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Original Research Article

A Comparative Study of Maternal and Perinatal Outcome Between Normal Pregnant Women and Women with First Trimester Vaginal Bleeding

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Abstract

Introduction: First trimester bleeding may indicate an underlying placental dysfunction, which may manifest later in pregnancy causing adverse outcomes such as increased risk of pre-eclamptic toxemias, preterm delivery, prelabour rupture of membranes (PROM), and IUGR. 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 imminens.

Aim and objective: To establish the relation between first trimester vaginal bleeding and its effect on maternal and fetal outcome.

Material and methods: This study is a comparative cohort study. I included 100 women aged between 18-45 years with first trimester vaginal bleeding as case group, who met the inclusion and exclusion criteria and 100 normal pregnant women without first trimester vaginal bleeding as control. All the women in the study group were followed from the first visit till delivery. The characteristics of all the patients related to their age, gravidity, period of gestation, duration of bleed, ultrasound results, duration of hospital stay, treatment modalities and final fetal and maternal outcome were determined, and data were collected on the basis of proforma.

Result: In our study 21% patients had abortion in cases group whereas, 9% had abortion in control group, 62% had Full term vaginal delivery in cases whereas, 80% had full term vaginal delivery in control group 17% delivered preterm in case group as compared to 11% in control group. These differences were statistically significant with p value <0.02. There was statistically significant difference between cases and control for the mode of delivery. Majority of patients, about 64% in cases and 71% in control had vaginal delivery whereas 15% of cases and 20% of control had caesarean section.

Conclusion: First trimester vaginal bleeding can be a predicting factor for adverse outcome of mother and infant. It is necessary to increase the knowledge of pregnant women in this regard for observation. Also, because the clinical intervention of attentive obstetrician has important role in not only, the continuation of pregnancy but also decreasing fetal complications in these high-risk pregnancies.

Keywords: Vaginal bleeding, PROM, IUGR, APH.

Introduction

Vaginal bleeding during the first trimester is a frequent pregnancy symptom, affecting 16-25 percent of all pregnancies. Miscarriage (threatened, inevitable, incomplete or complete), ectopic pregnancy, implantation haemorrhage, and cervical disease are the four main reasons. It causes anxiety in the mother, her family, and the caregivers. The gestational age at bleeding, the cause of bleeding, and the severity of bleeding are likely to influence the outcome.[1] Approximately one-third of first-trimester bleeding occurs in otherwise healthy pregnancies. Furthermore, in the vast majority of pregnancies complicated by vaginal bleeding, no anatomical cause can be determined. Half of women who have vaginal bleeding in the first trimester will keep their babies, while the other half will have an abortion.[2] Fetal loss has been linked to mental disorders. Women who had an abortion had an 81 percent higher chance of developing mental health problems. Its impact on a woman's life is often overlooked. Before ultrasonographic evidence of foetal viability, the probability of spontaneous abortion is over 50%, and after viability is verified, it lowers to 2 to 14%.[3]

The maternal and foetal outcomes of first trimester vaginal bleeding patients were compared to those of normal pregnant women who did not have first trimester vaginal bleeding in this study.

Cases were handled in two ways: first, a conservative approach was adopted for threatened abortions, and second, a decisive approach was taken for circumstances such as ectopic pregnancy, H. Mole, incomplete, missing, and inevitable abortions. In my study, I used the APGAR Score and the NICU to assess the foetal prognosis. Maternal outcomes included the baby's admittance, birth weight, and neonatal mortality, as well as the manner of delivery, PROM, Premature labour, and its link to first trimester vaginal haemorrhage.

Aim

To establish the relation between first trimester vaginal bleeding and its effect on maternal and fetal outcome.

Objectives

1. To study and compare the maternal outcome in pregnant women with first trimester vaginal bleeding with those without first trimester vaginal bleeding.
2. To study and compare the perinatal outcome among women with first trimester vaginal bleeding and normal pregnant women without bleeding in first trimester.

