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Omar Anwar Banjar
Department of Obstetrics and Gynecology, Security Forces Hospital, Riyadh, Saudi Arabia

Ahmad Talal Chamsi
Department of Obstetrics and Gynecology, Security Forces Hospital, Riyadh, Saudi Arabia

Salman AlShahed
Department of Obstetrics and Gynecology, Security Forces Hospital, Riyadh, Saudi Arabia

Gehan Farid
Department of Obstetrics and Gynecology, Security Forces Hospital, Riyadh, Saudi Arabia

Correspondence
Ahmad Talal Chamsi
Department of Obstetrics and Gynecology, Security Forces Hospital, Riyadh, Saudi Arabia

The effect of uterine leiomyoma on obstetric outcome in pregnant Saudi females

Omar Anwar Banjar, Ahmad Talal Chamsi, Salman AlShahed and Gehan Farid

Abstract
Background: Fibroids in pregnancy is a commonly encountered clinical entity.
Objective: To evaluate the maternal and fetal outcome in women having pregnancy with uterine fibroids.
Settings: A retrospective observational cohort study was conducted at Department of Obstetrics and Gynecology, Security Forces Hospital, Riyadh, Saudi Arabia. Women who delivered singleton newborns between June 1 and December 31, 2017, were retrospectively identified.
Results: We present the clinical, obstetric data, perinatal outcomes of 15 patients from a prospective study. Fifteen pregnant women with fibroid >3cm were prospectively included in study. Major proportion of patient with fibroids were in younger age group of 25-30 years when compared to older age group of 31-35 years (66% vs 33%). Fibroids were more frequent in multi-gravidae, compared to primigravidae. In almost half of patients, (53.3%) fibroids were diagnosed before pregnancy. Common complications encountered during pregnancy in decreasing order of frequency were pain abdomen (46.6%), followed by threatened preterm labor (26.6%) and anemia (26.6%). Out of 15, three (20%) women had abortion. In remaining, 11/12 patients attained term pregnancy between 37 to 40 weeks. Caesarean section was done in 75% of women who attained term pregnancy and one patient had technical difficulty during caesarean section. Post-partum hemorrhage was seen in 5/15 (33.3%) of patients. Out of 15, five babies were low birth weight. Four babies required NICU admission. There was no perinatal mortality.
Conclusion: In our small patient population high incidence of caesarean section rates and increased incidence of threatened preterm labor, anemia, and postpartum hemorrhage, was observed in pregnant patients with fibroids and hence, the pregnancy with fibroids should be considered as high risk pregnancy.

Keywords: Pregnancy, uterine fibroid, leiomyoma, obstetric, outcome

1. Introduction
Uterine fibroids (leiomyomas) are benign smooth muscle tumors of the uterus. They are found in approximately 20-50% of women of reproductive age [1]. Incidence of fibroids varies from 0.1% to 12.5% [2]. Incidence of fibroids increases with maternal age at pregnancy [2]. Fibroid less than 5 cm in diameter tend to remain stable or decrease in size [3-5] and, larger fibroids (>5 cm) tend to grow during the pregnancy [5]. The risk of adverse events in pregnancy increases with the size of the fibroid [6]. Different complications with variable rates of incidence have been reported in pregnancy with fibroids which include ante-partum hemorrhage, acute abdomen, laparotomy, preterm labor, feto-pelvic disproportion, malposition of the fetus, retention of the placenta, postpartum hemorrhage, red degeneration, dysfunctional labor, retained placenta, and retained products of conception, intra uterine growth restriction (IUGR) [7-11]. These complications are more commonly seen with large submucosal and retroplacental fibroids [6]. Despite the high incidence of all these adverse events during pregnancy, perinatal outcomes in these patients tend to be fair [9]. Due to risk of all these complications pregnancy with fibroids has been a topic of research for many years. However, there is paucity of literature involving Asian population and especially Indian population [1, 12, 13]. In this context, this retrospective study was planned to assess the outcome of pregnancy in patients with uterine fibroids involving pregnant ladies in a single Saudi center.

2. Materials and Methods
2.1. Ethical Approval
The study was approved by the Institutional Research Committee at Security Forces Hospital
Design and Setting

2.2 Settings
A retrospective observational cohort study was conducted at Department of Obstetrics and Gynecology, Security Forces Hospital, Riyadh, Saudi Arabia.
Women who delivered singleton newborns between June 1 and December 31, 2017, were retrospectively identified.

2.3 Subjects
A total of 5619 patients were analyzed.
The inclusion criteria for this study were:
1. Singleton pregnancy
2. Gestational age of 24-42 weeks at the time of delivery
3. Booked patients who delivered at SFH with availability of documented records of maternal weight and height at the booking visit.
4. Women with at least one leiomyoma noted at routine first or second-trimester ultrasound examination

The exclusion criteria were
1. Patients who did not meet the inclusion criteria
2. Women with pathological conditions (chronic hypertension, gestational diabetes or pre-existing diabetes mellitus, uterine anomalies or fetal malformations).
3. Multiple- pregnancy.
4. Uncooked patients
5. Patients with contraindication for normal vaginal delivery such as previous 2 Cesarean Deliveries or Placenta Previa
6. Maternal demographic characteristics, medical and obstetrical history and pregnancy outcomes were collected from Medical Record Viewer database of Security Forces Hospital along with manual retrieval from medical charts and labor records using standardized data collection forms.

