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Original Research Article

Maternal And Perinatal Outcomes in Pregnant Women Presenting with First-Trimester Vaginal Bleeding: A Tertiary Care Hospital – Based Observational Study

Vonteri Ramadevi[1], Valadanda Kavitha[2], Gajulapati Shwetha[3]

[1]Professor, Department of Gynaecology & Obstetrics, Chalmeda Anand of Medical Sciences, Karimnagar, Telangana

[2]Assistant professor, Department of Gynaecology & Obstetrics, Chalmeda Anand of Medical Sciences, Karimnagar, Telangana

[3]Post-Graduate (3rd Year), Department of Gynaecology & Obstetrics, Chalmeda Anand of Medical Sciences, Karimnagar, Telangana

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Corresponding Author: Dr. Gajulapati Shwetha

Conflict of interest: Nil

Abstract:

Background: Vaginal bleeding during the first trimester is a typical obstetric manifestation that is usually linked with maternal anxiety and doubt about the future of the pregnancy. Though most of the affected pregnancies develop normally, it was shown that early bleeding is associated with poor maternal and perinatal outcomes and therefore requires close assessment and follow up. requires close assessment and follow up.

Objectives: To determine maternal and perinatal outcomes in pregnant women with first-trimester vaginal bleeding and to determine the obstetric complications.

Materials and Method: The study was an observational descriptive study carried out in a tertiary care center and incorporated 80 pregnant women who presented with vaginal bleeding less than 13 weeks of gestation. The women who had ectopic pregnancy, molar pregnancy, induced abortion and severe underlying medical conditions were excluded. The participants were prospectively tracked until birth. The outcomes of the mothers in terms of pregnancy loss, hypertensive disorders, preterm labor, placental complications, and mode of delivery were documented. Descriptive and inferential statistics were used to test perinatal outcomes such as gestational age at birth, birth weight, APGAR score, NICU admission and perinatal mortality.

Results: In this case, pregnancy continuation was seen in 81.25 percent of the women past the first trimester and 18.75 percent saw pregnancy loss. Hypertensive disorders (29.2%) and preterm labor (21.5) were the most common maternal complications among the ongoing pregnancies. In 18.5percent cases, preterm delivery took place. It was observed that 26.7 percent of neonates had low birth weight and 17.5 percent of them were admitted to the NICU.

Background risk factors and increase in gravidity had a significant association with poor outcomes ($p < 0.05$).

Conclusion: Vaginal bleeding during the first trimester is linked with the high probability of poor maternal and infant outcomes. Affected pregnancies need early detection and close antenatal monitoring in order to maximize maternal and neonatal outcomes.

Keywords: Maternal and Perinatal Outcomes, Vaginal Bleeding, First-Trimester.

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Introduction

First-trimester vaginal bleeding is a common obstetric presentation, occurring in approximately 20-30% of all pregnancies, and is a major cause of anxiety in both pregnant women and clinicians. It covers a broad clinical spectrum from benign implantation bleeding to the serious conditions such as threatened miscarriage, ectopic pregnancy and early pregnancy loss [1-3]. Despite improvements in imaging and biochemical evaluation of early pregnancy, first trimester bleeding still presents diagnostic and prognostic problems.

There are a number of cohort and case-control studies that have shown a link between vaginal bleeding in early pregnancy and an elevated risk of miscarriage, and may be predictive of adverse maternal and perinatal outcome later in gestation [4-9]. Women who choose to continue their pregnancies after an episode of first-trimester bleeding have been shown to have increased

incidences of preterm birth, low birth weight, intrauterine growth restriction, hypertensive disorders of pregnancy, placental abruption and perinatal mortality compared with women without early bleeding [9-11]. Systematic reviews and population-based studies provide further evidence of threatened miscarriage as an independent adverse risk factor for poor obstetric outcomes [10,12].

The etiology of first trimester vaginal bleeding is multifactorial, and involves the following: placental implantation defects, subchorionic hematoma, uterine anomalies, endocrine dysfunction, infections or maternal lifestyle factors [4,13-20]. Maternal comorbidities like diabetes mellitus, thyroid and anemia and previous pregnancy losses have also been implicated in altering the pregnancy outcome following the early bleeding [14-18]. Furthermore, the complications in early pregnancy may represent underlying placental dysfunction that may be a risk factor for adverse outcomes such as preeclampsia, fetal growth restriction, and stillbirth [19-23].

