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Original Research Article

Maternal and fetal outcome in women experiencing first trimester vaginal bleed: a multicentric approach

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ABSTRACT

Background: Vaginal bleeding before 12 weeks of gestation is relatively common obstetric event complicating nearly 25% of all pregnant women. In this study we examined the maternal and fetal outcomes of pregnant women who experienced bleeding throughout the first trimester of their pregnancy.
Method: A multicentre prospective cohort study was carried out at the Institute of Obstetrics and Gynaecology, Egmore and Department of Obstetrics and Gynaecology, Sri Venkateshwara Medical College Hospital and Research Centre, Puducherry from June 2023 to May 2024. In a one-year period, 200 cases were chosen, with 100 pregnant women with first trimester haemorrhage and 100 women with no bleeding serving as control groups. Following informed consent, women were recruited into the study.
Results: In this study we observed maternal outcome of preterm delivery (37% vs 12%), LSCS (41% vs 14%), 2nd trimester abortion (12% vs 3%), PPROM (13% vs 2%), anaemia (32% vs 27%), PPH (25% vs 7%) and PIH (24% vs 12%) were observed significantly higher in study group than control group (p=<0.05). Regarding fetal complications Low birth weight (32% vs 8%), NICU admission (33% vs 8%), APGAR <7 (25% vs 6%), premature baby (22% vs 4%) was observed significantly higher in study group (p=<0.05)
Conclusion: We concluded from this study that during the first trimester, women with vaginal bleeding face a higher chance of undesirable pregnancy outcomes and require more care and consultation. These instances should be regarded as high-risk pregnancy and treated accordingly, or referred to better-equipped medical clinics to lessen the chance of difficulties.

Keywords: Pregnancy, Vaginal bleeding, Miscarriage, Preterm

INTRODUCTION

Adverse maternal and fetal outcomes, such as premature rupture of membranes (PROMs), placental abruption, intrauterine growth restriction (IUGR), preterm delivery, intrauterine growth restriction (IUGR) and admission to the neonatal intensive care unit (NICU), can result from vaginal bleeding during pregnancy, particularly in the first trimester.[1,2] In the first few weeks of pregnancy, about one fourth of pregnant women have spotting or bleeding per vaginum (PV) half of those go on to miscarry.[3] Vaginal bleeding and spotting are common during pregnancy and it is associated with many factors.[4] Studies reported implantation bleeding, miscarriages (threatened, inevitable, incomplete and complete miscarriage), sub-chorionic haemorrhage, ectopic pregnancy and cervical pathology are the major factors besides molar pregnancy leading to first trimester vaginal bleeding. It has been reported that mild to severe vaginal bleeding during the

first trimester occurs in 25% of pregnancies.[5] In general, vaginal bleeding in the first trimester of pregnancy significantly increases the chance of fetal and neonatal morbidity (NICU admission, restricted fetal growth fetal anomalies), mortality and also chances of adverse maternal outcome.[6] These may leads to prolonged hospital stay and place a heavy financial burden on the healthcare system which causes psychological impact on women and her family.[7] The findings of a physical examination, laboratory tests, and ultrasound imaging can be utilized to diagnose the causes for first trimester bleeding and to implement the necessary treatment.[8] The current study examined the maternal and fetal outcomes of pregnant women who experienced bleeding PV in the first trimester of their pregnancy.

METHODS

A multicentre prospective cohort study was carried out at the Institute of Obstetrics and Gynaecology, Egmore and Department of Obstetrics and Gynaecology, Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry from June 2023 to May 2024. All pregnant women with a history of first trimester vaginal bleeding were interviewed at the time of admission for delivery. The Institutional Ethics Committee permission was obtained. Pregnant women who seek hospitalization for a vaginal bleeding before 12 weeks of gestation were the subjects of the study, which aims to analyse the outcome of pregnancy after close follow up during prenatal, intranasal, and postnatal period. The subjects were selected from the inpatient department. Participants who experienced substantial vaginal bleeding in the first trimester <12 weeks were recruited. In a one-year period, 200 cases were chosen, with 100 pregnant women with first trimester vaginal bleeding PV and 100 women without bleeding PV serving as control groups. Following informed consent, women were recruited into the study.

Inclusion criteria

The included women should not be taking any medications for haematological issues. There should be no history of vaginal bleeding in the previous pregnancy.

