A Study of Maternal and Foetal Outcome in Pregnant Women with History of First Trimester Vaginal Bleeding

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ABSTRACT

BACKGROUND
First trimester vaginal bleeding is an obstetric high-risk, early registration of pregnancy regular antenatal visits and good awareness to the pregnant women and their family members about first trimester vaginal bleeding and the sequelae and the early and remote obstetric and neonatal outcome are needed. The purpose of the study was to observe the effect of first trimester bleeding on maternal & foetal outcomes.

METHODS
This study involved all women attending the antenatal clinic at the Department of Obstetrics and Gynaecology with a history of vaginal bleeding in the first trimester or the second trimester or third trimester with prior history of first trimester bleeding at Basaveshwar and Sangameshwar Hospital, attached to MRMC, Kalaburagi. It included a total of 100 singleton pregnant women with vaginal bleeding in the first trimester of pregnancy that was confirmed ultrasonographically. Patients were closely observed and follow-up done 2 weekly up to 36 weeks and weekly after that till delivery. The maternal and foetal outcomes were studied.

RESULTS
In the present study, first trimester vaginal bleeding was seen maximum in the age group of 21-25 years about 47 %, seen more in Multigravida 52% than primigravida 44% and 4% in Grandmultipara. Maternal adverse outcomes such as abortion in 8 % of cases, placenta pravia in 15% of cases, placenta accreta in 2 % of cases, preeclampsia in 12 % of cases and PROM in 18 % of cases and preterm labour in 21 % of cases were observed. Among 63 live births, 38 were term babies, 19 were early preterm, 2 were late preterm babies, and 8 were IUGR babies.

CONCLUSIONS
In the first trimester, vaginal bleeding is one of the predictors of poor maternal and foetal outcomes later in pregnancy. Both maternal and foetal outcomes are studied considering pregnant women with first-trimester vaginal bleeding as a high-risk category. Proper evaluation of a pregnant woman with first-trimester vaginal bleeding, regular antenatal care, methodical evaluation of bleeding and regular follow-up with the lookout for maternal and foetal complications and awareness to the woman and family members and knowledge about warnings signs in pregnancy to be explained. Proper clinical examination and ultrasonographic evaluation & timely obstetric consultation and interventions play an important role in the management of patients with first-trimester vaginal bleeding.

KEY WORDS
First Trimester Vaginal Bleeding, Threatened Abortion, Subchorionic Bleed, Maternal and Foetal Outcome
BACKGROUND

Vaginal bleeding is one of the major obstetric problems in the first trimester and causes anxiety to pregnant women and obstetricians. About 16-24% of pregnant women present with first-trimester vaginal bleeding. Common causes of first trimester bleeding are inevitable abortion, threatened abortion, incomplete and complete abortion, molar pregnancy and ectopic pregnancy. The outcome is affected by the period of gestation during the first trimester bleeding, cause and severity of bleeding and duration of bleeding. About 50% of pregnancies with the first-trimester bleeding end in pregnancy loss before 20 weeks of gestation. If the pregnancy continues there will be poor foetal and maternal outcomes such as preterm labour, preterm premature rupture of membranes, placenta previa, placental abruption, preeclampsia and intrauterine growth restriction and intrauterine foetal demise. Pain and heavy bleeding are associated with an increased risk of early pregnancy loss. Treatment of threatened abortion is expectant management. Bed rest does not improve outcomes, and there is insufficient evidence supporting the use of progestins.

First trimester vaginal bleeding is a common symptom of pregnancy, complicating 16-25% of all pregnancies. Four major causes are miscarriage (threatened, inevitable, incomplete or complete), ectopic pregnancy, implantation bleeding of pregnancy and cervical pathology. It constitutes a source of anxiety for the mother, family as well as care providers. The outcome is likely to be affected by the gestational age of bleeding, cause of bleeding and severity of bleeding.[1] It is also known that maternal age, systemic diseases such as diabetes mellitus, hypothyroidism, infertility treatment, thrombophilia, maternal weight and uterine structural anomalies increase the risk of abortus imminent.[2]

The purpose of the study was to observe the effect of first trimester bleeding on maternal & foetal outcomes. Anembryonic gestation is defined as the ultrasonographically finding of a gestational sac with a mean sac diameter ≥ 25 mm and no yolk sac or embryo. Complete abortion is the complete passage of all products of conception. Early pregnancy loss refers to non-viable intrauterine pregnancy within the first 12 6/7 weeks of gestation.