Material and methods

Methodology: This study is a comparative cohort study. I included 100 women aged between 18-45 years with first trimester vaginal bleeding as case group, who met the inclusion and exclusion criteria and 100 normal pregnant women without first trimester vaginal bleeding as control.

Sample size: Assuming that the one of the important outcomes of first trimester vaginal bleeding is abortion. As per the previous study the abortion in vaginal bleeding group was about 45.5% whereas in control it was 10%, (based on study by Dr. JahanAra et al(4)) at 2-sided test with 95% confidence level (α=5%) and 80% power, expected sample size in both group is 60 each, i.e., total 120, As per Kelsey et al, but for increase in power I had taken sample size 100 in each group so 200 sample size had been taken for each group i.e., total 200 sample size. (100 in vaginal bleeding group and 100 in non vaginal bleeding group.)

This prospective cohort study was done in the Department of obstetrics and gynaecology, NMCH, Jamuhar during Oct 2019 to Dec 2021. Participants with

vaginal bleeding in the first trimester were recruited in the study group after informed consent. The control group consisted of age matched women who booked for the antenatal care in the hospital during the same time period. They were identified, consecutively matched for maternal age.

Inclusion criteria

1. All pregnancy confirmed women within 12 weeks pregnancy with vaginal bleeding as cases
2. Pregnant women without history of vaginal bleeding in first trimester. This control group was taken just after completion of first trimester

Exclusion criteria

1. Women with chronic medical complications including diabetes, hypertension, history of trauma and hematological disorder
2. Women with multiple pregnancy

All the women in the study group were followed from the first visit till delivery. The characteristics of all the patients related to their age, gravidity, period of gestation, duration of bleed, ultrasound results, duration of hospital stay, treatment modalities and final fetal and maternal outcome were determined and data were collected on the basis of proforma. The cases and controls were matched in terms of age, parity, level of education, working during pregnancy. The potential confounding factors like maternal age, gravidity, previous recurrent abortion, previous preterm delivery, previous induced abortion, were identified and adjustment was made in the statistical model.

Outcome data were obtained by follow up. Late pregnancy complications were evaluated in two categories of maternal complications and fetal complications. Maternal complication included IUGR, APH, PROM. PREECLAMPSIA, PRETERM and mode of delivery. Fetal complications included low birth weight, IUGR, NICU admission, neonatal jaundice. Patients were put under surveillance till delivery and 1week post-delivery.

Statistical Methods

Statistical analysis was carried out with the help of Micro soft Excel and Epiinfo 7.1 software. The description of the data was done in form of arithmetic mean +/-SD (or median) for quantitative data while in the form of frequencies (%) for qualitative (categorical) data. P-values of < 0.05 was considered significant.

Result

In our present study majority of the patients in cases and control were in between 21-30 years of age. (73% and 79%) followed by 18-20 years and then 31-45 years, The gestational age of the case group was 36.92± 1.86 wk and of the control group was 37.34±1.59 wk with range 33-39 week in both the group. Majority of them in both case and control were prime gravida.

Table 1: Comparisons of maternal outcome between cases and controls

OUTCOME	CASE	CONTROL	TOTAL
Abortion	21	9	30
Full Term	62	80	142
Pre-Term	17	11	28
TOTAL	100	100	200
Chi-Square-7.2; P-Value-0.02; Significant			

In this present study 21% patients had abortion in cases group whereas, 9% had abortion in control group, 62% had Full term vaginal delivery in cases whereas, 80% had full term vaginal delivery in

control group 17% delivered preterm in case group as compared to 11% in control group. These differences were statistically significant with p value <0.02.

Table 2: Comparisons of mode of delivery between cases and controls

MODE OF DELIVERY	CASE	CONTROL	TOTAL
Vaginal	64	71	135
LSCS	15	20	35
TOTAL	**79**	**91**	**170**
Chi-Square-33.61; P-Value-0.001; Significant			

In the present study, there was statistically significant difference between cases and control for the mode of delivery. Majority of patients, about 64% in cases and 71% in control had vaginal delivery whereas 15% of cases and 20% of control had caesarean section.

