

## Evaluation of Etiological Factors for Early Antenatal Bleeding in Tertiary care Centre

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### Abstract

*Aims and Objectives:* (1) To study prevalence of various etiological factors involved in early pregnancy haemorrhage. (2) To find out relative frequency of various causes of bleeding during early pregnancy. *Materials and Methods:* (1) This is observational retrospective study performed within span of 2 years (August 2014 to July 2016) in Department of Obstetrics and Gynaecology in ACPM Medical college, Dhule. (2) Total number of 200 women with bleeding per vaginum during pregnancy were enrolled in the study. The patients who presented with vaginal bleeding were divided into: 1. Early pregnancy bleeding < 20 weeks. 2. Late pregnancy bleeding > 20 weeks. Since the demographic profile, etiology, risk factors involved, maternal & perinatal morbidities and mortalities associated with early and late pregnancy group are drastically different, so the cases in this study are divided into two groups- EARLY (< 20 weeks) & LATE (>20 weeks). In this first article, early pregnancy group studied separately in terms of all variables. *Results:* In this study, 66% patients presented with early pregnancy bleeding and 34% with late pregnancy bleeding. Early pregnancy bleeding due to abortion was 72.7%, 4.54% was due to molar pregnancy, 10.6% was due to ectopic pregnancy and rest 6.81% constitutes causes due to cervical factors. *Conclusion:* Preventable maternal death is greatest tragedy in obstetrics. Vaginal bleeding at any stage of pregnancy, is an alarming event and can be potentially life threatening situation. Efforts to improve geographical access, referral services and quality of comprehensive emergency obstetric care are required to improve maternal outcome.

**Keywords:** Early Antenatal Bleeding; Miscarriage; Preterm delivery; Etiological Factors.

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### Introduction

“Antepartum hemorrhage weakens, for postpartum hemorrhage to kill.”

Obstetrics hemorrhage is important cause of maternal morbidity, maternal mortality, neonatal morbidity and neonatal mortality. So as “prevention is better than cure”, it is important to prevent, diagnose and treat obstetrical hemorrhage promptly.

Antenatal hemorrhage is divided into two groups :

Early group : < 20 weeks gestation

Late group : > 20 weeks gestation

Early pregnancy bleeding (EPB) is defined as bleeding within the first 20 weeks of gestation [1,2].

There are a wide range of clinical presentations of vaginal bleeding ranging from the classic collapsed patient with a hemoperitoneum, to vaginal spotting [3]. Causes of early antenatal bleeding are: abortion, ectopic pregnancy, trophoblastic disease, cervical carcinoma. It may be caused by pedunculated fibroid, cervical mucus polyp, cervical erosion or vulvar and vaginal lesions. Spotting in the first trimester may be a prelude to haemorrhage in the third trimester. Early

pregnancy bleeding has been shown to be associated with an increased risk of poor obstetrical outcomes such as preterm labour, low birth weight and premature rupture of membranes [4].

Vaginal bleeding is a common occurrence during pregnancy. Some degree of vaginal bleeding during the first trimester occurs in approximately 25% of pregnancies. Previous studies have shown a high rate of fetal loss and adverse infant outcomes like prematurity, intrauterine growth retardation (IUGR), still birth and neonatal death (NND) in pregnancies complicated by vaginal bleeding [5-13].

It is hypothesised that first-trimester bleeding may indicate an underlying placental dysfunction, which may manifest later in pregnancy causing adverse outcomes such as increased risk of pre-eclampsia, preterm delivery, preterm prelabour rupture of membranes (PPROM), placental abruption and intrauterine growth restriction (IUGR) [14]. 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.

Threatened miscarriage is a common complication affecting about 20% of pregnancies. It has been shown to be associated with an increased risk of poor obstetric outcomes such as preterm labor, low birth weight, and premature rupture of membranes. Moreover, when pregnant women have bleeding, it may cause stress and anxiety for the mother-to-be about the outcome of pregnancy. So, it is necessary to diagnose and manage in order to prevent maternal or fetal mortalities and morbidities [15].

First-trimester bleeding is a common complication which affects 16-25% of all pregnancies [16].