METHODS

The study involves all women attending the antenatal clinic at the Department of Obstetrics and Gynaecology with a history of vaginal bleeding in the first trimester or the second trimester or third trimester with prior history of first trimester bleeding at Basaveshwar Teaching and General Hospital and Sangameshwar Teaching and General Hospital, attached to Mahadevappa Rampure Medical College, Kalaburagi.[3]

Methods of Collection of Data
1. Study design: Prospective Observational Study
2. Study period: 1st October 2019 - 31st March 2021 (18 months)

3. Place of study: Mahadevappa Rampure Medical College, Kalaburagi
4. Sample size: 100
5. Sampling procedure: Simple Randomized sampling

Inclusion Criteria
1. Pregnant women with a history of first-trimester vaginal bleeding.
2. Pregnant women in the second or third trimester with a history of vaginal bleeding in the first trimester in present pregnancy.
3. Singleton's pregnancy confirmed by ultrasound.

Exclusion Criteria
1. Pregnant women with medical disorders like chronic hypertension, diabetes mellitus, syphilis, and bleeding disorders.
2. History of recurrent miscarriage
3. Cervical incompetence, uterine anomalies, fibroids, cervical polyp or cervical erosions
4. Suspected or proven ectopic and molar pregnancy
5. Pregnant women with inevitable abortion and missed abortion.

Data were collected using a standardized questionnaire. The data included detailed patient information such as demographic data, marital life, number of pregnancies, gestational age, first antenatal visit and laboratory investigations. It also included patient characteristics such as age, parity, body mass index, gestational age, type of bleeding, ultrasound findings management, pregnancy outcome and neonatal outcome and co-morbidities.[4]

After taking a written informed consent, patients were kept under surveillance until delivery and the outcome of pregnancy was evaluated by close observation every two weeks up to 36 weeks of gestation and weekly thereafter. Sonography was performed for all women at the 6-8 weeks interval.

The gestational age at the time of bleeding, the amount of bleeding, bleeding associated with pain abdomen, and history of similar complaints in previous pregnancies were asked. In the history of previous pregnancies, any co-existing diseases, the duration of pregnancy and the birth weight, Apgar score at 1 min and 5 min and neonatal complications, admission to neonatal intensive care unit were recorded.[5]

Patients were closely observed and follow up done 2 weekly up to 36 weeks and weekly after that till delivery. Pregnancy outcomes such as incomplete and complete abortions, second-trimester abortions, gestational hypertension, preeclampsia, placental abruption, placenta previa, preterm delivery and premature rupture of membranes in the mothers and the newborn, low birth weight, intrauterine growth restriction, low Apgar score at 1 and 5 minutes, and admission to neonatal intensive care unit were noted.[6]

If vaginal spotting is found, it is considered light bleeding. If the bleeding is similar to the patient's menstrual bleeding or more, it is considered heavy bleeding.[7]
Specimen Collection and Laboratory Procedures
Blood and urine samples were taken from all patients who clinically were suspected to have vaginal bleeding or spotting.

Ultrasoundographic examination in 1st trimester and blood and urine investigations were sent and antenatal checkups were done at regular intervals and follow-ups were done.

For gestational hypertension and preeclampsia patients.[8]

| Complete hemogram | Coagulation profile: PT, INR, APTT |
|-------------------|-----------------------------------|
| Liver function tests | Ultrasonography with Doppler studies |
| Renal function tests | Fundoscopy |
| 24hr Urine protein | |

These tests are done at regular intervals.

● For patients diagnosed with HELLP syndrome, the 8th hourly monitoring of platelet count and coagulation profile is done.

● For patients diagnosed with the low-lying placenta and placenta previa, regular follow-up with ultrasonography and Doppler studies and placental localization and migration by serial USG monitoring is done.

● For patients diagnosed with placenta previa with a previous uterine scar, placental invasion is diagnosed by MRI imaging.

● For patients diagnosed with IUGR, serial foetal growth monitoring by growth scan at 4 to 6 wks interval; by AFI, EFW and Doppler studies monitoring.

