Obstetric Outcomes in Women with Threatened Abortion

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ABSTRACT

Background: Approximately half of all cases of threatened miscarriage result in a complete miscarriage and pregnancy loss. If the pregnancy keeps going, suboptimal outcomes, such as preterm birth and preeclampsia, have become more common.

Aim of the work: to assess the impact of threatened miscarriage on the growth of the fetus and premature membrane rupture, as well as the impact of threatened abortion on other adverse pregnancy outcomes such as abortion, preterm labor, preeclampsia, placenta previa, IUGR, and caesarean.

Patients and methods: A prospective case study has been performed on 152 pregnant women at the Obstetrics and Gynecology department at Al-Hussein Hospitals, Al-Azhar University, who were divided into two groups: (Group I): 76 women who presented with symptoms of threatened abortion at or below 20 weeks of pregnancy; (Group II): 76 women who did not present with any symptoms of threatened abortion, from october 2020 to october2021.

Results: Preterm labor, neonatal mortality, low birth weight, and NICU admission differ significantly between the groups.

Conclusion: A threatened abortion is linked to a higher risk of a bad pregnancy result. Premature membrane rupture, preterm birth, and neonatal birth weight are all associated with an increased risk. Women who are about to have a miscarriage must be informed about the negative maternal and neonatal consequences of their situation and given explicit advice on how to maintain a healthy.

Keywords: *Threatened miscarriage; Preterm delivery; Premature rupture of membrane; Preeclampsia; Cesarean delivery.*

INTRODUCTION

Hemorrhage before 20 weeks of pregnancy is known as threatened miscarriage, and it occurs in about 20% of all recognized pregnancies .[1]

A quarter of all pregnancies have been complicated by haemorrhage before 20 weeks of pregnancy, and 12 to 57% of such pregnancies end in abortion .[2]

In clinical practice, a history of vaginal spotting and the subsequent discovery of a closed cervix on examination commonly lead to the prognosis of threatened abortion. An ultrasonographic examination, which confirms the existence of fetal heart activity in an intrauterine pregnancy, must be used to make a definitive prognosis of threatened abortion .[3]

Hemorrhage during pregnancy could trigger anxiety in the mother, and new research implies it could be linked to bad fetal and maternal outcomes .[4]

Therefore, it is necessary to be diagnosed and managed to prevent maternal or fetal mortalities and morbidities .[5]

Despite of the common occurrence of First-trimesteric vaginal bleeding, the risk of a negative result for pregnancies with a threatened miscarriage in the first trimester and a living embryo was identified insufficiently .[6]

It's thought that first- trimesteric hemorrhage could signal underlying placental dysfunction that could emerge later in the pregnancy and lead to complications like pre-eclampsia, preterm premature rupture of membranes (PPROM), preterm birth, placental abruption, as well as intrauterine growth restriction (IUGR) .[7]

PATIENTS AND METHODS

It's a prospective case-control study involving 152 pregnant women and was carried out at the Obstetrics and Gynecology department at Al-Hussein Hospitals, Al-Azhar University, between october 2020 and october 2021.

The total sample size required for this research was determined to be 152 cases, split into 2 groups of 76 cases each, as follows: **Group 1 (Cases):** 76 women who had signs and symptoms of an impending abortion at or below the 20th week of pregnancy, diagnosed by vaginal spotting and minimal pain with

a closed cervix on examination and a viable fetus by ultrasound, who will be subjected to ultrasound examination afterwards. **Group 2 (Controls):** 76 women who don't have any symptoms of threatened abortion.

Inclusion criteria: Subjects with single intrauterine pregnancy with sure last menstrual period constant with 1st trimesteric documented ultrasound and Viable IntraUterine pregnancy.

Exclusion criteria (Causes of abortion): Chronic high blood pressure, diabetes, smoking, thrombophilia, recurrent abortion history, congenital uterine anomalies, large leiomyomata distorting uterine cavity, cervical incompetence, local cervical pathology as cervical polyp, multiple pregnancies, any bad obstetric history as previous miscarriage IUFD, PTL, etc…, congenital fetal anomalies and maternal liver, renal and heart diseases.

The threat of abortion will be diagnosed depending on recorded fetal cardiac activity on ultrasound, a history of vaginal hemorrhage, the existence of a closed cervix, and the pregnancy age of 20 weeks or less.

