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Study of the Predictive Factors for First Trimester Bleeding in Pregnancy

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ABSTRACT

Introduction: First trimester bleeding is a common obstetric complication, affecting up to 20–25% of all pregnancies. While not all cases result in adverse outcomes, such bleeding is often associated with increased risks of miscarriage, preterm labor, and placental complications later in pregnancy.

Aims and Objectives: To evaluate the clinical profile and ultrasonographic findings in pregnant women presenting with first trimester bleeding. To identify predictive factors associated with pregnancy outcomes in these cases.

Materials and methods: The present study was a Prospective study. This Study was conducted from December 2020 to July 2021 at Department of Obstetrics and Gynecology, Nilratan Sircar Medical College and Hospital, Kolkata. Total 60 patients were included in this study.

Result: The majority of participants were aged 21–25 years, with nearly half being primigravida. Abnormal USG findings were seen in 70%, most commonly retained products of conception. Mild bleeding was most frequent (55%), and 30% had a history of abortifacient use. Abortion was the most common outcome (61.67%), and bleeding was most frequent between 6–8 weeks. A significant association was found between bleeding severity and pregnancy outcome ($p < 0.001$), with all moderate and heavy bleeders resulting in abortion.

Conclusion: We concluded that the severity of first trimester bleeding emerged as a strong predictor of pregnancy outcomes. Women who experienced mild bleeding had a greater likelihood of continuing their pregnancies to term or preterm delivery, with a relatively lower risk of adverse outcomes.

Keywords: Bleeding, Pregnancy, Predictors, Ultrasound, Abortion

INTRODUCTION

First trimester bleeding is a common obstetric complication, affecting up to 20–25% of all pregnancies [1]. While not all cases result in adverse outcomes, such bleeding is often associated with increased risks of miscarriage, preterm labor, and placental complications later in pregnancy [2,3]. The etiology is multifactorial, including implantation bleeding, subchorionic hematoma, threatened abortion, ectopic pregnancy, and gestational trophoblastic disease. Identifying predictive factors such as maternal age, parity, prior miscarriages, assisted reproductive techniques, and lifestyle factors (e.g., smoking, alcohol use) can help in early risk stratification and targeted management [4]. Ultrasound and serum beta-hCG trends are essential tools in evaluating the prognosis of first trimester bleeding [5]. However, the predictive accuracy of clinical, biochemical, and ultrasonographic parameters remains inconsistent across different populations. Hence, this study aims to evaluate and analyze the predictive factors associated with first trimester bleeding in pregnancy to enhance early diagnosis and improve pregnancy outcomes.

MATERIALS AND METHODS

Study Type: Prospective study

Place Of Study: Department of Obstetrics and Gynecology, **NILRATAN SIRCAR MEDICAL COLLEGE AND HOSPITAL, KOLKATA.**
Period Of Study- December 2020 to July 2021
Study Population: Consenting Patients presenting with first trimester bleeding per vagina in OPD,emergency and indoor in the Department Of Obstetrics and Gynecology within the study period.

INCLUSION CRITERIA:

1. Women with months of amenorrhea of <3 months.
2. Women with positive pregnancy test.
3. Women with bleeding per vagina in first trimester of pregnancy.

EXCLUSION CRITERIA:

1. Women with chronic medical complications including diabetes and hypertension
2. Women with a history of infertility
3. Women with bad obstetric history(h/o >3 first trimester abortion in previous pregnancy)
4. Women with history of bleeding diathesis
5. All patient with more than 12 completed weeks of gestation
6. multiple gestations
7. Molar pregnancy.

SAMPLE SIZE: we take 60 as minimal sample size for the study.

STUDY VARIABLES

- Age
- Parity
- Socioeconomic status
- Period of gestation
- History of previous abortion.
- Presentation
- Duration of bleeding
- Type of bleeding
- Ultrasonography examination
- Blood examination
- General examination and Obstetrical examination

Statistical Analysis:-

For statistical analysis, data were initially entered into a Microsoft Excel spreadsheet and then analyzed using SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism (version 5). Numerical variables were summarized using means and standard deviations, while Data were entered into Excel and analyzed using SPSS and GraphPad Prism. Numerical variables were summarized using means and standard deviations, while categorical variables were described with counts and percentages. Two-sample t-tests were used to compare independent groups, while paired t-tests accounted for correlations in paired data. Chi-square tests (including Fisher's exact test for small sample sizes) were used for categorical data comparisons. P-values ≤ 0.05 were considered statistically significant.

