Study of maternal and perinatal outcome in women with first trimester vaginal bleeding

Dr. Jahan Ara* & Dr. Krishna Dahiya**, Dr. Archit Dahiya***

ABSTRACT

Background: First trimester bleeding is any vaginal bleeding occurring during the first 12 weeks of pregnancy. Threatened abortion is diagnosed on the basis of documented fetal cardiac activity on ultrasound with a history of vaginal bleeding in the presence of a closed cervix. It is a common complication which affects 16-25% of all pregnancies.

Aims and Objectives: To evaluate the maternal and perinatal outcome in women presenting with first trimester vaginal bleeding.

Material and Methods: Prospective case control study on 300 pregnant women. Study group included 200 pregnant women with history of bleeding per vaginum during first trimester and 100 pregnant women without bleeding per vaginum as control subjects.

Results: Pregnancy outcome in study group showed that 45.5%(91) had abortion, 4%(8) had ectopic, 0.5%(1) had H.mole and 50%(100) continued their pregnancy. Pregnancy outcome in control group showed that 10% (10) had abortion and 90%(90) continued their pregnancy.

Maternal outcome among two groups showed that 68 women in group A and 25(27.77%) in group B had preterm delivery, 13(13%) and 10(11.11%) had PROM, 20(20%) and 2(2.22%) had placenta previa, 13(13%) and 2(2.22%) had abruption, 8(8%) and 6(6.66%) women had preeclampsia and 20 (20%) and 9(10%) were anemic in group A and B, respectively. Mean Apgar score at 1 minute was 5.89±1.80 in group A and 6.37±1.25 in group B (p value <0.05). In study group, 28%(28) babies were admitted to NICU while 5.55%(5) babies in control group were admitted to NICU (p<0.001). In study group, perinatal mortality was 9%(9) and 1.11%(1) in control group (p<0.01).

Conclusion: We concluded that patients with first trimester vaginal bleeding are at increased risk for spontaneous pregnancy loss and adverse pregnancy outcomes like preterm, antepartum haemorrhage, intrauterine growth retardation, low birth weight, perinatal mortality and NICU admission whereas there was no significant increase in incidence of preeclampsia, anemia and PROM.

Keywords: Maternal outcome, Perinatal outcome, Vaginal bleeding

INTRODUCTION

First trimester bleeding is any vaginal bleeding occurring during the first 12 weeks of pregnancy and by default constitutes a threatened abortion until a non threatening cause is identified. Threatened abortion is a common complication
which affects 16-25% of all pregnancies. Various causes of first trimester vaginal bleeding includes obstetric and non obstetric causes. Obstetric causes include abortion, ectopic pregnancy, gestational trophoblastic disease and non obstetric causes include cervical erosion, polyp, malignancy, ruptured varicose vein.

Ultrasound is the primary imaging modality in evaluation of patients presenting with bleeding in the first trimester of pregnancy. With transvaginal sonography (TVS) gestational sacs as small as 2-3mm may be visualized corresponding to 4.5-5 weeks of gestation. The generally accepted discriminatory level of beta HCG at which gestational sac is expected on TVS is 1000-2000 mIU/ml. The yolk sac is the first definitive sign of intrauterine pregnancy. It is usually visualized in any gestational sac >8mm. Crown rump length (CRL) is the most accurate way of dating between 7 to 12 weeks of pregnancy. When the CRL is greater than 3mm, cardiac activity can usually be seen by TVS.

Various complications that can be expected in women with first trimester bleeding include maternal complications like abortion, preterm delivery, preterm premature rupture of membranes (PROM), placenta praevia, placental abruption, preeclampsia, anaemia, postpartum haemorrhage and perinatal complications like intrauterine growth retardation (IUGR), prematurity, low birth weight, birth asphyxia. Vaginal bleeding during early pregnancy is a sign of threatened pregnancy. First trimester vaginal bleeding has been shown to be associated with an increased risk of poor obstetric outcomes such as preterm labor, low birth weight and premature rupture of membranes. Bleeding caused stress and anxiety for the mother-to-be about the outcome of pregnancy. So, it is necessary to be diagnosed and managed to prevent maternal or fetal mortality and morbidities.

