

# Association of First Trimester Threatened Miscarriage with Preterm Prelabor Rupture of Membrane and Preterm Delivery

GHAZALA HUMA, SAIMA JAVED

## ABSTRACT

**Aim:** To determine the association of first trimester threatened miscarriage with Preterm Premature Rupture of Membranes and preterm delivery.

**Methods:** This study was conducted from April 2016 to April 2017 in Alkhidmat Teaching Mansoorah Hospital. In this cohort study, a total of 200 pregnant women were included, with group A, having history of 1<sup>st</sup> trimester bleeding and group B, having no history of 1<sup>st</sup> trimester bleeding, between 20-35 years of age in both groups with any parity, while twin pregnancy, congenital uterine anomaly, large leiomyomata distorting the uterine cavity assessed by USG, history of chronic diabetes or gestational diabetes diagnosed by glucose tolerance test, history of hypertension or diagnosed by BP monitoring of diastolic BP >90 mmHg on two occasions, vaginal spotting and the finding of an open cervix, polyhydramnios and patients with previous history of preterm labour and PPRM were excluded from the study. The collected data was entered and analyzed in computer software SPSS version 12. Frequency and percentage was calculated for categorical variables whereas, mean and standard deviation for age. Chi Square test was applied to see the association between threatened miscarriage in 1<sup>st</sup> trimester and PPRM or preterm labour. A P value of less than 0.05 was taken as significant.

**Results:** In this study, most of the patients in both groups were recorded between 20-25 years of age, in Group-A, 51% and 43% in Group-B, 38% in Group-A and 41% in Group-B were between 26-30 years. Mean age was 25.78±3.43 years in Group-A and 26.42±2.78 years in Group B. Association of first trimester threatened miscarriage with preterm delivery was compared in both groups which showed 58% in Group-A have preterm delivery as compared to 17% in Group-B, with significant difference having p value of < 0.05. Association of first trimester threatened miscarriage with PPRM was also compared in both groups and found a significant difference in both groups, where 19% in Group-A and 8% in Group-B were having PPRM, with a P value of <0.05.

**Conclusion:** This study showed that there is an association of first trimester threatened miscarriage with PPRM and Preterm delivery.

**Keywords:** First trimester threatened miscarriage, Association, PPRM, Preterm delivery

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## INTRODUCTION

Pregnancy related complications are more common in first trimester period, compared to other trimesters. Vaginal bleeding and pain are the most common complications.<sup>1</sup> Threatened miscarriage, defined as vaginal bleeding before 24 weeks of gestation, is a common complication affecting about 20% of pregnancies<sup>2</sup> and is the commonest reason for general practitioner emergency gynecology referrals in the United Kingdom<sup>3</sup>. The presumptive diagnosis of a threatened miscarriage is based on a history of vaginal bleeding in early pregnancy in the presence of a closed cervix. The diagnosis is confirmed by ultrasonic evidence of an intrauterine gestational sac with a positive fetal heart<sup>4</sup>. It is hypothesized that first-trimester may indicate an underlying placental

dysfunction, which may manifest later in pregnancy causing adverse outcomes such as, increased risk of preeclampsia, preterm delivery, preterm prelabour rupture of membranes (PPROM), placental abruption and intrauterine growth restriction,<sup>5</sup> while maternal death is rare in the first trimester.<sup>6</sup> In general, if a viable fetus is noted at ultrasound examination after first-trimester vaginal bleeding, 95% to 98% of such pregnancies still continues beyond 20 weeks of gestation. <sup>2</sup> Knowledge about the outcome of ongoing pregnancies following first trimester bleeding will be helpful in order to plan antenatal care and consider clinical intervention in pregnancy. In our institute a large number of patients are presenting with threatened miscarriage with vaginal bleeding, therefore, this study was planned and this study will be helpful for the patients with threatened miscarriage with vaginal bleeding and obstetricians to decide antenatal surveillance and management of these pregnancies. The objective of this study was to

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*Department of Obstetrics & Gynaecology, Alkhidmat Teaching Mansoorah Hospital, / University of Lahore Teaching Hospital  
Correspondence to Dr. Ghazala Huma, Senior Registrar, Lahore  
Email: uozair@gmail.com 0333-0432772, 0333-4851360*

determine the association of first trimester threatened miscarriage with Preterm Premature Rupture of Membranes and preterm delivery.

**PATIENTS AND METHODS**

In this prospective cohort study, a total of 200 pregnant women were included, with group A, having history of 1<sup>st</sup> trimester bleeding and group B having no history of 1<sup>st</sup> trimester bleeding, between 20-35 years of age in both groups with any parity, while twin pregnancy, congenital uterine anomaly, large leiomyomata distorting the uterine cavity assessed by USG, history of chronic diabetes or gestational diabetes diagnosed by glucose tolerance test, history of hypertension or diagnosed by BP monitoring of diastolic BP >90 mmHg on two occasions, vaginal spotting and the finding of an open cervix, polyhydramnios and patients with previous history of preterm labour and PPRM were excluded from the study. This study was conducted between April 2016 to April 2017, admitted through outpatient and emergency department of Gynaecology Unit, Al-Khidmat Teaching Hospital Mansoorah, Lahore. Informed consent was obtained from all the patients after explaining the study purpose. Information like age, gestational age, parity and addresses was obtained.

