Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v6i11.2103
*Biol. Clin. Sci. Res. J., Volume 6(11), **2025**: 2103*
Original Research Article

Preterm Delivery Outcomes Following Threatened Abortion

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(Received, 24th September 2025, Accepted 18th November 2025, Published 30th November 2025)

Abstract: *Threatened abortion is a common complication of early pregnancy and may predispose women to adverse obstetric and neonatal outcomes. Evidence regarding its impact on preterm birth and related complications remains limited in low and middle-income settings.* ***Objective:****.To assess the prevalence of preterm birth and the following complications in women presenting with threatened abortion.* ***Methodology:*** *A case-control study was conducted on eighty pregnant women. Forty women with a confirmed diagnosis of threatened abortion formed the case group. They were matched on age, parity, and gestational age at presentation to 40 control women. Preterm delivery (birth before 37 weeks), low birth weight (<2.5 kg), postpartum haemorrhage, and neonatal intensive care unit admission were assessed. Complications like preeclampsia, HELLP syndrome and placenta praevia were also evaluated. SPSS 25 was used for analysing the data.* ***Results:*** *The groups were similar in terms of maternal age, gestational age and parity. Preterm delivery was significantly higher in the case group, 25.0% compared to 5.0% in the control group (p=0.01). Neonates in the threatened abortion group had a higher incidence of low birth weight, 22.5% vs 5.0% (p=0.02), and required neonatal intensive care unit admission more frequently, 27.5% vs 7.5% (p=0.01). Postpartum haemorrhage was also more common in cases, 15.0% vs 2.5% (p=0.04). Maternal complications were significantly higher in the case group compared to the control group (p=0.03).* ***Conclusion:*** *Threatened abortion is a significant risk factor for preterm delivery and is associated with an increased burden of maternal and neonatal morbidity.*

Keywords: Threatened Abortion, Preterm Delivery, Preterm Birth, Pregnancy Complications, Neonatal Intensive Care.

[***How to Cite:*** Khatoon S, Anwar N, Zahra T, Khan HG, Ali SF. Preterm delivery outcomes following threatened abortion. *Biol. Clin. Sci. Res. J.*, **2025;**

Introduction

Threatened abortion, i.e vaginal bleeding in early pregnancy with a closed cervix and a viable intrauterine pregnancy, is a common presentation in obstetric practice and is a recognised marker of raised pregnancy risk. Pregnancies complicated by threatened abortion have consistently been associated with higher rates of adverse outcomes later in gestation, including preterm delivery, hypertensive disorders and fetal growth restriction (1-4). The biological mechanisms that link early pregnancy bleeding to preterm birth are not fully elucidated but are thought to involve impaired trophoblast invasion and early placental dysfunction, which predispose to membrane weakening and spontaneous preterm labour (5-7).

Epidemiological studies from diverse settings report that the risk of preterm birth among women who survive an early threatened loss is meaningfully higher than among unexposed pregnancies, bleeding severity and coexisting maternal conditions such as hypertensive disease, as well as thrombophilia (8-10). Recent multicentre research has highlighted that threatened abortion is frequently a marker rather than a direct cause of later placental pathology, implying that targeted surveillance rather than blanket interventions may offer the best balance between resource use and improved outcomes (11).

Ultrasonographic findings, together with biochemical markers and obstetric history, show promise for risk stratification, but existing prediction models lack broad external validation and are not yet standardised for routine practice. Management strategies in such populations emphasise tailored antenatal surveillance and consideration of proven preventative measures for preterm birth when indicated by risk profile. (12, 13)

Threatened abortion is a significant early pregnancy complication that has been consistently linked to adverse obstetric outcomes, including an elevated risk of preterm delivery. Despite growing evidence internationally as well as within regional populations, the strength of this association and the specific maternal and neonatal outcomes following preterm birth in women with threatened abortion remain incompletely understood. Evaluating preterm delivery outcomes in women presenting with threatened abortion is essential for guiding evidence-based management and reducing preventable perinatal adverse outcomes.