Threatened miscarriage is diagnosed on the basis of documented fetal cardiac activity on ultrasound with a history of vaginal bleeding in the presence of a closed cervix. Bleeding during pregnancy can cause maternal anxiety and emerging evidence suggests that it may be associated with poor fetal and maternal outcomes [5,10,13-15,17-19].

In general, the incidence of spontaneous abortion after first-trimester bleeding is quoted to be 50% before sonographic evaluation for fetal viability [16,20]. If the causes are identified early, it will be easier to detect and treat those conditions, preventing further complications.

So, we have conducted the study exploring the etiological factors of early antenatal hemorrhage.

### *Aims and Objectives*

To study prevalence of various risk factors involved in early pregnancy hemorrhage.

### **Materials and Methods**

1. This is observational prospective study performed within span of 1 year (August 2014 to September 2015) in the Department of Obstetrics and Gynaecology in ACPM Medical college, Dhule.
2. Total number of 200 women with bleeding per vaginum during pregnancy were enrolled in the study.

The patients who presented with vaginal bleeding were divided into:

1. Early pregnancy bleeding < 20 weeks
2. Late pregnancy bleeding > 20 weeks

### *Inclusion Criteria*

- Women carrying a singleton gestation.
- Planned to deliver at the study site.
- Women intended to carry pregnancy to term.

### *Exclusion Criteria*

- Women carrying multiple gestation.
- Women using assisted reproductive technologies to conceive.
- Women not intending to carry pregnancy to term.

### **Results**

#### *Incidence of pregnancy affected by vaginal bleeding*

Since the demographic profile, etiology, risk factors involved, maternal & perinatal morbidities and mortalities associated with early and late pregnancy group are drastically different, so the cases in this study are divided into two groups- EARLY (< 20 weeks) & LATE (>20 weeks), and early pregnancy group studied separately in terms of all variables.

Various causes of vaginal bleeding during early pregnancy are shown here. Maximum number of cases were of abortion and minimum were of bleeding due to cervical polyp.

Most important risk factor for early pregnancy bleeding is medical illness (such as uncontrolled DM, hypothyroidism, APLA syndrome, etc), followed by

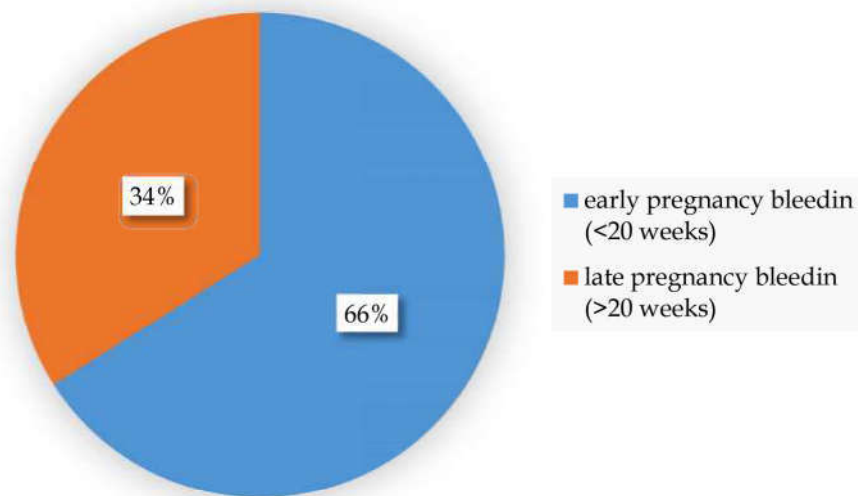
**Table 1:** Incidence of pregnancy affected by vaginal bleeding

Total ANC Admission	No. of Cases with ANC Bleeding	%	Incidence Per 1000
1126	200	17.8	178

