

# Fetomaternal outcome in patients with threatened abortion in the first trimester – An observational study



Mousumi Ghosh<sup>1</sup>, Aparna Khan Mandal<sup>2</sup>, Shelley Seth<sup>3</sup>, Animesh Naskar<sup>4</sup>

<sup>1</sup>Senior Resident, <sup>2,3,4</sup>Associate Professor, Department of Obstetrics and Gynaecology, R. G. Kar Medical College and Hospital, Kolkata, West Bengal, India

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## ABSTRACT

**Background:** Uterine bleeding in early pregnancy represents a definite threat to developing embryo and is directly proportional to the amount of bleeding. It is associated with an increased risk of poor obstetric and neonatal outcomes such as preterm labor, low birth weight, and premature rupture of membranes (PROM). **Aims and Objectives:** This study aims to investigate the effect of the first trimester vaginal bleeding on maternal and perinatal outcomes. **Materials and Methods:** This prospective observational study carried out in a tertiary teaching hospital of Kolkata, between January 2019 and June 2020. Here, 190 patients with the first trimester vaginal bleeding were included in the study. Outcome of pregnancy was assessed in the form of obstetrical complications such as placenta previa, PROM, preterm labor, intrauterine fetal death, intrauterine growth retardation (IUGR), and neonatal outcomes such as prematurity, low birth weight, low appearance, pulse, grimace, activity, and respiration, requirement of newborn intensive care unit (NICU) admission, and perinatal death. **Results:** Our study shows that 116 (61.05%) out of 190 were primi gravida and rest 74 (38.95%) were multigravida. Seventy-five (39.47%) had missed abortion, 43 (22.63%) patients had incomplete abortion, and 23 (12.10%) out of 190 patients resulted in complete abortion. About 19.47% (37 out of 190) had viable pregnancy. Six (16.21%) out of 37 patients had preterm delivery, 4 (10.81%) out of 37 patients had antepartum hemorrhage. Preeclampsia developed in 8.1% (three out of 37) patients. About 48.64% (18) delivered vaginally, 45.94% (17) underwent lower segment cesarean section, and only 2 (5.40%) patients had instrumental delivery (forceps). Regarding neonatal outcome, 5.40% had early neonatal death, 21.62% needed NICU admission, 8.10% suffered from fetal distress, 5.40% had meconium stained liquor, 8.10% were IUGR, and 32.43% had birth weight < 1.5 kg. **Conclusion:** The first trimester bleeding is a predicting factor for obstetric and perinatal complications during pregnancy.

**Key words:** Fetomaternal outcome; First trimester bleeding; Threatened abortion

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## INTRODUCTION

Threatened abortion is defined as evident bleeding per vagina without dilation of cervix or cervical dilatation without vaginal bleeding in early period of gestation. Confirmation of diagnosis is done by ultrasonography finding of the presence of fetal heart beat. Uterine bleed in early pregnancy represents a definite threat to developing embryo and is directly proportional to the amount of

bleeding. It constitutes a source of anxiety to both the patient and the clinician. Clinical vaginal bleeding during the first trimester is associated with an approximate 5.5–42.7% risk for subsequent complete miscarriage.<sup>1,2</sup> It is associated with an increased risk of poor obstetric outcomes such as preterm labor, low birth weight, and premature rupture of membranes (PROM). The purpose of this study was to investigate the effect of the first trimester vaginal bleeding on maternal and perinatal outcomes.

### Address for Correspondence:

Dr. Animesh Naskar, R. G. Kar Medical College and Hospital, Kolkata, West Bengal, India. **Mobile:** +91-8240635615.

**E-mail:** animesh282@gmail.com

## Aims and objectives

Our study aims to evaluate the fetomaternal outcome in women presented with threatened abortion in the first 12 weeks of gestation.

## MATERIALS AND METHODS

This is an observational prospective study done at R.G. Kar Medical College and Hospital among patients admitted in the Department of Obstetrics and Gynaecology from January 1, 2019, to June 30, 2020, that is, 18 months. From January 2019 up to September 2019, we enrolled the patients for the study and for the next 9 months, that is, from October 2019 to June 2020, we followed up them to study the fetomaternal outcome. Data collection was started after the institutional ethical clearance. One hundred and ninety patients presented with bleeding per vagina with  $\leq 3$  months pregnancy, positive pregnancy test and gave consent for study were included by multiphasic sampling method without taking emergency cases who needed immediate surgical interventions such as incomplete and missed abortion, ectopic and molar pregnancy, with a history of abortifacient intake, any local lesions and bleeding disorders, and pregnant women with chronic medical complications.