Methods:

All Patients were subjected to:

Taking a complete history: Personal history including: name, age, marital state, address, menstruation history: including age of Menarche, menstrual disturbance, dysmenorrhea, related symptoms, obstetric history including parity and mode of delivery, present history: of chronic diseases and medication, past history of HTN, DM, family history of similar condition or diabetes, history of allergy to any medication and surgical history of operation, laparoscopic interference, treatment of hirsutism by Laser.

Examination: A careful examination and assessment had been done with special attention to the inclusion and exclusion criteria among all couples, as follows; General examination: (focusing on the blood pressure to exclude pregnancy-induced hypertension [PIH], temperature and respiratory rate): Vital signs assessment, weight and height measurement (BMI), and obstetric investigation. Clinical examination of the abdomen and surrounding area to determine the fundal level and gestational age, as well as any previous surgery scars, mass, tenderness, or solidity, and clinically detectable pathology in the abdomen or pelvis. For the detection of any abnormalities in

female genitalia, a bimanual pelvic inspection of both the adenexa and the uterus is performed. Routine Trans vaginal examination

Investigations, as follows: Blood typing (ABO Grouping) and antibody testing (Rh antibody, in cases of Rh negative), Complete blood count (CBC), a 2-hour oral glucose tolerance test and a fasting blood glucose test, Urine analysis, Thyroid, kidney and liver function tests and ultrasound assessment.

Ultrasound protocol: Subjects preparation; subjects had been asked to remove their clothes and put on a gown or cover for the procedure. Device used; Volsuon-730 pro (General Electric Health Care, Austria) with a 3.5 MHz probe.

Sonographic parameters evaluated had been as follows: Size of gestational sac and CRL if <12 weeks. fetal cardiac activity, subchorionic hematoma, fetal biometry: BPD, FL, AC if >12 weeks, placental site and amniotic fluid index

Follow up; subjects in both groups had been followed up every two-week until delivery for obstetric ultrasound.

Outcome measures: Primary outcomes; occurrence of intrauterine growth restriction (IUGR), PROM, IUFD and PTL and Secondary outcomes; occurrence of maternal or fetal complication as placental abruption, preterm labor and any other (maternal, fetal mortality and morbidity)

Ethical considerations: the Study protocol has been submitted for approval by AL Azhar University's Faculty of Medicine's Ethical Committee–Ethical committee of the Obstetrics and Gynecology Department. Informed verbal and written consent had been obtained from each participant sharing in the study following an explanation of the study's aim and procedures.

Data management and Statistical Analysis: Microsoft Excel software has been used to code, enter, and analyse data collected during the patient's history, basic clinical investigation, laboratory tests, and result measures. Data has been imported into the Statistical Package for the Social Sciences (SPSS) version 20.0 software for analysis, and the following tests have been used to determine whether the differences were significant: Pearson's correlation or Spearman's correlation. The P value for significant findings was set at <0.05, and the P value for highly significant findings was set at <0.001.

RESULTS

Variables	Group I (n=76)	Group II (n=76)	t	P
Age (years) Mean ±SD	28.33 ± 4.12	26.96 ± 4.03	2.07	.040
GA (weeks) Mean ±SD	13.44 ± 1.63	12.92 ± 1.74	1.91	.059
Parity Mean ±SD	1.72 ± 1.02	1.59 ± 1.13	.754	.452
BMI (kg/m^2) Mean ±SD	28.03 ± 2.68	26.45 ± 2.29	3.91	.001

Table 1: Demographic characteristics distribution between the two groups
There was a statistically significant difference between groups in terms of maternal age and BMI, Table (1)

Previous abortion	Group I (n=76)		Group II (n=76)		X^2	P
	N	%	N	%		
No previous abortion	46	54.5	67	88.2	15	.0005
1	22	28.9	8	10.5		
2	8	10.5	1	1.3		

Table 2: Previous abortion distribution among studied groups
There was a significant difference between the groups as regards the number of previous abortions. Table (2)

Variables	Group I (n=76)	Group II (n=76)	t	P
β-hCG (mlU/ml) Median Range	7993 1287 – 72891	69126 14373 - 218801	MU 271	.000
Progesterone (ng/mL) Mean ±SD	22.86 ± 3.54	26.18 ± 6.31	4.03	.000

Table 3: β-hCG and Progesterone distribution between the two groups
Regarding median β-hCG levels and mean progesterone levels were significantly lower among Group I women compared to Group II. Table (3)