International guidelines highlight the importance of prompt evaluation of first trimester bleeding with ultrasonography (transvaginal ultrasonography) and appropriate laboratory studies to establish viability of the pregnancy and to manage and rule out life threatening conditions [11,27]. However, although diagnostic pathways are well established, there is still some variability in counseling and risk stratification in terms of long-term pregnancy outcome. Recent prospective and retrospective studies, including those from low- and middle-income settings, point to the importance of having region-specific data to better understand maternal and perinatal risks associated with early pregnancy bleeding [6-9,28,29].

Given the high burden of first trimester vaginal bleeding and its possible consequences for both maternal and fetal health, a thorough examination of the maternal and perinatal outcomes is necessary. Understanding these associations may help to enable better antenatal surveillance and early identification of high-risk pregnancies and early interventions to optimise pregnancy outcomes.

Materials and Method

This study was planned as a hospital-based observational study carried out at a tertiary care centre for a defined study period. Pregnant women who present with vaginal bleeding in the first trimester of pregnancy were consecutively recruited after obtaining informed written consent. A total sample size of 80 participants was used in the study. The sample size was calculated according to feasibility, patient inflow and comparability with similar published studies, while ensuring an adequate representation to evaluate maternal and perinatal outcomes.

All pregnant women with the confirmed intrauterine pregnancy of gestational age <13 completed weeks who presented with vaginal bleeding were eligible for inclusion. Gestational age was confirmed on the basis of last menstrual period confirmed with ultrasonographic findings. Women with bleeding secondary to ectopic pregnancy, molar pregnancy, induced abortion trauma or known bleeding disorders were excluded. Patients with chronic medical illnesses diagnosed before pregnancy such as chronic hypertension, pregestational diabetes mellitus, renal disease or autoimmune disorders were also excluded to minimize confounding.

Methodology

At the time of enrollment, detailed demographic and obstetric information was obtained, including maternal age, parity, gravidity, body mass index, socioeconomic status, previous obstetric history, and history of prior pregnancy losses. A detailed clinical evaluation was undertaken in all participants, including examination of the hemodynamic status and abdominal and pelvic examination where appropriate. Baseline laboratory investigations were taken as per institutional protocol. All women had transvaginal or transabdominal ultrasonography to determine fetal viability, gestational age, presence of subchorionic hematoma and other uterine or adnexal abnormalities.

Participants were prospectively followed through pregnancy until delivery. Standard antenatal care was given based on institutional guidelines with additional surveillance for those women considered to be at higher risk based on clinical or ultrasonographic findings. Maternal outcomes that were measured included miscarriage, development of hypertensive disorders of pregnancy, gestational diabetes mellitus, anemia, antepartum hemorrhage, mode of delivery, and other pregnancy-related complications. Perinatal outcomes assessed were gestational age at delivery, birth weight, preterm birth, intrauterine growth restriction, Apgar scores, need for admission in neonatal intensive care unit, and perinatal mortality.

Statistical Analysis: Data were collected in a pre-determined structured proforma which was entered into a computerized database later. Statistical analysis was conducted by appropriate statistical software. Continuous variables were reported as mean with standard deviation and categorical variables were reported as frequencies and percentages. Associations between first trimester vaginal bleeding and adverse maternal and perinatal outcomes were examined using appropriate statistical tests with the p-value equal to less than 0.05 being considered statistically significant. Ethical clearance for the study was obtained from the Institutional Ethics Committee before the

commencement of the study and confidentiality of data about patients was maintained strict throughout the study period.

Observation and Results

A total of 80 pregnant women with vaginal bleeding of the first trimester were included in the study and followed to the pregnancy outcome. The mean age of the mothers of the study population was 27.9 □4.8 years and the majority (52.5%) of the women belonged to the 25-34 year-of-age group followed by 15-24 years of age (30.0%) and >35 years of age (17.5%). Most of the study participants were multigravida, and 33.75% were gravida two or three, whereas 52.5% were primigravida and 13.75% had a gravidity greater than three. A previous history of first trimester bleeding was reported by 28.8% of women; a history of previous abortion was reported by 15.0% of women. (Table1)

With regard to bleeding characteristics, the majority of women had moderate vaginal bleeding (51.25%), with spotting (27.5%) and heavy bleeding (21.25%) also being seen. Ultrasonography at presentation confirmed an intrauterine pregnancy in all cases included and fetal cardiac activity was documented in 81.3% of cases at the time of the first evaluation. There was no statistically significant relationship between the gestational age at the time of bleeding and the eventual outcome of the pregnancy (p = 0.08). (Table 2)