Table 3: Distribution of patients according to the APH

Maternal outcome	CASE	CONTROL	TOTAL
APH	4	2	6
PROM	5	2	7
Pre term delivery	17	4	21

In the present study, 4% cases had APH in form of (2placenta previa, 2 abruptio placentae), whereas in control group there were only two cases of APH both in form of placenta previa which was statistically non-significant. In the case group 5% study subjects had PROM were as only 2% women had PROM in control group which was statistically non-significant. 17% cases had preterm delivery whereas 4% control had preterm delivery and was statistically significant with p value 0.002, there was no maternal mortality in case and control group.

In neonatal outcome, in cases 5 study subjects had IUGR whereas in control only 2 study subjects had IUGR which was statistically non-significant, it was observed that there was statistically significant difference between case and control in relation to APGAR score at 1min and 5 min,

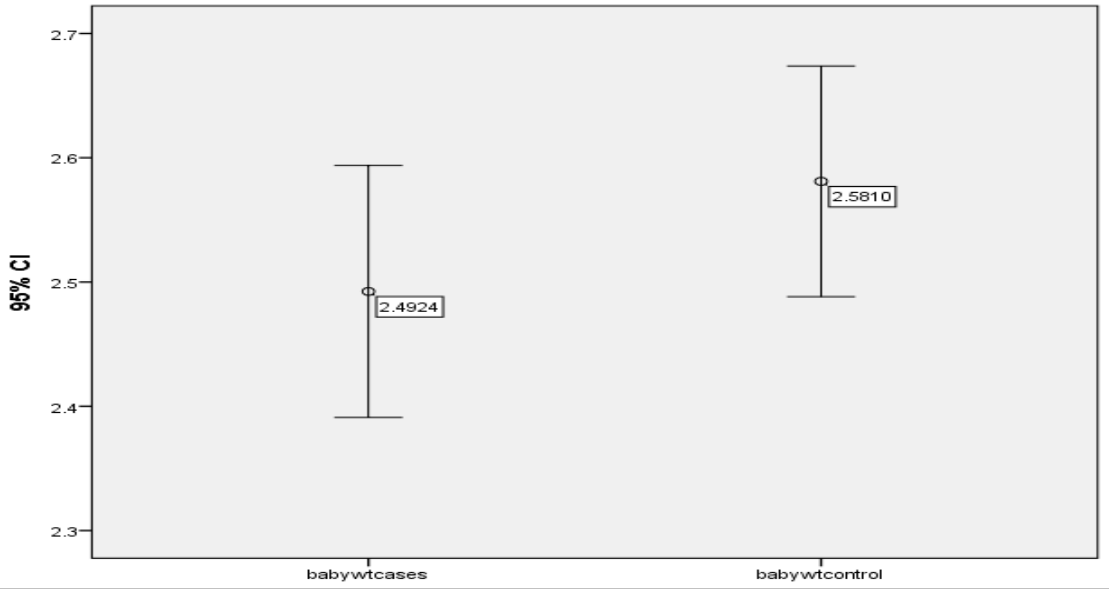

Figure 1: Error graph showing baby weight of the study subjects

Table 4: Distribution of patients according to the Meconium Aspiration Syndrome (MAS)

MAS	CASE	CONTROL	TOTAL
YES	2	1	3
NO	77	90	167
TOTAL	79	91	170
Chi-Square-0.50; P-Value-0.48; Not Significant			

In the present study, there were 2 neonate who had Meconium aspiration syndrome in case group and 1 neonate in control group. The result is not statistically significant.

Discussion

Not only is first-trimester bleeding linked to miscarriage, but it's also linked to a higher likelihood of pregnancy problems. In my study of 100 patients, 29 were in the case group and the rest were in the threatened group. These patients were given standard care and tracked till delivery, with 62 delivering on time and 17 delivering prematurely. I compared this case group to a control group of 100 patients who did not experience first trimester haemorrhage. The maternal and perinatal parameters that I investigated and the results that I discovered are as follows.

