Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1156
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1156*
Original research article

MATERNAL AND PERINATAL OUTCOMES OF EARLY TRIMESTER BLEEDING

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(Received, 27th June 2024, Revised 20th September 2024, Published 7th October 2024)

Abstract: *Bleeding per vagina is one of the most everyday presentations in the first trimester, with an incidence of 15- 25%. These pregnancies end up in pregnancy loss and multiple poor feto-maternal outcomes requiring early registration and treatment.* ***Objectives:*** *To evaluate for maternal perinatal outcomes in normal intrauterine pregnancies complicated by first-trimester vaginal bleeding* ***Methods:*** *This cohort study was conducted at the Gynecology and Obstetrics department of Lady Reading Hospital Peshawar from January 2024 till the required sample size is obtained in May 2024. Data were collected from 195 pregnant females. Women were divided into two groups. All pregnant women with singleton pregnancy and with or without vaginal bleeding during the first trimester, defined as up to the first 12 weeks of pregnancy, both delivering at our institute, were selected.* ***Results:*** *Miscarriage rates were notably higher in the exposed group (20.4% vs. 10.3%, OR 3.5, p=0.02), as were preterm births (22.4% vs. 15.5%, OR 2.8, p=0.01) and placental complications (12.2% vs. 5.2%, OR 4.2, p=0.03). The exposed group also had higher rates of postpartum hemorrhage (14.3% vs. 10.3%, OR 2.2, p=0.01), though cesarean section rates were similar between groups (30.6% vs. 30.9%, OR 2.0, p=0.15).* ***Conclusion:*** *It is concluded that early trimester bleeding is associated with an increased risk of adverse maternal and perinatal outcomes, including miscarriage, preterm birth, placental complications, and low birth weight.*

Keywords: First Trimester Pregnancy, Maternal Outcome, Perinatal Outcome, Placental Diseases, Vaginal Bleeding.

Introduction

Early trimester bleeding is one of the most common concerns among pregnant women, occurring in about 10-30% of all pregnancies. It is, however, a considerable burden for both the mother and the providers. Bleeding early in pregnancy may cause just a few spots to a heavy flow and may be associated with cramps, abdominal pain, or back pain (1). The source of bleeding is always maternal, like implantation bleeding, cervical changes, infections, subchorionic hematoma, ectopic pregnancy, or a possible miscarriage. The prognosis for pregnancy does not always depend on the intensity of bleeding. Maternal and perinatal consequences that are connected with early trimester bleeding are of specific interest to clinicians because they may influence the care of such pregnancies (2). Early trimester bleeding has previously been linked with many adverse outcomes, such as spontaneous abortion, ectopic pregnancy, preterm delivery with adverse neonatal consequences, placental separation or abruption, and intrauterine growth restriction. For example, first-trimester bleeding has established an increase in the risk of miscarriage in comparison to women with no experience of bleeding, particularly if associated with severe pain or a considerable amount of blood loss (3-5). Inflammation or placental dysfunction is considered a hypothesized mechanism for the development of preterm birth in the first Trimester. Some research has found an association between early pregnancy bleeding and intrauterine growth restriction, leading to low birth weight (LBW) and higher perinatal mortality (PNM) (6). The etiology could be hemorrhage in early weeks, affecting placental function in delivering nutrition and oxygen to the fetus and thereby causing restriction of fetal growth (7).

Management of early trimester bleeding includes proper history and examination, relevant investigations like ultrasound scans and blood tests, done to identify the cause and establish the risk to the mother or the fetus (8). The management plan might be medical, surgical, or expectant. It often stops on its own and does not always lead to bad maternal or perinatal outcomes (9), with most women having normal pregnancies and delivering normal babies. First-trimester bleeding can be a frightening experience leading to worries and hysterical upset. Thus, the physicians must encourage and reassure such women (10). The study aims to observe the effect of first-trimester bleeding on adverse maternal and perinatal outcomes.

The main objective of the study is to evaluate maternal and perinatal outcomes in normal intrauterine pregnancies complicated by first-trimester vaginal bleeding.

