

A Prospective Study on Obstetric Outcome in First Trimester Vaginal Bleeding

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Abstract

Introduction: One third of first trimester bleedings happen in pregnancies that are otherwise normal. Nearly 50% of pregnancies end in pregnancy loss, if pregnancy continues, poor maternal and fetal outcomes such as preterm delivery, Preterm preLabor rupture of membranes, preeclampsia, placental abruption and intrauterine growth restriction occur.

Aims: To know the obstetric outcome of pregnancy complicated by first trimester vaginal bleeding.

Materials and Methods: Prospective study where All pregnant women reporting to Government Maternity Hospital, Hanmakonda with first trimester vaginal bleeding were included. Minimum 100 participants meeting inclusion criteria from January 2018 to July 2019 were there.

Results: 62% of early vaginal bleeding had pregnancy loss (miscarriage). Only 37% had threatened abortion where pregnancy continued. Recurrent vaginal bleeding had higher risk of pregnancy loss than single episode of bleeding PV, of which most of them had inevitable abortion. Most of the cases of threatened abortion were induced (38%), mainly for PROM, IUGR and prolonged pregnancy. Other indications were PPRM, gestational hypertension, GDM. Only 22% had spontaneous onset of Labor. Cesarean section rate was not significantly high (22%) and main indication was post LSCS status, malpresentation, NPOL followed by APH and fetal distress.

Conclusion: To conclude, adverse maternal and

fetal outcome predicted following threatened miscarriage should be taken into consideration when deciding upon antenatal surveillance. The identification of these high risk groups should enable better management protocols to improve neonatal outcome.

Keywords: Vaginal Bleeding; Neonatal outcome; Antenatal checkups.

Introduction

First trimester vaginal bleeding is a common symptom of pregnancy, complicating 16-25% of all pregnancies. The major sources of non traumatic bleeding in early pregnancy are ectopic pregnancy, miscarriage (threatened, inevitable, incomplete, complete), implantation bleeding of pregnancy and cervical pathology (cervical erosions, cervicitis, polyp, cervical carcinoma), subchorionic hemorrhage, vesicular mole. Other causes are bleeding from uterine fibroid, pregnancy with intrauterine contraceptive device, uterine anomalies. Outcome is likely to be affected by gestational age at bleeding, cause and severity of the bleeding. Meta analyzes indicate that vaginal bleeding is associated with a two fold increased risk of other complications during that pregnancy.¹ Approximately, one third of first trimester bleedings happen in pregnancies that are otherwise normal.

Nearly 50% of pregnancies end in pregnancy loss, if pregnancy continues, poor maternal and fetal outcomes such as preterm delivery, Preterm preLabor rupture of membranes, preeclampsia, placental abruption and intrauterine growth restriction occur.² It was suggested that bleeding and abruption may use one or more common pathways. Inconsistent results have been reported in relation to early vaginal bleeding and congenital malformations. After taking a detailed history, physical and pelvic examination should be done and further with the help of imaging techniques, diagnosis and plan of management is decided.³ It is also known that maternal age, systemic diseases such as diabetes mellitus, hypothyroidism, infertility treatment, thrombophilia, maternal weight and uterine structural anomalies increase the risk of abortus imminens. Local hemostatic factors in the uterus during implantation, decidualization, and early pregnancy, Knowledge about the outcome of ongoing pregnancies following first-trimester bleeding is relevant to both women and their obstetricians in order to plan antenatal care and consider clinical interventions in pregnancy. The purpose of this study was to investigate the effect of first trimester vaginal bleeding on maternal and perinatal outcomes.

Materials and Methods

It is a Prospective study in 100 pregnant women reporting to Government Maternity Hospital, Hanmakonda with first trimester vaginal bleeding from January 2018 to July 2019.

Inclusion criteria

All pregnant women presenting with bleeding per vaginum up to 12 weeks of gestation with positive urine pregnancy test.

