ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 16, Issue 8, 2023

Online - 2455-3891
Print - 0974-2441

Research Article

FETOMATERNAL OUTCOME IN PATIENTS WITH THREATENED ABORTION IN A TERTIARY CARE CENTER IN SOUTH KERALA

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Received: 24 May 2023, Revised and Accepted: 08 July 2023

ABSTRACT

Objective: Pregnancy complications due to threatened abortion are related with contrary pregnancy outcomes. The main aim of the present study was to analyze the changes in pregnancy outcomes among the women who experienced threatened abortion and normal pregnant control women.

Methods: This retrospective observational study was performed among 117 pregnant women who were attending our Travancore Medical College Hospital, Kollam, during the period from January 2021 to January 2023 (2 years). The control group was developed from an equal number of asymptomatic women who were receiving antenatal care during the same period. Demographic parameters, clinical and ultrasound observations, treatment plans, and pregnancy outcomes were analyzed.

Statistical Analyses: Data were analyzed using IBM SPSS Statistics.

Results: Spontaneous abortion rate of 15.38% was observed with the threatened abortion group and control group as 5.1% (p=0.005). Women with threatened abortion had higher odds for placenta previa (p=0.048), pre-mature rupture of membranes (p=0.021), post-partum hemorrhage (p=0.001), and pre-term birth.

Conclusion: Threatened abortion seems to be an important hazard to fetal survival and may intensify the threat for operational delivery.

Keywords: Bed rest, Placenta previa, Cesarean section, Vaginal bleeding in pregnancy, Threatened miscarriage, Spontaneous miscarriage.

 DOI: http://dx.doi.org/10.22159/ajpcr.2023v16i8.48709. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

Threatened abortion is termed as evident bleeding per vagina without dilation of the cervix or cervical dilatation deprived of vaginal bleeding in the initial period of conception. Confirmation of the diagnosis is performed by ultrasonographical findings of the existence of fetal heartbeat. Uterine bleed during the initial pregnancy signifies a definite threat to the emerging embryo and is directly proportionate to the volume of blood. It establishes a source of anxiety to both the patient and the physician. Clinical vaginal bleeding in the first trimester is connected with an estimated 5.5–42.7% threat for successive thorough miscarriage [1,2].

The occurrence of fetal chromosomal anomalies is progressively declining with duration of pregnancy to <1% between live-born children. By extrapolating this trend toward the time of conception, it can be argued that maximum pregnancy losses happen during the pre-clinical stage and this occurs only because of genetic abnormalities [3]. First-trimester abortion is the pregnancy loss in first trimester of pregnancy, earlier 12 weeks of conception. Threatened abortion is a reasonably collective impediment throughout pregnancy, approximately about 20% of prenatal period [4,5].

Approximate 5.5–42.7% risk of complete miscarriage was observed due to vaginal bleeding during the first trimester of pregnancy [1,2]. Numerous authors have perceived a collective risk of fetal loss, in specific spontaneous abortion, with increasing maternal age [6,7].

This study was performed to examine the delivery outcomes of women with threatened abortion and to identify the effects of threatened abortion on maternal and perinatal outcomes.

METHODS

This was an observational retrospective study of women who met the diagnoses of threatened abortion and were managed in the maternity unit of the Travancore Medical College Hospital, Kollam, during the period from January 2021 to January 2023 (2 years). This study was cleared from the Institutional Ethics Committee.

With the patient registry which is maintained in the hospital, all cases of threatened abortions were recognized and analyzed. An equal number of asymptomatic pregnant women of similar age and parity with the same gestational ages who received antenatal care during the same period were selected as control from the antenatal records. The diagnosis of threatened abortions was done by sonographic observations. The diagnostic principles were established on documented details of vaginal bleeding with a closed cervix before the gestational age of 20 weeks and ultrasound documented evidence of fetal heart activity at the time of presentation during the hospital visit. The inclusion criteria of women in the study are bleeding per vagina within 3 months of pregnancy and a positive pregnancy test.

Women with the following complications were omitted into the study. They consist of implantation bleeding, emergency patients who required instant surgical interventions such as incomplete and missed abortion, ectopic and molar pregnancies, abortifacient consumption, any local (cervical/vaginal) lesions/polyps, bleeding disorders, and pregnant women with chronic medical impediments.

The outcome measures were pregnancy impediments such as spontaneous abortion, antepartum hemorrhage (placenta abruption and placenta previa), pre-eclampsia/eclampsia, pregnancy-induced hypertension, pre-term labor and pre-term birth, pre-term pre-labor rupture of membranes, mode of delivery, retained placenta, post-partum hemorrhage, low birth weight (<2.5 kg), birth asphyxia, neonatal intensive care unit (ICU) admission, perinatal death, and neonatal sepsis.

Statistical analysis

Data were analyzed using IBM SPSS Statistics for Windows, Version 24.0. Descriptive data were presented as frequencies. The statistically significant differences in mean body mass index (BMI) and the mean infant birth weights in the two groups were analyzed and statistical significance was considered $p<0.05$.