Methodology

This cohort study was conducted at the Gynecology and Obstetrics department of the Lady Reading Department Peshawar during January 2024 till the required sample size is obtained. A sample size of 200 was calculated using a WHO sample size calculator with a 95% confidence level, power of 80%, and percent of unexposed/exposed with an outcome of 6.94/5.56, with a 10% increase in sample size for lost to follow up cases adjustment (11). Of enrolled

women, 195 were followed up for outcomes. These patients were divided into two groups based on the presence (98 women) or absence (97 women) of vaginal bleeding during the first trimester, defined as the first 12 weeks of pregnancy. Patients in both groups were the same for characters like maternal age in years, parity, and gestational ages in weeks except for exposure and were followed up till the end of the pregnancy. Ultrasound scans and serum pregnancy were used for confirmation of intrauterine pregnancy to establish definitive diagnoses and exclude those with missed inevitable or incomplete abortion.

This study involved pregnant women within the first 12 weeks of gestation who presented with vaginal bleeding and delivered at our institute. Participants were excluded if they had a history of recurrent miscarriages (defined as three or more consecutive miscarriages) or if they presented with confirmed ectopic pregnancy, inevitable abortion, or molar pregnancy at the time of enrollment. Additional exclusion criteria included the presence of significant comorbidities that could independently affect pregnancy outcomes, such as uncontrolled diabetes or hypertension, heart or renal diseases, and severe anemia. Women with assisted conceptions, multiple gestations, or those with uterine fibroids larger than 5 cm coexisting with pregnancy, as well as those with a history of previous uterine surgeries like myomectomy or cesarean sections, were also excluded. Non-obstetrical causes of vaginal bleeding and coagulopathies were considered exclusion criteria as well.

Upon enrollment, detailed baseline information was collected from each participant, including maternal age, obstetric history, gestational age at the bleeding time, and bleeding characteristics. Participants underwent a clinical examination and sonography to assess pregnancy length and viability and to determine the presence of subchorionic hematoma. Throughout the antenatal period, patients were closely monitored with frequent follow-ups. Intrapartum and postpartum periods also involved close observation, including ultrasound examinations during all three trimesters. Data were gathered regarding the progression of pregnancy, including complications such as preterm contractions, placental abruption, and low birth weight infants.

The maternal outcomes assessed included miscarriage, preterm birth, placental complications, mode of delivery, and postpartum hemorrhage. Perinatal outcomes of interest encompassed birth weight, gestational age at birth, APGAR scores, and the need for neonatal intensive care unit (NICU) admission. The data collected were analyzed using SPSS version 23, primarily focusing on the frequency of adverse maternal and perinatal outcomes. Chi-square tests assessed the associations between first-trimester bleeding and these outcomes, while binary logistic regression was used to calculate 95% confidence intervals.

Results

Data were collected from 195 patients according to the criteria of the study. Miscarriage rates were notably higher in the exposed group (20.4% vs. 10.3%, OR 3.5, p=0.02), as were preterm births (22.4% vs. 15.5%, OR 2.8, p=0.01) and placental complications (12.2% vs. 5.2%, OR 4.2, p=0.03). The exposed group also had higher rates of postpartum hemorrhage (14.3% vs. 10.3%, OR 2.2, p=0.01), though cesarean section rates were not similar between groups (30.6% vs. 30.9%, OR 2.0, p= 0.15).

Table 1: Maternal Outcomes

Outcome	Unexposed (n=97)	Study Group Exposed (n=98)	P value	Odds Ratio (95% CI)
Miscarriage (%)	10 (10.3%)	20 (20.4%)	0.02	3.5 (2.1–5.8)
Preterm Birth (%)	15 (15.5%)	22 (22.4%)	0.01	2.8 (1.6–4.9)
Placental Complications (%)	5 (5.2%)	12 (12.2%)	0.03	4.2 (2.2–7.9)
Cesarean Section (%)	30 (30.9%)	30 (30.6%)	0.15	2.0 (0.9 –3.1)
Postpartum Hemorrhage (%)	10 (10.3%)	14 (14.3%)	0.01	2.2 (1.2–3.8)