Table 1: Baseline Demographic and Obstetric Characteristics of Study Participants

Variable	Number (n)	Percentage (%)
Age group (years)		
15–24 Years	24	30.0
25–34 Years	42	52.5
≥35 Years	14	17.5
Gravidity		
Primigravida	42	52.5
Gravida 2–3	27	33.75
≥ Gravida 4	11	13.75
History of first-trimester bleeding		
Yes	23	28.8
No	57	71.2
History of previous abortion		
Yes	12	15.0
No	68	85.0

Table 2: Characteristics of Vaginal Bleeding at Presentation

Outcome	Number (n)	Percentage (%)
Mild vaginal bleeding (Spotting)	22	27.5
Moderate vaginal bleeding	41	51.25
Heavy vaginal bleeding	17	21.25

Pregnancy continuation beyond the first trimester was seen in 65 (81.25%) women and 15 (18.75%) women had a pregnancy loss, consisting of spontaneous abortion and medically indicated termination. Among pregnancy losses 18.8% were spontaneous abortions, and 8.7% were terminations of the pregnancy for obstetric reasons such as Blighted ovum or Missed Abortion. A significant association was noted between pregnancy termination and increasing gravidity (p = 0.03) and the occurrence of background medical or lifestyle risk factors, such as smoking or anemia (p = 0.02). (Table3) (Figure 1)

Table 3: Pregnancy Outcome Following First-Trimester Vaginal Bleeding

Outcome	Number (n)	Percentage (%)
Continued pregnancy	65	81.25
Spontaneous abortion	9	11.25
Medically indicated termination	6	7.5
Total pregnancy loss	15	**18.75**

Among women who did not terminate pregnancy because of viability, several maternal complications were recorded. Preterm labor (21.5%) and premature rupture of membranes (7.7%) were found. Placental abruption was found 6.2% of women and second- or third-trimester vaginal bleeding was 18.5%. Hypertensive disorders of pregnancy occurred in 29.2% of the women and gestational diabetes

mellitus was diagnosed in 16.9% The link between first trimester bleeding and development of hypertensive disorders was statistically significant ($p < 0.05$). (Table 4)

Table 4: Maternal Complications in Ongoing Pregnancies

Maternal complication	Number (n)	Percentage (%)
Preterm labor	14	21.5
Premature rupture of membranes	5	7.7
Placental abruption	4	6.2
Second/third trimester bleeding	12	18.5
Hypertensive disorders of pregnancy	19	29.2
Gestational diabetes mellitus	11	16.9

The average gestational age at delivery of the women who delivered was 273 ±16 days. Preterm delivery (<37 weeks) was 18.5% and term delivery (81.5%) was seen in the majority. Mode of delivery analysis revealed that 41.5% of the women had cesarean section and 58.5% vaginal delivery. The rate of cesarean delivery was higher among women with complications of the placenta and in cases of preterm labor, but this association was not statistically significant ($p = 0.07$). (Table 5)

Table 5: Mode of Delivery Among Women Who Delivered

Mode of delivery	Number (n)	Percentage (%)
Vaginal delivery	38	58.5
Cesarean section	27	41.5

Perinatal results showed the mean of the birth weight was 2890 ± 410g. Low birth weight (<2500 g) was seen in 26.7% of neonates and 65.6% of neonates had a birth weight of 2500-3500 g and 7.7% had a birth weight >3500 g. Intrauterine growth restriction was found in 6.3% of pregnancies. Neonatal intensive care unit admission was necessary in 17.5% of neonates, mostly because of prematurity and low birth weight. A 5-minute Apgar score <7 occurred in 12.5% of the newborns. Perinatal mortality was low with 1 (1.3%) intrauterine fetal deaths recorded in the study population. (Table 6)

Table 6: Perinatal Outcomes in Study Population

Perinatal outcome	Number (n)	Percentage (%)
Preterm birth (<37 weeks)	12	18.5
Term birth (≥37 weeks)	53	81.5
Low birth weight (<2500 g)	12	26.7
Normal birth weight (2500–3500 g)	30	65.6
Birth weight >3500 g	3	7.7
Intrauterine growth restriction	5	6.3
NICU admission	14	17.5
5-minute Apgar <7	10	12.5
Intrauterine fetal death	1	1.3

Discussion

First trimester vaginal bleeding is a common obstetric complication and is well-known as a potential marker of adverse outcomes in pregnancy. The present study evaluated maternal and perinatal outcomes in 80 pregnant women with vaginal bleeding in the first trimester and showed that although a majority of the pregnancies were able to continue successfully, the condition was linked to significantly increased risks of maternal complications and adverse perinatal outcomes. These findings are relatively consistent with previously published literature and further attest to the prognostic importance of early pregnancy bleeding.