Exclusion criteria

- 1) All pregnant women presenting with bleeding per vaginum after 12 weeks period of gestation.
- 2) Local cervical pathology like cervical polyp, erosion, carcinoma cervix, trauma.

After taking written informed consent, pregnant women with bleeding per vaginum during the first twelve weeks of pregnancy between January 2018 to July 2019 who planned to deliver at Government

Maternity hospital, Hanmakonda or had telephone accessibility were included. Such patients were registered, followed up prospectively at antenatal outpatient departments. The patient's factors like last menstrual period, parity, maternal age, period of gestation, antenatal risk factors and presenting complaints were recorded in the proforma. Combination of patient's history, examination and ultrasound gave diagnosis in most of the cases. When this combination did not yield the diagnosis, β HCG was done. Gestational age was calculated from last menstrual period if patient remembered, otherwise first trimester ultrasound was used to estimate the gestational age. If the self reported last menstrual period was >7 days from the calculated ultrasound last menstrual period, then the ultrasound was used to assign the gestational age. The amount of bleeding was noted. If it was simply spotting, it was considered as light. If similar to patient's menstrual bleeding or more, it was considered as heavy. All patients had a complete examination (general, systemic and gynecological) at booking. Gynecological examination was most important for diagnosis. Threatened miscarriage was diagnosed on the basis of documented fetal Cardiac activity on ultrasound with a history of vaginal bleeding in the presence of a closed cervix.

Patients with threatened miscarriage were managed with complete bed rest till 48 hrs of cessation of bleeding, folic acid supplementation and tablet micronized progesterone 200mg BD. Complete abortion was diagnosed by a history of passage of tissue followed by gradual cessation of bleeding and pain. Ultrasonography was done only to rule out retained products of conception in the event of prolonged bleeding or pain or if symptoms of infection developed. Missed abortion was diagnosed based on vaginal bleeding, uterine size less than the period of gestation and absent cardiac activity on TVUS.

Vaginal bleeding with cervical os open with partial expulsion of products of conception was concluded as incomplete abortion. Inevitable abortion was considered when vaginal bleeding was associated with open cervical internal os and products of conception not expelled which could be sometimes felt through the os. Vaginal bleeding, pelvic pain with manipulation of the cervix, and a palpable adnexal mass was concluded as ectopic pregnancy in most of the cases. TVUS was used to confirm the diagnosis. Quantitative β -hCG testing was done when conclusion could not be made by either clinically or by TVUS. Hydatidiform mole was diagnosed based on vaginal bleeding, h/o passage of grape like vesicles, uterine enlargement

greater than expected based on gestational age, absent fetal cardiac activity or absent fetal pole and snowstorm appearance on TVUS and an abnormally high serum hCG level.

Routine antenatal investigations were done. Special investigations like OGTT, thyroid profile, thrombophilia screening done when indicated. The following observations were made.

Primary outcome following vaginal bleeding threatened abortion, complete abortion, incomplete abortion, inevitable abortion, missed abortion, molar pregnancy and ectopic pregnancy, maternal outcome and fetal outcome are noted.

Statistical data analysis

The statistical analysis was done using *chi-square* (X2) test and One-way ANOVA to estimate the significance of each parameter. The conclusions were drawn at 5% significance (P < 0.05) level. To know the incident level and type of complications cross tables were used with bar graph.

Results

Maximum numbers of cases with bleeding per vaginum were in the age group of 20-30 years (74%). In all the three groups maximum cases had threatened abortion <20 years (2%), 20-30 years

(24%), >30 years (11%).

Among gravida distribution, maximum cases (37%) were second gravid followed by primigravida (34%). In all the three groups, maximum cases had threatened abortion primi (14%), second gravida (14%) and third gravida and more (9%). It is observed that majority of the women had spotting PV (58%), of which most of them had threatened abortion (30%). Maximum number of cases who presented with bleeding PV had inevitable abortion (8%). In those who had associated pain abdomen, majority had ectopic pregnancy (4%).

