

The Incidence and Fetal Outcome of Threatened Miscarriage at a Tertiary Health Centre in Sub-Saharan Africa

Eka PO*, Hilary OD, Ajunwa MO and Anenga UM

Department of Obstetrics and Gynaecology, Benue State University Teaching Hospital, (BSUTH), Makurdi, Nigeria

*Corresponding author

Eka PO, Department of Obstetrics and Gynaecology, Benue State University Teaching Hospital, (BSUTH), Makurdi, Nigeria.

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ABSTRACT

Background: Threatened miscarriage or pregnancy-related vaginal bleeding in the first half of pregnancy without cervical dilatation, is associated with adverse pregnancy outcomes and its incidence varies from one centre to another.

Objective: The main objective was to determine the incidence and fetal outcome of threatened miscarriage at the Benue State University Teaching Hospital (BSUTH), Makurdi

Methodology: This was a cross-sectional study of 90 consecutive, eligible pregnant women presenting with threatened miscarriage at the Obstetrics and Gynaecology unit of Benue State University Teaching Hospital over a two-year period. After discharge, they were followed up at the antenatal clinic to determine the fetal outcome of their pregnancies. Data was analyzed using SPSS version 25.0

Results: There were 504 gynaecological admissions with 90 threatened miscarriages giving an incidence of 17.9%. The mean age of the subjects was 28.8 (± 5.93) years. The mean gestational age at presentation was 10.93 (± 3.68) weeks. Seventy-five point six (75.6%) percent of the cases presented in the first trimester. Fever, due to malaria and UTI, was the major risk factor for threatened miscarriage, occurring in 28.9% of the subjects. Fifty (55.6%) of the subjects progressed to the age of viability whereas 44.4% subjects miscarried prior to the age of viability. Forty-eight (96.0%) delivered at term whereas 2(4%) had preterm delivery at 34 and 35 weeks respectively. The main route of delivery was SVD (84%). The mean birth weight was 3.02 (± 0.32) kg. There was no neonatal intensive care unit (NICU) admission.

Conclusion: The incidence of threatened miscarriage (17.9%) in this study was high. Seventy-five point six (75.6%) of the cases occurred in the first trimester. Fifty-five point six (55.6%) progressed to the age of viability and the fetal outcome was favourable. Close follow up is imperative in maximizing a favourable outcome for cases of threatened miscarriage.

Keywords: Threatened Miscarriage, Incidence, Fetal Outcome, BSUTH, Caesarean Section, Spontaneous Vertex Delivery

Introduction

Threatened miscarriage refers to mild to moderate vaginal bleeding through a closed cervix, with or without abdominal pain or cramps and with documented ultrasound evidence of fetal or embryonic cardiac activity before twenty weeks' gestation [1-3]. The world health organization (WHO) defines threatened miscarriage as pregnancy-related bloody vaginal discharge or frank bleeding during the first half of pregnancy without cervical dilatation [4]. It is a relatively common early pregnancy complication occurring in 20-25% of all pregnancies in the first and second trimesters. Approximately 50% of women who had threatened miscarriage progressed to loss of pregnancy [5-7]. Threatened miscarriage or early pregnancy bleeding is a known cause of stress and anxiety for both the pregnant woman and the doctor or caregiver about the outcome of the pregnancy [7-9].

Moreover, women who experience a threatened miscarriage are at increased risk of adverse pregnancy outcomes such as pregnancy loss, preterm delivery, low-birth weight babies, perinatal mortality and antepartum haemorrhage [10]. The exact cause of threatened miscarriage or spontaneous abortion is not always known. About 50% of all cases of spontaneous abortions are due to non-modifiable factors such as chromosomal abnormalities. However, for euploid spontaneous abortions, maternal and paternal factors play a more significant role. Optimization of maternal health conditions prior to pregnancy, such as minimizing exposure to teratogens or infections during early pregnancy can reduce the risk of spontaneous abortion [11-12]. The risk of threatened miscarriage to proceed to full miscarriage depends on gestational age and is diminished to 2-14% after confirmation of cardiac activity. In some cases, ultrasound may reveal a sub-chorionic haematoma. Large haematomas have been implicated in an increased risk of miscarriage and other poor pregnancy outcomes [13]. This was

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conducted in order to determine the incidence and fetal outcome of threatened miscarriage at our facility.

Materials and Methods

This was a cross-sectional study conducted at the Department of Obstetrics and Gynaecology of the Benue State University Teaching Hospital, Makurdi, North-central Nigeria, from January 1, 2020 to December 31, 2021. The study involved 90 eligible subjects.

