3 - 5 cm	Count	1	1	0	35	37
	% within Size of fibroid in third trimester	2.7%	2.7%	0.0%	94.6%	100.0%
6 - 8 cm	Count	10	2	2	102	116
	% within Size of fibroid in third trimester	8.6%	1.7%	1.7%	87.9%	100.0%
9 - 12 cm	Count	2	2	0	12	16
	% within Size of fibroid in third trimester	12.5%	12.5%	0.0%	75.0%	100.0%
>13 cm	Count	1	0	0	0	1
	% within Size of fibroid in third trimester	100.0%	0.0%	0.0%	0.0%	100.0%
Total	Count	14	5	2	149	170
	% within Size of fibroid in third trimester	8.2%	2.9%	1.2%	87.6%	100.0%

Fischer's exact=11.8, p=0.004

Two third cases of malpresentations were noted with larger fibroid size (>6cm) as well as when the fibroids were multiple (p=0.007). Subinvolution of uterus was noted in forty cases (23%), of which 73% had fibroids of size >6cm. Majority of preterm labour (52 cases) and IUGR (22cases) was noted when the fibroid size was >6cm (p=0.03 & 0.004 respectively). In 54% of IUGR, there were 2 fibroids, making the relation statistically significant (p=0.017).

Table 3: Size of fibroid in 3rd trimester and incidence of PTL

			PTL		Total
			Yes	No	
Size of fibroid in third trimester	3 - 5 cm	Count	9	28	37
		% within Size of fibroid in third trimester	24.3%	75.7%	100.0%
	6 - 8 cm	Count	52	64	116
		% within Size of fibroid in third trimester	44.8%	55.2%	100.0%
	9 - 12 cm	Count	4	12	16
		% within Size of fibroid in third trimester	25.0%	75.0%	100.0%
	>13 cm	Count	1	0	1
		% within Size of fibroid in third trimester	100.0%	0.0%	100.0%
Total		Count	66	104	170
		% within Size of fibroid in third trimester	38.8%	61.2%	100.0%

Fischer's exact=7.7, p=0.03

Table 4: IUGR and the number of uterine fibroids

			IUGR		Total
			Yes	No	
Total number of fibroid	One	Count	16	86	102
		% within IUGR	41.0%	65.6%	60.0%
	Two	Count	21	40	61
		% within IUGR	53.8%	30.5%	35.9%
	Three	Count	2	5	7
		% within IUGR	5.1%	3.8%	4.1%
Total		Count	39	131	170
		% within IUGR	100.0%	100.0%	100.0%

Fischer's exact=7.77, p=0.017

Failure to progress occurred in 44% of cases with fibroid size of 9 - 12cm. When the size of the fibroid was 6cm or more there was 1.29 higher odds of atonic PPH, though statistically insignificant. Multiple fibroids were found in 68 cases (40%). Intramural fibroids were one hundred and twelve, which accounted for 66%. Eighty eight cases (52%) were placed in the anterior uterine wall. The cases with sub serosal fibroids were found to have 2.4 times higher odds of having failure to progress (p=0.004).

4. Discussion

This study was conducted to evaluate the outcome of pregnancies which were complicated by leiomyomas. Since the presence of leiomyomas increases the chances of adverse outcomes in pregnancies, as stated in various studies, [1] appropriate measures are warranted while catering to such cases.[2] With the increase in childbearing age, fibroids have become more common in pregnant women. The high prevalence of uterine fibroids in the general population accounts for making the effects of uterine fibroids during antepartum, intrapartum, and postpartum periods highly remarkable.

In our study, 170 pregnant women with uterine fibroids of size more than 3 cm were followed up, and we noted that the presence of fibroids increased the risk of adverse obstetric outcomes. The age of 63% cases were between 26 to 35 years, and 30% cases were >35years old, which is comparable to other studies, like that of Deena Dayal et al. in 2012, showing occurrence of leiomyomas more in 3rd and 4th decade of life.[3] Ninety (53%) belonged to middle socioeconomic status.