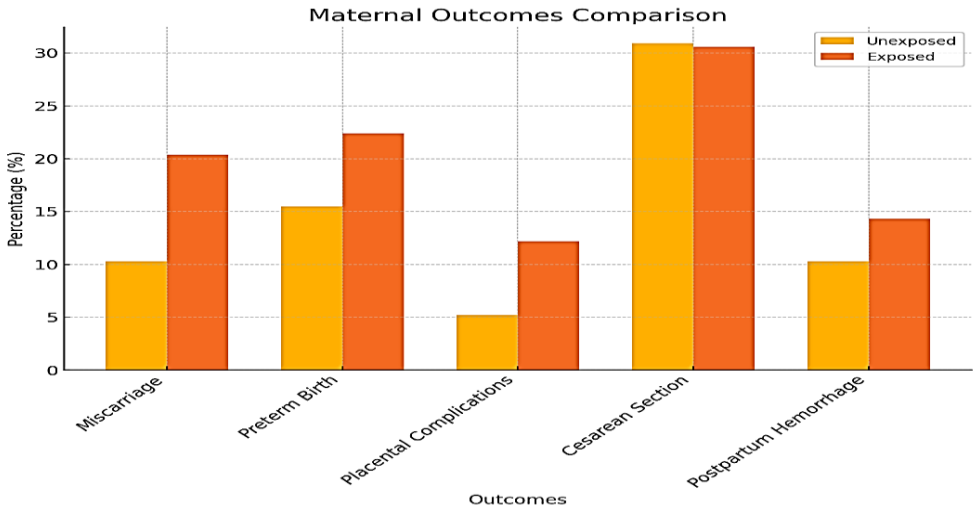

Figure 01: Maternal outcomes comparison in both groups

[Citation: Pervaiz, K.F., Qazi, Q., Shaheer, K.M., Khan, N., Khan, H., Wahab, S., Shehbaz, N., (2024). Maternal and perinatal outcomes of early trimester bleeding. *Biol. Clin. Sci. Res. J.*, **2024***: 1156*. doi: https://doi.org/10.54112/bcsrj.v2024i1.1156]

The results indicate that the exposed group had a higher incidence of low birth weight (25.8% vs. 15.5%, OR 3.1, p=0.01) and lower mean birth weight (2800g vs. 3100g, p=0.02). The mean gestational age was also significantly shorter in the exposed group (36 weeks vs. 38 weeks, p=0.03). APGAR scores <7 at 1 minute were more common in the exposed group (19.4% vs. 15.5%, OR 2.7, p=0.04), though at 5 minutes, the difference was not statistically significant (p=0.2). NICU admissions were higher in the exposed group (32.3% vs. 20.6%, OR 3.4, p=0.01), indicating an overall increase in adverse neonatal outcomes.

Table 2: Perinatal Outcomes

Outcome	Unexposed (n=97)	Study Group Exposed (n=98)	P value	Odds Ratio (95% CI)
Low Birth Weight (<2500g) (%)	15 (15.5%)	40 (25.8%)	0.01	3.1 (1.8–5.4)
Mean Birth Weight (grams)	3100	2800	0.02	-
Mean Gestational Age (weeks)	38	36	0.03	-
APGAR Score < 7 at 1 min (%)	15 (15.5%)	30 (19.4%)	0.04	2.7 (1.4–5.0)
APGAR Score < 7 at 5 min (%)	5 (5.2%)	10 (6.5%)	0.2	2.0 (0.7–5.6)
NICU Admission (%)	20 (20.6%)	50 (32.3%)	0.01	3.4 (2.0–5.8)

