

Pregnancy outcomes in women presenting with first trimester vaginal bleeding: A descriptive longitudinal study

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ABSTRACT

Introduction: Pregnancy is a significant event in a woman's life, and emotional attachment to the pregnancy and developing foetus may begin early in the first trimester. Bleeding during first trimester is a source of stress and anxiety to mothers because of the uncertainty of the outcome, lack of preventive measures and emotional significance of early pregnancy loss.

Objective: To determine pregnancy outcomes among women presenting with first trimester vaginal bleeding.

Methodology: This hospital-based descriptive longitudinal study was conducted at Kathmandu Medical College Teaching Hospital over a period of one year. Pregnant women presenting with vaginal bleeding within the first trimester (≤ 13 weeks) were enrolled. Maternal characteristics, pregnancy viability, obstetric complications, mode of delivery, and perinatal outcomes were analyzed using SPSS.

Results: Out of 220 women included, 136 (61.8%) had non-viable pregnancies and 84 (38.2%) had viable pregnancies. The mean maternal age was 28.89 ± 5.1 years and the mean gestational age at presentation was 8.44 ± 2.08 weeks. Among viable pregnancies, 40 (47.7%) delivered at term, 31 (36.9%) had preterm delivery, and 13 (15.4%) had mid-trimester abortion. Obstetric complications occurred in 55 (77.5%) of viable pregnancies, with prelabour rupture of membranes being the most common 34 (61.8%). Among 70 live births, 16 (22.5%) required NICU admission and there were four perinatal deaths.

Conclusion: First trimester vaginal bleeding is frequently associated with pregnancy loss and adverse maternal and perinatal outcomes. Even in viable pregnancies, close antenatal surveillance is warranted.

Key words: First trimester bleeding; Pregnancy outcome; PROM; Preterm birth; Perinatal mortality

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INTRODUCTION

First trimester vaginal bleeding occurs in approximately 16–20% of pregnancies and represents one of the most common obstetric emergencies.¹⁻⁸ Pregnancy is a significant event in a woman's life, and emotional attachment to the pregnancy and developing fetus may begin early in the first trimester. Bleeding during first trimester is a source of stress and anxiety for mothers about the outcome of the pregnancy. It is a difficult time for a mother because of the uncertainty of the outcome, lack of preventive measures and emotional significance of early pregnancy loss.¹ Although many cases resolve spontaneously, bleeding during early pregnancy may indicate underlying placental dysfunction and is associated with an increased risk of miscarriage, preterm birth, PROM, and adverse perinatal outcomes.^{9, 10} In low-resource settings like Nepal, limited data exist on longitudinal outcomes of such pregnancies. This study aimed to evaluate pregnancy outcomes among women presenting with first trimester vaginal bleeding at a tertiary care center.

METHODOLOGY

This descriptive longitudinal study was conducted in the Department of Obstetrics and Gynaecology at Kathmandu Medical College Teaching Hospital over a period of one year from December 2019 to November 2020. Ethical approval was obtained from the Institutional Review Committee of Kathmandu Medical College. (IRC no: 1309201942).

Convenience sampling was done and sample size was calculated using following formula.

Sample size (n): $= Z^2pq/d^2$

Where, $Z = 1.96$ at 96% confidence interval

$p = 0.16\%$ ³

$q = 0.84\%$

$d =$ Margin of error at 5% prevalence (0.05)

Sample size (n) : 206

Non response rate: 20 % (0.2)

Total Sample size (n1): 247

All pregnant women presenting with vaginal bleeding within the first trimester were included after informed consent. Women with bleeding due to non-obstetric cause (cervical polyp, fibroid), trauma or known bleeding disorders were excluded.

Data collected included maternal age, gravidity, gestational age at presentation, pregnancy viability, obstetric complications (PROM, PPRM, preterm labor, APH), mode of delivery, neonatal birth weight, NICU admission, and perinatal mortality. Data were analyzed using SPSS version 23. Descriptive statistics were used and results were expressed as mean $\pm$ SD and percentages.

RESULTS

A total of 2792 women were admitted for various obstetric problems during the study period. There were 328 women who had vaginal bleeding in the first trimester. The prevalence of women presenting with first trimester vaginal bleeding was found to be 11.74 %. Out of 328 women, 296 met the eligibility criteria and 220 women were recruited as many were lost to follow up. Among the 220 cases enrolled in this study, more than half of the women were multigravida (121 women, 55%) with a mean maternal age of 28.89 ± 5.1 years and a mean gestational age of 8.44 ± 2.08 weeks. The mean gestational age at bleeding was significantly associated with pregnancy viability, p -value < 0.001 (Table 1).