### Ethical clearance

Ethical clearance had been obtained from review and ethical committee of R.G. Kar Medical College and Hospital.

### Sample size

The study patients were taken from obstetrics and gynecology department between January 2019 and June 2020. Purposive sampling technique was applied for sampling. It had been observed that around 5 patients/week of threatened abortion came to Obstetrics and Gynaecology Department in RGKMCH. Hence, the study subject for my study was  $(5 \times 4 \times 9) = 180$ . Estimating 10% dropout  $(180 + 18) = 198$  cases, but eight patients dropped out. Hence, eventually, our study sample was 190.

### Study procedure and data collection

After admission through Obstetrics and Gynecology emergency in RGKMCH, patient particulars such as parity, gestational age, last menstrual period, and amount of bleeding were taken from indoor bed tickets (BHT). Patients continuing pregnancy were discharged to attend antenatal care outpatient department later on and future outcomes were recorded from records of antenatal cards and BHTs when they were admitted for delivery. Patients contact numbers and addresses were recorded for future correspondence. Neonatal outcomes were recorded from log records, nursery records, and in some cases from newborn intensive care unit (NICU) registers. The patients

were followed up until their final outcome. Figure 1 depicts the entire study procedure.

Later, the outcomes of pregnancy were assessed in the form of obstetrical complications such as placenta previa, PROM, preterm labor, intrauterine fetal death (IUFD), FGR, and neonatal outcomes such as prematurity, low birth weight, low appearance, pulse, grimace, activity, and respiration (APGAR), NICU admission, and perinatal death. Maternal data were collected from log book, antenatal records, patient BHTs, and fetal data were taken from neonatal record log books, nursery records, and NICU register. Patients under went all antenatal check-ups and investigations such as hemoglobin %, ABO grouping and Rh typing, fasting blood sugar, postprandial blood sugar high-performance liquid chromatography, thyroid-stimulating hormone, free T<sub>4</sub>, venereal disease research laboratory, human immunodeficiency virus 1

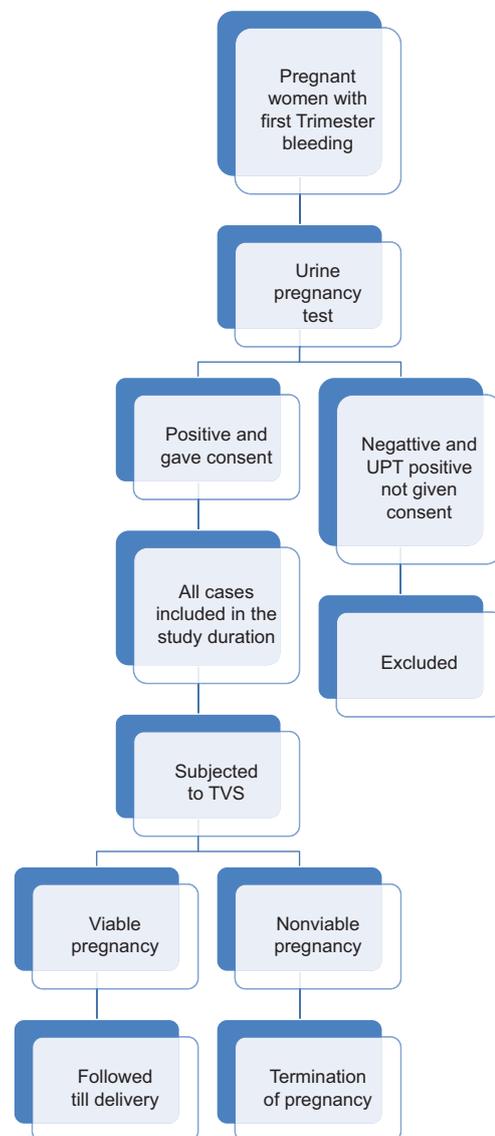


Figure 1: Study procedure

and 2, hepatitis B surface antigen, anti-hepatitis C virus, urine RE/ME and C/S, and ultrasound (USG) for early pregnancy profile.

**Statistical analysis**

All data were verified and entered into Microsoft Excel. Data cleaning was done meticulously. Data were analyzed using SPSS version 23. The categorical data or qualitative data were presented by frequency along with percentages. P<0.05 was considered as level of significance.