Table 2: Maternal complications following threatened abortion.

Complications	n=20	Percentage(%)
PROM	06	30
PPROM	02	10
Malpresentation	02	10
Prolonged pregnancy	05	25
Gestational hypertension	02	10
Preterm Labor	01	05
APH	01	05
MTP	01	05

Of those who had threatened abortion, 30% of them had PROM, 25% had crossed due date, PPRM, malpresentation and gestational

Table 1: Demographic details in present study.

Age	Incomplete abortion		Complete abortion		Inevitable abortion		Missed abortion		Ectopic pregnancy		Molar pregnancy		Threatened abortion		Total(%)
Years	n=13	%	n=14	%	n=14	%	n=14	%	n=7	%	n=1	%	n=37	%	100
<20	0	0	01	01	00	00	01	01	00	00	00	00	02	02	4
20-30	10	10	11	11	10	10	12	12	07	07	00	00	24	24	74
>30	3	3	02	02	04	04	01	01	00	00	01	01	11	11	22
Parity															
Primi	01	01	08	08	03	03	07	07	01	01	00	00	14	14	34
Two	05	05	03	03	06	06	06	06	03	03	00	00	14	14	37
≥3	07	07	03	03	05	05	01	01	03	03	01	01	09	09	29
Presenting complaints															
Spotting PV	04	04	07	07	06	06	08	08	03	03	00	00	30	30	58
Bleeding PV (heavy)	06	06	06	06	08	08	06	06	00	00	01	01	07	07	34
Spotting or bleeding PV with pain abdomen	03	03	01	01	00	00	00	00	04	04	00	00	00	00	08

Table 3: Mode of delivery following threatened abortion (total=37)

Vaginal delivery				Instrumental		Cesarean section		Lost follow up		MTP			
Spontaneous		Induced		Total		Nil		n		%			
n	%	N	%	n	%			N	%	n	%		
09	24	14	38	23	62	-		08	22	05	14	01	02

hypertension found in 10% each. Preterm Labor, APH and MTP found in 5% of cases each.

It is noted that those who had threatened abortion, most of them had vaginal delivery (62%), 22% had Cesarean delivery, no instrumental delivery and 2% had MTP. Remaining 14% lost follow up.

Table 4: Indication for induction of Labor.

Indication for induction of Labor	n	%
PROM	03	21
PPROM	01	07
IUGR	03	21
Prolonged pregnancy	03	21
BOH	01	07
GDM	01	07
Gestational hypertension	02	16
Total	14	100

Among threatened abortion those who were

induced, indication was PROM, IUGR and prolonged pregnancy with 21% each. Other indications were PPROM, BOH and GDM with 7% each.

Table 5: Indication for Cesarean section.

Indication for Cesarean section	Number of patients	Percentages
Previous LSCS status	02	25
APH	01	12.5
Fetal distress	01	12.5
Malpresentation	02	25
Non progression of Labor	02	25
Total	08	100

It is observed that major indication for Cesarean section is post LSCS status, NPOL and malpresentation (25% each) followed by fetal distress and APH with 12.5% each.

Major fetal complications was IUGR(62%)

