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Original Research Article

EFFECT OF FIRST TRIMESTER BLEEDING ON PERINATAL AND MATRIMONIAL OUTCOME: A PROSPECTIVE COHORT STUDY

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ABSTRACT

Background: Pregnancy is a significant event in a woman's life, and emotional attachment to the pregnancy and baby may begin early in the first trimester. The objective is to assess the effect of first trimester vaginal bleeding on perinatal and maternal outcome. **Materials and Methods:** The present study was conducted in the Department of Obstetrics and Gynaecology, Rohilkhand Medical College & Hospital, Bareilly, (U.P.). with the objective. **Result:** The maternal outcome that were studied included: premature rupture of membranes, preterm labor, and operative delivery and blood loss. The fetal outcome were studied in terms of birth weight, prematurity, IUGR and NICU admission if any. PPH was seen only in study group cases. Preeclampsia was significantly more in study group (p=0.04). In 4.90% cases of control group and 8.20% of study group had PROM this association was statistically non significant and PROM was equally distributed among both the groups. (p=.464). LBW was significantly more in study group (p<0.001). Prematurity was significantly more in study group (p=0.005). 4.90% cases of control group and 6.60% of study group had IUGR this association was statistically non significant and IUGR was equally distributed among both the groups. (p=.69). **Conclusion:** First trimester bleeding is a significant predictor of adverse perinatal and maternal outcome. Low birthweight has been found to be strongly associated with first trimester vaginal bleeding (P Value <0.001). First trimester bleeding has also increased risk for mothers with increased incidence of Preeclampsia (P value 0.04), which was significant.

INTRODUCTION

First-trimester vaginal bleeding is a common obstetric problem, complicating 16-25 % of all pregnancies.[1] When bleeding occurs, women are aware that their pregnancy is at risk, and for many it is a difficult, vulnerable time due to the threat of loss, uncertainty of the outcome, not knowing whether to remain hopeful. It constitutes a source of anxiety for the mother and the family members. However, the outcome of the first trimester is affected by many factors like the gestational age at bleeding, the cause of bleeding, the severity of bleeding, etc.

Ectopic pregnancy, implantation bleeding of pregnancy, cervical disease, and threatened, inevitable, or complete miscarriage are the four main causes of first trimester bleeding.[1] When experiencing bleeding, up to 50% progress normally beyond 20 weeks of gestation, around 10-15% of cases will be ectopic pregnancies, 0.2% will be hydatidiform moles, and approximately 30% will result in miscarriage. Additionally, about 5% of women choose to terminate the pregnancy.[2]

First trimester bleeding is most frequently caused by a threatened or inevitable miscarriage. At the time of initial presentation, about 30% of these pregnancies are not viable.[3]

The pattern, duration, and intensity of bleeding and pain associated with threatened pregnancy loss and are highly varied and are not accurate determinants of the pregnancy outcome. The bleeding can range from spotting to full-blown hemorrhage, could be pale pink, crimson (new), or brown (old) in color. Bleeding may be intermittent or continuous, last a few hours, days, or weeks, and vary in severity day by day.[4] It can be stressful to have bleeding that doesn't stop. The timing, intensity, duration, location, and quality of abdominal pain vary.

There are some women who have no pain, many who experience mild to moderate anterior or lower back

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cramping, and, infrequently, there are others who experience intense, rhythmic pain similar to labor during tissue expulsion.[5] Preterm birth, preterm premature rupture of the membranes (PPROM), placental abruption, pre-eclampsia, and intrauterine growth restriction (IUGR) are only a few of the adverse maternal and fetal outcomes that could happen if the pregnancy continues. The evaluation of first trimester bleeding is hence a significant component of its management, and although it does not impact the outcome, the information it provides about the pregnancy's prognosis is crucial for women who are bleeding.[1]

The clinical importance of vaginal bleeding can vary based on the timing of the episodes, the degree of the bleeding, and the fate of the pregnancy. There is a correlation between bleeding during the second trimester of pregnancy and the occurrence of low birth weight and premature delivery. The results regarding the impact of first trimester or light bleeding vary more across different studies.

This research aims to examine the effects of vaginal bleeding during the first trimester of pregnancy on the health outcomes of both the mother and the baby. The purpose of this study is to investigate the impact of this particular issue that occurs in the early stages of pregnancy on the overall health and well-being of both the mother and the infant. The primary objective of this research is to provide significant knowledge regarding the management and treatment of pregnancies that are complicated by vaginal bleeding in the first trimester. This knowledge has the potential to enhance clinical practices and result in better results for both mothers and their infants.