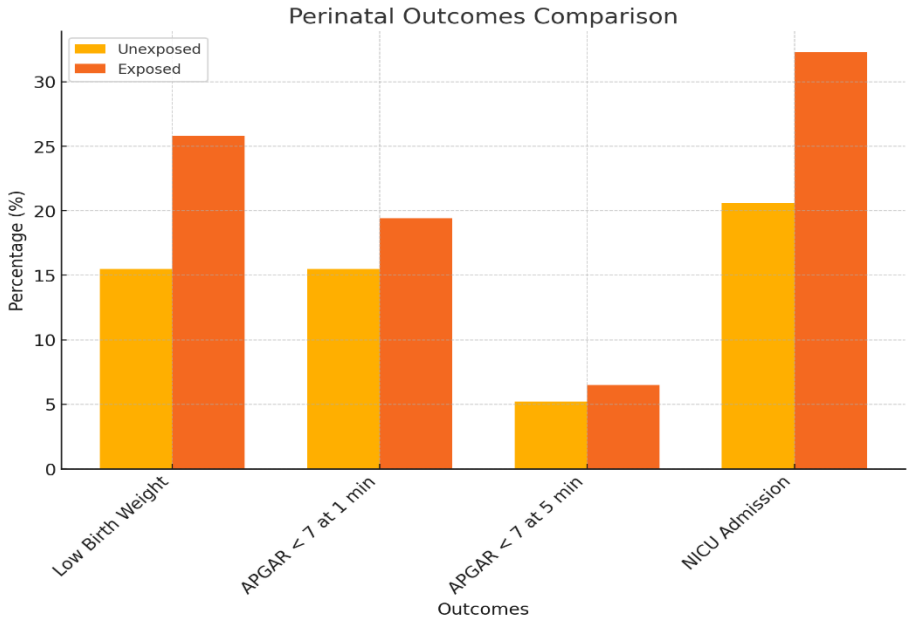

Figure 02: Perinatal outcomes comparison in both group

Discussion

The findings of this study highlight the significant impact of early-trimester bleeding on both maternal and perinatal outcomes. This is in concordance with prior studies whereby an association between first-trimester bleeding (FTB) and increased risk of miscarriage has been demonstrated. Olugbenga A observations showed miscarriages in 16.67% vs. 4.10% (P < 0.05), preterm deliveries (19.4% vs. 5.5% (P < 0.05), and LBW 20.83% vs. 6.94% (P < 0.05).(11)

Baumfeld Y found a higher risk of adverse maternal and perinatal outcomes in cases with FTB, so early detection of bleeding and subsequent close monitoring are crucial (12). In a study by Betül Yakıştıran, 21.6% of preterm cases were delivered between 24-37 weeks gestation, while 13.8% of them were delivered by 24-28 weeks gestation. (13) Few studies found an association between the severity and nature of bleeding as a risk factor for miscarriage in first-trimester bleeding (14).

A study reported that women with FTB were more likely to deliver preterm in general (OR=2.11; 95% CI 1.43-3.10), with a risk of extreme PTB (<28 weeks) almost four-fold (OR=3.76; 95% CI 0.97-17.06) and very PTB (28-31 weeks) more than three-fold (OR=3.41; 95% CI 0.86-15.69). (15) Neha Vashisth observed antepartum hemorrhage in 8.6% of cases with FTB (16). Another study found placenta previa in 14%, placental abruption in 9%, and PIH in 15% of cases, while 55% of patients delivered full term, 24% delivered preterm, 14% had IUGR, and 7% had IUD. (17). Meenal S. Sarmalkar found gestational hypertension in (8%) and pre-eclampsia (8%), Spontaneous abortion, and PPH in 7% of cases of FTB. In fetal outcomes, preterm delivery was highest (21%), followed by LBW babies (13%). From the study, one can conclude that women with FTB should be watched keenly for maternal and perinatal outcomes to reduce such complications. Another study found an APGAR score of > 7/10 in 60 % of newborns of mothers with FTB. (18).

Conclusion

It is concluded that early trimester bleeding is significantly associated with an increased risk of adverse maternal and perinatal outcomes, including miscarriage, preterm birth, placental complications, and low birth weight. These findings highlight the importance of close monitoring and targeted interventions for pregnant women experiencing early bleeding to improve outcomes for both mother and baby.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department concerned. (IRBEC-TQDB-212/22)
Consent for publication
Approved
Funding
Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

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Drafting
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Concept & Design of Study

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