Methodology

This case-control study was conducted in the Department of Obstetrics & Gynaecology at a tertiary care hospital from August 2024 to August 2025. The study sample included eighty pregnant women. Forty women who presented with a confirmed diagnosis of threatened abortion in the first or early second trimester were recruited as cases. The diagnosis was established based on a history of vaginal bleeding before 20 weeks of gestation, a closed cervical os on clinical examination, and the confirmation of a viable intrauterine pregnancy with cardiac activity on transabdominal or transvaginal ultrasound. For each case, we enrolled a matched control in terms of age, gestation age at presentation and parity during the same period.

The study's outcome variable was preterm delivery, defined as birth occurring before 37 completed weeks of gestation. Other potential outcomes included low birth weight (<2.5 kilograms). Postpartum haemorrhage is defined as an estimated blood loss of> 500 millilitres following a vaginal delivery or 1000 millilitres following a caesarean section. Neonatal intensive care unit admission was also recorded. The diagnosis of antenatal complications, including preeclampsia, HELLP syndrome, and placenta praevia, was made by the attending obstetrician according to established institutional and international clinical guidelines. Women with multiple gestations, known uterine anomalies, significant cervical dilation at presentation, or primary pre-existing medical conditions such as chronic hypertension or diabetes mellitus were

excluded. Consent was taken from all patients. Their demographic and clinical data were recorded.

SPSS 25 was used to analyse the collected data. Descriptive statistics were used to present the data. Chi-square was applied for assessing the preterm delivery, fetomaternal outcomes and complications. A p-value < 0.05 was taken as significant.

Results

This study compared preterm birth and other pregnancy outcomes between forty women with threatened abortion and forty matched controls. The two groups were similar at baseline in terms of age, parity and gestational age at presentation (Table I).

Significant differences were observed in preterm delivery; it occurred in ten women (25.0%) in the threatened abortion group, compared to only two (5.0%) in the control group (p=0.01). The rate of caesarean delivery was higher in the case group, at twelve women (30.0%) versus nine (22.5%) in the control group, though this difference did not reach statistical significance (p=0.44). Postpartum haemorrhage was observed in six cases (15.0%) but only one control (2.5%) (p=0.04). Low birth weight infants were more common among cases 9 (22.5%) and 2 (5.0%) among controls (p=0.02). Eleven neonates (27.5%) from the case group were admitted to NICU, compared to three (7.5%) from the control group (p=0.01) (Table II).

A large majority of controls, thirty-six women (90.0%), had no recorded antenatal or intrapartum complications. While in 25 (62.5%) cases had an uncomplicated course (p=0.03) (Table III)

Table I: Demographics

Groups		Age (Years)	Gestational age at presentation (Weeks)	Parity
Cases	Mean	24.58	14.55	2.48
	N	40	40	40
	Std. Deviation	5.387	1.085	1.109
Controls	Mean	24.60	14.50	2.50
	N	40	40	40
	Std. Deviation	5.777	.961	1.132

Table 2: Maternal & fetal outcomes

Maternal & fetal outcomes		Groups				P value
		Cases		Controls		
		n	%	n	%	
Preterm delivery	Yes	10	25.0%	2	5.0%	0.01
	No	30	75.0%	38	95.0%	
Caesarean section	Yes	12	30.0%	9	22.5%	0.44
	No	28	70.0%	31	77.5%	
PPH	Yes	6	15.0%	1	2.5%	0.04
	No	34	85.0%	39	97.5%	
LBW (< 2.5 kg)	Yes	9	22.5%	2	5.0%	0.02
	No	31	77.5%	38	95.0%	
NICU admission	Yes	11	27.5%	3	7.5%	0.01
	No	29	72.5%	37	92.5%	