2.4 Statistical analysis
Data were collected and entered on Microsoft Excel. Data Analysis was carried out using Microsoft Excel 2017.

3. Result
Of the 5619 women who delivered during the study period, 15 patients met the inclusion criteria. All the findings are summarized in [Table 1-4]. Fifteen patients were included in this study. Mean age was 28.9 years. History of recurrent pregnancy loss was present in 7 patients. Six patients were primigravida and 9 were multigravida, of which four patients had history of more than three recurrent abortions, obstetric history of 2 abortions were seen in 2 patients and 1 patient had previous history of single abortion.
Majority of the patients (8/15) had prenatal diagnosis of fibroids. Majority of patients had single fibroid and one thirds had multiple fibroids. Most common location of fibroids was intramural followed by subserosal location. Around 20% (3/15) of the patients had early pregnancy loss. Majority of the patients had (11/12) term pregnancy. Pain was the most frequently noted complication followed by threatened preterm, and anaemia. High incidence of PPH, and IUGR were noted.

Table 1: Maternal demographic characteristics: n=15 S-Spontaneous, OI-ovulation induction, IVF-*In vitro* fertilization, G-Gravida, P-Para,

S.no	Age	Parity	Type of Conception	H/O Abortions	Time of Diagnosis
1	28	G1	S	No	12 weeks
2	28	G3A2	S	Yes	14 weeks
3	32	G4A3	S	Yes	Before pregnancy
4	31	G1	IVF	No	Before pregnancy
5	26	G1	S	No	16 weeks
6	28	G4A3	OI	Yes	Before pregnancy
7	30	G4A3	OI	Yes	Before pregnancy
8	32	G4A3	IVF	Yes	Before pregnancy
9	28	G3A2	OI	Yes	14 weeks
10	26	G1	S	No	16 weeks
11	27	G2A1	S	Yes	Before pregnancy
12	28	G2P1L1	S	No	Before pregnancy
13	27	G2P1L1	S	No	Before pregnancy
14	28	G1	OI	No	16 weeks
15	26	G1	S	No	28 weeks

There was one preterm baby, who developed RDS (8.3%). The incidence of IUGR was 41.6% (5/12). Four babies (33.3%) were admitted in NICU. There was no neonatal death noted in our study. USG findings of few patients are shown in [Figure 1 A-C].

Table 2: Ultrasound characteristics fibroid: n= 15 SS-Subserosal, IM-Intramural

S. no	Number	Site	Size (cm)
1	Single	IM-Ant, LUS	5-10
2	Single	IM-Post	5-10
3	Single	IM-Ant, fundal	>10
4	Single	IM-Ant, fundal	<5
5	Single	SS, Pedunculated	>10
6	Multiple	SS IM-fundal IM-Ant	>10 <5
7	Multiple	IM-Fundal IM-Ant	>10 <5
8	Single	IM-Post	5-10
9	Single	IM-Ant	>10
10	Single	IM-fundal	<5

11	Multiple	SS IM	>10 <5
12	Multiple	SS IM-Ant	5-10 <5
13	Single	IM-post	<5
14	Multiple	SS IM-Ant	<5 5-10
15	Single	IM-post	<5

Table 3: Antenatal complications: n= 15 PPROM-Preterm Premature rupture of membranes, IUGR-Intrauterine growth restriction, APH-antepartum hemorrhage, Y-Yes, N-No

S. no	Abortions	Anemia	Abdominal Pain	PPROM	Threatened Preterm	IUGR	APH
1	N	Y	Y	N	Y	Y	N
2	N	N	Y	N	N	N	N
3	N	Y	Y	N	Y	N	N
4	N	N	N	N	N	Y	N
5	N	N	Y	N	N	N	N
6	N	Y	Y	Y	Y	Y	N
7	Y	N	Y	N	Y	N	N
8	N	N	N	N	N	Y	N
9	N	N	N	N	N	N	N
10	N	Y	Y	N	N	N	N
11	Y	N	N	N	N	N	N
12	Y	N	N	N	N	N	N
13	N	N	N	N	N	N	N
14	N	N	N	N	N	Y	N
15	N	N	N	N	N	N	N

Table 4: Perinatal outcome, n=15 RDS-respiratory distress Syndrome, Y-Yes, N-No

S. no	Term	Birth weight in Kg	Birth asphyxia	NICU admission
1	Y	2.25	N	Y (Hyperbilirubinemia)
2	Y	2.8	N	N
3	Y	2.9	N	N
4	Y	2.4	N	Y (Hyperbilirubinemia)
5	Y	2.8	N	N
6	N	2.4	Y	Y (RDS, Prematurity)
7	Y	2.9	-	N
8	Y	2.4	N	N
9	Y	2.8	N	N
10	Y	2.8	N	N
11	Y	3.1	-	N
12	Y	2.82	-	N
13	Y	2.75	N	N
14	Y	2.3	Y	Y (Asphyxia)
15	Y	2.6	N	N

