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Impact of Threatened Abortion on Fetal Growth And Premature Rupture of Membrane

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Abstract

Background: Bleeding prior to the twentieth week of gestation constitutes threatened abortion, which transpires in around twenty percent of identified pregnancies. Preterm rupture of membranes (PROM) is a widespread obstetrical consequences (three percent), leading to potential consequences for both the mother and fetus, including infection and prematurity.

Aim and objectives: The objective of this research is to Examine the impacts of threatened termination on the fetus. Development & premature membrane rupture.

Subjects and methods: In that prospective case-control research, 200 cases were joined between March 2022 and September 2023 from the Emergency Rooms of the Obstetrics & the Outpatient Clinics & Gynaecology Department at Hospitals of Al-Azhar University (Alhussin and Bab Elsheria).

Results: No significant statistical differences were detected among the categories with respect to parity, body mass index, age, gravidity, or method of delivery. In terms of biparietal diameter, birth weight, femur length, abdominal circumference, abortion, preterm labor, placental abruption, neonatal sepsis, IUGR, and NICU admission, significant differences existed among the groups.

Conclusion: A threatened abortion is ultimately connected with an elevated chance of adverse pregnancy consequences. Bleeding of the vagina throughout the three months at first is an independent risk element for adverse obstetric outcomes; the quantity of bleeding is proportion directly to this danger. Patients who are confronted with an abortion are more susceptible to experiencing adverse pregnancy consequences, including greater occurrence of preterm birth, admission to the neonatal intensive care unit, low birth weight, and IUGR.

Keywords: Abortion; Fetal growth; Premature rupture of membrane

1. Introduction

Bleeding prior to the twentieth week of gestation constitutes threatened abortion, which transpires in around twenty percent of identified pregnancies.¹

A closed cervix observed upon subsequent Examination of the vagina & vaginal discharge history are common indicators for diagnosing threatened abortion in clinical practice. Following an intrauterine pregnancy ultrasonographic examination that confirms the existence of cardiac activity of fetal, a conclusive diagnosis of threatened abortion must be established.²

Recent research suggests that the distress caused by bleeding throughout pregnancy might be linked to adverse maternal and fetal

consequences.³

Hence, effective management and early detection is imperative in order to avoid fetal or maternal fatalities as well as morbidities.⁴

Preterm rupture of the membranes is the leading reason of preterm labour, about thirty to forty percent of cases. Preterm premature rupture of membranes (PROM) can manifest as an unanticipated consequence throughout the period of preterm, immediately preceding labour, or at term; in either case, it is typically discussed as preterm (PROM).^{5,6}

The objective of the research seemed to examine the impact of threatened abortion on fetal development and the rupture of premature membranes.

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2. Patients and methods

200 Participants were joined in that prospective case-control research through the Obstetrics Outpatient Clinics, Emergency Rooms, and Gynecology Unit at Hospitals of Al-Azhar University. (Alhussin and Bab Elsheria) Among March 2022 & September 2023. Inclusion criteria: Individuals who are diagnosed with a pregnancy of single intrauterine & have had confirmed threats of abortion, last menstrual period, a closed cervix upon investigation, & a viable fetus as determined through ultrasound, while also experiencing vaginal spotting & minimal discomfort.

Exclusion criteria: Individuals with the following medical conditions are excluded from the monitoring program: those with diabetes mellitus, chronic hypertension, a history of recurrent abortions, large leiomyomata distorting the uterine cavity, thrombophilia, great leiomyomata distorting the uterine cavity, cervical incompetence, congenital uterine anomalies, local cervical pathology such as cervical polyp, congenital fetal anomalies, maternal renal, heart, & liver diseases, & those who generated PPRM prior to twenty weeks of pregnancy (inevitable abortions).

Patients were divided into two groups as follows: Group 1 (Cases): A total of 100 females who came with symptoms suggestive of the threatened abortion during or prior to the twentieth week of gestation subsequently underwent an ultrasound examination. & Group 2 (Controls): - 100 women who are asymptomatic & were confronted with abortion.

Research Ethical considerations: Every participant was provided with a comprehensive & straightforward explanation of the study's objectives & methodologies prior to being requested to provide informed oral & written consent to take part in research.