As far as the parity is concerned, 83 (49%) patients were nulliparous and 87 (51 %) patients were multiparous. The association of fibroids in nulliparous as well as multiparous females were reported to be similar, in frequency, in studies of Ashraf et. al and Cesen et al. in 1997 and 2000 respectively.[4, 5] Seventy eight participants (46%) had reported fibroids even in pre - pregnancy state, among whom 42 had size of more than 3cm. Among these 78, 19 (24%) of them had previous history of abortion, out of which 16

(20%) were in the second trimester which correlates with the national study which shows 22% miscarriages in cases of fibroid.3 This study confirmed the findings of prior studies demonstrating that spontaneous pregnancy loss rates were higher in women with fibroids.[6] The location of the fibroid may also be important. Early miscarriage is more common in women with fibroids located in the uterine corpus (body) when compared to the lower uterine segment[7] and also in women with intramural or submucosal fibroids.[8, 9] Five patients had conceived following myomectomy. Out of 170 cases, 41 (22%) and 45 (24%) presented with prolonged menstruation and frequent cycles respectively, before the present pregnancy. One hundred and five patients had no menstrual abnormalities prior to pregnancy. Forty symptomatic patients were managed medically using tranexamic acid for menstrual irregularity.

Thirty two (18%) out of 170, as compared to 11% as observed in 1999 by Bulletti et al, had history of infertility, among whom 4 (2%) and 1 (0.5%) conceived following ART and IUI respectively.[10] One hundred and fifty six patients (91.8%) conceived spontaneously.

In our study of 170 cases, 94 patients (55) % had no change in the size of fibroid whereas 35 (20.6%) noted increasing size of fibroid. About two third cases (68%) had fibroids of size 6 - 8cm in the third trimester. Sixty eight cases (40%) had multiple fibroids. One hundred and twelve (66%) out of 170 had intramural fibroids. Only single case of submucosal fibroid was noted.

During pregnancy, uterine leiomyomas are usually asymptomatic but may be occasionally complicated by red degeneration, an increased frequency of spontaneous abortion, preterm labour, premature rupture of membranes, ante - partum haemorrhage, malpresentation, failure to progress, caesarean section and postpartum haemorrhage.[11, 12, 13] Hundred and thirty pregnancies (76.5%) in our study had complications, while 40 (23.5%) remained asymptomatic. Other studies have reported similarly, with up to 70% pregnancies with fibroids getting complications.[14]

Regarding obstetric complications, 112 (66%) out of 170 patients gave history of threatened abortion. The location of the fibroid determines the risk for bleeding. Bleeding in early pregnancy is significantly more common if the placenta implants close to the fibroid compared with pregnancies in which there is no contact between the placenta and fibroid (60% vs 9%, respectively) [9]. Thirteen patients had pain abdomen (7.6%), managed by analgesics, bed rest, hydration and reassurance. The cause of pain was found to be degeneration. The incidence of red degeneration has been reported to be 12% by Deena Dayal et al. in 2012 [3]

Pregnant women with fibroids are significantly more likely to develop preterm labour and to deliver preterm than women without fibroids (16.1% vs 8.7% and 16% vs 10.8%, respectively) as per the systematic review by Klatsky et al. in 2008.9 Multiple fibroids and fibroids contacting the placenta appear to be independent risk factors for preterm labour as per that study.[15] In contrast, fibroids do not appear to be a risk factor for preterm premature rupture of membranes (PPROM). In this study we also found an increased risk of preterm labour. Sixty one percent patients reached up to term pregnancy. while 66 patients (39%) had preterm deliveries and 14 (8%) pregnancies were complicated by preterm premature rupture of membranes. Myoma may distort the shape of uterine cavity which may account for higher rates of preterm birth and malpresentations.6, [16, 17] As pregnancy advances myometrium having fibroids are overstretched and this mechanism can initiate labour and thus result in increase rate of preterm births.[17, 18]

Among the 39 cases of IUGR, 66.7% (26) occurred in cases with fibroid size of 6 - 8 cm. On the other hand, 50% of cases with fibroid size of 9 - 12 cm resulted in IUGR. There was a significant association between size of fibroid and occurrence of IUGR (Fisher's Exact= 11.8, p=0.004. In our study 59% of IUGR, there were more than one fibroids, making the relation statistically significant (p=0.017).

