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Maternal and Fetal Outcomes after First Trimester Vaginal Bleeding

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Abstract: ***This prospective study conducted at Sree Balaji Medical College and Hospital in Chennai over two years aimed to investigate the maternal and fetal outcomes following first trimester vaginal bleeding. The study included pregnant women presenting with vaginal bleeding up to 13 + 6 weeks of gestation, excluding those with conditions such as ectopic pregnancy and chronic hypertension. Data were collected on demographic information, obstetric history, details of the current pregnancy, and maternal and perinatal outcomes. The results indicated that first trimester vaginal bleeding is associated with an increased risk of spontaneous miscarriage, hypertensive disorders of pregnancy, preterm labor, and poor perinatal outcomes. The findings underscore the importance of early detection and intervention, particularly for overweight and obese women, primigravida women, and those experiencing heavy bleeding with abdominal pain. The study highlights the need for meticulous antenatal care and management to improve both maternal and neonatal health outcomes in pregnancies complicated by early bleeding.***

Keywords: first trimester, vaginal bleeding, maternal outcomes, perinatal outcomes, antenatal care

1. Introduction

Vaginal bleeding is a common complication in 16 - 25% of pregnancies. In recent years, concerns for both maternal and fetal health have led obstetricians to pay closer attention to early pregnancy. Meta - analysis shows that vaginal bleeding increases the risk of complications during pregnancy ([1]). Often, women come to the clinic with symptoms of amenorrhea and bleeding; for these patients, an ultrasound is performed to verify not only the viability but also the location of the pregnancy ([2]).

Bleeding in early pregnancy can cause significant distress and anxiety for women, as it raises concerns about the pregnancy's progression. This can be a challenging period due to the uncertainty of outcomes, the lack of preventative measures, and the emotional strain of potential pregnancy loss. It has a profound emotional and psychological impact on the pregnant women. Few studies have focused on the long - term outcomes of pregnancies affected by early bleeding rather than just viability at term. Understanding the outcomes of ongoing pregnancies after vaginal bleeding is important for mothers and obstetricians to plan antenatal care effectively ([3]). A study was conducted to observe the maternal and fetal outcomes after first trimester vaginal bleeding in Southern Chennai, Tamil Nadu.

2. Materials and Methods

Study Design and Setting

This is a prospective study conducted at Sree Balaji Medical College and Hospital, Chennai, a tertiary care centre, over a period of 2 years. The study was approved by the Ethical Committee of Sree Balaji Medical College and Hospital, Chennai. A written informed consent was obtained from all participants.

The study population included all pregnant women who presented with vaginal bleeding during the first trimester (up to 13+6 weeks of gestation) and were subsequently followed through to delivery.

Exclusion Criteria

Ectopic pregnancy, Chronic hypertension, Diabetes mellitus, Thrombophilia, Smoker, Previous congenital malformations in their children, History of trauma or surgery to cervix, Cervical incompetence, Congenital uterine anomalies, Uterine fibroids or local pathologies like cervical polyp, erosion, vaginal growth

Data Collection

Data was collected and recorded in Microsoft Excel spreadsheet that was password protected. Data was collected under the following heading

- Demographic information: age, parity, body mass index (BMI).
- Obstetric history: previous pregnancies, miscarriages, preterm births.
- Details of the current pregnancy: gestational age at presentation, severity and duration of bleeding, ultrasound findings.
- Maternal outcomes: gestational hypertension, preeclampsia, gestational diabetes, mode of delivery.
- Perinatal outcomes: birth weight, Apgar scores, preterm birth (before 37 weeks), neonatal intensive care unit (NICU) admission, perinatal mortality.

Procedures: Upon presentation, all women with vaginal bleeding underwent a transvaginal ultrasound to confirm the viability and location of the pregnancy. Follow - up ultrasounds were performed as clinically indicated. Both groups received standard antenatal care, with additional monitoring for those with first trimester bleeding.

Statistical Analysis

Descriptive statistics were used to summarize the demographic and clinical characteristics of the study population. Continuous variables were expressed as means and standard deviations, while categorical variables were expressed as frequencies and percentages. Comparative analyses between the bleeding and non - bleeding groups were performed using the chi - square test for categorical variables and the t - test for continuous variables.

Multivariate logistic regression analysis was used to identify factors associated with adverse maternal and perinatal outcomes, adjusting for potential confounders. A p - value of <0.05 was considered statistically significant. All statistical analyses were performed using computer SPSS IBM Version 23.

3. Results

The results support the notion that First Trimester Vaginal Bleeding indicates placental dysfunction, which can lead to various adverse effects later in pregnancy, such as hypertensive disorders, placental abruption, and retained placenta after delivery.

The majority of patients who miscarried were between 25 and 34 years old, likely because this age group comprises most pregnancies. In our study, 70.3% of patients who miscarried were in this age range, similar to findings by Amirkhani et al. [4] (53%) and Kamble PD et al. [5] (66.2%).

In this study, patients with a higher BMI were more likely to miscarry when presenting with First Trimester Vaginal Bleeding. Specifically, 38.7% of patients who miscarried were obese. There was a significant correlation between BMI and miscarriage. Previous research by H. Lashen also showed that obesity increases the risk of first trimester and recurrent miscarriages.

The study found that 65.8% of miscarriages occurred in primigravida women, while 34.2% were in multigravida women. This aligns with Amirkhani et al. 's findings, where 56.7% of miscarriages occurred in primigravida women and 43.3% in multigravida women.

Kamble's study found a high incidence of miscarriages in patients with First Trimester Vaginal Bleeding at less than six weeks of gestation (77%). In our study, 57.7% of those who miscarried were less than six weeks pregnant, while only 10.8% were more than ten weeks pregnant.