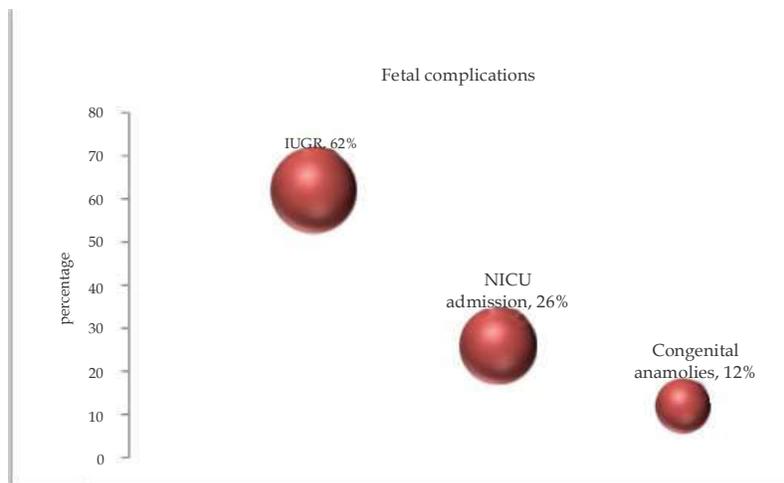


Fig. 1: Fetal and neonatal complication following threatened abortion.

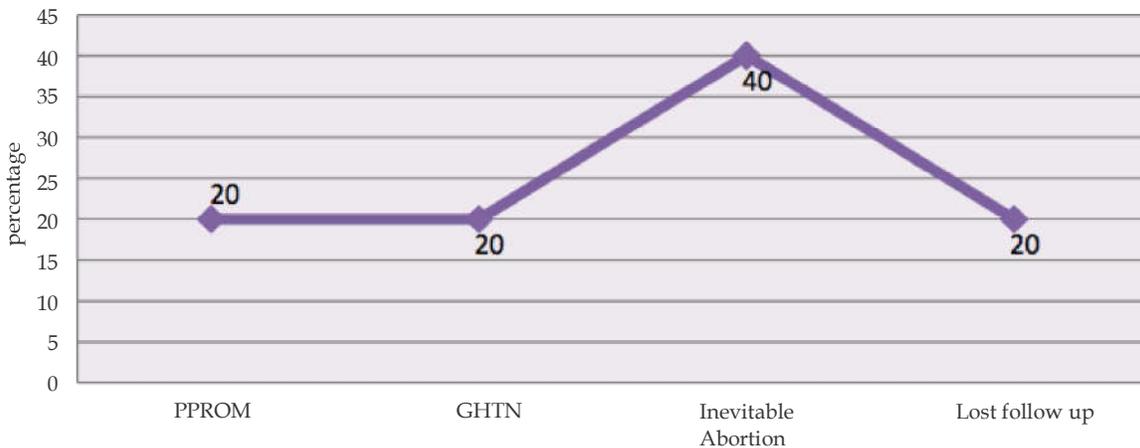


Fig. 2: Obstetric outcome in recurrent vaginal bleeding.

Table 6: Antenatal risk factors.

	Incomplete abortion		Complete abortion		Inevitable abortion		Missed abortion		Ectopic pregnancy		Molar pregnancy		Threatened abortion		Total
	n	%	n	%	n	%	n	%	n	%	N	%	n	%	100
GDM	1	1	1	1	1	1	2	2	-	-	-	-	5	5	10
Type 2 DM	-	-	-	-	1	1	-	-	-	-	-	-	1	1	02
Hypothyroidism	1	1	1	1	-	-	2	2	-	-	-	-	9	9	13
Low lying placenta	-	-	-	-	-	-	-	-	-	-	-	-	3	3	03
Anaemia	4	4	6	6	2	2	-	-	3	3	-	-	7	7	22
Advanced maternal age	2	2	1	1	2	2	1	1	-	-	-	-	2	2	08
BOH	-	-	-	-	-	-	1	1	-	-	-	-	-	-	01
RPL	-	-	1	1	-	-	-	-	-	-	-	-	-	-	01
Thrombophilia	-	-	-	-	-	-	-	-	-	-	-	-	1	1	01
UTI	-	-	-	-	-	-	-	-	-	-	-	-	1	1	01
Fibroid Uterus	-	-	-	-	-	-	-	-	-	-	-	-	1	1	01
Obesity	-	-	-	-	1	1	1	1	-	-	-	-	2	2	04
Uterine Anamolies	-	-	-	-	1	1	-	-	-	-	-	-	1	1	02
Conceived after IVF	-	-	-	-	-	-	-	-	-	-	-	-	1	1	01
Conceived after IUI	-	-	-	-	1	1	-	-	-	-	-	-	1	1	02
Twin Gestation	-	-	-	-	-	-	-	-	-	-	-	-	1	1	01
Fetal Anamolies	-	-	-	-	-	-	-	-	-	-	-	-	1	1	01
Bacterial/mixed vaginosis	-	-	-	-	-	-	-	-	-	-	-	-	2	2	02
Others	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24

followed by NICU admission for TTN(26%) followed by congenital anomalies (12%).