● For patients susceptible to preterm delivery with pain abdomen

Vaginal and cervical swabs, urine routine and urine for culture and sensitivity were sent and treated accordingly. Prophylactic progesterone (vaginal or oral) supplementation was given and monitored by USG.[9]

Obstetric Causes
Early pregnancy loss is a term often used interchangeably. Spontaneous abortion and miscarriage refer to pregnancy loss during the first trimester. It is the most common cause of early pregnancy bleeding and is usually associated.[10]

Threatened early pregnancy loss, often considered a type of early pregnancy loss refers to vaginal bleeding in presence of intrauterine pregnancy and closed cervix.

The presence of a foetal heart rate largely determines whether the pregnancy will progress through viable outcomes.

Implantation Bleeding
In early pregnancy, some harmless bleeding can be observed called spotting. This is when the developing embryo implants in the uterine cavity. This type of bleeding often happens around the time the menstrual period would have been due.[11]

RESULTS

In the present study, the maximum number of cases was 47 (47.0 %) belonging to the age group of 21-25 years, followed by 28 (28.0 %) cases belonging to the age group of 25-30 years, 15 (15.0 %) cases belonged to the age group of ≥ 31 and 10 (10.0 %) cases belonged to the age group of ≤ 20 years. The mean age of cases was 25.46 years.

Threatened Miscarriage
If the pregnancy ends before these 27 weeks it is called a miscarriage. Around 1 in 5 pregnancies end this way. Many early miscarriages happen because there are chromosome errors. There can be other causes of miscarriages like hormone or blood clotting problems.[12]

Two important clinical risks for miscarriage are a history of previous miscarriage and vaginal bleeding in the current pregnancy.

Moreover, the risk of miscarriage increases in line with the number of previous miscarriages a woman suffered.

A recent meta-analysis showed that the risk of miscarriage increases along a sequential biological gradient from an 11% risk of miscarriage in those women with a history of no previous miscarriage to a 65% risk of miscarriage in those women with a history of 6 or more previous miscarriages.[13]

Table 1. Distribution of Cases According to Maternal Age.

| Age in Years | Number of Cases | Percentage |
|--------------|-----------------|------------|
| 20           | 10              | 10.0       |
| 21-25        | 47              | 47.0       |
| 25-30        | 28              | 28.0       |
| ≥ 31         | 15              | 15.0       |
| Total        | 100             | 100.0      |
| Mean         | 25.46 ± 4.14    | ----       |

Table 2. Distribution of Cases According to Parity.

| Gravida Score | Number of Cases | Percentage |
|---------------|-----------------|------------|
| Primigravida  | 44              | 44.0       |
| Multigravida  | 52              | 52.0       |
| Grand Multipara | 4              | 4.0        |
| Total         | 100             | 100.0      |

In the present study, out of 100 cases, 44 (44.0%) cases were primigravida, 52 (52.0%) cases were multigravida and 4 (4.0%) cases were grand multipara.
In the study, out of 100 first trimester vaginal bleeding cases; 55 (55.0%) cases had mild bleeding and 45 (5.0%) cases had heavy bleeding.

In the present study, out of 55 cases who had mild bleeding, 21.8 % of cases of PROM had 1 episode and 10.9 % of cases of PROM had 2 to 4 episodes, 18.1 % of preeclampsia had 1 episode and 3.6 % of preeclampsia had 2 to 4 episodes of bleeding.

In the present study, 17.7 % of cases of abruption and 4.4 % of cases of placenta previa had 1 episode of bleeding, 4.4 % of placenta accreta cases and 60 % of incomplete abortion had 2 to 4 episodes of bleeding, and 13.3 % of complete abortion cases had more than 4 episodes of bleeding.
In the present study, out of 100 women with first-trimester vaginal bleeding, 65 (65.0%) cases had pain abdomen and 35 (35.0%) cases didn’t have pain abdomen.

In the present study, 33% of cases were aborted and 67% of cases continued beyond the period of viability.

In the present study, 33 cases had abortions, among them 5 (15.1%) had an abortion at 6 weeks of gestation, 15 (45.4%) had an abortion between 6 and 10 weeks of gestation, 13 (39.3%) had an abortion between 10 and 12 weeks of gestation and none had a second-trimester loss. The mean gestational age at which patients aborted was 8.6 weeks.