RESULT

Table 1. Distribution of cases according to the age groups

AGE	N	%
<20 years	8	13.33
21-25 years	35	58.33
26-30 years	16	26.67
>30 years	1	1.67
Total	60	100
Mean age (years)	23.2±3.6	

Table 2. Clinical and Obstetric Profile of Patients Presenting with First Trimester Bleeding

		N	%
Gravida	Primi	29	48.33
	Multi	31	51.67
	Total	60	100
USG Findings	Within normal limit	18	30
	Abnormal	42	70
	Total	60	100
Abnormal USG Findings	Blighted Ovum	1	2.38
	C.A Absent	5	11.9
	Ectopic Pregnancy	2	4.76
	Missed Abortion	5	11.9
	No Fetal Pole	3	7.14
	Placenta Previa	2	4.76
	RPOC	21	50
	Subchorionic Hematoma	3	7.14
Bleeding	Mild(spotting)	33	55
	Moderate	18	30
	Heavy	9	15
	Total	60	100
USE of Abortifacient	Yes	18	30
	No	42	70
	Total	60	100
Mode of Delivery	Vaginal delivery	15	71.43
	LSCS	6	28.57
	Total	21	100
Gestational Age At Bleeding	6-8 weeks	34	56.67
	9-10 weeks	20	33.33
	11-12 weeks	6	10
	Total	60	100
Past Obstetric History	Spontaneous abortion	8	22.86
	MTP	9	25.71
	LSCS	8	22.86
	Vaginal delivery	10	28.57
Outcome	Abortion	37	61.67
	Laparotomy	2	3.33
	Delivery at term	7	11.67
	Delivery at preterm	14	23.33
	Total	60	100
Previous abortion	A0	41	68.33
	A1	13	21.67
	A2	6	10
	Total	60	100

Table 3. Comparison of outcome between different severities of bleeding

OUTCOME	Mild bleeding		Moderate bleeding		Heavy bleeding		P value
	N	%	N	%	N	%	
Abortion	10	30.31	18	100	9	100	<0.001*
Laparotomy	2	6.06	0	0	0	0	
Delivery at term	7	21.21	0	0	0	0	
Delivery at preterm	14	42.42	0	0	0	0	
Total	33	100	18	100	9	100	

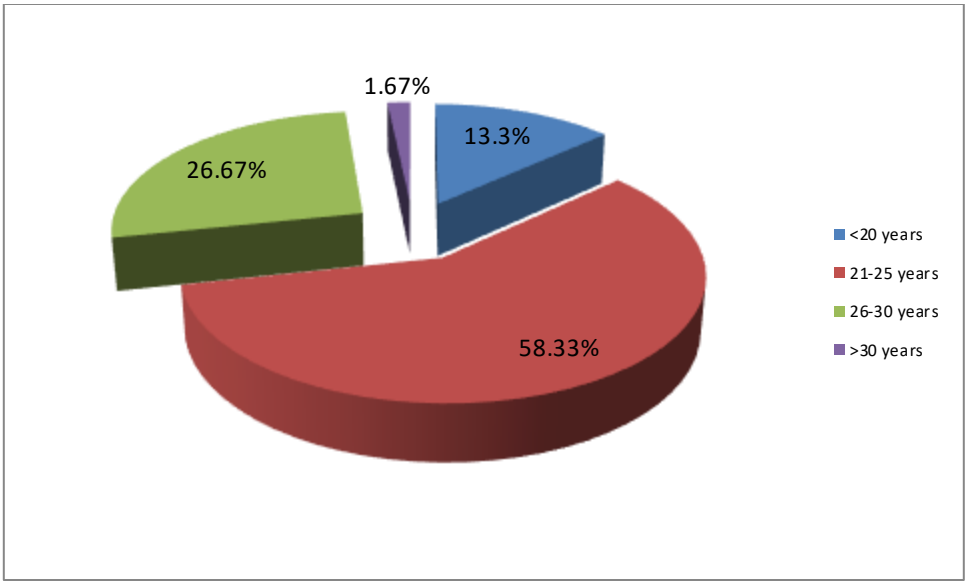

Figure 1: Distribution of cases according to the age groups

In our study, the majority of participants were in the age group of 21–25 years, accounting for 58.33% (n=35) of the total sample. This was followed by 26–30 years with 26.67% (n=16), and <20 years with 13.33% (n=8). Only 1.67% (n=1) of the participants were aged above 30 years. The mean age of the study population was 23.2 ± 3.6 years.