Following recurrent vaginal bleeding either in the same trimester or both first and second trimester, 40% had inevitable abortion followed by complication like PPRM and GHTN in 20% of cases each. 20% of the cases are lost for follow up

It is observed that majority had a complication of Anaemia (22%) followed by hypothyroidism (13%), GDM(10%), advanced maternal age (8%) and obesity (4%). All these complications are seen in majority of cases with threatened abortion.

Discussion

Vaginal bleeding is a common, and potentially alarming, symptom in early pregnancy. Yet, its relationship with miscarriage has not been carefully studied. Pregnancy loss is a common and poorly understood pregnancy outcome. As a beginning step, characterizing and understanding common early pregnancy symptoms and their association with miscarriage may provide clues about biological mechanisms that underlie miscarriage. Though the causes of bleeding in later pregnancy have been investigated (due to placenta previa, abruption, or infection), there has been little investigation of early pregnancy bleeding.⁴ The present study is

strengthened by detailed assessment of bleeding characteristics, including data on the timing, heaviness and overall number of episodes. Spotting and light bleeding are common symptoms of early pregnancy. Heavy bleeding is much less common.

Whether both light and heavy bleeding arise from the same mechanisms or have different etiologies is an important question for future research. This project focused on vaginal bleeding, a common and potentially alarming symptom of early pregnancy. There are different studies conducted to know the outcome of pregnancy complicated by early vaginal bleeding. The present study is unique in a manner where all the possible outcomes of pregnancy with early vaginal bleeding were studied in a single study, i.e., ended up with different types of abortion or pregnancy continued as threatened abortion and its outcome was also studied.

In the present study majority of the cases with bleeding PV in early pregnancy were in the age group of 20-30 years (74%). M. Arafa et al.⁵ and Juan Yang et al.⁶ also found similar results. The overall adverse pregnancy outcome was higher in the age group of 21-30 years in the studies conducted by Kamble et al.⁷ The calculated 'p' value (p=0.354) for age distribution in the present study is statistically insignificant. In all the three age group maximum cases with early pregnancy bleeding were threatened abortion(37%)

Bleeding PV in early pregnancy was common among multigravida especially among second gravida (37%) in the present study. M.Arafa et al.⁵ also found similar results. The calculated 'p' value ($p=0.342$) is statistically not significant. Among second gravida with bleeding PV, threatened abortion was the most common outcome. In all the three groups, maximum cases had threatened abortion- primi (14%), second gravida (14%) and third gravida and more (9%).

In the present study, majority of the women had spotting PV (58%) -all did not end up with miscarriage instead most of them had threatened abortion of 30%. Those who presented with heavy bleeding PV had miscarriage especially inevitable abortion (8%) and only 7% had threatened abortion. Similar results were found in the studies conducted by Weiss, et al.⁸ and Chung, et al.⁹ Swati agrawal, et al.¹⁰ and Hasan et al.¹¹ In those who had spotting or heavy bleeding PV associated with pain abdomen, majority had ectopic pregnancy (4%).