In the present study, out of 100 study cases, 33 (33.0%) cases had abortions; among them 27 (27.0%) cases had incomplete abortions and 6 (6.0%) cases had complete abortions.
In the present study out of 67 women who continued the pregnancy, 46 (68.7%) cases were term deliveries and 21 (31.2%) cases were preterm deliveries. Among the preterm deliveries, 19 (28.3%) cases were early preterm and 2 (2.9%) cases were late preterm.

In the present study, among 67 (67.0%) deliveries, 35 (35.0%) cases were delivered by lower segment caesarean section (LSCS) and 32 (32.0%) cases were delivered by normal vaginal delivery (NVD).
In the present study, out of 100 study cases, the majority of cases (74.0%) had subchorionic hematoma (SCH), 4 (4.0%) had perigestational sac bleed, 8 (8%) cases had retroplacental and intraplacental clots and 14 (14%) cases had shown normal ultrasonographic findings.

| USG Findings                          | Number of Cases | Percentage |
|---------------------------------------|-----------------|------------|
| Sub Chorionic Hematoma (SCH)          | 74              | 74.0%      |
| Normal USG findings                   | 14              | 14.0%      |
| Retroplacental clot and Intraplacental clot | 0               | 0.0%       |
| PERI Gestational SAC bleed            | 04              | 4.0%       |

Table 16. USG Findings in Women with First-Trimester Vaginal Bleeding

In the present study, out of 67 cases who delivered, 63 were live births which accounted for 94.1% and 4 were intrauterine foetal demise which accounted for 5.9%.

| Category of Birth Weight | Birth Weight | Number of Cases | Percentage |
|--------------------------|--------------|-----------------|------------|
| Extremely LBW            | < 1kg         | 2               | 3.0%       |
| Very LBW                 | 1-1.5kg       | 11              | 16.4%      |
| Low Birth Weight         | 1.5-2.5kg     | 15              | 22.4%      |
| Normal Birth Weight      | 2.5kg         | 39              | 58.2%      |
| Total                    |               | 67              | 100%       |

Table 18. Distribution of Cases According to Birth Weight

In the present study, out of 67 deliveries, 39 (58.2%) newborns had birth weight ≥ 2.5 kg (normal birth weight), 15 (22.4%) of newborns had birth weight in the range of 2–2.4 kg, 11 (16.4%) of newborns had birth weight in the range of 1–2 kg and 2 (3.0%) of the newborns had birth weight in the range of <1 kg. The mean birth weight of a newborn was 2.42 kg.

| Category of Birth Weight | Birth Weight | Number of Cases | Percentage |
|--------------------------|--------------|-----------------|------------|
| Series1                  | < 1kg         | 2               | 3.0%       |
| Series1                  | 1–2 kg        | 11              | 16.4%      |
| Series1                  | 2–2.4 kg      | 15              | 22.4%      |
| Normal (NVD)             | ≥ 2.5 kg      | 39              | 58.2%      |
| Total                    |               | 67              | 100%       |

Table 19. Distribution of Cases According to Birth Weight

In the present study, out of 67 deliveries, 39 (58.2%) newborns had birth weight ≥ 2.5 kg (normal birth weight), 15 (22.4%) of newborns had birth weight in the range of 2–2.4 kg, 11 (16.4%) of newborns had birth weight in the range of 1–2 kg and 2 (3.0%) of the newborns had birth weight in the range of <1 kg. The mean birth weight of a newborn was 2.42 kg.

| Perinatal Outcome | Number Of Cases | Percentage |
|-------------------|-----------------|------------|
| Term              | 34              | 50.7%      |
| Early Preterm     | 19              | 28.3%      |
| Late Preterm      | 2               | 2.9%       |
| IUGR              | 8               | 11.9%      |
| IUD               | 4               | 6.0%       |

Table 20. Distribution of Cases According to Perinatal Outcome
In the study, 34 (50.7 %) cases were term AGA babies, 19 (23.8 %) were early preterm and 2 (2.9 %) were late preterm, 8 (11.9 %) babies were term IUGR (Intrauterine foetal growth restriction) babies and intrauterine foetal demise in 4 (5.9 %).

In the present study, out of 63 live births, 16 (25.3 %) cases were admitted to NICU [Neonatal Intensive Care Unit]. Among them, 8 (50.0 %) cases were admitted to NICU for 10-20 days duration. Followed by 6 (37.5 %) of cases were admitted to NICU for <10 days duration and 2 (12.5 %) of cases for >20 days duration. The mean duration of stay in the NICU was 11.81 days.