All patients were subjected to the following: History taking including: (obstetric, present, Personal, surgical, past, family & menstrual history & A medical history of any medication allergy), Examination including: (General, Abdominal, Local vaginal, and Obstetric Examination) and laboratory investigations.

Ultrasound assessment by Olsuon-seven hundred & thirty pro (Austria, General Electric Health Care) per a three and half of MHz probe.⁷

The technique of ultrasound examination: The ultrasound probe was positioned in a cephalic orientation to the pubis of the symphysis, through an indicator of the probe facing the correct side of the person being examined. Through the vaginal membrane & cervix posterior position to the bladder, the probe was angled inferiorly to enable visualization of the bladder. After maintaining the indicator to the right while tilting the probe

upwards, the cervix and uterine fundus became visible. The upward inclination of the probe persisted till the upper portion of the uterus ceased to be visible. Following the completion of a transverse uterine scan, the indicator of the probe was oriented towards the head of the patient via a clockwise rotation, thereby obtaining a longitudinal (or sagittal) view. The stripe in the vagina was observed in the bladder in a posterior position, which remained visible inferiorly & anteriorly in this view.⁸

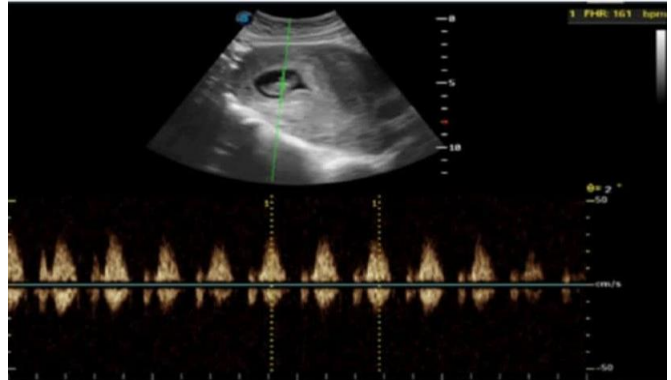


Figure 1. An eight-week gestational-old patient presenting with vaginal hemorrhage exhibits a normal, regular FHR.

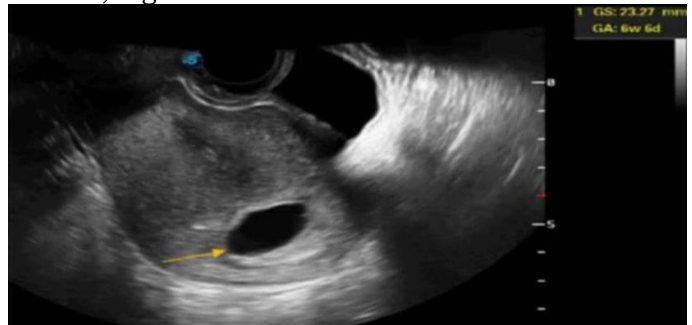


Figure 2. At seven weeks of gestation, a patient presenting with vaginal hemorrhage exhibited a normal GS (yellow arrow).

Follow-up: Until delivery, patients in both groups were monitored every couple of weeks.

Outcome measures

Primary outcomes: Preterm labour (PTL), intrauterine fetal demise, premature rupture of membranes, & premature uterine growth restriction are all instances that may transpire. Secondary outcomes: The incidence of premature labour, placental abruption, Neonatal intensive care unit admittance, neonatal sepsis, death, and morbidity of the mother fetus.

Statistical Analysis: In order to enter, code, and analyze information gathered throughout the history of patients, laboratory tests, result measures, and fundamental clinical investigation, Microsoft Excel was utilized. The collected information was included in version twenty of the Statistical Package for the Social Sciences software for analysis. To ascertain the significance of the differences, the connection of Pearson or

Spearman's tests was employed. Significant findings were assigned a P value of less than 0.05, and significant important findings were assigned a P value of less than 0.001.

3. Results

Table 1. Demographic characteristics distribution between the two groups

VARIABLES	GROUP 1 (N=100)	GROUP 2 (N=100)	T	P
AGE (YEARS) MEAN ±SD	28.73 ± 4.12	28.26 ± 4.53	.813	.417
PARITY MEAN ±SD	2.48 ± 1.09	2.59 ± 1.13	.509	.611
GRAVIDITY MEAN ±SD	3.62 ± 1.25	3.81 ± 1.43	.631	.318
BMI (KG/M ²) MEAN ±SD	26.03 ± 2.38	26.45 ± 2.75	1.15	.250

This table showed there was no significant difference among individuals in regard to age, parity, body math, & index gravidity.