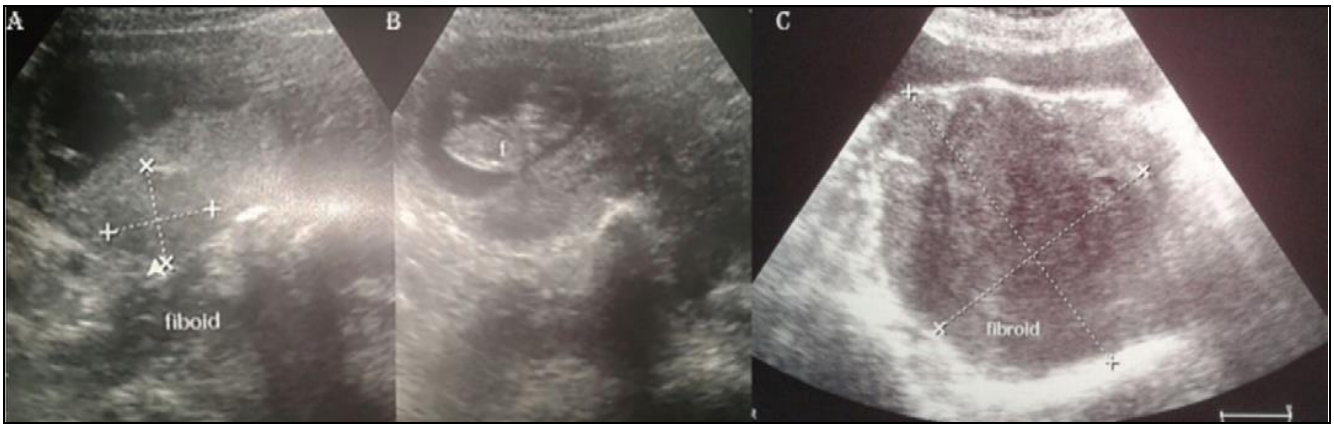

Fig 1: A) Longitudinal ultrasound images showing live intrauterine gestation; B) 2.5X2.5cm fibroid. This patient had uneventful course during pregnancy; C) Longitudinal ultrasound images of uterus showing a large intramural fibroid of size 12x8 cm. This patient had an early abortion

4. Discussion

This study was conducted to evaluate the outcome of pregnancies complicated by leiomyomas. Mean maternal age in our study was found to be 28.9 years, which is comparable to other studies, showing occurrence of leiomyomas in second and third decades of life [1, 13]. We found that fibroids were less

frequent in first pregnancy compared to multigravida. This is in consistent with earlier studies by Noor *et al*. [13] (73.33% multigravida and 23.66% primigravida) and Sarwar *et al*. [1] (63% multigravida and 37% primigravida). Regarding obstetric complications, in our study, 3 out of 15 patients (20%) had abortion. High incidence of abortions in patients with fibroids is in agreement with results from earlier studies [1, 9]. The proposed mechanism is compressed endometrial vascular supply, affects the fetus adversely resulting in abortion [1]. In our study, 7/15 (47%) had significant pain abdomen, which is slightly higher to results reported in the prior studies [1, 3, 9, 14]. These patients were managed by bed rest, analgesics and reassurance. Cause of pain was due to red degeneration, which is thought to be result of effect of progesterone on fibroids, and occurs more commonly in pregnancy [12].

Though 4/15 (26.6%) patients had history of threatened preterm labor during pregnancy, 11 (73.3%) patients had continued their pregnancy till term and only one patient (7%) had preterm delivery at 34 weeks of gestation due to PPROM. The incidence of preterm delivery was low in our study compared to study by Sarwar *et al*. (33.3%) [1]. we reported slightly increased incidence of PROM, (3/15, 20%) compared to Sarwar *et al*. (10%). Anemia was found in four patients (26.6%), comparable with study by Noor *et al*. (20.6%) [13].

Regarding mode of delivery, 3 patients had spontaneous onset of labor. Of 12 patients, 9 had LSCS, 2 had spontaneous vaginal delivery and 1 patient was delivered by ventose assistance. This is similar to studies by Noor *et al*. (70%) and three folds higher, compared to studies by Sarwar *et al*. (2.6%) [1, 13].

In our patient population, 5 patients (33.3%) had PPH, similar to study by Noor *et al*. (33.3%) and slightly high, compared with 14% in study by Lam *et al*. [13, 15]. Only one patient had technical difficulty during caesarean section, owing to the larger fundal fibroid, similar to Sarwar *et al*. [1]. However, no patient in our study required caesarean hysterectomy, as compared to13.33% in Noor *et al*. study [13], Cesarean myomectomy should be avoided unless fibroid is in line of incision.

5. Conclusions

Pregnancy with fibroids is associated with various adverse events during pregnancy which included but not limited to high caesarean section rates, threatened preterm labor, anemia, post-patum hemorrhage, and hence, it should be considered as high risk pregnancy.

6. Conflict of interest

The authors state no conflict of interest.

7. References

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