Among the 200 cases of First Trimester Vaginal Bleeding, 52% had a history of previous miscarriages, while 48% experienced their first episode. There was no significant association between vaginal bleeding and a history of miscarriages.

Our study found that 85.4% of mild bleeding cases resulted in live births, while heavy bleeding cases did not result in viable pregnancies.

Patients with heavy bleeding often experienced complete or incomplete miscarriages, particularly those with accompanying abdominal pain. In our study, 83.8% of patients with abdominal pain miscarried.

Among the patients, 15.5% had missed abortions, 17.11% had a blighted ovum, and 12.3% had subchorionic haemorrhage and were treated conservatively.

By the end of the first trimester, 55.5% of pregnancies resulted in miscarriage, while 44.5% continued. Of those that miscarried, 33.3% underwent medical management and 22.4% had uterine curettage. Blood transfusions were required in 4.5% of cases.
Misoprostol was more commonly used for medical management than surgical methods, with slightly lower complication rates compared to surgical curettage.

First trimester miscarriages resulted in complications such as anemia, sepsis, ICU admissions, disseminated intravascular coagulation (DIC), and multiple transfusions. DIC complicated 0.90% of cases, requiring ICU management and transfusions. Anemia was the most common complication (29%), with 4.5% of patients requiring blood transfusions. Sepsis was the second most common complication (6.30%).

First trimester bleeding was associated with an increased risk of preterm delivery, likely due to impaired trophoblast implantation and invasion, leading to first trimester miscarriages, preterm delivery, PPROM, and hypertensive disorders. Yakistriran et al. [6] also found higher rates of preterm delivery and PPROM in cases of threatened miscarriage.

Maternal Outcome Complications

Complications	Patel NG et al. [7]	Davari - Tanha et al. [8]	Kamble PD et al. [5]	Present Study
Anemia	29%	22.7%	-	12.35%
Placenta previa	3.1%	0.6%	1.8%	3.37%
Placental abruption	7.8%	5.7%	1.8%	2.24%
PPH	6.2%	-	-	3.37%
PPROM	18.7%	27.5%	-	7.86%
PIH	6.2%	4.6%	5.5%	23.59%
Preterm Labor	-	-	15.3%	4.94%
PROM	-	-	6.75%	2.247%

In this study, only 38.20% of pregnancies had no complications. The most common complication was hypertensive disorders of pregnancy (23.59%), with 42.85% having gestational hypertension, 33.33% non - severe preeclampsia, 14.2% severe preeclampsia, 4.76% eclampsia, and 4.76% HELLP syndrome.

The mode of delivery was vaginal for 62.1% and caesarean for 37.9%. This is similar to Kamble PD et al., where 38% had vaginal deliveries and 41% underwent caesarean sections. In the current study, First trimester vaginal bleeding did not affect the mode of delivery.

Saraswat et al. [7] found that First trimester vaginal bleeding predicted poor perinatal outcomes, with significant associations between First Trimester Vaginal Bleeding and fetal growth restriction (FGR), low birth weight (LBW), and neonatal admissions.

Perinatal Outcome

Perinatal Outcome	Patel NG et al. [8]	Davari - Tanha et al. [9]	Mulik et al. [10]	Wijesiriwardana et al. [11]	Present Study
Full term	78.1%	-	-	-	66.67%
Preterm	21.9%	30.6%	28.8%	-	33.33%
FGR	14.1%	-	-	9.5%	19.54%
Perinatal Death	9.4%	9.3%	-	-	10.33%
LBW	-	-	-	-	36.78%

Saraswat et al. found that First trimester vaginal bleeding predicted poor perinatal outcomes, with significant associations between First Trimester Vaginal Bleeding and fetal growth restriction (FGR), low birth weight (LBW), and neonatal admissions [7]. Similar findings were found in this study.

4. Conclusion

The study points out the significant impact of first trimester vaginal bleeding on maternal and perinatal outcomes. Our findings indicate that first trimester vaginal bleeding is associated with an increased risk of spontaneous miscarriage, hypertensive disorders of pregnancy, antepartum haemorrhage, anemia, preterm labor, PPROM, PROM, and postpartum haemorrhage. These complications necessitate meticulous antenatal care and management for affected pregnancies.

A notable finding is the correlation between higher BMI and increased risk of miscarriage among women presenting with First trimester vaginal bleeding. This underscores the need for targeted interventions and monitoring in overweight and obese pregnant women. Additionally, primigravida women and those experiencing heavy bleeding with abdominal pain were found to be at a higher risk for adverse outcomes, highlighting the importance of early detection and intervention in these populations.

The study also revealed that pregnancies complicated by first trimester vaginal bleeding had higher rates of caesarean sections and preterm deliveries. Despite these challenges, a significant proportion of mild bleeding cases resulted in live births, emphasizing that early and appropriate management can lead to positive outcomes.

First trimester vaginal bleeding may be a marker of placental dysfunction, which manifests later in pregnancy through various adverse effects such as hypertensive disorders, placental abruption, and poor perinatal outcomes including fetal growth restriction, low birth weight, and increased neonatal admissions. [12]

Given the association between First trimester vaginal bleeding and increased maternal and perinatal complications, it is imperative that pregnancies complicated by early bleeding are closely monitored and managed as high - risk. This includes educating women on the potential risks and ensuring timely and appropriate medical interventions.

In summary, first trimester vaginal bleeding is a critical factor in predicting and managing adverse pregnancy outcomes. Healthcare providers should be vigilant in monitoring and support women to improve both maternal and neonatal health outcomes.

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