In our study, nearly half of the participants were primigravida (48.33%, n=29), while the remaining 51.67% (n=31) were multigravida. Ultrasonographic (USG) evaluation revealed abnormal findings in 70% (n=42) of cases, with only 30% (n=18) showing normal scans. Among the abnormal USG findings, retained products of conception (RPOC) was the most common (50%, n=21), followed by missed abortion and cardiac activity (C.A) absent (11.9% each, n=5), no fetal pole and subchorionic hematoma (7.14% each, n=3), and ectopic pregnancy and placenta previa (4.76% each, n=2). Blighted ovum was observed in 2.38% (n=1) of the cases. With regard to bleeding severity, mild spotting was most common (55%, n=33), followed by moderate (30%, n=18) and heavy bleeding (15%, n=9). A history of abortifacient use was reported in 30% (n=18) of the patients. Among those who continued their pregnancy and delivered (n=21), 71.43% (n=15) underwent vaginal delivery, while 28.57% (n=6) required lower segment cesarean section (LSCS). Bleeding most commonly occurred between 6 to 8 weeks of gestation (56.67%, n=34), followed by 9 to 10 weeks (33.33%, n=20), and 11 to 12 weeks (10%, n=6). Regarding past obstetric history (n=35), vaginal delivery was noted in 28.57% (n=10), medical termination of pregnancy (MTP) in 25.71% (n=9), spontaneous abortion and LSCS each in 22.86% (n=8). In terms of outcomes, abortion was the most frequent (61.67%, n=37), followed by preterm delivery (23.33%, n=14), term delivery (11.67%, n=7), and laparotomy (3.33%, n=2). Previous abortion history revealed that 68.33% (n=41) of the participants had no prior abortion (A0), while 21.67% (n=13) had one (A1), and 10% (n=6) had two previous abortions (A2).

In our study, bleeding severity was found to have a statistically significant association with pregnancy outcomes ($p < 0.001$). Among those with mild bleeding (n=33), 30.31% (n=10) had an abortion, 42.42% (n=14) delivered preterm, and 21.21% (n=7) delivered at term. Two patients (6.06%) in this group underwent laparotomy. In contrast, all patients with moderate (n=18) and heavy bleeding (n=9) experienced abortion, accounting for 100% of outcomes in both groups. No term or preterm deliveries and no laparotomies were reported in these groups. The difference in outcomes across bleeding severity was highly significant ($p < 0.001$), indicating a strong correlation between increased bleeding severity and risk of abortion.

DISSCUSSION

In our study, the majority of women presenting with first trimester bleeding were in the 21–25-year age group, with a mean age of 23.2 ± 3.6 years. This aligns with findings from **Victory J et al. (2021)**, who reported that first trimester bleeding is most prevalent among women in their early reproductive years [6]. Parity did not show a significant difference, with primigravida and multigravida almost equally represented, similar to the results of the study by **SEDEF AM et al. (2015)**, which noted no significant difference in the incidence of early bleeding between primigravida and multigravida women [7]. Abnormal ultrasonographic findings were observed in 70% of our participants, with retained products of conception (RPOC) being the most common diagnosis. This is comparable to the findings of **Gupte AN et al. (2021),** who identified RPOC as a major ultrasonographic abnormality in women with first trimester bleeding [8]. Other findings in our study included missed abortion, absent cardiac activity, ectopic pregnancy, and subchorionic hematoma. In our study, the timing of bleeding was most common between 6 to 8 weeks of gestation, a pattern that

correlates with the findings of **Sapra et al. (2016),** who reported the highest frequency of early pregnancy bleeding within this gestational window [9]. Importantly, we observed a significant association between bleeding severity and adverse pregnancy outcomes ($p < 0.001$). All women with moderate or heavy bleeding experienced abortion, whereas mild bleeding was associated with a more favorable prognosis, including preterm and term deliveries. The majority of adverse outcomes in our cohort were abortions (61.67%), followed by preterm deliveries. These findings reflect those of **Thomas OK et al. (2021)**, who identified first trimester bleeding as a major predictor of both miscarriage and preterm birth in Indian populations [10]. Furthermore, our data suggest that previous abortion history plays a role in pregnancy outcomes. Women with one or more prior abortions had a higher likelihood of poor outcomes in the current pregnancy, consistent with the findings of **Séjourné N et al. (2020)**, who reported increased risk of miscarriage in women with previous abortion history [11]. Thus, our findings reinforce the importance of early clinical evaluation, risk stratification using sonographic and clinical parameters, and close follow-up in cases of first trimester bleeding. The significant correlation between bleeding severity and pregnancy loss emphasizes the need for improved antenatal surveillance and patient education to mitigate risks.

CONCLUSION

We concluded that the severity of first trimester bleeding emerged as a strong predictor of pregnancy outcomes. Women who experienced mild bleeding had a greater likelihood of continuing their pregnancies to term or preterm delivery, with a relatively lower risk of adverse outcomes. In contrast, moderate to heavy bleeding was consistently associated with unfavorable outcomes, particularly spontaneous abortion, underscoring the prognostic significance of bleeding intensity. These findings highlight the importance of early evaluation and close monitoring of bleeding episodes during the first trimester to facilitate timely intervention and improve maternal-fetal outcomes.

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