	Group I (n=76)		Group II (n=76)		X^2	P
	N	%	N	%		
Preeclampsia	5	6.6	3	3.9	.528	.467
Eclampsia	1	1.3	0	--	1.01	.318
Placental abruption	1	1.3	1	1.3	--	1
Placenta previa	5	6.6	0	--	5.17	.023
Antepartum hemorrhage	16	23.7	6	7.9	7.13	.008
PROM	1	1.3	1	1.3	--	1
Induced labor	24	31.6	22	28.9	.125	.724
Postpartum hemorrhage	15	19.7	4	5.3	7.28	.007
Emergency SC	14	18.4	12	15.8	.186	.667
Manual removal of placenta	8	10.5	2	2.6	3.85	.049

Table 4: Obstetric Outcome distribution among studied groups
There was a significant difference between the groups as regards the Placenta previa, Antepartum hemorrhage, Postpartum hemorrhage and Manual removal of placenta. Table (4)

	Group I (n=76)		Group II (n=76)		X^2	P
	N	%	N	%		
Preterm labor	15	17.1	5	6.6	5.76	.016
Stillbirth	2	2.6	1	1.3	.34	.560
Neonatal death	6	7.9	0	--	6.25	.012
Low birth weight	18	23.7	5	6.6	8.66	.003
Apgar at 5 < 7	3	3.9	1	1.3	1.03	.313
NICU admission	23	30.3	11	14.5	6.27	.012

Table 5: Perinatal Outcome distribution among studied groups
There was a significant difference between the groups as regards the preterm labor, neonatal death, low birth weight and NICU admission. Table (5)

DISCUSSION

The danger of miscarriage (threatened abortion) could have been defined in the early stages of pregnancy as either visible vaginal hemorrhage without cervical dilatation or cervical dilatation without visible vaginal hemorrhage.

The primary aim of this research would have been to assess the impact of threatened abortion on the growth of the fetus and premature membrane rupture, as well as the impact of threatened abortion on other adverse pregnancy outcomes like abortion, preterm labor, preeclampsia, placenta previa, IUGR and cesarean section.

This was a prospective case-control study that included 152 pregnant women, partitioned into two groups as follows: Group 1 (Cases): 76 women who present with signs of threatened abortion at or less than 20 weeks of gestation were diagnosed with vaginal spotting and minimal pain with a closed cervix on examination and a viable fetus by ultrasound, and will be subjected to ultrasound examination afterwards. Group 2 (Controls): 76 women who don't have any symptoms of threatened abortion. The study was carried out at Al-Hussein Hospitals, Al-Azhar University, in the Obstetrics and Gynecology department, from from october 2020 to october2021.

In terms of maternal age and BMI, there have been statistically significant differences among groups, with the highest among cases.

Our findings matched those of Yakştran et al. (2015), who found that the average age of pregnancies with a higher risk of miscarriage increased significantly more than the control group.

In contrast to our results, Nwafor et al., 2019 reported that the two study groups had been matched with no significant difference in mean age and body mass index (BMI) between ladies with and without 1st trimester threatened miscarriage.

A prospective cohort study on 1000 women who are pregnant has also been conducted by Dadkhah et al., 2010.[8] the case group consisted of 550 women who had experienced vaginal hemorrhage during the first half of their pregnancy, while the control group consisted of 550 women who had never experienced such a haemorrhage. The age differences between the two groups of women (the case group was 25.8±4.6 years old, while the control group was 25.3±4.9 years old) were not statistically significant.

Much research has linked low serum progesterone levels to abortion. As a result, particularly in China, exogenous progesterone supplements have been frequently utilized to treat threatened abortions. Even so, progesterone's efficacy is debatable, and the applicable standard remains ambiguous. [9]

The current study showed that regarding median β-hCG levels and mean progesterone levels were significantly lower among Group I women compared to Group II.

Our findings were backed up by research by Deng et al., 2020, who found that basal serum progesterone had an adverse relationship with the risk of first-trimester miscarriage, even when time and progesterone treatment were taken into account. They also discovered a saturation impact between basal serum progesterone and the risk of miscarriage during the first trimester.

Serum progesterone is a common test for women who are threatened with abortion because its fluctuation is relatively tiny (in comparison to HCG) and the measurement is not limited by age of gestation. To our knowledge, the majority of research has linked serum progesterone levels to pregnancy outcomes, particularly in the first trimester. Abortion patients had lower serum progesterone levels than women who were still pregnant .[10]

Hanita et al. (2012) performed research on the single measurement of serum progesterone and discovered that the cut-off value for early gestation failings became 32.7 ng/mL (around 103.99 nmol/L).