Subjects comprised consecutive women who had been admitted through the Gynaecological Emergency and treated for threatened miscarriage and discharged for follow-up at the antenatal clinic. Such cases had presented at the Gynaecological Emergency with mild to moderate vaginal bleeding, with a closed cervix, with or without abdominal pain or cramps and with documented ultrasound scan evidence of fetal or embryonic cardiac activity before 20 weeks' gestation.

The inclusion criteria included obtaining written consent from each subject, having been admitted, treated for threatened miscarriage and with documented evidence of continuation of pregnancy after treatment and discharge.

The exclusion criteria consisted of ectopic pregnancy, other clinical types of miscarriage, having a bleeding disorder, having co-morbidities such as diabetes mellitus, thyroid disorders, sickle-cell anaemia, uterine fibroid and the subjects' refusal to participate in the study.

Subjects were recruited using a pretested, semi-structured questionnaire administered by two senior registrars in the Department of Obstetrics and Gynaecology of BSUTH. Questions asked consisted of sociodemographic characteristics, gestational age at presentation, parity and gravidity. Subjects who had fever on presentation at the gynaecological emergency had their urine and blood sample collected and sent for laboratory evaluation for definitive diagnosis of the causes of fever, prior to the treatment. The booking status of each subject was recorded on admission to the gynaecological ward. These details were recorded in their medical records.

Subjects had follow-up antenatal visits at four weekly intervals until 28 weeks' gestation, forth- nightly until 36 weeks, and thereafter weekly until delivery. Follow-up was continued until spontaneous abortion occurred or delivery occurred preterm or at term. The route or mode of delivery was recorded for those who delivered after the age of viability. Birthweight and need for neonatal intensive care unit (NICU) admission were also recorded for each subject.

Sample size was calculated using the incidence of 5.7% reported by Sowemimo et al. [6]

$$n = \frac{z^2pq}{d^2} = \frac{(1.96)^2(0.057)(1-0.057)}{(0.05)^2} = 82.6 \approx 83$$

The sample size of approximately 83 obtained confirmed that the sample size of 90 obtained during the study period was adequate. Data analysis was performed using Statistical Package for health and the Social Sciences (SPSS) version 25.0(IBM

Corp. released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp). Frequency tables, mean and percentages were used to describe the variables.

Written consent was obtained from each participant and the study was conducted in accordance with the revised Helsinki guidelines.

Results

There were 504 gynaecological admissions and 90 diagnosed cases of threatened miscarriage, giving an incidence of 17.9%. The mean age of the subjects was 28.80 (± 2.46) years. The mean birthweight of the neonates at delivery was 3.02 (± 0.32) kg. Table 1 shows that majority of the subjects (46.7%) were in the age interval of 25-29 years. Majority of the subjects had tertiary level of education (60.0%) and secondary level of education (33.3%). Fifty-four (60.0%) were unemployed whereas 36 (40.0%) were employed. The subjects were predominantly Tiv (84.4%) and were of the Christian Faith (97.8%). Table 2 shows that sixty-eight (75.6%) of the subjects presented in the first trimester whereas 22(24.4%) presented in the second trimester. Twenty-six (28.9%) had fever on presentation. Fever was due to malaria in 18 subjects and urinary tract infection (UTI) in 8 subjects.

Table 1: Socio-Demographic Characteristics of Subjects

Variable (n=90)	Frequency	Percentage
Age		
<20	2	2.2
20-24	16	17.8
25-29	42	46.7
30-39	10	11.1
40-44	4	4.4
Ethnicity		
Tiv	76	84.4
Idoma	8	8.9
Others	6	6.7
Religion		
Christian	88	97.8
Islam	2	2.2
Educational level		
No formal	2	2.2
Primary	4	4.4
Secondary	30	33.3
Tertiary	54	60.0
Employment Status		
Employed	36	40.0
Unemployed	54	60.0

Fifty (55.6%) of the subjects with threatened miscarriage progressed to the age of variability and beyond. Forty-eight (96.0%) of those who got to the age of viability delivered at term whereas 2 (4%) of them had preterm delivery at 34 and 35 weeks respectively. Forty (44.4%) of the subject eventually miscarried before the age of viability as opposed to the 50 (55.6%) subjects

whose pregnancies progressed to the age of viability and beyond. Sixty-eight (75.6%) of the subjects were booked for antenatal care prior to presentation whereas 22 (24.4%) were not booked. The mode of delivery was spontaneous vertex delivery (SVD) in 42 (84%) of those who got to the age of viability whereas 8 (16%) had caesarean delivery for various obstetric indications. All the neonates had birthweights that were normal. None required neonatal intensive care unit (NICU) admission.