First trimester vaginal bleeding is common obstetric problem but despite its common occurrence, the risk of adverse outcome for pregnancies with first trimester bleeding has been defined incompletely. Considering the lack of information on this subject and also the significance of late pregnancy outcomes, the present study was conducted on pregnant women with a history of vaginal bleeding in the first trimester of their pregnancy and control subjects with no vaginal bleeding.

MATERIAL AND METHODS

This prospective case control study was conducted on 300 pregnant women registered in first trimester from antenatal clinic of Pt. B.D. Sharma PGIMS, Rohtak. Study group included 200 pregnant women with history of bleeding per vaginum during first trimester and 100 pregnant women without bleeding per vaginum were taken as control. A detailed obstetrical history was taken regarding period of amenorrhoea, amount of vaginal bleeding (spotting, moderate or heavy), color of bleeding, association with pain and any other complaint. Complete general physical examination and obstetrical examination was done on all patients. Investigations like haemoglobin, bleeding time, clotting time, HIV, ABO Rh, serological test for syphilis, Hbs Ag, urine complete, fasting blood sugar, serum TSH and beta HCG was done on all patients. Ultrasonography of all the patients was performed at the time of registration to know the site of pregnancy, period of gestation, cardiac activity, size of subchorionic haematoma,
adnexal mass and free fluid if any. Patients in both the groups were regularly followed in antenatal clinic till delivery and discharge from the hospital. Maternal outcome like abortion, preterm delivery, preterm premature rupture of membranes, placenta praevia, placental abruption, preeclampsia, anaemia, postpartum haemorrhage and perinatal outcomes like intrauterine growth retardation, preterm, low birth weight, birth asphyxia was compared in both groups.

**Statistical analysis**

At the end of the study, the data was collected and analysed statistically by using SPSS software. Student t-test and chi-square test was applied. A p value of <0.05 was considered statistically significant.

**RESULTS**

Mean age of the patients in study group was 24.55±4.01 and in control group, it was 23.95±3.90 years (p=0.215). Mean period of gestation in the study group was 8.96±1.41 weeks and in control group, it was 8.91±0.95 weeks (p value 0.719). Mean duration of amenorrhoea was 2.17±0.42 months in study group and 2.06±0.30 months in control group (p <0.01). A total of 65(32.5%) women in study group reported heavy bleeding, 2(1%) had moderate bleeding and 133 (66.5%) had spotting. Seventy three (36.5%) women had associated pain. In study group, single bleeding episode was seen in 155 women, two bleeding episode was seen in 28 women and 17 women had multiple episodes of bleeding. Ninety one women (45.5%) in group A and 63 (63%) in group B were nulliparous and 109 women (54.5%) in group A and 37(37%) in group B were parous (>0.05, NS). On ultrasound examination, mean gestational sac diameter was 34.49±8.98mm in group A and 34.46±8.11mm in group B. mean CRL in study group was 2.29±1.11 and in control group, 2.86±2.53 cm. Fetal cardiac activity was found in 52.5% cases in study group and 100% cases in control group with statistically significant difference (p<0.001). Mean POG in study group was 8.48±1.43 and in control group 9.07±1.21 weeks.

