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RESEARCH ARTICLE
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MATERNAL & PERINATAL OUTCOME IN PREGNANT WOMEN PRESENTING FIRST TRIMESTER VAGINAL BLEEDING

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ABSTRACT

Background: First-trimester vaginal bleeding complicates 15–25% of pregnancies and is associated with adverse outcomes, including miscarriage, preterm birth, and intrauterine death (IUD). Despite its clinical significance, limited local data exist on its impact in our population.

Objective: To evaluate the maternal and perinatal outcomes of pregnancies complicated by first-trimester vaginal bleeding.

Methods: A case series study was conducted at Mardan Medical Complex from July 2019 to January 2020, involving 204 women with first-trimester bleeding (≤12 weeks) and confirmed fetal cardiac activity. Exclusion criteria included chronic medical conditions, cervical pathology, and fetal anomalies. Data were analyzed using SPSS v23, with $p<0.05$ considered significant.

Results: The mean maternal age was 28 ± 5.18 years, with 41.6% (n=86) aged 20–25 years. Most pregnancies ended in termination (84.1%, n=172), while 9.3% (n=19) resulted in normal vaginal delivery and 6.3% (n=13) in cesarean section. Perinatal outcomes revealed IUD in 85.3% (n=174), live births in 10.29% (n=21), and preterm delivery in 4.41% (n=9). Maternal complications included missed abortion (84.31%, n=172), PROM (14.21%, n=29), and APH (1.47%, n=3). Age stratification showed higher IUD rates in women aged 21–30 years (91.72%) vs. 30–40 years (73.23%, p=0.45), but maternal complications (PROM, APH) were significantly higher in older women (p=0.017). Gestational age strongly influenced outcomes (p=0.000), with 100% IUD at 4–12 weeks vs. 67.74% live births at 29–40 weeks.

Conclusion: First-trimester vaginal bleeding is a significant predictor of poor perinatal outcomes, particularly IUD. Advanced maternal age and early gestational bleeding correlate with higher complications. Close monitoring and early intervention are essential for improving fetomaternal outcomes in high-risk pregnancies.

Keywords: First-trimester bleeding, intrauterine death, preterm birth, maternal complications, perinatal outcomes.

INTRODUCTION

Vaginal bleeding is a common event at all stages of pregnancy especially during the first trimester, complicating 15 to 25% of the pregnancies.[1,2] Major sources of bleeding in early pregnancy include ectopic pregnancy, miscarriage, implantation bleeding of pregnancy, and cervical, vaginal, or uterine pathology.[1-5]

First trimester bleeding is associated with normal pregnancy in 50% of the cases.[6,7] It can lead to adverse maternal and perinatal outcome such as miscarriage, preterm birth, premature rupture of membranes, fetal growth restriction and increased risk of adverse outcome in subsequent trimesters and pregnancies in remaining half of the cases.[1,3,8,9] Miscarriage is the most common complication. These complications have serious impact on the life of women as well as its consequences like depression and anxiety.[4,10] Best outcome of PV bleeding is associated with light bleeding and bleeding limited to early pregnancy whereas heavy bleeding or bleeding extending into the second trimester is associated with worst outcome. Outcome is also likely to be affected by the cause of bleeding and comorbids.[1,8,11]

A study conducted in India showed abortion in 34% cases, PROM presented in 36% of cases, placenta previa in 14%, placental abruption in 9%, and PIH were seen in 15% cases presented with First trimester vaginal bleeding whereas 24% of the children were preterm and IUD occurred in 7% of the cases.[3]

Another study by Bangash N et al showed abortion only in 10.8% of the cases because of first trimester bleeding.[6] A study conducted in Iran shows obstetrical complications (table 2) in women with first trimester vaginal bleeding as premature labor 25%, PROM 8.3%, Placental abruption 13.3%, and pregnancy outcome (table 3) as abortion 20%, termination of pregnancy 10 %, normal vaginal delivery 38/4%, cesarean section 41/6%. [4] Results of study shows that 76.9% patients who presented before six week aborted where as 7% patients who presented after 10 weeks aborted, 15.3% went into preterm labor and 6.75% has PROM. [2]

As mentioned above, first trimester PV bleeding strongly predicts both maternal and perinatal outcome. Many studies have been done which shows that first trimester PV bleeding is not only associated with miscarriage but also with a higher rate of pregnancy complications. [2] Furthermore, no work has been done on this topic and up our knowledge it will be first of its type in our department. On the basis of its results we will recommend further research work and other recommendations to improve skills in order to overwhelm these complications. We encounter many high risk issues throughout pregnancy which if detected earlier can be prevented. Patients with first trimester PV bleeding can be classified as high risk patient needs closer feto-maternal surveillance in order to improve feto-maternal outcome.