Exclusion criteria

Women with prenatal abnormalities or hydatid moles were excluded from the study. Women who experienced a second trimester miscarriage were also excluded from the study. Women with congenital malformations or acquired disorders that cause uterine cavity distortion were also excluded. The Control group comprised women of similar age who scheduled appointments for prenatal care at the hospital throughout the same timeframe. They were sequentially selected based on their maternal age from the obstetric-ultrasound database, since they had attended for normal first trimester screening. Control cases were excluded if they had visited the early pregnancy unit due to a potential miscarriage in the first trimester or if they reported any instances of bleeding during the first trimester. The study group consisted of women who were monitored continuously from their initial session until they gave birth.

The study collected data on several characteristics of the patients, including their age, gravidity, period of gestation, ultrasound results, duration of bleeding, duration of hospital stay, treatment modalities, and outcome. This information was obtained by a self-administered structured questionnaire. Data regarding the results were collected from the hospital records and verified through telephone follow-up, if needed.

RESULTS

In the current study we followed up 200 pregnancy women, 100 women with 1st trimester bleeding and 100 women without and 1st trimester complications. Among age the study group had mean age of 26.93 and control group had 28.31. In this study the study group women were observed with 62 primi, 38 multi gravida mean while control group had 58 primi and 42 multi gravida. The gestation age of the study group was 36.23 weeks and control group were 38.91 weeks (Table 1).

Among 100 antenatal women with 1st trimester vaginal bleeding, regarding the gestational age at bleeding 34% of them were observed bleeding at <4 weeks followed by 37% at 4-8 weeks and 29% of them were observed bleeding at 8 to 12 weeks of gestation period. Among study group 64% of the women presented with spot bleeding, 28% with mild and 8% with moderate bleeding. Among 100 women with 1st trimester bleeding 41% of them were observed with miscarriage and 59% continued their pregnancy (Table 2). Out of the 41 cases involving abortion, the ultrasound (USG) results showed that 63% of the cases had complete abortion, 12% had incomplete abortion and missed abortion each, 7% cases had intrauterine fetal demise (IUFD), and 6% cases had sub-chorionic haemorrhage (Table 3).

Table 1: Demographic data of study group and control group.

Parameters	Study group (n=100)	Control group (n=100)	P value
Age (Mean±SD)	29.63±4.36	28.31±4.95	0.53
Range (Min-Max)	21-33	22-34	
Weight in kg (Mean±SD)	64.14±7.01	65.10±6.89	0.323

Continued.

Parameters	Study group (n=100)	Control group (n=100)	P value
Range	58-71	56-74	
Height in cm (Mean±SD)	155.25±2.86	154.87±2.10	0.286
Range	138-170	136-168	
Gravida			
Primi	62	58	
Multi	38	42	-
Gestation in weeks (Mean±SD) Range	36.23±2.01	38.91±1.36	0.0001

Table 2: Distribution of 1st trimester bleeding among study group.

Parameters	Study group (n=100)
Gestational age at bleeding	
<4 weeks	34
4–8 weeks	37
8-12 weeks	29
Mean age	8.42 weeks
Type of bleeding (n=100)	
Spot	64
Mild	28
Moderate	8
Previous history of bleeding (n=38 multigravida)	
Yes	7
No	31
Miscarriage at period of bleeding (n=100)	
Yes	41
No	59

Table 3: USG findings (n=100).

USG findings	Continued pregnancy (n=59)	Aborted (n=41)
Complete abortion	0	26 (63%)
Incomplete abortion	0	5 (12%)
Missed abortion	0	5 (12%)
IUFD	0	3 (7%)
Sub-chorionic haemorrhage	4	2 (6%)

In this study we observed maternal outcome of preterm delivery, lower (uterine) segment caesarean section (LSCS), 2nd trimester abortion, preterm premature rupture of membranes (PPROM), anaemia, PPH and PIH were observed significantly higher in study group than control group (p=<0.05) (Table 4). Regarding fetal complications Low birth weight, NICU admission, APGAR<7, premature baby was observed significantly higher in study group (Table 5).

Table 4: Maternal outcome.

Outcome	Study group (n=59)	Control group (n=100)	P value
Preterm	22 (37%)	12 (12%)	<0.0001***
LSCS	24 (41%)	14 (14%)	<0.0001***
2nd trimester abortion	7 (12%)	3 (3%)	0.012*
PPROM	8 (13%)	2 (2%)	0.0019**
Anaemia	19 (32%)	27 (27%)	0.242
PPH	15 (25%)	7 (7%)	0.0005*
PIH	14 (24%)	12 (12%)	0.026*
No complication	24 (41%)	83 (83%)	<0.0001***

Table 5: Fetal outcome.