**Table 1**

<table>
<thead>
<tr>
<th>Pregnancy outcome</th>
<th>Group A (Study group)</th>
<th>Group B (Control group)</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuation of pregnancy</td>
<td>100(50%)</td>
<td>90(90%)</td>
<td>&lt;0.001 Sig.</td>
</tr>
<tr>
<td>Ectopic</td>
<td>8(4%)</td>
<td>0</td>
<td>0.04 Sig.</td>
</tr>
<tr>
<td>H. mole</td>
<td>1(0.5%)</td>
<td>0</td>
<td>0.478 NS</td>
</tr>
<tr>
<td>Abortion</td>
<td>91(45.5%)</td>
<td>10(10%)</td>
<td>&lt;0.001 Sig.</td>
</tr>
</tbody>
</table>

In group A, 100 (50%) women continued their pregnancy, 8 (4%) women had ectopic and 1(0.5%) women had H.Mole. In group B, 90(90%) continued their pregnancy and 10(10%) had abortion (Table 1).
Table 2: Maternal outcome among two groups in women with continuation of pregnancy

<table>
<thead>
<tr>
<th>Maternal outcome</th>
<th>Group A (Study group) n=100</th>
<th>Group B (Control group) n=90</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm</td>
<td>68 (68%)</td>
<td>25 (27.77%)</td>
<td>&lt;0.01 HS</td>
</tr>
<tr>
<td>PROM</td>
<td>13 (13%)</td>
<td>10 (11.11%)</td>
<td>0.690 NS</td>
</tr>
<tr>
<td>Placenta previa</td>
<td>20 (20%)</td>
<td>2 (2.22%)</td>
<td>&lt;0.01 HS</td>
</tr>
<tr>
<td>Abruption</td>
<td>13 (13%)</td>
<td>2 (2.22%)</td>
<td>&lt;0.01 HS</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>8 (8%)</td>
<td>6 (6.66%)</td>
<td>0.725 NS</td>
</tr>
<tr>
<td>Anemia</td>
<td>20 (20%)</td>
<td>9 (10%)</td>
<td>0.055 NS</td>
</tr>
<tr>
<td>PPH</td>
<td>10 (10%)</td>
<td>0 (%)</td>
<td>&lt;0.01 HS</td>
</tr>
<tr>
<td>Mean POG at time of birth (wks)</td>
<td>34.70±3.20</td>
<td>37.12±3.02</td>
<td>&lt;0.01 HS</td>
</tr>
</tbody>
</table>

In present study, total number of cases were 200 but 91 out of them aborted, 8 had ectopic, one had H.mole, so for outcome, total number of cases were reduced to 100. Total no. of controls were 100 but out of them 10 aborted, so for outcome of total number of cases were reduced to 90 (Table 2).

Maternal outcome among two groups showed that 68 women in group A and 25 (27.77%) in group B had preterm delivery, 13 (13%) and 10 (11.11%) had PROM, 20 (20%) and 2 (2.22%) had placenta previa, 13 (13%) and 2 (2.22%) had abruption, 8 (8%) and 6 (6.66%) women had preeclampsia and 20 (20%) and 9 (10%) were anemic in group A and B, respectively. Postpartum haemorrhage was seen in 10 patients in group A and none in group B.

Table 3: Perinatal outcome among two groups in women with continuation of pregnancy