MATERIALS AND METHODS

This Prospective cohort study was conducted in the Department of obstetrics and gynecology, Rohilkhand Medical College and Hospital, Bareilly. Duration of study was one year from 1st November 2022 to 31 October 2023

Subjects: 61 patients who fulfilled the inclusion and exclusion criteria after taking informed consent were recruited into the study and were followed up to delivery.

A second group of 61 patients with similar inclusion and exclusion criteria except for history of vaginal bleeding in first trimester were taken for comparison

Sample Size: The sample size in present study is 61 which was statistically calculated by using the software Power and sample size program

Inclusion Criteria

- Women with gestation age >14 weeks with a history of vaginal bleeding in the first trimester
- Previous regular cycles
- Absence of cervical pathology
- Patients with a single viable pregnancy

Exclusion Criteria

- Females with known history of chronic hypertension, DM, syphilis, thrombophilia, smoker, history of recurrent miscarriage.
- Without trauma or surgery during present pregnancy
- Congenital uterine malformation, uterine fibroids, or local cervical pathologies like cervical polyp or erosion
- Ectopic pregnancy
- Molar pregnancy
- Bleeding continuing beyond 14 weeks of gestation

Methodology

After taking approval from institutional ethics committee all the patients who fulfilled the criterion for inclusion and exclusion were recruited into the study. Detailed obstetric history, menstrual history, general physical, systemic and obstetric examination was done. Routine antenatal investigations were done:

Per speculum examination was done in all women to rule out local cervical pathology. They were followed prospectively throughout pregnancy, intrapartum and postpartum and their outcome was studied.

The maternal outcome studied included: premature rupture of membranes, preterm labor, and operative delivery, blood loss, sepsis and duration of hospital stay.

The fetal outcome was studied in terms of birth weight, prematurity, IUGR, NICU admission if any.

Statistical Analysis: The collected data was entered on a Microsoft Excel software and statistical analysis was done using a licensed version of SPSS version 23.0. Appropriate statistical tests were applied depending on the distribution and type of data. A p value of less than 0.05 was considered statistically significant.

RESULTS

Majority of patients (61.50%) belong to age group 21-25 years followed by 25-30 years (21.30%). Both groups were comparable with respect to age and no significant difference was seen among both the groups (p=0.47).

Table 1: Distribution of patients with respect to Mode of delivery

Mode of delivery	Control group		Study group		Total		chi square	p-value
	n	%	n	%	N	%		
Labour								
	33	54.10%	34	55.70%	67	54.90%		
natural								
Lower								
Segment								
	28	45.90%	27	44.30%	55	45.10%	.033	.856
Caesarean								

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Section								
Total	61	100.00%	61	100.00%	122	100.00%		

In 54.90% patients the mode of delivery was vaginal while in 45.10% it was via lower segment caesarean section. Both groups were comparable with respect to Mode of delivery and no significant difference was seen among both the groups(p=0.85)

Maternal outcome: In 97.50% patients PPH was absent while it was present in 2.50% cases. PPH was seen only in study group cases while none of the cases in control group presented with PPH. However, no significant statistical difference was seen among both the groups(p=0.079)

Table 2: Distribution of patients according to Preeclampsia.

Preeclampsia	Control group		Study group		Total		chi square	p-value
	n	%	n	%	N	%		
Absent	58	95.10%	51	83.60%	109	89.30%	4.219	.040
Present	3	4.90%	10	16.40%	13	10.70%		
Total	61	100.00%	61	100.00%	122	100.00%		

In 89.30% (109/122) patients the preeclampsia was not seen while it was present in 10.70% (13/122) cases. 4.90% cases of control group and 16.40% of study group had preeclampsia. Thus, preeclampsia was significantly more in study group (p=0.04)

Table 3: Distribution of patients according to Premature rupture of membrane (PROM)

PROM	Control group		Study group		Total		chi square	p-value
	n	%	n	%	n	%		
Absent	58	95.10%	56	91.80%	114	93.40%	.535	.464
Present	3	4.90%	5	8.20%	8	6.60%		
Total	61	100.00%	61	100.00%	122	100.00%		

In 93.40% (114/122) patients the PROM was absent while it was present in 6.60% (8/122) cases. 4.90% (3/61) cases of control group and 8.20% (5/61) of study group had PROM However this association was statistically non significant and PROM was equally distributed among both the groups. (p=.464).