MATERIAL AND METHODS

The study was conducted in the Department of Obstetrics & Gynaecology at Mardan Medical Complex, Mardan, as a case series study over six months from 4/7/2019 to 4/1/2020, with a sample size of 204 determined using a 95% confidence interval, 3.5% margin of error, and a 7% prevalence of intrauterine death (IUD) in first-trimester vaginal bleeding pregnancies. Non-probability consecutive sampling was employed, and inclusion criteria comprised singleton pregnancies with first-trimester PV bleeding (≤12 weeks) and positive cardiac activity on ultrasound, where the pregnancy was intended to be carried. Exclusion criteria included hydatiform mole, cervical pathology or incompetence, chronic medical conditions (e.g., diabetes, hypertension, cardiac or hepatic disease), bleeding disorders, history of infertility or multiple pregnancies, recurrent miscarriage, trauma or surgery during the current pregnancy, non-use of assisted reproductive techniques, and any evidence of fetal anomalies or prior fetal pathology. Data collection involved approval from the hospital ethics committee, with patients enrolled via the Outpatient Department (OPD) after providing informed consent. A total of 204 pregnant women with amenorrhea, a positive urine pregnancy test, and first-trimester PV bleeding were admitted, with ultrasound-confirmed gestational sac and cardiac activity. Following ethical approval from Mardan Medical Complex and CPSP, patients were monitored until delivery, with outcomes assessed through close observation and follow-up after two months. Each patient underwent a comprehensive examination (general, physical, and gynecological) and baseline investigations (full blood count, blood group, and obstetrical scan) at the booking visit. Management followed RCOG guidelines under the supervision of an experienced obstetrician (minimum five years of experience), with regular follow-ups at the antenatal clinic (two months) and repeat ultrasounds by an experienced radiologist. Bleeding was categorized as light (spotting) or heavy (similar to or exceeding menstrual flow). Late pregnancy complications were evaluated as maternal (e.g., PROM, APH) or perinatal (e.g., LBW, pregnancy loss).

DATA ANALYSIS:

Data collected through predesigned Proforma will be analyzed using SPSS software version 23. Frequency and percentages will be calculated for categorical variables like gender, and Mean standard deviation will be calculated for the numerical data like age. Results will be presented in graphs and tables. Maternal and perinatal outcomes will be stratified among age and duration of pregnancy to see effect modification. Post stratification chi-square test will be applied keeping p value less than 0.05

RESULTS

The study included 204 pregnant women with first-trimester vaginal bleeding, with a mean maternal age of 28 ± 5.18 years. The majority of women (41.6%, n=86) were aged 20-25 years, followed by 26-30 years (23.5%, n=47), 31-35 years (21.7%, n=45), and 36-40 years (12.5%, n=26). Most participants were primary gravida (62.75%, n=128), with a mean gravida of 2.02 ± 1.55 and mean parity of 0.98 ± 1.4. **Table 1**

Regarding pregnancy outcomes, 84.1% (n=172) ended in termination of pregnancy, while 9.3% (n=19) resulted in normal vaginal delivery, and 6.3% (n=13) in caesarean section. Perinatal outcomes revealed a high rate of intrauterine death (IUD) (85.3%, n=174), with only 10.29% (n=21) of pregnancies resulting in live births and 4.41% (n=9) in preterm deliveries. Maternal complications included missed abortion (84.31%, n=172), PROM (14.21%, n=29), and APH (1.47%, n=3). **Table 2**