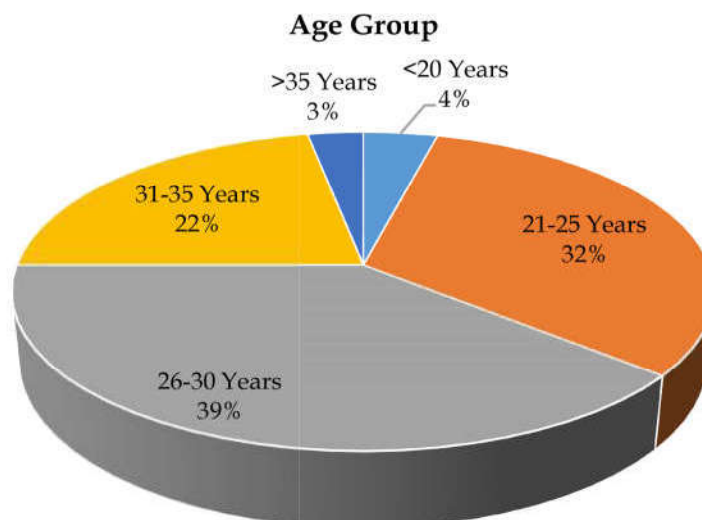
Approximately 1 in every 6 pregnancies is affected with vaginal bleeding

**Table 2:** Incidence of vaginal bleeding

	No. of Cases (%)
Early Pregnancy (<20 weeks)	132 (66%)
Late Pregnancy (>20 weeks)	68 (34%)

**Fig. 1:****Table 3:** Distribution of cases according to age of patient

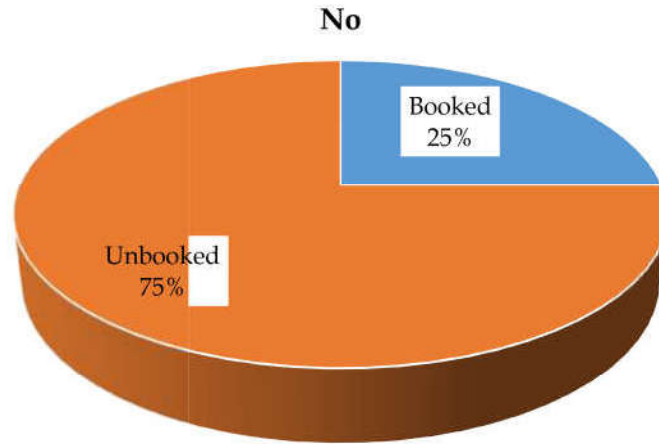
Age (Years)	No.(n=132)	%
<20 Years	5	4
21-25 Years	42	32
26-30 Years	52	39
31-35 Years	29	22
>35 Years	4	3



Maximum number of cases were concentrated in 26 -30 years of age with mean age of 28 years

**Table 4:** Distribution of cases according to gravidity

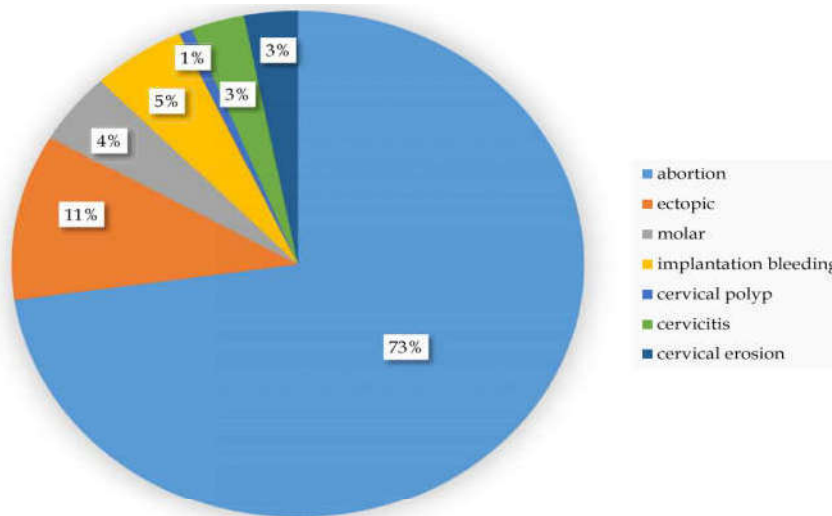
Gravida	No.	%
Primi	55	42
Multi	77	58



Maximum number of cases were multigravida

**Table 5:** ANC care of early pregnancy bleeding

	No.	%
Booked	33	25
Unbooked	99	75



Majority of cases were unbooked and booking status was minimal with early bleeding group

**Table 6:** Cases distribution of bleeding during early pregnancy

Diagnosis	No.	%
Abortion	96	72.7
Ectopic	14	10.6
Molar Pregnancy	6	4.54
Implantation bleeding	7	5.3
Cervical polyp	1	0.75
Cervicitis	4	3.03
Cervical erosion	4	3.03

**Table 7:** Risk factors detected for early pregnancy bleeding

Risk Factors	No. of Cases	%
Prior Miscarriage	24	18.2
Prior Induced Abortion	20	15.1
Prior Preterm Labour	17	12.9
Prior LSCS	15	11.4
Medical illness	32	24.2
Smoking	10	7.6
None	14	10.6

previous history of miscarriage which increases the risk of bleeding in subsequent pregnancies.