In the present study, when outcome of pregnancy was compared with the amount of bleeding, the only statistically significant finding was the increased occurrence of spontaneous abortion (76.4% vs. 43.1%) in heavy bleeding group. Other complications like PROM, malpresentations, preterm births appeared more in those with light bleeding, but were statistically not significant. Similar results were found in the studies conducted by Prathap, et al.¹²

From the present study it can be noted that the most common risk factor was anemia (22%), most commonly seen in threatened abortion followed by complete abortion. So it can be concluded that anemia is one of the predictor of threatened abortion. In case of complete abortion, anemia may be predisposing factor or it could be the result of excessive bleeding. Endocrinological factors like hypothyroidism (13%) and GDM (10%) were also risk factors for bleeding PV in early pregnancy that lead to a significant number of cases of threatened abortion in the present study. Advanced maternal age i.e. ≥ 35 years was important risk factor leading to incomplete, inevitable and threatened abortion equally (8% each). Hasan et al.¹³ also had similar observation from his study that above factors are the important risk factors for bleeding in early pregnancy 4% of the cases with bleeding PV in early pregnancy had a risk factor of obesity which lead to threatened abortion. Other risk factors like low lying placenta (3%), fibroid uterus (1%) and uterine anomalies (2%) indicated abnormal placentation

leading to vaginal bleeding in early pregnancy. Weiss, et al.⁸ observed a higher rate of placenta previa among patients with vaginal bleeding during the first trimester. Other factors like BOH, RPL, thrombophilia, maternal infection, conception after IUI and IVF and multifetal gestation were associated with early vaginal bleeding in pregnancy. Hasan et al.¹³ also found these risk factors as important predisposing factors for early vaginal bleeding. In all the pregnant women with these risk factors, most of them had threatened abortion. Studies have found associations between the presence of a SCH and adverse obstetric outcomes, such as miscarriage, preterm birth, and fetal growth restriction. In the present study only one case had SCH where pregnancy continued as threatened abortion and no adverse maternal or neonatal outcome was seen.

From the present study it is seen that in bleeding per vaginum in early pregnancy, not all cases ended up in pregnancy loss though rate of miscarriage was high up to 63%. Threatened abortion where the pregnancy continued was only 37%. Number of complete, inevitable, missed abortion were equally distributed (12%) followed by ectopic pregnancy (7%). One case with early vaginal bleeding diagnosed as molar pregnancy. Threatened abortion following early pregnancy bleeding had higher rate of adverse maternal and fetal outcome. Wijesiriwardana, et al.¹⁴ had similar conclusion from his study.

Threatened abortion tend to have complications in later pregnancy. In the present study 30% had PROM, 25% had crossed EDD i.e., prolonged pregnancy, 10% had malpresentation, PPROM, gestational hypertension each. 5% had preterm Labor, APH and MTP (for fetal anomaly) each. All these complications were at higher rate in women with threatened abortion than in women without threatened abortion as also observed in number of studies- previously have reported an increased risk of preeclampsia after "light bleeding," but strangely not after "heavy bleeding,". Weiss, et al.⁸ and Mulik, et al.¹⁵ observed a higher rate of placenta previa among patients with heavy vaginal bleeding during the first trimester. Prathap, et al.¹², Yakistiran, et al.³ have also shown increased incidence of PROM and PPROM in cases of threatened abortion similar to the present study. It is hypothesized that disruption of the chorio-amniotic plane by the adjacent hemorrhage may make the membranes more susceptible to rupture. Alternatively, the prolonged presence of blood may act as a nidus for intrauterine infection. Persistent

or recurrent placental hemorrhage could also stimulate subclinical uterine contractions that result in cervical change and eventually ruptured membranes. And also because of increased free iron deposits from subchorionic bleeding, hydroxyl radical is catalyzed damaging the membranes. A large population based cohort study in China showed that first trimester vaginal bleeding is associated with an increased risk of low birth weight, preterm delivery and small for gestational age babies 86. Similar findings were reported by Yang et al.⁶ Women who had bleeding might have vaginal infections because of alteration in vaginal pH. Besides, placental insufficiency also may make them susceptible for preterm labor.