The case group's mean was 36.92 weeks, while the control group's mean was 37.34 weeks in this study. In a study by Dr. JahanAra et al (2018) [4], the mean gestation time in the study group was 8.961.41 months, while it was 8.910.95 months in the control group. Swati Agrawal et al (2013)[5] found that the average gestational age at birth was 35.29 weeks. Zhila Amirkhani et al (2013) found that the mean (SD) gestational age at the end of pregnancy among the women they analysed was 274 15 days [6].

In the case group, 21% of patients had abortions, compared to 9% in the control group, and 62 percent of patients in the case group made it to term and were delivered, compared to just 80% in the control group. In a research by Nayan G. Patel et al. (2014)[2], 64 pregnancies persisted beyond 20 weeks of gestation, with 78.1 percent delivering full term, 21.9 percent delivering preterm, and 14.1 percent having foetal growth restriction (FGR). Dr. Sumathi Gollapalli et colleagues (2020)[7] looked at 174 women, 135 of whom delivered at full term and 39 at preterm. In the study by Dr. Preeti Lewis et al (2017)[8], 26 (26.8%) of the 97 patients who completed their pregnancy had preterm deliveries, 69 (71.13%) had term deliveries, and 2 (2.06%) had postterm deliveries.

The majority of patients, 64 percent in cases and 71 percent in controls, delivered vaginally, while 15% of cases and 20% of controls underwent a caesarian procedure. According to Himang Jharaik et al (2019)[9], the majority of patients had LSCS at term and preterm. 14.28 percent of vaginal births were normal. In a study by Kavyashree H. S. et al. (2019)[10], out of 53 women who gave birth, 81 percent did it vaginally and 19 percent had a lower caesarian section. Nayan G. Patel et al (2014)[2] found that 59.5 percent of patients had a vaginal delivery and 40.5 percent had a caesarean section. In a study by Sushma Gaur et al (2017)[11], the percentage of lower segment caesarean sections was 26 percent in the study group and 15.6 percent in the control group. Instrumental delivery occurred in 1.2 percent of the study group, but not in the control group. In a study by Sonal et al[12] (2020), 30 percent of women who had vaginal bleeding in the first trimester had a normal delivery, while the remaining 35 percent underwent a Caesarean surgery. Panagiotis Tsikouras et al (2016) found the following results[13] Vaginal delivery

accounted for 15.4% (74), assisted vaginal delivery accounted for 25.8% (124), and Caesarian section accounted for 58.8%. (282).

There were four patients with APH in this study, two of whom had placenta previa and two of whom had abruptio placentae. Only two individuals in the control group had APH, both of whom had placenta previa. Antepartum haemorrhage was seen in 10 patients in the study group and none in the control group, according to Dr. Jahan Ara et al (2018)[4]. Pradnya Digambar Kamble et al (2017)[1] investigated 107 women with vaginal bleeding in the first trimester, three of them were diagnosed with Ante-partum Hemorrhage.

PROM was found in 5 women out of 100 in the case group, but only 2 women in the control group. PROM was found in 24.6 percent of patients in a research by Azhar Unnisa Quraishi et al (2020)[14], while it was found in 6.2 percent of controls, a statistically significant difference. Women with first-trimester haemorrhage had a 1.19-fold greater risk of PROM and a 1.18-fold increased risk of pre-term PROM, according to a study by Jacob Alexander Lykke et al (2010)[15]. PROM was found in 18.7% of all patients with first trimester haemorrhage in a study by Nayan G. Patel et colleagues (2014)[2]. PROM was found in 20.41 percent of patients and 3.85 percent of controls in a research by Swati Agrawal et al (2013)[5]. Shaheen Hokabaj et al (2018)[3] investigated 430 women and found that 36 (31.6%) of them had PROM.