Stratification by age groups showed that women aged 21-30 years had a significantly higher rate of IUD (91.72%) compared to those aged 30-40 years (73.23%), though this difference was not statistically significant (p=0.45). However, maternal complications (missed abortion, PROM, APH) differed significantly between age groups (p=0.017), with older women experiencing higher rates of PROM (11.26%) and APH (4.2%). **Table 3**

When analyzed by mode of delivery, termination of pregnancy (TOP) was uniformly associated

with IUD (100%), whereas normal vaginal delivery (NVD) and caesarean section (C/S) had varying outcomes (p=0.000). Similarly, gestational age significantly influenced outcomes (p=0.000), with all pregnancies at 4-12 weeks ending in IUD (100%), while those reaching 29-40 weeks had 67.74% (n=21) live births and 29.03% (n=9) preterm deliveries. **Table 4**

First-trimester vaginal bleeding was strongly associated with adverse perinatal outcomes, particularly IUD, with maternal age and gestational age significantly affecting complications ($p<0.05$). These findings highlight the need for early intervention and close monitoring in high-risk pregnancies.

Table 1: Demographic Characteristics of Patients (n=204)

Variable	**Frequency (%) / Mean ± SD**
Age Distribution	
20-25 years	86 (41.6%)
26-30 years	47 (23.5%)
31-35 years	45 (21.7%)
36-40 years	26 (12.5%)
Mean Age ± SD	28 ± 5.18
Gravida Status	
Primary gravida	128 (62.75%)
Multi gravida	76 (37.25%)
Gravida (Mean ± SD)	2.02 ± 1.55
Parity (Mean ± SD)	0.98 ± 1.4
Gestational Age (Mean ± SD)	10.64 ± 11.38

Table 2: Mode of Delivery and Pregnancy Outcomes (n=204)

Mode of Delivery	Frequency (%)	Perinatal Outcome (IUD/Alive/Preterm)	Maternal Outcome (Missed/PROM/APH)
Termination of Pregnancy	172 (84.1%)	172 (100%) / 0 / 0	172 (100%) / 0 / 0
Normal Vaginal Delivery	19 (9.3%)	1 (5.2%) / 4 (21.05%) / 14 (73.68%)	0 / 18 (94.7%) / 1 (5.2%)
Caesarean Section	13 (6.3%)	1 (7.69%) / 7 (53.84%) / 5 (38.46%)	0 / 11 (84.61%) / 2 (15.38%)
Total	204 (100%)	174 (85.29%) / 21 (10.29%) / 9 (4.4%)	172 (84.31%) / 29 (14.21%) / 3 (1.47%)

Table 3: Perinatal and Maternal Outcomes by Age Groups (n=204)

Age Group (Years)	Perinatal Outcome (IUD/Alive/Preterm)	P-value	Maternal Outcome (Missed/PROM/APH)	P-value
21-30	122 (91.72%) / 6 (4.5%) / 5 (3.7%)	0.45	122 (91.72%) / 11 (8.27%) / 0	0.017
30-40	52 (73.23%) / 15 (21.12%) / 4 (5.6%)		50 (70.42%) / 18 (11.26%) / 3 (4.2%)	
Total	174 (85.29%) / 21 (10.29%) / 9 (4.41%)		172 (84.31%) / 29 (14.21%) / 3 (1.47%)	

Table 4: Perinatal and Maternal Outcomes by Gestational Age (n=204)

Gestational Age (Weeks)	Perinatal Outcome (IUD/Alive/Preterm)	P-value	Maternal Outcome (Missed/PROM/APH)	P-value
4-12	163 (100%) / 0 / 0	0.000	163 (100%) / 0 / 0	0.000
13-28	10 (100%) / 0 / 0		9 (90%) / 0 / 1 (10%)	
29-40	1 (3.22%) / 21 (67.74%) / 9 (29.03%)	-	0 / 25 (92.59%) / 2 (7.4%)	-
Total	174 (85.29%) / 21 (10.29%) / 9 (4.4%)	-	172 (84.31%) / 29 (14.21%) / 3 (1.47%)	-

Table 5: Summary of Pregnancy Outcomes (n=204)