Outcome	Study group (n=59)	Control group (n=100)	P value
Low birth weight	19 (32%)	8 (8%)	<0.0001
NICU admission	21 (33%)	10 (10%)	<0.0001
APGAR 7-10	44 (75%)	94 (94%)	0.0002
APGAR <7	15 (25%)	6 (6%)	0.0002
Premature baby	13 (22%)	4 (4%)	<0.0001

DISCUSSION

Vaginal bleeding during the first trimester is a frequent yet concerning symptom that typically happens when there is a transition in the luteal-placental phase.[9] While bleeding is a frequently observed sign, it is crucial to assess it and identify its underlying causes. Transvaginal ultrasonography is a valuable method for assessing bleeding that occurs during the first trimester of pregnancy.[10,11] Vaginal bleeding occurring during the first trimester of pregnancy leads to improper placentation and has negative effects on both the mother and the foetus. The majority, over 70%, of individuals experiencing vaginal

bleeding during the first trimester of pregnancy proceed without any complications.[2,5]

Our study found various complications arises due to 1st trimester bleeding. We included 200 participants in this study among 100 with 1st trimester bleeding and another 100 women as control group with no complaints in the 1st trimester. Our study reported among study group there was 64% of the women presented with spot bleeding, 28% with mild and 8% with moderate bleeding, among them 41 miscarriage and 59 of them were carried their pregnancy. Out of the 41 cases involving abortion, the ultra-sonographic (USG) results showed that 26 cases had complete abortion, 5 cases had incomplete abortion, 5 cases had missed abortion, 3 cases had intrauterine fetal demise (IUFD), and 2 cases had sub-chorionic haemorrhage.

Weiss et al. reported comparable results to the present study, in which the most prevalent complications of first trimester vaginal haemorrhage was abortion, premature delivery, and placental disruption.[12] In the research conducted by Saraswat et al, reported that the mode of delivery did not have an impact on vaginal bleeding during the first trimester.[13] However, in the present study, caesarean section was found to have an impact on it. In the study conducted by Weiss et al, the duration of pregnancy was reduced and premature delivery was more prevalent in pregnant women who experienced vaginal bleeding during the first trimester.[12] This was attributed to a variety of placental disorders.

Animesh Naskar et al, found that among 120 women experiencing first trimester haemorrhage, 66 (55%) were diagnosed with threatened abortion. Out of these, 51.5% (34/66) went on to have a full-term pregnancy, while 39.4% (26/66) experienced preterm labour. Only a small number, 9.09% (6/66), had an incomplete miscarriage.[14] The current study also exhibited a substantially higher incidence of complications, including preterm delivery, LSCS, 2nd trimester abortion, PPROM, anaemia, Postpartum haemorrhage (PPH), and Pregnancy-induced hypertension (PIH) in study group compared to the control group ($p=<0.05$). In relation to fetal complications the study group exhibited a significantly higher incidence of low birth weight, NICU admission, APGAR<7, and premature babies.

In summary, it appears that vaginal bleeding during the first trimester of pregnancy elevates the likelihood of complications such as premature membrane rupture and caesarean section, both of which were determined to be highly significant. Other complications, such as preeclampsia and gestational hypertension, preterm birth, and low birth weight, were also observed to be higher, resulting in an increase in NICU admissions. The clinical implications of this study suggest that mothers who experience vaginal bleeding in the first trimester should be closely monitored and given focused attention. This will help minimize complications in ongoing pregnancy by providing more rigorous prenatal surveillance and management, ultimately leading to a successful pregnancy outcome.

An advantage of this study was its longitudinal design, in which pregnant women were enrolled early in their pregnancy. The study systematically examined various maternal and fetal outcomes through regular antenatal check-ups conducted on a weekly basis. This allowed for the early detection of adverse events and appropriate intervention.

CONCLUSION

We concluded from this study that during the first trimester, women with vaginal bleeding face a higher chance of undesirable pregnancy outcomes and require more care and consultation. These instances should be regarded as high-risk pregnancy and treated accordingly, or referred to better-equipped medical clinics to lessen the chance of difficulties. Our study reported preterm birth, PROM, LBW, abortion, stillbirth, placental abruption, and placental previa are all increased by bleeding during the first trimester of pregnancy. Therefore, it is imperative to ascertain the aetiology of this phenomenon and implement the necessary healthcare measures to prevent bleeding during pregnancy, with a particular emphasis on the unfavourable clinical consequences.

It is recommended to provide optimal counselling and appropriate prenatal treatment, along with follow-up, for women experiencing vaginal bleeding during the first trimester of pregnancy, particularly those at risk of miscarriage and those with a history of complications during pregnancy.

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