Table 2: Biodata of Subjects

Variable (n=90)	Frequency	Percentage
Booking Status		
Booked	68	75.6
Unbooked	22	24.4
Parity		
2-4	48	53.3
<5	2	2.2
Gestational Age		
First trimester	68	75.6
Second trimester	22	24.4
Fever		
Yes	26	28.9
No	64	71.1
Aetiology of Fever (n=26)		
Malaria	18	69.2
UTI	8	30.8
Progression to Miscarriage		
Yes	40	44.4
No	50	55.6
Gestational Age at Delivery (n=50)		
At term	48	96.0
Preterm	2	4
Mode of Delivery		
SVD	42	84.2
C/S	8	16.0

Discussion

The incidence of threatened miscarriage of 17.9% in this study was greater than the incidence of 5.7% reported by Sowemimo et al. from south-west Nigeria and the incidence of 6.5% obtained by Kanmaz et al. from Turkey [6,14]. The higher incidence in our study might be attributed to the fact that our facility serves as a referral centre for Benue state communities and the six neighbouring states of Nassarawa, Kogi, Taraba and northern parts of Enugu, Cross River and Ebonyi States.

The mean age of the subjects was 28.8 years. This was similar to the mean maternal age of 29.4 years found by Ahmed et al from Egypt. The mean age of 26.5 years reported by Davari-Tanha et al. from Iran was less than the mean age of our participants [16]. However, Enaruna et al. got a higher mean age of 31.1 years in their subjects presenting with vaginal bleeding in Benin, South-south Nigeria [17].

The mean gestational at presentation was 10.93 weeks, with 75.6% of the subjects with threatened miscarriage presenting in the first trimester whereas 24.4% presented in the second trimester. The mean gestational age in our study was less than the mean gestational age of 13.1 weeks reported by Ahmed et al. and the Sarmalkar et al. found a mean gestational age at presentation of 8.3 (58days) weeks which was less than the mean gestational age of 10.93 weeks in our study [15]. Najnin et al. reported a similar gestational age of 8 to 10 weeks in most of their subjects with vaginal bleeding in early pregnancy [18]. Malaria and urinary tract infection (VTI) were the identifiable risk factors associated with threatened miscarriage in our study. A similar finding was reported by Sowemimo et al. in Ife, south-west Nigeria [6]. This may be explained that by the fact that plasmodium falciparum-infested erythrocytes, during pregnancy, express a unique variant surface antigen, VAR2CSA, leading to placental sequestration. This initiates a range of host responses resulting in placental inflammation. These collectively result in impaired placental functions and fetal development [19].

In our study, forty (44.4%) of our participants with threatened miscarriage progressed to spontaneous miscarriage whereas 50 (55.6%) progressed to the age of viability and beyond. Sivasane et al. reported a similar scenario where 44% of their subjects had spontaneous abortions whereas in 56% of them pregnancy continued to the age of viability and beyond [20].

Majority (84%) of the subjects whose pregnancies progressed to the age viability and beyond had spontaneous vertex delivery (SVD) whereas 16% had caesarean section (C/S) for a variety of obstetric indications. The caesarean section rate in our study was much less than the C/S rate of 32.65% reported by Agrawal et al. and the C/S rate of 36.0% reported by John et al. [13,21].

The variability of our results compared to results from other similar studies may be due to differences in cultural, geographical, ethnic, religious factors and in sample size.

The main limitation of this study was the exclusion of women with threatened miscarriage and co-morbidities such as diabetes mellitus, thyroid disorders, sickle cell anaemia and coexisting uterine fibroid. This must have reduced the sample size.

It is recommended that women presenting with threaten miscarriage be closely monitored, after discharge, to reduce the risk of their progressing to spontaneous abortion. Besides, every effort should be made to co-manage them with a psychiatrist or clinical psychologist in order to offer them the much-needed mental health support against the anxiety and stress associated with this condition. Further studies should investigate the autopsy reports of abortuses of women with threatened miscarriage who progress to spontaneous abortion.

Conclusion

The incidence of threatened miscarriage in this study was high (17.9%). Fifty-five point six (55.6%) of the subjects progressed to the age of viability and beyond. Ninety-six (96%) of these subjects progressed to term and delivered healthy neonates. The main route of delivery was spontaneous vertex delivery (in 84% of the subjects). None of the babies required neonate intensive care unit (NICU) admission.

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Conflict of Interest:

The authors declare that they have no competing interest.

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