Table 2. Neonatal characteristics distribution between the two groups

VARIABLES	GROUP 1 (N=100)	GROUP 2 (N=100)	T	P
GA AT TIME OF PRESENTATION (WEEKS) MEAN ±SD	15.54 ± 2.68	15.92 ± 2.71	.997	.320
GA AT TIME OF RUPTURE OF MEMBRANE (WEEKS) MEAN ±SD	32.82 ± 2.39	33.59 ± 3.07	1.62	.107
BIRTH WEIGHT (GM) MEAN ±SD	2.74 ± 0.651	3.11 ± 0.425	7.44	<0.001

In the table there is a statistically significant difference among individuals in regard to birth weight.

Table 3. Mode of delivery distribution among studied groups

	GROUP 1 (N=100)		GROUP 2 (N=100)		χ^2	P
	N	%	N	%		
CS	67	67%	59	59%	1.37	.242
VD	33	33%	41	41%		

In the table there isn't significant difference among the individuals in regard to mode of delivery.

Table 4. Fetal biometry distribution among the two groups

	GROUP 1 (N=100)	GROUP 2 (N=100)	T	P
BIPARIETAL DIAMETER (MM) MEAN ± SD	32.86 ± 6.93	37.12 ± 7.28	4.24	<0.001
ABDOMINAL CIRCUMFERENCE (MM) MEAN ± SD	102.11 ± 23.54	116.86 ± 26.35	4.17	<0.001
FEMUR LENGTH (MM) MEAN ± SD	20.18 ± 6.44	26.39 ± 5.49	7.34	<0.001

In the table there is a statistically significant difference among groups in regard to abdominal

circumference, biparietal diameter, & femur length.

Table 5. Obstetric Outcome distribution among studied groups

	GROUP 1 (N=100)		GROUP 2 (N=100)		χ^2	P
	N	%	N	%		
PREECLAMPSIA	6	6%	2	2%	2.08	.149
ECLAMPSIA	2	2%	0	--	2.02	.155
PLACENTAL ABRUPTION	9	8%	2	2%	4.71	.030
PLACENTA PREVIA	4	4%	1	1%	1.85	.174
PROM	8	8%	4	4%	1.42	.234
ABORTION	35	35%	8	8%	22	<0.001

In the table there is a significant difference among the individuals in regard to placental abruption and abortion.

Table 6. Neonatal complications distribution among studied groups

	GROUP 1 (N=100)		GROUP 2 (N=100)		χ^2	P
	N	%	N	%		
PRETERM BIRTH	17	17%	3	3%	11	.001
IUGR	12	12%	2	2%	7.68	.006
NEONATAL SEPSIS	10	10%	1	1%	7.79	.005
NICU ADMISSION	28	28%	6	6%	17	<0.001

In the table there is a significant difference among the individuals in regard to labor of preterm, IUGR, sepsis of neonates, and NICU admission.

4. Discussion

Prior to term, Premature rupture of membranes is a widespread obstetrical consequence (three percent) that may lead to infection and prematurity in the mother and fetus. ⁹

There exists evidence suggesting that subsequent consequences of pregnancy, including preterm labour and rupture of the membranes in a premature state, could potentially be attributed to placentation and, more newly, species of reactive oxygen generated throughout early pregnancy insult. ¹⁰

At this moment, there was no significant difference in age, parity, gravidity, or BMI among the groups (P > 0.05). In group 1, the mean age was 28.73 ± 4.12 years, the average parity was 2.48 ± 1.09, the average gravidity was 3.62 ± 1.25, and the average BMI was 26.03 ± 2.38 kg/m². While, in group 2, the average age was 28.26 ± 4.53 years, the mean parity was 2.59 ± 1.13, the average- gravidity was 3.81 ± 1.43 and the mean BMI was 26.45 ± 2.75 kg/m².