Table 4: Distribution of patients according to Placental Abruption

Abruption placenta	Control group		Study group		Total		chi square	p-value
	n	%	n	%	n	%		
Absent	61	100.00%	59	96.70%	120	98.40%	2.033	.154
Present	0	0.00%	2	3.30%	2	1.60%		
Total	61	100.00%	61	100.00%	122	100.00%		

In 98.40% (120/122) patients the abruption placenta was absent while it was present in 3.30% (2/122) cases. None of the cases of control group and 3.30% (2/61) of study group had abruption placenta. This association was statistically non significant and abruption placenta was equally distributed among both the groups. (p=.154)

In 99.20% (121/122) patients the retained placenta was absent while it was present in 0.80% (1/122) cases. None of the cases of control group and 1.60% (1/61) of study group had retained placenta, this association was statistically non significant and retained placenta was equally distributed among both the groups. (p=.315)

Fetal outcome 14.80% cases (9/61) of control group and 44.30% cases (27/61) of study group had LBW babies. Thus, LBW was significantly more in study group (p<0.001)

Table 5: Distribution of patients according to Prematurity

Prematurity	Control group		Study group		Total		chi square	p-value
	N	%	n	%	n	%		
Absent	56	91.80%	44	72.10%	100	82.00%	7.985	.005
Present	5	8.20%	17	27.90%	22	18.00%		
Total	61	100.00%	61	100.00%	122	100.00%		

In 82% (100/122) patients' prematurity was absent while it was present in 18% (22/122) cases. 8.20% cases (5/61) of control group and 27.90%cases (22/61) of study group had premature deliveries. Thus, prematurity was significantly more in study group (p=0.005)

Table 6: Distribution of patients according to IUGR (intrauterine growth restriction)

IUGR	Control group		Study group		Total		chi square	p-value
	N	%	n	%	n	%		
Absent	58	95.10%	57	93.40%	115	94.30%	.152	.697
Present	3	4.90%	4	6.60%	7	5.70%		
Total	61	100.00%	61	100.00%	122	100.00%		

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In 94.30% (115/122) patients IUGR was absent while it was present in 5.70% (7/122) cases. 4.90% (3/61) cases of control group and 6.60% (4/61) of study group had IUGR this association was statistically non significant and IUGR was equally distributed among both the groups. (p=.69)

The mean age of the control group was 24.25±3.67 years while of study group it was 24.62±3.86. Both the groups were statically similar with respect to age (p=.587)

DISCUSSION

Bleeding during the first trimester is a frequent occurrence. According to estimates, 15–25% of all pregnant women experience it. Bleeding during the first trimester is correlated not only with an increased risk of miscarriage but also with a greater incidence of complications during pregnancy. Early pregnancy bleeding is matter of concern for both the patient and the doctor since it frequently indicates a threatened abortion. Bleeding during the first trimester of pregnancy is not only linked to miscarriage, but also to a number of adverse pregnancy outcomes, including PROM, PPROM, APH, and premature delivery.

A total of 122 cases (61 control and 61 cases) were included in the study. Majority of patients (61.50%) belong to age group 21-25 years followed by 25-30 years (21.30%). Patients included in most of the studies belonged to age group between 21- 30 years. The study by Vashisth, et al.6. showed contrasting results where the most predominant age groups were 30-35 years.

In present study both groups (study and control) were comparable with respect to age and no significant difference was seen among both the groups (p=0.47). Most patients also belonged in the age group between 21 – 30 years which was similar to that of the previous studies.

According to study conducted by Amirkhani et al,[7] 56% of patients were Primigravida and 43.3 % patients were Multigravida in the study group.

In the study conducted by Kamble P D et al,[8] 63.9 % of patients were Primigravida and 36.9 % were Multigravida in the study group.

The results in our study was also in the range of the data of previous studies. No significant difference was seen among both the groups with respect to gravidity (p=0.36). However in the study conducted by Suganya M et al.2 79.5 % patients were Primigravida and 20.5 were multigravida.

According to the study conducted by Patel et al,[9] 59.5 % patients had vaginal delivery and 40.5 % patients underwent LSCS.

In the study conducted by Naskar, et al,[10] 53.37% patients had vaginal delivery and 46.6 % patients underwent LSCS.