Among 136 (61.8%) of non-viable pregnancies, the most common cause was missed abortion 65 (47.79%, Figure 1). Vaginal bleeding was most frequently observed between 7 and 8 weeks of gestation (Figure 2). Among the viable pregnancies, 40 (47.7%) women had term delivery and 31 (36.9%) women had preterm delivery, whereas 13 (15.4%) women had mid-trimester abortion.

Among the 84 viable pregnancies, 55 (65.5%) developed obstetric complications. PROM was the most frequent complication, followed by preterm labor and placenta previa

Out of 71 viable pregnancies that were followed till delivery, more than half of them were delivered vaginally 38 (53.52%) women, while the rest delivered via caesarean section 33 (46.48%) women. Of the 70 live births, 16 neonates required NICU admission, mainly due to prematurity and low birth weight.

Among the 16 neonates admitted in the NICU, 13 were preterm babies, one had meconium aspiration syndrome, one had low birth weight and one baby was growth retarded. Those with NICU stay had mean birth weight of 1.92 ± 0.42 kg including mostly preterm babies. While those without a NICU stay had a mean birth weight of 2.74 ± 0.44 kg which was found to be statistically significant (p -value < 0.001 , Table 2)

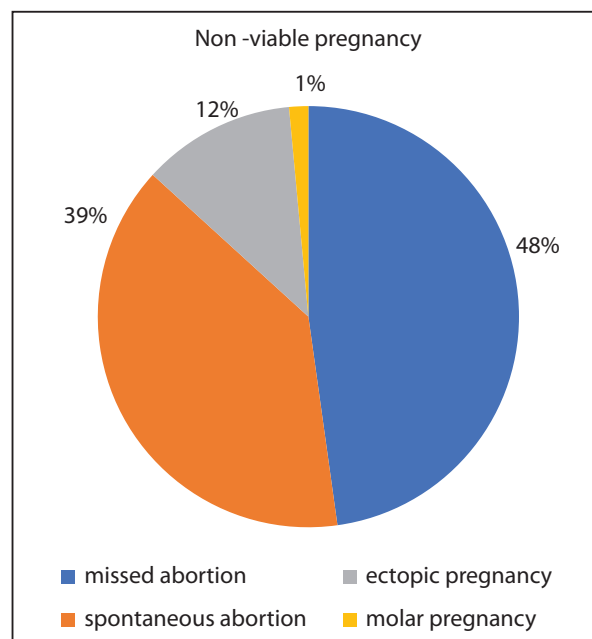


Figure 1: Outcome of non-viable pregnancy

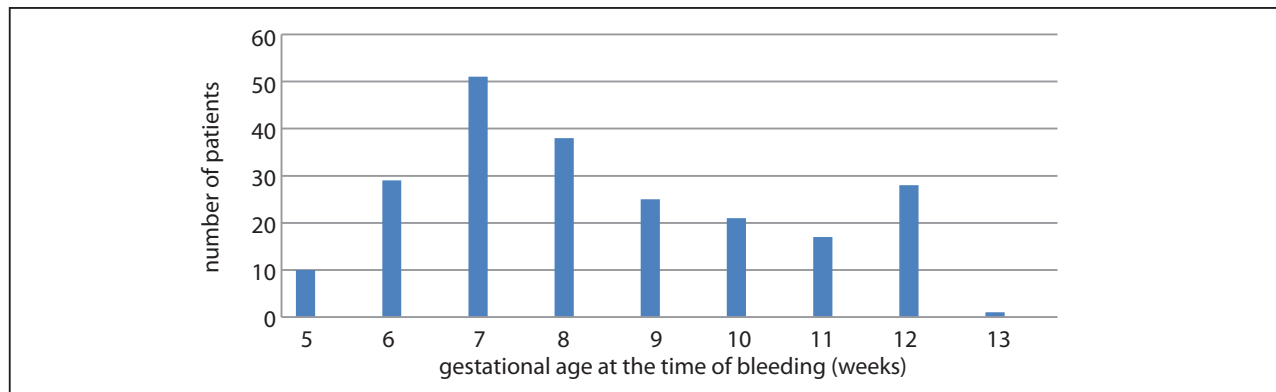


Figure 2 : Gestational age at the time of bleeding

Table 1: Demographic characteristics of the pregnant women

Demographic variables	first trimester bleeding (N=220)	viable pregnancy (threatened abortion) (n=84)	Non-viable pregnancy (n=136)	P-value
Gravidity				
Primigravida	99 (45%)	44 (52.3%)	55 (40.44%)	0.16*
Multigravida	121 (55%)	40 (47.7%)	81 (59.56%)	
Maternal age in years				
≤20	9 (4.09%)	2 (2.4%)	7 (5.14%)	0.187*
21-30	133 (60.45%)	57 (67.9%)	76 (55.88%)	
31-40	75 (34.09%)	25 (29.7%)	50 (36.76%)	
>40	3 (1.37%)	0	3 (2.22%)	
Mean maternal age ± SD (years)	28.89 ± 5.1	28.19 ± 4.3	29.32± 5.4	0.113 [†]
Mean gestational age ± SD (weeks)	8.44±2.08	7.6 ± 1.8	8.9 ± 2.04	<0.001 [†]

p-value significant at <0.05 * = Chi-square test, [†] = independent t test

Table 2: Pregnancy complications and perinatal outcome among viable cases

Pregnancy complications (n=84)	Frequency (%)
Mid-trimester abortion	13 (15.4)
Complications absent	16 (19.04)
Complications present	55 (65.4)
Type of complications (n=55)	
PROM/PPROM	34 (61.8)
Preterm labor	15 (27.3)
Placenta previa	5 (9.09)
Abruptio placentae	1 (1.81)
NICU admission (n=70)	
Yes	16 (22.8%)
No	54 (77.2%)
Mean birth weight (kilograms)	p-value
NICU admitted 1.92 ± 0.42	<0.001 [†]
No NICU admission 2.74 ± 0.44	

p-value significant at <0.05 [†] = independent t test

DISCUSSION

Vaginal bleeding in early pregnancy is a distressing symptom for both the woman and the obstetrician, as it raises concern regarding pregnancy viability and outcome. This prospective longitudinal study evaluated the prevalence, clinical profile, and outcomes of women presenting with first-trimester vaginal bleeding.