Cumulative data and a population - based study by Klatsky et al suggested that women with fibroids are at slightly increased risk of delivering a growth - restricted infant.[9, 19] Rarely, large fibroids can compress and distort the intrauterine cavity leading to fetal deformities. A number of fetal anomalies have been reported in women with large submucosal fibroid[20, 21, 22] Seven (4%) fetal structural anomalies were noted in our study. Pregnant women with fibroid are at increased risk of placenta previa and malpresentation.[23, 24]

In our study two third cases of malpresentation were noted with larger fibroid size (>6cm) as well as when the fibroids were multiple (p=0.007). Breech was the most common malpresentation noted, accounting to 8.2% of total deliveries. Figures of increase risk of malpresentation due to fibroid in our study is similar to studies carried out in the past.[3] There was a significant association between the size of the fibroid and failure to progress (Fisher's Exact = 12.838, p=0.025). Higher proportion of participants (43.8%) with fibroid of a size of 9 - 12 cm failed to progress.

Forty five percentage of cases were delivered by caesarean section as noted in our study. In a systematic review, women with fibroids were at a 3.7 - fold increased risk of cesarean delivery (48.8% vs 13.3%, respectively).[9] Hence, our study results are contrasting to a few similar studies conducted in the past, which concluded fibroids as a significant factor increasing the chances for caesarean delivery.[9, 25, 26] Malpresentation, large fibroids, multiple fibroids, submucosal fibroids, and fibroids in the lower uterine segment are considered predisposing factors for cesarean delivery.[25, 26] Five (2.9%) patients had abruption. All cases of abruption were noted to be in cases of fibroid size 6 - 8 cm in third trimester. No significant association was noted between abruption and the size or the number of fibroids. Although reports are conflicting, pooled cumulative data in other studies suggest that the risk of placental abruption is increased 3 - fold in women with fibroids.9 Submucosal fibroids, retroplacental fibroids, and fibroid volumes 200 cm^3 were independent risk factors for placental abruption as per previous studies.9Among the 14 cases of PPROM, 11 (78.6%) occurred in cases with fibroid size of 6 - 8 cm. But there was no significant association found between size of

fibroid and occurrence of PPROM (Fisher's Exact= 7.19, p=0.059).

In our study, 82 patients (48%) had atonic postpartum haemorrhage.76 patients were managed medically (44.7%). Three patients were managed using condom tamponade. . When the size of the fibroid was 6cm or more there was 1.29 higher odds of atonic PPH, though statistically insignificant. Reports on the association between fibroids and postpartum haemorrhage are conflicting compared to previous studies.9 Fibroids are considered to distort the uterine architecture and interfere with myometrial contractions leading to uterine atony and postpartum haemorrhage. None of our patients underwent obstetric hysterectomy.

Removal of fibroid during pregnancy is seemingly reserved for women who have subserosal or pedunculated fibroid with pain that is unresponsive to rest, intravenous fluids NSAIDs and narcotic medication.[24] None of our patients were taken up for fibroid removal in the antepartum period.

In our study there were 77 patients delivered by caesarean (45.3%), 9 underwent caesarean myomectomy. Three patients had classical incision, one patient had lower segment vertical incision, while others underwent lower segment transverse incision. Fibroid was in the lower uterine segment in cases where classical caesarean was performed. Caesarean myomectomy is avoided unless the fibroid is in the line of incision.2[7] In our study, therefore, 9 patients underwent caesarean myomectomy.

Forty (23%) cases had sub - involution of uterus in postpartum period, as per our data. Out of these, 72.9% occurred in cases were the fibroid sizes were 6 - 8cm. It was also noted that in cases with fibroid size of 9 - 12cm, there was significantly higher odds of subinvolution. There was significantly higher odds of sub involution, i. e, 2.25 times higher compared to those with size of 6 - 8cm. As far as neonatal outcome is concerned, 150 (90%) patients delivered healthy babies.

5. Conclusion

Pregnancy with fibroids of size more than 6cm in third trimester lead to significant increase in preterm labour, IUGR, mal presentation and failure to progress. Atonic PPH, although not resulting in significant anaemia, was noted in about half the number of cases, though statistically proven insignificant.

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