<table>
<thead>
<tr>
<th>Perinatal outcome</th>
<th>Group A (Study group) n=100</th>
<th>Group B (Control group) n=90</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUGR</td>
<td>7 (7%)</td>
<td>1 (1.11%)</td>
<td>0.04 Sig.</td>
</tr>
<tr>
<td>IUD</td>
<td>6 (6%)</td>
<td>0</td>
<td>0.01 Sig.</td>
</tr>
<tr>
<td>LBW</td>
<td>57 (57%)</td>
<td>30 (33.33%)</td>
<td>&lt;0.01 HS</td>
</tr>
<tr>
<td>Preterm</td>
<td>66 (66%)</td>
<td>25 (27.77%)</td>
<td>&lt;0.01 HS</td>
</tr>
<tr>
<td>Baby weight (mean±SD)</td>
<td>2.17±0.69kg</td>
<td>2.51±0.62kg</td>
<td>&lt;0.01 HS</td>
</tr>
<tr>
<td>Apgar score 1 min (mean±SD)</td>
<td>5.89±1.80</td>
<td>6.37±1.25</td>
<td>&lt;0.05 Sig.</td>
</tr>
<tr>
<td>Apgar score 5 min (mean±SD)</td>
<td>7.79±2.19</td>
<td>8.33±1.55</td>
<td>&lt;0.05 Sig.</td>
</tr>
<tr>
<td>NICU admission</td>
<td>28 (28%)</td>
<td>5 (5.55%)</td>
<td>&lt;0.001 HS</td>
</tr>
<tr>
<td>Perinatal mortality</td>
<td>9 (9%)</td>
<td>1 (1.11%)</td>
<td>&lt;0.01 S</td>
</tr>
</tbody>
</table>
A total of 6(6%) babies in group A and none in group B was intrauterine death, 7(7%) in group A and 1(1.11%) in group B had intrauterine growth restriction (IUGR), 57(57%) low birth babies in group A and 30 (33.33%) in group B. A total of 66(66%) babies delivered as preterm in group A and 25(27.77%) in group B. Mean baby weight in group A was 2.17±0.69 kg and 2.51±0.62 kg in group B. On statistical comparison, the difference among two groups was found to be significant (p <0.001). Mean Apgar score at 1 minute was 5.89±1.80 in group A and 6.37±1.25 in group B. At 5 minute, it was 7.79±2.19 in group A and 8.33±1.55 in group B. On statistical comparison, the difference in apgar score at 1 min and 5 minute was found to be significant (p <0.05). In study group, 28%(28) babies were admitted to NICU while 5.55%(5) babies in control group were admitted to NICU with p value<0.001 which is statistically significant. In study group, perinatal mortality was 9%(9) and 1.11%(1) in control group with p value<0.01 which is statistically significant.

**DISCUSSION**

The overall adverse pregnancy outcomes were higher in cases than the control group. The largest prospective study was conducted by Weiss et al which concluded that first trimester bleeding was an independent risk factor for adverse obstetric outcome.

**Period of gestation**

In study group, maternal outcome was compared with respect to period of gestation at the time of presentation. It was found that women who had bleeding at <6 weeks of period of gestation in study group, ectopic pregnancy was found in 8 (61.53%) cases, abortion in 3 (38.46%) cases. In women with bleeding at >6 weeks of period of gestation, 86(45.98%) women had abortion. 1 (0.53%) had H. mole and 100 (53.47%) had continuation of pregnancy. So, it can be concluded that chances of continuation of pregnancy was higher in women who presented with bleeding at >6 weeks of gestation.

**Characteristics of bleeding in study group**

In study group, 32.5%(65) women had heavy bleeding out of which 98.46%(64) had abortion and 1.53%(1) had H.mole. Two women who had moderate bleeding had abortion. In women who had spotting, 6.01%(8) had ectopic pregnancy, 18.79%(25) had abortion and 75.18%(100) continued their pregnancy. In Kamble et al, 96.44% women with heavy bleeding had abortion and 3.55% continued their pregnancy. In women with spotting, 81.26% had abortion and 18.74% continued their pregnancy. Based on present study, most of the women with heavy bleeding had abortion while rate of continuation of pregnancy was higher with spotting. Majority of women had 1 episode of bleeding i.e. 155 out of which 8 (5.16%) had ectopic, 85(54.83%) had abortion, 1(0.64%) had H. hole and 61(39.35%) continued their pregnancy. Two episodes of bleeding was seen in 28 women out of which 6(21.42%) had abortion in second trimester and 22(78.57%) continued their pregnancy. Multiple bleeding episodes were seen in 17 and all of them continued their pregnancy.

**Parity**

Pregnancy outcome in study group was compared in primigravida and multigravida. In primigravida, 3.29%(3) had ectopic pregnancy, 41.75%(38) had abortion and 54.94%(50) women continued their pregnancy. In multigravida, 4.58%(5) had ectopic, 48.62%(53) had abortion, 0.91%(1) had H.mole and
45.87%(50) continued their pregnancy. So no significant difference was observed in the outcome between primigravida and multigravida. This result is in concordance with Kamble et al study, which also failed to show any significant correlation in pregnancy outcome between primigravida and multigravida.