**RESULTS**

The mean age of the study population is 24.053±5.267 years, lowest being 18 years and highest being 37 years. Table 1 shows that 116 (61.05%) out of 190 were primigravida and 74 (38.95%) were multigravida. Maximum number of patients, that is, 102 (53.68%), presented at 7 weeks of gestation. Sixty (31.58%) patients were at 7–10 weeks of gestation and only 28 (14.74%) of patients belonged to gestational age above 10 weeks.

Table 2 shows that 75 (39.47%) had missed abortion, 43 (22.63%) patients had incomplete abortion, and 23 (12.10%) patients resulted complete abortion. Twenty-five (13.16%) patients out of 190 had sub-chorionic hemorrhage detected by USG out of which 10 (40%) patients ended up in abortion and 15 (60%) patients continued their pregnancy.

About 74.21% had lost pregnancy in the 1<sup>st</sup> trimester. About 62.10% of patients underwent dilation and evacuation and manual vacuum aspiration (surgical intervention), 12.10% of patients who had complete abortion were managed conservatively. About 25.79% of patients who were continued pregnancy giving tab. folic acid, tab. progesterone, and advising complete bed rest. Among them, 2 (1.05%) patients were given cervical cerclage.

Pregnancy was continued to the 2<sup>nd</sup> trimester in 49 (25.78%) patients. Four (2.10%) patients had the 2<sup>nd</sup> trimester abortion and 8 (4.21%) patients had IUFD. Only 37 (19.47%) patients had delivered live babies.

Table 3 shows that 6 (16.21%) had preterm labor, 2 (5.40%) had PROM, 3 (8.10%) had pregnancy-induced hypertension (PIH), 4 (10.81%) had antepartum hemorrhage (APH), and 22 (59.45%) reached up to term pregnancy. Thirty-seven (19.47%) out of 190 study population had viable pregnancy. Out of 37 viable pregnancies, 2 (5.40%) had early neonatal death, 8 (21.62%) needed NICU admission, 3 (8.10%) suffered from fetal distress, 2 (5.40%) had meconium stained liquor, 3 (8.10%) were intrauterine growth retardation (IUGR), 12 (32.43%) had birth weight <1.5 kg, 22 (59.45%) had birth weight of ≥2.5 kg, and rest of neonates, that is, 3 (8.10%) had birth 1.5 to <2.5 weight in between. About 24.32% and 75.67% had APGAR <7 and >7 at 1 min, respectively. About 21.62% and 78.37% had APGAR <7 and >7 at 5 min, respectively. Table 4

**Table 1: Baseline parameters of patients at the time of admission (n=190)**

Parameters	Number	Percentage
Parity		
Primigravida	116	61.05
Multigravida	74	38.95
Gestational age		
<7 weeks	102	53.60
7–10 weeks	60	31.58
>10 weeks	28	14.74
Pattern of bleeding		
Spotting	158	83.16
Heavy	32	16.84
Abortion in previous pregnancy		
Yes	73	38.42
No	117	61.57

**Table 2: Distribution of population according to USG finding (n=190)**

USG findings	Number	Percentage
Missed abortion	75	39.47
Incomplete abortion	43	22.63
Complete abortion	23	12.10
IUFD	08	4.21
Normal	41	21.57

USG: Ultrasound, IUFD: Intrauterine fetal death

**Table 3: Distribution of population according to fetomaternal outcome (n=37)**

Outcomes	Number	Percentage
Maternal		
Preterm labor	6	16.21
PROM	2	5.40
PIH	3	8.10
APH	4	10.81
Term	22	59.45
Fetal		
Birth weight		
<1.5 kg	12	32.43
1.5–<2.5 kg	3	8.10
≥2.5 kg	22	59.45
APGAR score		
APGAR <7 (1 min)	9	24.32
APGAR >7 (1 min)	28	75.67
APGAR <7 (5 min)	8	21.62
APGAR >7 (5 min)	29	78.37
Neonatal complications		
IUGR	3	8.10
Meconium stained liquor	2	5.40
Fetal distress	3	8.10
NICU admission	8	21.62
Early neonatal death	2	5.40