First-trimester miscarriage was defined as miscarriage before 14 completed weeks of gestation. Preterm labor was defined as birth of a baby of less than 37 weeks of gestational age, and PPRM was defined as rupture of the fetal membranes before 37 weeks of gestation. All this information was recorded in a predesigned proforma, patients were followed till delivery in both groups to look for presence or absence of PPRM & preterm labour.

The collected data was entered and analyzed in computer software SPSS version 12. Frequency and percentage was calculated for categorical variables whereas, mean and standard deviation for age. At the end of study, preterm labour and PPRM in both groups A & B was recorded. Chi Square test was applied to see the association between threatened miscarriage and PPRM and preterm labor. A P value of less than 0.05 was taken as significant.

**RESULTS**

Age distribution of the patients in both groups was recorded, most of the patients in both groups were between 20-25 years of age, in Group-A, 51% and 43% in Group-B, 38% in Group-A, and 41% in Group-B were between 26-30 years, while 11 % were in 31-35 years age group in Group-A and 16% in Group-B.

Mean age was calculated as 25.78±3.43 years in Group-A and 26.42±2.78 group B.

Parity distribution of the patients revealed 54% in Group-A and 48% in Group-B with 1-2 parity, 37% in Group-A and 39% in Group-B with parity of 3-4 while 5 and above parity was recorded in 9% in Group-A and 13% in Group-B (Table I).

Association of first trimester threatened miscarriage with preterm delivery was compared in both groups which showed 58% in Group- A have preterm delivery as compared to 17% in Group-B with significant difference with p value of <0.05 (Table II).

Association of first trimester threatened miscarriage with PPRM was also compared in both groups and found a significant difference in both groups, where 19% in Group-A and 8% in Group-B were having PPRM, with a P value of <0.05 (Table III).

Table I: Parity of the subjects

Parity	Group A	Group B
1-2	54(54%)	48(48%)
3-4	37(37%)	39(39%)
5	09(9%)	13(13%)

Table II: Association of first trimester threatened miscarriage with preterm delivery

Preterm delivery	Group A	Group B
Yes	58(58%)	83(83%)
No	42(42%)	83(83%)

Relative Risk: 3.50= P<0.05

Table III: Association of first trimester threatened miscarriage with PPRM

PPROM	Group A	Group B
Yes	19(19%)	8(8%)
No	81(81%)	91(92%)

Relative Risk: 2.698= P < 0.05

**DISCUSSION**

The literature regarding threatened abortion is relatively limited on the subject of outcomes and viability at term. Small number of patients and significantly biased data collection has limited previous studies of pregnancies that were complicated by threatened abortion<sup>7,8</sup>.

Knowledge about the outcome of ongoing pregnancies following first trimester bleeding will be helpful in order to plan antenatal care and consider clinical intervention in pregnancy. In our institute a large number of patients are presenting with threatened miscarriage with vaginal bleeding. The current study was planned which will be helpful for the patients with threatened miscarriage with vaginal bleeding and obstetricians to decide antenatal surveillance and management of these pregnancies.

We recorded no significant difference in both groups regarding demographic information, age in both groups was comparable 25.78±3.43 years in Group A and 26.42±2.7 years in Group B. Association of first trimester threatened miscarriage with preterm delivery and PPROM was statistically significant.

It is hypothesized that first-trimester bleeding may indicate an underlying placental dysfunction, which may manifest later in pregnancy causing adverse outcomes i.e., increased risk of preterm delivery, preterm prelabour rupture of membranes (PPROM), placental abruption and intrauterine growth restriction (IUGR)<sup>9</sup>.

The association between vaginal bleeding and preterm delivery has also been noted by others<sup>10,11,12</sup>. Batzofin et al<sup>8</sup> and Williams et al<sup>13</sup> reported that patients with bleeding had double the risk of preterm delivery compared with patients without bleeding. The study of Williams et al, was limited to first trimester bleeding<sup>13</sup>. Batzofin et al included patients with bleeding up to 20 weeks<sup>8</sup>. Strobino and Pantel-Silverman failed to show an association between preterm delivery before 36 weeks of gestation with light vaginal bleeding in the first or second trimester of pregnancy<sup>14</sup>. Another study found that preterm delivery is increased significantly in patients with either light (OR, <2.0) or heavy (OR, 3.0) first-trimester rebleeding. Davari-Tanha F,<sup>2</sup> is also of the view that first trimester vaginal bleeding is an independent risk factor for adverse obstetric outcome and showed statistically significant difference in patients with first trimester vaginal bleeding, preterm delivery in 52.9% versus 14.7% and PPROM 16% versus 6.4%, these findings are in agreement with the results of the current study.

The results of the current study with the support of other studies are helpful for the patients with threatened miscarriage with vaginal bleeding and obstetricians to decide antenatal surveillance and management of these pregnancies.

## CONCLUSION

This study showed that there is an association of first trimester threatened miscarriage with PPROM and Preterm delivery.

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