Ku et al. 2015 [11] predicted the result of a spontaneous miscarriage using progesterone, foetal heart rate, and BMI. As an independent prediction, the ROC analysis revealed a cut point of around 35 nmol/L progesterone. The cut point of 35 nmol/L was verified by Lek et al. in 2017,[12] and the outcomes revealed that it was precise and repeatable. According to such studies, basal progesterone can be used as a predictive indicator for threatened abortion.

Threatened abortion results include advances to a term viable pregnancy or could lead to spontaneous, unavoidable, incomplete, complete, missed, or septic miscarriage. Abortion threats are extremely stressful and could result in anxiety and depression. The role of the maternity nurse is distinctive and essential in aiding patients in making healthy behavioral changes. On the other hand, poor adherence problems to medical therapy are well-documented problems in the literature .[13]

In our hands-on study, there were significant differences among the groups regarding placenta previa, antepartum hemorrhage, postpartum hemorrhage, and manual removal of the placenta.

Our findings were backed up by research published in 2019 by Kanmaz et al.,[14] who found that hyperemesis gravidarum became statistically significantly more common in pregnant women with a risk of abortion than in those without. Similarly, the occurrence of GDM (gestational diabetes mellitus) was higher in pregnant women at risk of abortion than in those not at risk. Preeclampsia rates were not statistically different between pregnant women with a risk of abortion and the control group. Placenta previa has been found to be significantly more common in pregnant women who were at risk of pregnancy loss than in the control group. There have been no statistically significant differences in the incidence of placental detachment between miscarriage-risk and non-risk pregnancies.

Abd-Elaziz et al., [15] discovered a statistically significant difference between patients and control in terms of PPROM, abortion, and preterm labor.

Furthermore, [16] demonstrated that women who were threatened with abortion were more likely to give birth prematurely. (OR = 7.1, 95% CI = 3.51- 14.32, P < 0.0001), placenta praevia (OR = 2.4, 95% CI = 1.13–5.26, P = 0.03), placental abruption (OR = 3.6, 95% CI = 1.40–9.03, P = 0.01) and retained placenta (OR = 2.9, 95% CI = 1.18–6.97, P = 0.02). Likewise, women who were threatened with abortion in the first trimester were more likely to experience postpartum hemorrhage (OR = 2.4, 95% CI = 1.17 - 5.06, P = 0.02).

According to Sarmalkar et al. [17] threatened miscarriages in the first trimester has been linked to a higher risk of LBW, preterm delivery, PPROM, as well as PIH. Furthermore, [18] found that women who had a threatened abortion had a significantly higher risk of preterm labor (less than 37 weeks' gestation) than the control group (16% versus 2%, p= 0.001).

In the study of Ahmed et al., 2012, preterm birth, low birth weight babies, and premature rupture of membranes were significantly higher in the abortion group compared to the control group in (15.7 % versus 2.2 %, p = 0.001), (15.7% versus 2.2%, p = 0.001), and (6.7% versus 4.45), p = 0.016). Other pregnancy results were not significantly different.

Preterm labour, neonatal mortality, low birth weight, and NICU admission were all found to be significantly different between the groups in this study.

Kanmaz et al., [19] backed our findings, reporting that extremely preterm as well as very preterm occurrences in pregnant women with a threat of abortion were statistically greater than in the control. Likewise, pregnant women with a threat of abortion had significantly higher rates of extremely low birthweight (ELBW) and very low birthweight (VLBW) than the control group. Infants born after threatened abortions during the first trimester had higher NICU needs than those born in the control group. Both the risk of abortion group and the control group had similar rates of moderate LBW, moderate preterm pregnancy, stillbirth, and macrosomia infantile occurrence.

According to Mansour et al., [19] 70 (35.0%) of women have been subjected to various types of abortions, while 130 (65.0%) of women carried their pregnancy to term. When they had antenatal complications, 67.7% had CS and 5.4% had serious birth asphyxia (0–3) by the fifth minute.

Emara, [18] demonstrated that women who were at risk of abortion had significantly smaller babies weighing less than 2500 gm in comparison to the control group, with a mean birth weight (2335.1 ± 644.9 vs. 3118.9 ± 211.7, p< 0.0001). There was a significant difference in neonatal NICU admissions (28 % in the case group vs. 7% in the control group, p = 0.001). The occurrence of PROM between the two groups did not differ significantly.

However, in the study of Abd-Elaziz et al., [15] there was no statistically significant difference in NICU admissions between cases and controls.

CONCLUSION

A threatened miscarriage is linked to a higher rate of negative pregnancy results. Premature rupture of the membranes, preterm birth, as well as neonatal birth weight all increase the risk.

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