PROM: Premature rupture of membranes, PIH: Pregnancy-induced hypertension, APH: Antepartum hemorrhage, NICU: Newborn intensive care unit, IUGR: Intrauterine growth retardation, APGAR: Appearance, pulse, grimace, activity, and respiration

shows that 18 patients (48.64%) delivered vaginally, 17(45.94%) underwent lower segment cesarean section, and only 2(5.40%) patients had instrumental delivery (by forceps). Table 5 shows that 158 (83.16%) out of 190 patients presented with spotting of which 58.42% were aborted and 24.74% continued pregnancy. Thirty-two (16.84%) patients presented with heavy bleeding out of which 30(15.78%) were aborted and rest of the patients, that is, 2 (1.05%) continued their pregnancy which was statistically significant. Seventy-three (38.42%) patients studied had a history of abortion in previous pregnancy of which 65 (34.21%) patients got aborted and rest of the patients continued their pregnancy. One hundred and seventeen (61.58%) out of 190 had no history of abortion in their previous pregnancy and 76 (40%) were aborted and 41(21.58%) continued pregnancy which was statistically significant.

## DISCUSSION

The mean age of the study population in our study was 24.053±5.267 years. Yasmin et al., showed that the mean maternal age was 26.53±6.36 year. <sup>3</sup>The present study showed that majority had spontaneous abortion when

threatened abortion occurred at early week of gestation at <7 weeks than threatened abortion occurred a bit later gestational age which was statistically significant (P=0.000). Bleeding prevalence was highest around gestational week 5–8 in a study done by Hasanet al.<sup>4</sup>In our study, among the patients presented with the first trimester bleeding, 61.05% were primigravida and 38.95% were multigravida which were not statistically significant (P=0.321). Amirkhani et al., reported that 56.7% of patients who presented with the first trimester bleeding were primigravida and 43.3% were multigravida which are similar to our study. <sup>5</sup>Kanmaz et al., reported nulliparity 37.5% and multiparity 62.5% among the pregnant mothers with threatened abortion. <sup>6</sup>Lewis et al., showed that the risk of first trimester vaginal bleeding was more in multigravida. <sup>7</sup>Majority (83.16%) patients of the present study presented with spotting. Only 16.84% of patients had heavy bleeding.

There was a significant correlation between abortion in the current pregnancy and the history of previous pregnancy loss(P=0.000) seen in our study. Bhattacharya et al., showed that an initial abortion is associated with a higher risk of obstetric complications in next pregnancy.<sup>8</sup> Lewis et al.,found that 30.67% of patients with the first trimester vaginal bleeding had a history of previous abortion.<sup>7</sup> Similar findings were also noted by Hossain et al., and Hackneyetal.<sup>9,10</sup>

In our study, abortion occurred in 74.21% of patients with a history of the first trimester vaginal bleeding. Amirkhani et al., showed that only 30% had abortion and 70% continued pregnancy. <sup>5</sup>Talwer et al., had reported 18% spontaneous abortion. <sup>11</sup>Yakistiran et al., showed11.7%,

**Table 4: Distribution of population according to mode of delivery (n=37)**

Mode of delivery	Number	Percentage
Vaginal delivery	18	48.64
Instrumental delivery	2	5.40
LSCS	17	45.94

LSCS: Lower segment cesarean section

**Table 5: Comparison between two groups of patients who aborted and who continued pregnancy (n=190)**

Patient particulars	Patients who aborted (%)	Patients who continued pregnancy (%)	P-value
Age (years)			
<20	30 (15.78)	29 (15.26)	P-value (by Pearson Chi-square test) 0.0001
21–30	93 (48.95)	7 (3.68)	
31–35	14 (7.37)	12 (6.32)	
>35	4 (2.11)	1 (0.5)	
Total	141 (74.21)	49 (25.79)	
Gravida			P-value-0.321
Primigravida	89 (46.84)	27 (14.21)	
Multigravida	52 (27.37)	22 (11.58)	
Gestational age at presentation			P-value-0.0000 (By Pearson Chi-square test)
<7 weeks	101 (53.16)	1 (0.53)	
7–10 weeks	26 (13.68)	34 (17.89)	
>10 weeks	14 (7.37)	14 (7.37)	
Pattern of bleeding			P-value-0.001 (Chi-square test)
Spotting	111 (58.42)	47 (24.74)	
Heavy	30 (15.78)	2 (1.05)	
Abortion in previous pregnancy			P-value-0.0000(Pearson Chi-square test)
Yes	65 (34.21)	8 (4.21)	
No	76 (40)	41 (21.58)	

who experienced bleeding in the first trimester terminated their pregnancies with spontaneous abortion while 88.3% of pregnancies continued after 24 weeks' of gestation.<sup>12</sup> Lewis et al., showed 67.67% abortion among patients with the first trimester vaginal bleeding.<sup>7</sup> According to our study, abortion occurred in 93.8% (30 of 32) of patients with heavy bleeding and 70.25% (111 of 158) patients with spotting which is statistically significant ( $P=0.001$ ). Hasan et al., reported 24% of women with heavy bleeding experienced miscarriage.<sup>4</sup> Gracia et al., also found that heavy bleeding was strongly associated with miscarriage which is matching with the present study.<sup>13</sup>