Guruvare et al.¹⁶ in contrast showed no association between overall preterm labor and early trimester bleeding but there was significantly more preterm labor before 32 weeks of gestation in women with history of bleeding (3 of 6 (50%) versus 2 of 15 (13%). Lykke et al.¹⁷ also extended the observation that first-trimester bleeding in the first pregnancy increased the risk of recurrence in the second pregnancy from 2.2% to 8.2% (OR 4.05; 95% CI 3.78-4.34), preterm delivery from 2.7% to 4.8% (OR 1.83; 95% CI 1.67-2.00), and placental abruption from 0.9% to 1.0% (OR 1.29; 95% CI 1.07-1.56) in the second pregnancy.

In the present study 62% of threatened abortion had vaginal delivery though induction rate among them was high(38%) and only 24% had spontaneous delivery. Induction of Labor was done maximum for PROM, IUGR and prolonged pregnancy (21% each) followed by gestational hypertension (16%). Rest were induced for PPRM, BOH and GDM(7% each). Cesarean section rate was 22% and main indication was malpresentation, non progression of Labor and post LSCS status (25% each). Other indications were APH and fetal distress (12.5% each). Saraswat, et al. performed a systematic review and demonstrated that first trimester bleeding has no effect on route of delivery. Prathap et al.¹² found no association of threatened abortion with increased cesarean delivery but Wijesiriwardana, et al.¹⁴ showed a higher incidence of elective cesarean delivery among threatened abortion group due to placenta previa and malpresentations. But in the present study cesarean section rate was not higher than vaginal delivery though rate of induction of Labor was high. Instrumental delivery was nil in our study. No studies till now showed increased instrumental delivery rate in cases of threatened abortion.

Major complication was IUGR (62%). NICU

admission for TTN was another complication (26%). Saraswat, et al.¹⁸, Swati agrawal, et al.¹⁰ had similar results Saraswat, et al. showed an association between threatened miscarriages, preterm delivery, intrauterine growth restriction, and higher rate of perinatal mortality. Fetal anomalies(multiple musculoskeletal abnormalities) was found in 12% of cases. In consistent results have also been found relating bleeding and congenital malformations. Williams, et al.¹⁹ found a 2.5-fold increase in the risk of neonatal death (95% CI 1.1-5.5) in women with threatened miscarriage. In our study, nil incidence of neonatal death was noted.

More complications are seen in women with recurrent vaginal bleeding than single episode of bleeding in pregnancy. In the present study 40% had inevitable abortion and threatened abortion each. Those with threatened abortion developed gestational hypertension and PPRM of 20% each. All these indicate that recurrent vaginal bleeding was not without complications and none had spontaneous delivery. Olugbenga, et al.²⁰ reported that all the 5 cases with two episodes of bleeding and the one with recurrent bleeding episodes in their study had poor pregnancy outcomes. Thus, recurrent vaginal bleeding is a predictor of poor pregnancy outcome. Contrarily, higher rates were reported in other studies for those who bled twice and for recurrent vaginal bleeding. Hasan, et al.¹³ reported values of 70.9% for single episode of bleeding, 20.0% for two episodes and 9.1% for those with three or more episodes. They, however, reported that heaviness of the bleeding and abdominal pains are more important, followed by the duration of bleeding and that the number of episodes and color of bleeding have little importance on pregnancy outcome. Guruvare S et al.¹⁶ reported in contrast that there was no significant difference in pregnancy complications, mean birth weight, and mean gestational age at delivery depending on single or recurrent episodes of bleeding.

Conclusion

To conclude, adverse maternal and fetal outcome predicted following threatened miscarriage should be taken into consideration when deciding upon antenatal surveillance. There is a need to monitor patients after a threatened miscarriage to minimize these complications, and demand more serious prenatal care. The identification of these high risk groups should enable better management protocols to improve neonatal outcome. The most

encouraging aspects of the present study was that it was a prospective study, women were booked very early in pregnancy, multiple fetal as well as maternal outcomes were studied and regular antenatal checkups of women in study group were done.

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