In the study conducted by Arora et al,[11] 55.37% patients had vaginal delivery and 54.7 % patients underwent LSCS.

The present study was well within this range and was in accordance to the previous studies. No significant difference was seen among both the groups with respect to mode of delivery in present study (p=0.36). However in the study conducted by Bala N et al,[12] 63.76% patients had vaginal delivery and 36.24 % patients underwent LSCS.

According to the study conducted by Davari Tanha et al,[13] 4.6 % patients in the study group were found to have Postpartum hemorrhage and in the study conducted by Bala N et al,[12] 4.03 % patients in the study group had PPH.

In present study 4.90% patients who had history of vaginal bleeding in first trimester had PPH. This was in accordance with the previous mentioned studies.

On comparing it with control group we observed that PPH was seen only in study group cases while none of the cases in control group presented with PPH. However, no significant difference was seen among both the groups (p=0.079).

In contrast in the study conducted by Arora et al,[11] 12% of patients in the study group was found to have PPH.

In the study conducted by Meenal et al,[14] 15% of patients had Preeclampsia and, in the study, conducted by Arora et al,[11] 17.3 % patients had Preeclampsia while in present study 16.40 % patients who had vaginal bleeding in first trimester had Preeclampsia which is almost comparable to the above mentioned studies.

4.90% cases of control group and 16.40% of study group had preeclampsia. Thus, preeclampsia was significantly more in study group (p=0.04). The results were in contrast with the study conducted by Suganya M, Kasthuri V.2 who observed that out of 200 cases with threatened miscarriage 5% of cases had signs and symptoms of preeclampsia as compared with 7.5% in the control group.

According to the study conducted by Kamble PD et al,[8] 6.75 % patients had PROM . In the study conducted by Suganya et al.2 6.5% patients had PROM, while in present study 8.20% patients who had vaginal bleeding in first trimester had PROM. This was in accordance with the above mentioned studies.

4.90% (3/61) cases of control group and 8.20% (5/61) of study group had PROM this association was statistically non-significant and PROM was equally distributed among both the groups. (p=.464). The results were in contrast with the study conducted by Davari Tanha et al,[13] in which 27.5 % patients had PROM was significantly higher than the present study.

According to the study conducted by Meenal et al,[14] 1% patients had abruptio placentae. In the study conducted by Bala N et al,[12] 0.67 % patients had abruptio placentae while in present study 3.30% patients who had vaginal bleeding in first trimester had abruptio placentae and is comparable with the previous mentioned studies.

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The results were in contrast with the study conducted by Patel et al,[9] who showed that 7.8% patients had abruptio placentae and was statistically significant.

Fetal Outcome

According to the study conducted by Meenal et al,[14] 13% of mothers who had bleeding in first trimester had babies with low birth weight. In the present study this percentage was much more and was 44.30% which is in contrast to previous study.

14.80% cases (9/61) of control group and 44.30% cases (27/61) of study group had LBW. Thus, LBW was significantly more in study group (p<0.001).

In present study this 27.90% babies were born premature; 8.20% cases (5/61) of control group and 27.90%cases (22/61) of study group had premature deliveries.

According to the study conducted by Meenal et al,[14] 6% mothers who had bleeding in first trimester had IUGR baby, In the study conducted by Arora et al.11 10.7% mothers with first trimester vaginal bleeding had IUGR babies. In the present study 6.60% babies had IUGR which is comparable to the above mentioned studies. 4.90% (3/61) cases of control group and 6.60% (4/61) of study group had IUGR this association was statistically non-significant and IUGR was equally distributed among both the groups. (p=.69).

CONCLUSION

First trimester bleeding is a significant predictor of adverse perinatal and maternal outcome. Low birthweight has been found to be strongly associated with first trimester vaginal bleeding (P Value <0.001). Preterm delivery was found to be significantly increased with first trimester vaginal bleeding (P value =0.005). Preterm birth not only increases the risk of complications during and after childbirth but also affects the well-being of both the mother and baby. Preterm infants often require specialized neonatal care and have an increased risk of long-term health problems. First trimester bleeding has also increased risk for mothers with increased incidence of Preeclampsia (P value 0.04), which was significant. It is therefore important for the clinician and patient to be aware of these complications, so that a close antenatal supervision is maintained and timely intervention be made to improve pregnancy outcome. However, a larger study on these findings is further recommended to firmly establish these facts.

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