Outcome	**Frequency (%)**
Perinatal Outcomes	
Intrauterine Death (IUD)	174 (85.3%)
Alive Births	21 (10.29%)
Preterm Births	9 (4.41%)
Maternal Outcomes	
Missed Abortion	172 (84.31%)
PROM	29 (14.21%)
APH	3 (1.47%)
Gestational Age at Abortion/Continuation	
6 weeks (Aborted)	120 (58.9%)
7-10 weeks (Aborted)	35 (17.15%)
>10 weeks (Continued)	32 (15.68%)

DISCUSSION

We found that vaginal bleeding was a common first trimester symptom. However majority of episodes were PV spotting or light bleeding episodes. Most of the patients were primary gravida. If the bleeding is massive then there is minimum chances of successful pregnancy and the pregnancy most probably will be aborted. If bleeding is light or just spotting then there is maximum chance that pregnancy will continue. First trimester bleeding is associated with normal pregnancy in 50% of the cases.[6,7]

In this study 204 patients with first trimester vaginal bleeding were observed and was taken as my group of study, 128 were primary gravida and the remaining 76 patients were multigravida. Among these patients 80% (160) presented with light bleeding as compared to 20% (44 number) have heavy bleeding.82.66% patients aborted in first trimester, 1.47% aborted in 2nd trimester and only 15.87 continue their pregnancy. The adverse pregnancy outcome was maximum in age group 20- 25 years. The number of patients who aborted in first trimester were 120 were less than 6 weeks, 35 in 7-10 weeks while 14 in greater than 10 weeks. Those who continue their pregnancy were 35 in number about 17.34%. Maternal outcome in the form of PROM is 12%, PROM with labour 2% and antepartum haemorrhage was 1.47%. In this study we found that maternal age was independent variable, abortions were mostly occurred in young age in 20-25 years age group, miscarriages occurred mostly in the first trimester and mostly less than 6 weeks. Majority of patients were primary gravida.

A study conducted in India showed abortion in 34% cases, PROM presented in 36% of cases,

placenta previa in 14%, placental abruption in 9%, and PIH were seen in 15% cases presented with First trimester vaginal bleeding whereas 24% of the children were preterm and IUD occurred in 7% of the cases.[3]
Another study by Bangash N et al showed abortion only in 10.8% of the cases because of first trimester bleeding.[6] A study conducted in Iran shows obstetrical complications (table 2) in women with first trimester vaginal bleeding as premature labor 25%, PROM 8.3%, Placental abruption 13.3%, and pregnancy outcome (table 3) as abortion 20%, termination of pregnancy 10 %, normal vaginal delivery 38/4%, cesarean section 41/6%. [4] Results of study shows that 76.9% patients who presented before six week aborted where as 7% patients who presented after 10 weeks aborted, 15.3% went into preterm labor and 6.75% has PROM. [2]

We encounter many high risk issues throughout pregnancy which if detected earlier can be prevented. Patients with first trimester PV bleeding can be classified as high risk patient needs closer feto-maternal surveillance in order to improve feto-maternal outcome. We conclude from this study that vaginal bleeding in first trimester is considered a high risk pregnancy and needs close Fetomaternal surveillance. Such patients should be followed up throughout pregnancy for both maternal feta well-being. Such pregnancy is either aborted or continued. If continued it might be complicated in the second or third trimester. Each trimester is important for monitoring.
This study also shows that if bleeding is light or just spotting it will resolve with good hydration, bed rest and progesterone support. If bleeding is major the chances of continuation of pregnancy is minimum and it will be aborted. Mentioned above, first trimester PV bleeding strongly predicts both maternal and perinatal outcome. Many studies have been done which shows that first trimester PV bleeding is not only associated with miscarriage but also with a higher rate of pregnancy complications. [2] Furthermore, no work has been done on this topic and up our knowledge it will be first of its type in our department. On the basis of its results we will recommend further research work and other recommendations to improve skills in order to overwhelm these complications.

CONCLUSION

This study shows that vaginal bleeding in first trimester predicts maternal and fetal complications. These patients are taken as high risk who need precise management and need a senior obstetrician for accurate diagnosis to prevent complications in both mother and the fetus. If such patients are followed up in OPD both maternal and fetal complications can be prevented and if there is any complication can be managed in time.

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