In the present study, 16 (25.3 %) babies had low Apgar score and 47 (74.6 %) babies had normal Apgar score.

## DISCUSSION

### Comparative Study

| Age in Years | RAI et al | Kamble et al | Present Study |
|-------------|-----------|--------------|---------------|
| <20         | 26 (26%) | 30 (30.4%)   | 10 (10%)      |
| 20-25       | 35 (35%) | 28 (28%)     | 47 (47%)      |
| 25-30       | 28 (28%) | 174 (17.4%)  | 29 (29%)      |
| >30         | 11 (11%) | 174 (17.4%)  | 15 (15%)      |
| N           | 100      | 1007         | 100           |

## Table 23. Age Distribution

In the present study, 34 (50.7 %) cases were term AGA babies, 19 (23.8 %) were early preterm and 2 (2.9 %) were late preterm, 8 (11.9 %) babies were term IUGR (Intrauterine foetal growth restriction) babies and intrauterine foetal demise in 4 (5.9 %).
In the present study, 47 % in the range of 20-25 is comparable to Priyanka Rai et al study which is 35 % and in the age group of 25 to 30 years both are comparable.

| Parity          | Kavyashree et al | Present Study | Kamble et al | Zhila Amirkhani et al |
|-----------------|------------------|---------------|--------------|-----------------------|
| Primigravida    | 80(40%)          | 44(44%)       | 69(63.9%)    | 34(56.3%)             |
| Multigravida    | 120(60%)         | 52(52%)       | 94(36.3%)    | 26(43.3%)             |

Table 24. Parity Distribution

In the present study, 44 % in the range of primigravida is comparable to 40 % in Kavyashree et al and 52 % in multigravida and comparable to Kavyashree et al study.

| Type of Bleeding | Patients who Aborted | Patients who Continued Pregnancy | Total | %  |
|------------------|----------------------|----------------------------------|-------|----|
| Spotting         | 00                   | 157                              | 42    | 838| 42.9% |
| Heavy            | 16                   | 33                              | 6     | 25 | 58.4% |

Table 25. Type of Bleeding

In the present study, 33 % aborted, 67 % continued pregnancy and 30 % had preterm deliveries which are comparable to the Betul Yakistiran study.

| Foetal Outcome | Priyanka Rai et al Study | Kamble et al | Zhila Amirkhani et al | Present Study |
|----------------|--------------------------|--------------|-----------------------|---------------|
| NICU Admission| 30                       | 9            | 10                    | 16            |
| Low Apgar Score<7| --                     | 9            | 7                     | 9             |
| Preterm        | 16                       |              |                       | 30            |
| IUGR           | 9                        |              |                       | 8             |
| RHD            | 5                        | 3            |                       | 4             |

Table 26. Foetal Outcome

In the present study, 33 % patients had abortions which are comparable to Priyanka Rai et al and Kamble et al study.

| Type of Abortion | Priyanka Rai et al Study | Kamble et al | Present Study |
|------------------|--------------------------|--------------|---------------|
| Complete abortion| 34/100(34%)              | 99/1007(9.9%)| 6/100(6%)     |
| Incomplete abortion| --                      | 238/1007(23.8%)| 27/100(27%) |
|                  |                          | 34%          | 33%           |

Table 29. Type of Abortion

In the present study, 15 % aborted at less than 6 weeks of gestation and 45.4 % aborted between 6 and 10 weeks and 39.9 % had abortion between 10 and 14 weeks which is not comparable to any of the above studies.

CONCLUSIONS

The first-trimester vaginal bleeding is one of the predictors of the outcome later in pregnancy. Both maternal and foetal outcomes are studied considering pregnant women with first-trimester vaginal bleeding as a high-risk category.[14]

Proper evaluation of a pregnant woman with first-trimester vaginal bleeding, regular antenatal care, methodical evaluation of bleeding and regular follow-up and awareness to the woman and family members and knowledge about warning signs in pregnancy to be explained.

Maternal history of previous abortions or pregnancy loss has to be elicited and prevention of abortion events in the present pregnancy has to be handled well.

Proper clinical examination and ultrasonographic evaluation & timely obstetric consultation play an important role in the management of patients with first-trimester vaginal bleeding.[15]

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