Complications	Groups				P value
	Cases		Controls		
	n	%	n	%	
No complications	25	62.5%	36	90.0%	0.03
Placenta Previa	5	12.5%	1	2.5%	
HELLP syndrome	7	17.5%	2	5.0%	
Preeclampsia	3	7.5%	1	2.5%	

Discussion

The demographic profile of the patients, with a mean age of approximately 24.6 years and parity of around 2.5, is consistent with cohorts described in similar research from the region. Huma et al. and Haleema et al. reported mean maternal ages of 25.78 and 26.53 years, respectively, with parity figures also closely matched. (14,15) This demographic similarity suggests that the studied population is representative of the typical childbearing cohort presenting with this complication, enabling meaningful comparisons of obstetric outcomes.

A high number of preterm deliveries was observed in 25.0% of cases, compared with only 5.0% of controls. Huma et al. found an even higher rate of 58%, while Haleema et al. reported 17.14%. (14,15) Akpan et al. documented a 10.9% rate of preterm deliveries, and a study from Egypt by Ahmed et al. noted 16%. (7,16) This variation reflects differences in sample characteristics, healthcare settings, and definitions of prematurity. These findings establish threatened abortion as a major independent risk factor for preterm birth. The pathophysiological link is thought to be early placental dysfunction or low-grade inflammation triggered by the initial bleeding event, which compromises uterine integrity and fetal support, ultimately leading to early labour.

This study found an increased prevalence of low birth weight in 22.5% of neonates in the case group and 5.0% in the control group. Khatun et al. reported a strikingly high rate of 54.41% low birth weight. (17) Ahmed et

al. and Ahmed SR et al. found rates of 34% and 15.7%, respectively. The present finding of 22.5% highlights the profound perinatal implications of threatened abortion, extending beyond the timing of birth to affect fetal growth and neonatal wellbeing directly. (16,18)

The analysis of antenatal complications revealed further insights. The incidence of postpartum haemorrhage was significantly greater in the study group, 15.0% compared to 2.5% in controls. This finding is supported by Akpan et al., who reported PPH in 8.9% of cases. The increased risk may be linked to a higher frequency of placental pathologies. In this study, placenta praevia was present in 12.5% of cases, a finding aligned with that of Khatun et al., who reported 13.23%. (17) Akpan et al. reported placenta previa in 7.9% cases. (7) Abnormal placentation, evident as placenta praevia, is a recognised cause of both antepartum and postpartum haemorrhage, providing a plausible explanation for this complication.

Preeclampsia was observed in 7.5% cases, and HELLP syndrome was found in 17.5%. Saba et al. reported a very high 42.5% incidence of hypertensive disorder. Haleema et al. noted that the presence of preeclampsia significantly increased the risk of preterm delivery (15)

A significantly higher rate of neonatal intensive care unit admission was observed in this study: 27.5% in cases and 7.5% in controls. Ahmed et al. similarly reported NICU admission rates of 28% in their threatened abortion group. (16) This outcome represents a crucial clinical and health economic endpoint, highlighting the substantial burden imposed by threatened abortion on neonatal services and family welfare.

Conclusion

Women with threatened abortion had a significantly higher risk of preterm delivery and its associated complications. These complications included low birth weight, postpartum haemorrhage, an increased need for neonatal intensive care and a higher incidence of placental and hypertensive disorders. These findings underscore the necessity for classifying such pregnancies as high-risk to ensure enhanced antenatal monitoring and timely clinical intervention.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department concerned. (IRBEC--25)

Consent for publication
Approved

Funding
Not applicable

Conflict of interest

The authors declared no conflict of interest.

Author Contribution

SK (Trainee Medical Officer) *Manuscript drafting, Study Design Study Conception and Critical Input*

NA (Trainee Medical Officer)
Review of Literature, Data entry, and Data Analysis

TZ (Trainee Medical Officer)
Conception of Study, Development of Research Methodology Design

HGK (Trainee Medical Officer)
Study Design, Manuscript Review, and Critical Input.

SFA (Trainee Medical Officer),
Literature search and Revision

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the study's integrity.

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