RESULTS

In this observational study, 117 cases with threatened abortion and control groups were studied. The age range from <20 years, between 20 and 29 years, 30 and 39 years, and >40 years were studied and compared between the groups. Mean BMI of the women was found to be 28.68±6.42 kg/m^2 for the threatened abortion and 27.42±6.78 kg/m^2 for the control group. Amid the women who experienced threatened abortion, 18 (15.38%), lost the pregnancy before fetal viability (spontaneous miscarriage) while 6 (5.1%) among the control showed abortion. The difference was statistically significant (p=0.005) (Table 1). Parity was found to be not significant among the groups.

In the present study, the incidences of adverse pregnancy outcomes among the groups were studied (Table 2). Women with threatened abortion had a statistically significantly higher incidence of placenta previa compared with the control (6% vs. 10.8%; p=0.048). The post-partum hemorrhage and pre-mature rupture of membranes among the groups were studied. Post-partum hemorrhage was found to be statistically significant among the groups with the p=0.001. The mode of delivery was found to be higher in threatened abortion for cesarean delivery compared to the control (p=0.028). There was also no statistical difference in their mean birth weights: 3.113±0.585 kg for the TM group and 3.285±0.536 kg for the control (p=0.074).

Table 3 summarizes other perinatal outcomes among the groups, namely, birth weight, neonatal ICU, stillbirth, severe birth asphyxia, and sepsis. In terms of intervention to improve pregnancy outcomes, the study revealed that admission to the ward for in-patient care was a departmental policy routinely practiced.

The intervention of pregnancy outcomes between the groups is shown in Table 4. Apart from bed rest, other interventions recorded include the administration of tocolytics such as beta-agonists, progesterone supplements, sedatives, and cervical cerclage placement. The foremost motive for in-patient care was to provide bed rest to pregnant women because of threatened abortion to improve the better outcomes.

Table 1: Demographic and obstetrics characteristics among the groups

Variables	Threatened abortion group (n=117) n (%)	Control group (n=117) n (%)	p-value
Age range			
<20	6 (5.13)	4 (3.42)	0.078
20–29	61 (52.14)	67 (57.27)	
30–39	47 (40.17)	41 (35.04)	
≥40	3 (2.56)	5 (4.27)	
Parity			
Nulliparity	44 (37.6)	32 (27.35)	0.135
Primiparity	33 (28.20)	40 (34.18)	
Multiparity	40 (34.18)	45 (38.46)	
BMI (kg/m^2)			
<25	30 (25.64)	25 (21.37)	0.539
25–29.9	24 (20.51)	26 (22.22)	
30–34.9	53 (35.30)	57 (48.72)	
≥35	10 (8.55)	9 (7.69)	

BMI: Body mass index

Table 2: Complications of pregnancy among the groups

Complications	Threatened abortion group (n=99) n (%)	Control (n=111) n (%)	p-value
Placenta previa			
Yes	6 (6)	2 (10.8)	0.048
No	93 (92.1)	99 (89)	
Post-partum hemorrhage			
Yes	9 (8.9)	4 (3.5)	0.001
No	90 (90.9)	107 (96.3)	
Delivery mode			
Vaginal delivery	57 (57.5)	84 (74.3)	0.028
Cesarean section delivery	42 (41.6)	27 (24.3)	
Pre-mature rupture of membranes			
Yes	7 (6.9)	1 (0.9)	0.021
No	92 (92.9)	100 (90)	
Placenta abruption			
Yes	2 (1.98)	2 (1.8)	1.000
No	97 (97.9)	109 (98.1)	
Pre-eclampsia/eclampsia			
Yes	3 (3)	4 (3.6)	0.935
No	96 (95.05)	107 (94.7)	
Retained placenta			
Yes	3 (2.97)	2 (1.8)	0.686
No	98 (97.01)	109 (98.1)	

DISCUSSION

In the present study, vaginal bleeding during early pregnancy occurs most commonly as a pregnancy impediment and it was found as the common

Table 3: Perinatal outcomes among the groups

Perinatal outcomes	Threatened abortion group (n=99) n (%)	Control (n=111) n (%)	p-value
Birth weight			
Low birth weight	8 (8)	5 (4.5)	0.358
Normal	91 (90.1)	106 (93.8)	
Neonatal ICU			
Admitted	2 (2)	2 (1.77)	0.258
Not admitted	97 (95.05)	109 (98.1)	
Stillbirth			
Yes	2 (1.98)	3 (2.66)	0.532
No	97 (97.9)	108 (97.29)	
Severe birth asphyxia			
Yes	4 (3.96)	1 (0.9)	0.612
No	95 (95.95)	110 (97.34)	
Sepsis			
Yes	4 (3.96)	3 (2.7)	0.104
No	95 (95.95)	108 (97.29)	