Our study showed PROM 5.40% and preterm labor 16.21% among patients with a history of first trimester bleeding. The finding of the study done by Talwar et al., where pre-labor rupture of membranes was seen in 20% of patients and 21% had preterm labor.<sup>11</sup> Kanmaz et al., reported preterm labor in 6.2% of patients.<sup>6</sup> The incidence of preterm PROM was significantly higher in women whose pregnancy was complicated by the first trimester bleeding (OR 1.78, 95% CI 1.28, 2.48) found in a study by Saraswat et al.<sup>14</sup> Amirkhani et al., showed PROM in 8.3% and preterm labor in 25% of patients with a history of first trimester bleeding.<sup>5</sup>

We found IUGR in 8.10% of patients whereas Amirkhani et al., reported IUGR 5%.<sup>5</sup> Davari-Tanha et al., reported an increased risk for IUGR in the case group.<sup>15</sup> Incidence of intrauterine fetal death in our study was 4.21%. Kanmaz et al., showed incidence of still birth as 2%<sup>6</sup> and Amirkhani et al., showed IUFD of 1.7%.<sup>6</sup>

Among the pregnancy complications, 10.81% of patients had antepartum hemorrhage in our study. Saraswat et al., reported that APH was more among in those with threatened miscarriage.<sup>14</sup> Kanmaz et al., showed 1.23% of antepartum hemorrhage<sup>6</sup> and Amirkhani et al., reported placenta abruption in 13.3% of patients.<sup>5</sup> In our study, 8.10% of patients had PIH. According to Saraswat et al., incidence of PIH, preeclampsia, or eclampsia was not significantly altered by bleeding in the first trimester.<sup>14</sup> Kanmaz et al. reported preeclampsia in 3.8% of patients.<sup>6</sup>

Regarding neonatal outcome, we found 40.54% baby born with low birth weight. Kanmaz et al., reported incidence of low birth weight as 15.8%.<sup>6</sup> In our study, 21.62% of baby needed NICU admission. About 11% of neonates were admitted in NICU in the study of Kanmaz et al.<sup>6</sup> The current study showed that rate of vaginal delivery and cesarean section was almost same (48.64% vs. 45.94%). Most of the preterm pregnancies were delivered vaginally. Saraswat et al., showed that the first trimester bleeding did not influence the mode of delivery.<sup>14</sup>

### Limitations of the study

Apart from small sample size, our study could not evaluate the relation between threatened abortion and congenital malformation of the baby. Long-term follow-up and prognostic assessment were also could not be done here. As most of the people in the study were from similar ethnic background, it could not represent the entire population of India which has a large ethnic diversity.

### CONCLUSION

The risk of adverse maternal outcomes such as abortion, preterm rupture of membranes, hypertension in pregnancy, antepartum hemorrhage, and preterm labor is increased in mothers with the first trimester vaginal bleeding. Similarly, adverse fetal outcomes such as low birth weight, IUFD, fetal distress, and IUGR are also increased.

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**Authors Contribution:**

**MG**- Data collection, interpreted the results, review of literature, and manuscript preparation; **SS**- Concept of study and revision of manuscript; **AKM**- Concept and design of the study, prepared first draft of manuscript, revision of manuscript, and prepare final manuscript; **AN**- Coordination, preparation of manuscript, and support.

**Work attributed to:**

R.G.Kar Medical College, Kolkata - 700004, West Bengal, India

**Orcid ID:**

Dr. Mousumi Ghosh - <https://orcid.org/0000-0002-8513-4635>  
Dr. Aparna Khan Mandal - <https://orcid.org/0000-0002-3794-4625>  
Dr. Shelley Seth - <https://orcid.org/0000-0003-2964-0717>  
Dr. Animesh Naskar - <https://orcid.org/0000-0002-9319-6465>

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