**Ultrasound findings**

In study group, 4%(8) of women were diagnosed with ectopic pregnancy. In a study conducted by Githinji et al, on women presenting with first trimester vaginal bleeding, 27.4% of women were diagnosed with ectopic pregnancy. In another study conducted by Naila et al, on women presenting with vaginal bleeding before 20 weeks of gestation, ectopic pregnancy was diagnosed in 1.87% women. In present study, subchorionic hematoma (SCH) was seen in 3%(6) of women presenting with first trimester vaginal bleeding. In a study conducted by Githinji et al, SCH was seen in 10% of women who presented with first trimester vaginal bleeding. Out of six patients of subchorionic hematoma, one had abortion, 3 had preterm delivery, one had PROM with preterm delivery, preeclampsia, abruption and anaemia.

**Pregnancy outcome**

In present study, 50%(100) of women in study group continued their pregnancy while 90%(90) of women in control group continued their pregnancy. In the Snell et al study, it was demonstrated that vaginal bleeding occurs in 15-25% of pregnancies and half of them continue their pregnancy. In a study conducted by Davari et al, miscarriage rate was 42.7% in women presenting with first trimester vaginal bleeding. In study group, 11.51%(22) had missed abortion, 35.07%(67) had incomplete abortion, 1.04%(2) had complete abortion and 52.35%(100) had threatened abortion. In Githinji et al, 13.5% had missed abortion, 37.6% had incomplete abortion and 3% had complete abortion. Present study corroborates with this study.

The most common indication of caesarean in study group was placenta praevia while in control group it was fetal distress. In Davari et al study, 42.8% women in study group and 52.9% women in control group had caesarean section which was not statistically significant.

**Preterm delivery**

A total of 68%(68) women in study group had preterm delivery and 27.77%(25) women in control group had preterm delivery with p value <0.01 which was statistically significant and is in concordance with previous studies. In Arafa et al study, 37.6% women with first trimester vaginal bleeding had preterm delivery while 26.2% women in control group had preterm vaginal delivery. Amirkhani et al study reported 25% of women with first trimester vaginal bleeding had preterm delivery.

**Premature rupture of membranes (PROM)**

In present study, 13%(13) women in study group and 11.11%(10) women in control group had PROM with p value 0.690. Though the incidence of PROM is higher in study group than control, the study failed to find significant association between first trimester bleeding and PROM. In Amirkhani et al study, 83% women with pregnancy complicated by first trimester vaginal bleeding had PROM.

**Placenta previa**

20%(20) of women with first trimester vaginal bleeding had placenta previa and only 2.22%(2) women in control group had placenta previa with p value <0.01 which was statistically significant.
indicating women with first trimester vaginal bleeding have more chances of having placenta previa. In a study conducted by Obed et al\textsuperscript{17}, risk of placenta previa increased 2.5 fold for women with threatened first trimester abortion. Weiss et al\textsuperscript{18} observed a higher rate of placenta previa among patients with first trimester vaginal bleeding. Mulik et al\textsuperscript{18}, found a significantly higher risk of placenta previa at 37 weeks in women who experienced a first trimester vaginal bleeding.

**Abruption**

Present study showed significantly increased risk of abruption in women with first trimester vaginal bleeding. In this study, 13\%(13) women in study group and 2.22\%(2) women in control group had abruption with p value <0.01 which was statistically significant. Results of present study matched with Hosseini et al\textsuperscript{11} which showed significant association between first trimester bleeding and risk of abruption. In Hosseini et al\textsuperscript{11}, placental abruption occurred in 3.4\% cases and 0.7\% control.

**Pre-eclampsia**

In present study, 8\%(8) women in study group and 6.66\%(6) women in control group developed preeclampsia with p value 0.725. The result of present study matched with Davari et al\textsuperscript{15} study conducted in which 4.6\% women in study group and 9.8\% women in control group developed preeclampsia indicating no significant association between first trimester bleeding and preeclampsia.