ICU: Intensive care unit

Table 4: Interventions of pregnancy outcome between the groups

Intervention	Miscarriage (n=18) n (%)	Live birth (n=99) n (%)
Bed rest		
Yes (n=94)	10 (55.5)	89 (89.89)
No (n=23)	8 (44.44)	10 (10.1)
Antibiotics		
Treated (n=70)	5 (27.77)	62 (62.62)
Not treated (n=47)	13 (72.22)	37 (37.37)
Tocolytics		
Treated (n=17)	4 (22.22)	13 (13.13)
Not treated (n=100)	14 (77.77)	86 (86.86)
Progestins		
Treated (n=35)	6 (33.33)	21 (21.21)
Not treated (n=82)	12 (66.66)	78 (78.78)
Cerclage		
Inserted (n=16)	17 (94.44)	19 (19)
Not inserted (n=101)	1 (5.55)	80 (80.80)

symptom for admission during first and second trimesters. In this study, 18.6% spontaneous miscarriage was observed with threatened abortion and 6.2% in the control group indicated that threatened abortion was the cautionary symbol for probable undesirable incidence. The observed incidence among threatened abortion pregnancies was comparable to the other outcomes from various documented research [8-10]. Threatened abortion is consequently a foremost threat issue for pregnancy loss before fetal sustainability.

Apart from the augmented risk of spontaneous miscarriage, threatened abortion was related with comparatively amplified odds of placenta previa, pre-mature rupture of membranes, and pre-term birth associated with the control groups. This also seems to be comparable with various other findings [11-13]. Clinically, the low-lying placenta frequently presents as a cautioning bleed. Ultrasound observations must be measured to ascertain placental location in pregnant women with a history of threatened abortion in the index pregnancy. Placenta previa is a chief threat feature for post-partum hemorrhage [14]. The frequency of other pregnancy difficulties such as pre-eclampsia and placenta abruption was found to be comparable among the groups.

Pathogenesis and adverse effects on pregnancy outcomes of threatened abortion are not well understood. During first trimester, bleeding because of abnormal placentation and implantation if not treated may lead to pregnancy loss (spontaneous abortion) [15]. Various studies on threatened abortion pregnancies with molecular research have shown a substantial proliferation in placental markers of oxidative stress [16]. Malexpression of placental antioxidant enzymes and disturbance in the balance of production of reactive oxygen radicals and the natural anti-oxidant defenses as well as endothelial damage prominent to thrombi development might negatively disturb placental progress along with pregnancy outcomes, therefore, advances the occurrence of pregnancy difficulties [17].

The amplified cesarean delivery rates among threatened abortion groups have been affected by the higher frequencies of placenta praevia and pre-term birth, which are mutual signs for cesarean section delivery. There were no significant changes in perinatal complication rates among the groups. This observation was found to be comparable with the other published results [18,19].

The threatened miscarriage plans for women with threatened abortion were assessed and the possible impact on their pregnancy outcomes was also evaluated. The chief interferences predictable were bed rest, prophylactic antibiotics, progesterone therapy, cervical cerclage insertion, and consumption of tocolytics. Although this study recommends that only bed rest was effective in preventing pregnancy loss among women with threatened abortion. In a systematic review, prophylactic antibiotics did not reduce the risk of pre-term rupture of membranes or pre-term labor [20]. The antibiotics actions were only perceived among women who had indications of vaginal bacterial infection. Similarly, there was no difference in birth weight and neonatal sepsis comparable to the present observations [20].

Likewise, tocolytics consumption, namely magnesium sulfate, and beta-2 adrenergic receptor agonists in women with threatened abortion in the current study does not considerably prevented pregnancy loss. In further studies, however, magnesium use threatened abortion in women with low serum magnesium levels with pre-term uterine contractions seems to be advantageous, its intake in women with threatened miscarriage with absent uterine contractions was not found to progress pregnancy outcomes [21,22]. Furthermore, the victories of emergency cervical cerclage insertion in inhibiting pregnancy injury among women with threatened abortion are provocative. When prophylactic cerclage placement is presented to women with ultrasonographical evidence of little or inadequate cervix, pregnancy outcomes can be improved, but its use in these pregnant women with threatened abortion converses no substantial value [23,24]. Correspondingly, there were contradictory reports on the efficiency of progesterone in threatened abortion. A current Cochrane Review established that the existing suggestion of progestogens possibly creates no difference in the live birth rates among women with threatened abortion [25].

Limitations of the study

Since it is a retrospective study, some information was not mentioned in the documents of the individual cases, therefore, the data set was restricted to cases that met diagnostic criteria and satisfactory details regarding diagnosis, threatened abortion, and outcome. Few more cases with inappropriate records were also excluded from the study inclusions.

CONCLUSION

In this study, the prediction of pregnancy which will convert as miscarriage seems to be very difficult. Hence, the study suggested that all women with threatened abortion must be advised to take bed rest either in the hospital or at home, psychological counseling along with fetal surveillance was done for all women to progress both maternal and fetal outcomes.

ACKNOWLEDGMENT

Nil.

AUTHOR'S CONTRIBUTION

All the authors equally contributed in making this manuscript.

CONFLICT OF INTEREST

Nil.

FUNDING SOURCE

Nil.

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