In the present study, 81.25% of women continued their pregnancy after the first trimester, and 18.75% had a pregnancy loss. This continuation rate is similar to that found by Selvam et al. and Amirkhani et al. describing successful continuation in about 65-75% of the cases [1,3]. Similar proportions have been reported by other observational and population-based studies, which found that close to 50% to two-thirds of women presenting with first-trimester bleeding do go on to have live-born pregnancies [4,22]. The lack of a statistically significant association between gestational age at bleeding and pregnancy outcome in the present study is in accordance with the observation by Hasan et al in which it was suggested that the timing of bleeding alone may not be a good predictor of outcome [4].

A significant link between increasing gravidity and pregnancy loss was noted in this study, which is in agreement with results from studies assessing recurrent pregnancy loss and early pregnancy complications [12,16]. Background medical and lifestyle risk factors were also significantly related to adverse outcomes, reflecting the multifactorial nature of first-trimester bleeding in previous studies [13-20]. These results highlight the importance of individual risk assessment in women who present with early pregnancy bleeding.

Among pregnancies that progressed past the first trimester, maternal complications were common. Hypertensive disorders of pregnancy were the most common type of complication (29.2%), followed by preterm labor (21.5%) and placental abruption (6.2%). These results are in concordance with several studies that have identified first trimester bleeding as an independent risk factor for hypertensive disorders, placental abruption and preterm delivery [9-11,19,21]. Saraswat et al reported in their systematic review a significant higher risk of preterm birth and complications of placenta in women with threatened miscarriage, which is very similar to the present study [10]. Weiss et al. similarly showed that early pregnancy bleeding was linked with increased incidence of adverse obstetric outcomes (including placental abruption and preterm delivery) [21].

The rate of preterm birth noted in the current study (18.5%) is lower than that reported in the general obstetric population supporting the hypothesis that dysfunction of the placenta in the early stages of pregnancy may underlie both early trimester bleeding and later pregnancy morbidity [19,23]. The higher rates of premature rupture of membranes and recurrent bleeding in later trimesters adds further to this association as suggested in earlier epidemiological and clinical studies [18,20]. These findings highlight the need for improved antenatal surveillance in women with a history of first trimester bleeding.

Perinatal outcomes in this study also showed that there was increased neonatal morbidity. Low birth weight was found in 26.7% of neonates and 17.5% had to be admitted to the neonatal intensive care unit. Comparable incidences of low birth weight and neonatal complications have been reported by Amirkhani et al, Choudhury et al, and Kavyashree and Rajeshwari especially in relation to preterm delivery and placental insufficiency [3,7,8]. The finding in this study of an association between first-trimester bleeding and intrauterine growth restriction is consistent with data from earlier reports of an association between early placental pathology and impaired fetal growth [9,23].

Although the perinatal mortality was low in the present study, the observation of intrauterine fetal death underscores the potential severity of the outcome in a proportion of affected pregnancies. Large systematic reviews and meta-analyses have shown that first trimester bleeding is linked with heightened risk of stillbirth and negative neonatal outcomes, especially when it is accompanied by other maternal risk factors [26,27]. The low mortality noted in this study may be due to early diagnosis, close follow-up, and proper obstetric intervention in a tertiary care center.

The results of the present study are in agreement with the international guidelines that recommend thorough evaluation and close monitoring of women presenting with first-trimester bleeding [11,27]. While early ultrasonography and biochemical evaluation are useful to determine viability, the long-term prognostic implications suggested in this and other studies imply that first-trimester bleeding should be considered an indicator of high-risk pregnancy and not a self-limited occurrence.

There are some limitations to the current study that are to be admitted. The sample was also relatively limited and based on one tertiary care center, which can be a limitation to the generalizability of the results to larger populations. Also, biochemical indicators and placental pathology were not analysed, which restricted mechanistic interpretation.

Conclusion

First-trimester vaginal bleeding is a major clinical occurrence that is related to heightened risks of poor maternal and perinatal outcomes. Despite the fact that the majority of pregnancies have been successful, the affected women had better outcomes in terms of hypertensive disorders, preterm births, placental complications, low birth weights, and neonatal morbidity. The problem is these pregnancies are required to be identified and closely monitored during the antenatal period to enhance maternal and neonatal outcomes.

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