The prevalence of first-trimester vaginal bleeding in the present study was 11.74%, which is comparable to the pooled estimate of 11.9% reported by Ananth et al.^{7,11,12} This similarity supports the consistency of early pregnancy bleeding rates across populations. More than half of the women were multigravida (55%), a finding consistent with studies by Kavyashree et al. and, Dongol et al., suggesting that first-trimester bleeding is not restricted to primigravida women.^{1,13}

The mean maternal age in this study was 28.89 ± 5.1 years, aligning with observations by Zhila et al., where

most women were between 25–35 years of age.¹⁰ However, Dongol et al. reported a lower mean age, possibly reflecting demographic differences in the study population.¹³ The peak gestational age at presentation was the 7th week, similar to findings in other studies reporting increased bleeding between 7–10 weeks.^{14,15} This period coincides with the luteo-placental shift, during which placental hormone production replaces corpus luteum support, making early pregnancy more vulnerable.¹⁶ A secondary rise in cases around 12 weeks in our study may be attributed to delayed diagnosis of missed abortion.

In the present study, only 38% of women had viable pregnancies, while 62% resulted in non-viable outcomes. Missed abortion was the most common non-viable outcome, followed by spontaneous abortion. These findings are comparable to those reported by Kavyashree et al., though other studies such as those by Zhila et al. and Bhatu et al. reported higher viability rates.^{1,10,15} The variation across studies may be due to differences in study design, sample size, and referral patterns.

Among non-viable pregnancies, abortion accounted for the majority of cases, followed by ectopic and molar pregnancies. The higher incidence of ectopic pregnancy

in this study compared to others may be explained by the tertiary care setting and referral bias. Among viable pregnancies followed to delivery, a significant proportion experienced obstetric complications, particularly prelabour rupture of membranes and preterm labour. Although most women delivered vaginally, nearly half required cesarean section. NICU admission was required in 22.5% of live births, primarily due to prematurity and low birth weight.

Overall, this study reinforces that first-trimester vaginal bleeding is associated with a high risk of pregnancy loss and adverse obstetric outcomes. Early diagnosis, close surveillance, and appropriate counseling are essential to optimize maternal and fetal outcomes. This was a single-center hospital-based study, limiting generalizability. Long-term neonatal outcomes were not assessed.

CONCLUSION

First trimester vaginal bleeding remains a common obstetric presentation and is associated with a high incidence of non-viable pregnancy and adverse outcomes even among viable pregnancies.

Conflict of interest: None

Source(s) of support: None

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