In agreement, Ahmed et al. ¹¹ conducted a study titled "Effect of threatened abortion on fetal growth and preterm premature rupture of membrane." two hundred women joined the research; they were split into two groups: The Threatened Abortion group (n=one hundred) & the Age-Matching Control Group (n=one

hundred). In relation to the baseline body mass index, maternal age, parity, gravidity, and gestational age documented in both the threatened abortion and control individuals, no statistically significant differences were detected (p below 0.05).

Our findings observed that birth weight was significantly decreased in group one over group 2. It was (2.74 ± 0.651 v.s 3.11 ± 0.425 gm; $p < 0.001$).

This is close to the results of Kanmaz et al.¹² whose research identified an elevated occurrence of low birth weight as a consequence of first-trimester pregnancy and advised against abortion (p -value below 0.001).

Haddow et al.¹³ showed a higher threat of birth in low weight (less than two thousand grams) in pregnancies that were worsened through an abortion threat. In the existing research, there is no significant difference between the two examined individuals in regard to GA at the time of presentation or GA at the moment of membrane perforation (P above 0.05).

Along with our study, El-Raheem et al.⁷ observed that there is no significant difference among case control individuals with respect to gestational age; it was (13.44 ± 1.63 v.s 12.92 ± 1.74 weeks; $p = 0.059$).

Contrary, Emarat et al.² demonstrated a statistically significant difference in terms of gestational age (weeks) at the moment of Examination or presentation, with the control group having the average gestational age at presentation (15.3 ± 2.4) related to the case individual (16.3 ± 2.2) with a p -value of 0.006. As regards the mode of delivery distribution among studied groups, cesarean section occurred in 67 (67%) of group 1 and 59 (59%) of group 2. While, Vaginal delivery occurred in 33 (33%) of group 1 and 41 (41%) of group 2, with no significant difference between the two studied individuals; p -value = 0.242.

Our findings were consistent with those of Ozdemirci et al.¹⁴ whose research demonstrated that there is no significant difference in the mode of distribution or instrumental distribution among the threatened miscarriage and control groups. The present study showed that biparietal diameter, abdominal circumference, and femur length were significantly greater in the control individuals compared with the cases group (p below 0.001).

In agreement was a previous study by Wafa et al.¹ that reported that fetal biometry was significantly lower in the cases group than in the control group. Where Femur length was (19.9 ± 6.6 v.s 25 ± 6.3 ; $p < 0.0001$), Abdominal circumference was (100.7 ± 22.5 v.s 117.6 ± 25.4 ; $p < 0.000$), and Biparietal diameter was (32.5 ± 7.5 v.s 36.5 ± 7.3 ; $p = 0.0002$).

Our outcomes exhibited that, there is a significant difference among the individuals in regard to placental abruption and abortion p -values are 0.030 & below 0.001 correspondingly. But there is no significant difference among them regarding PPRM, placental previa and Preeclampsia.

Getnet et al.¹⁵ demonstrated that 36 (22.5 percent) of the control group and 42.5 percent of the threatened abortion cases possessed a prior record of abortions throughout pregnancies.

Conversely, our findings contradicted those of Kanmaz et al.¹² who reported that the frequency of placenta previa was considerably higher and statistically significant in the group of pregnancies in which an abortion was threatened compared to the control group.

This table shows there is a significant difference among the individuals in regard to labor of preterm (17% v.s 3%; $p = 0.001$), IUGR (12% v.s 2%; $p = 0.006$), neonatal sepsis (10% v.s 1%; $p = 0.005$), and NICU admission (28% v.s 6%; $p < 0.001$).

These findings were consistent with Kanmaz et al.¹² who documented a greater rate of preterm birth as a consequence of pregnancy throughout the first trimester and threatened termination of the pregnancy.

4. Conclusion

In conclusion, a threatened abortion is connected with an increased likelihood of an adverse pregnancy outcome. Bleeding of the vaginal throughout the first three months is an independent risk element for adverse obstetric outcomes; the quantity of bleeding is directly proportional to this risk. Patients who are confronted with an abortion are more susceptible to experiencing adverse pregnancy outcomes, including higher rates of diminished IUGR, neonatal intensive care unit admission, birth weight, and birth in a preterm state. However, these findings require confirmation by a larger, more powered study with a larger sample size.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article

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Conflicts of interest

There are no conflicts of interest.

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