In this study, 17 women delivered prematurely in the cases, while only four women delivered prematurely in the control group. Preterm birth was found in 16.7% of the total cases investigated by Alka Patil et al (2020). According to the findings of a retrospective cohort research by Jacob Alexander Lykke et al (2010)[15], first-trimester bleeding raised the probability of preterm delivery from 3.6 percent to 6.1 percent in weeks 32–36 and from 0.3 percent to 0.9 percent in weeks 28–31. A total of 75 patients were involved in a study by Aisha Moon et al (2021)[17], of whom 6% had premature delivery. Dr. JahanAra et al (2018)[4] found that 68 women in the study group and 25 (27.77 percent) in the control group had preterm birth. Preterm delivery was found in 28.5% of cases and 9.6% of controls in a research by Swati Agrawal et al (2013)[5].

Only two patients in the control group had IUGR, but five patients in the cases had it. Alka Patil et al (2020)[16] found that 4.5 percent of all cases investigated had IUGR. In a study by Himang Jharaik et al (2019)[9], 16.6% of individuals with a history of first trimester haemorrhage were found to have IUGR. Dr. JahanAra et al (2018)[4] found that 7 percent of the study group and 1 percent of the control group experienced intrauterine growth restriction (IUGR). According to Jaishree Bamniya et al (2015)[18], patients who experienced significant or protracted bleeding had the highest risk of developing IUGR (34.7 percent). Swati Agrawal et al (2013)[5] found IUGR in 6.12% of patients and 3.85% of controls in a study. Shaheen Hokabaj et al (2018)[3] investigated 430 women and found that 18 of them had IUGR in their foetus (15.8 percent).

There was no maternal mortality in the case or control groups in this study. In a study by Meghna Desai et al[19], they discovered a link between vaginal bleeding and maternal mortality, and they discovered that women who had vaginal bleeding had a higher maternal mortality rate. In their study, Jacob Alexander Lykke et al[15] discovered that the vaginal bleeding group has a higher maternal mortality rate. These studies may differ from ours in that ours only contains first trimester vaginal bleeding, whereas their studies include vaginal bleeding in all trimesters. Other studies, such as Saraswat et al.[20] and Hosseini et al.[21], found

that women who experienced bleeding in the first trimester of pregnancy were more likely to experience bleeding in the second and third trimesters due to the risk of placenta previa, placenta disruption, and bleeding from an unknown source, but no link was found for maternal mortality.

In my research, the mean neonate weight was 2.49 kg with 0.45 standard deviation in cases and 2.57 kg with 0.43 standard deviation in controls. According to Himang Jharaik et al (2019)[9], 45 percent of newborns weighed less than 2.5 kg. In a study by Azhar Un Nisa Quraishi et al (2020)[14], the average weight of newborns was 2.16kg in cases and 3.05kg in controls. In a study by Dr. JahanAra et colleagues (2018), the mean baby weight in the study group was 2.170.69 kg and 2.510.622 kg in the control group[4]. In a study by Ahkam Göksel Kanmaz et al (2019), the median birth weight of neonates with first trimester threatened abortion was 3167gms[22]. The mean weight of neonates in a study by Swati Agrawal et al (2013)[5] was 2.47kg in the study group and 2.94kg in the control group. In a study by Dr. Sumathi Gollapalli et al (2020), maximum neonate birth weight was between 2.6-3kg[7]. According to Zhila Amirkhani et al(2013)[6], 5.6 percent of neonates born to moms who experienced vaginal haemorrhage in the first trimester weighed more than 3500 grammes, 66.7 percent weighed between 2500 and 3500 grammes, and 27.8% weighed less than 2500 grammes. In a study by Pradnya Digambar Kamble et al (2017), 88.12 percent of newborns were born weighing more than 3 kilogrammes[1].

In my study, two neonates in the case group and one neonate in the control group had Meconium Aspiration Syndrome. The outcome does not have statistical significance. Other studies, such as that of Saroop Chand et al[23], reveal that MAS occurs in about 5% of these pregnancies.

Conclusion

In conclusion, considering the result of my study first trimester vaginal bleeding can be a predicting factor for adverse outcome of mother and infant. It is necessary to increase the knowledge of pregnant women in this regard for observation. Also, because the clinical intervention of attentive obstetrician has important role in not only, the continuation of pregnancy but also decreasing fetal complications in these high-risk pregnancies. A continuing support and sympathetic attitude and follow up care are important to patients.

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