**Anaemia**

In present study, 20\%(20) of women in study group and 11.11\%(10) women in control group developed anaemia. This finding is in agreement with Davari et al\textsuperscript{15} study, in which 22.7\% women in study group and 30.8\% women in control group had developed anaemia which was not statistically significant.

**Period of gestation at birth**

The mean period of gestation at the time of birth in study group was 34.70±3.20 weeks and in control group it was 37.12±3.02 weeks with p value<0.01 which was statistically significant and corroborates with Davari et al\textsuperscript{15} study, in which the mean period of gestation in study group was 35.7 weeks and 38.07 weeks in control group.

**Intrauterine growth restriction (IUGR)**

In present study, 7\%(7) women with first trimester vaginal bleeding had IUGR baby while 1.11\%(1) women in control group had IUGR baby with p value 0.04 which was statistically significant. Result of present study is in agreement with Hosseini et al\textsuperscript{11}. In Hosseini et al\textsuperscript{11} study 64\% women in study group and 2.3\% women in control group had IUGR which shows increased incidence of IUGR in women with first trimester vaginal bleeding.

**Intrauterine death (IUD)**

In present study, 6\%(6) women in study group had IUD while no patient in control group had IUD. In Davari et al\textsuperscript{15} study (2008), 14.1\% women in study group had IUD and 1.3\% women in control group had IUD.

**Low birth weight (LBW)**

In present study, 57\%(57) women in study group had low birth weight babies and 33.33\%(30) of women in control group had low birth weight with p value<0.01 which was statistically significant and in concordance with previous studies. In study conducted by Arafa et al\textsuperscript{10}, 61.4\% women with first trimester bleeding
had LBW baby and 47% women in control group had LBW.

Apgar score
The mean apgar score at 1 minute in study group was 5.89±1.80 and 6.37±1.25 in control group. The mean apgar score at 5 minute was 7.79±2.19 in study group and 8.33±1.55 in control group. In Davari et al\textsuperscript{15} study, mean apgar score in study group was 8 and in control group, it was 9.

NICU admission
In study group, 28%(28) babies were admitted to NICU while 5.55%(5) babies in control group were admitted to NICU with p value<0.001 which was statistically significant. This result corroborates with Hosseini et al\textsuperscript{11} study, in which 18.25 babies in study group and 4.2% babies in control group were admitted to NICU (p value 0.001) showing significant association. Out of 28 babies admitted to NICU in study group, 25 were discharged and 3 babies expired. In control group, out of 5 babies admitted to NICU, 4 were discharged and one baby expired.

Perinatal mortality
In study group, perinatal mortality was 9%(9) and 1.11%(1) in control group with p value<0.01 which was statistically significant. In Agrawal et al\textsuperscript{19}, perinatal mortality was 8.16% in study group and 5.77% in control group with p value 0.09 which was not significant. Results from this study confirm findings from other authors, that threatened abortion is associated with an increased risk of certain pregnancy related complications, namely abortion, preterm delivery, PROM, placenta previa, abruption, IUGR and LBW.

CONCLUSION
The current study concludes that patients with first trimester vaginal bleeding are at increased risk for spontaneous pregnancy loss and adverse pregnancy outcomes like preterm, antepartum haemorrhage, intrauterine growth retardation, low birth weight, perinatal mortality and admission to NICU whereas there was no significant increase in incidence of preeclampsia, anemia and PROM. Knowledge of this increased risk may facilitate decision making regarding management. There is need to monitor patients after threatened miscarriage to minimize these complications. Such pregnancies demand more frequent prenatal care and they should be referred to more equipped medical centres to reduce the risk of these complications. Obstetricians should be aware of the adverse outcomes associated with first trimester adverse outcomes and remain alert for signs of these complications.

REFERENCES