### Discussion

The overall incidence of bleeding during pregnancy reporting to our hospital is 17.8%, which is around the same reported in literature. When the incidence was observed in early groups, the data was approximately 11.7%, which is corroborating with the findings of Hertig & Livingstone et al 1944 [21].

Many studies in recent times reported a lower incidence than this ( for Early Pregnancy Bleeding, Savita et al 2007 - 3.01%) [22] probably because many episodes, particularly of lesser severity may not be reported or if reported, they were not documented in the patients record. However, an increased awareness of the potential dangers to the fetus, may well account for the higher incidence in this study.

Since the demographic profile, etiology, risk factors involved, maternal and perinatal morbidities and mortalities associated with early and late pregnancy group are drastically different, so the cases in this study were only taken as of Early groups and studied separately. In Early Pregnancy Bleeding group, maximum number of cases were clustered in mothers of higher age group of 26 - 30 years (39%). Majority of cases were unbooked, signifying the importance and revealing the lacunae in the MCH care. Booking status was below the half level in Early Pregnancy Bleeding group (25%). This clearly shows the importance of antenatal care in prevention and early detection of antepartum hemorrhage to reduce morbidities and mortalities.

In our series, bleeding due to abortion was detected in 72.7% cases, while 81% - Kalyani Singh (2015); 78% - Rajan R et al (1987); 68% - Jaideep Malhotra et al (1987); 99% - Drumm J.E. et al (1975); 91% - Neelam Bharadwaj (1988) [23]. Bleeding due to ectopic pregnancy was seen in 10.6% in our study, while 9% - Kalyani Singh (AJBPS- 2015); 5% - Rajan R et al (1987);

8% - Jaideep Malhotra et al (1987) [23]. Early pregnancy bleeding due to molar pregnancy seen in our study was 4.45%, while in other studies 8% - Kalyani Singh (AJBPS- 2015); 16% - Rajan R et al (1987); 5% - Jaideep Malhotra et al (1987); 1% - Drumm J.E. et al (1975); 4% - Neelam Bharadwaj (1988) [23].

There are studies that find normal postnatal development after threatened abortion (Buck et al 1969 [24] and Barker et al 1967 [25]). However, some of the counterbalancing studies find that the association between bleeding in early pregnancy and suboptimal outcome may be useful for detecting pregnancies at risk. This was suggested by Hobel et al 1973 [26] and Adelstein & Fedrickin 1978 [27].

Various studies found association between threatened miscarriage and PPRM (Johns et al 2006 [28], Weiss et al 2004 [14], Batzofin et al 1984 [13], Farrell et al 1996 [16], Chung et al 1999 [20]). Although the cause of association between threatened miscarriage and PPRM is unclear, it is hypothesized that disruption of chorionic- amniotic plane by adjacent hemorrhages may make the membranes more susceptible to rupture (Batzofin et al 1984 [13]). Alternatively the prolonged presence of blood may act as nidus for intra- uterine infection. Persistent or recurrent placental haemorrhage could also stimulate subclinical uterine contractions that result in cervical changes and eventual ruptured membranes.

Various other studies have postulated the increased risk of pregnancy related complications (primarily due to placental dysfunction) in Early Pregnancy Bleeding group, such as placental abruption, preterm labour, IUGR, PPRM, LBW, CS ( Weiss et al 2004 [14], Patel et al 2000 [29], Alcazar et al 2000 [30], Das et al 1996 [31]). It is important to identify the risk factors early in the prenatal period, so that appropriate measures can be taken to ensure the wellbeing of the mother and child. Better antenatal services, increased awareness, improved transportation, improved nutritional status can help to address some of the complications associated with antenatal bleeding (Sneha Wasnik et al 2015 [32]).

There is a consistent association between first-trimester bleeding and adverse fetal and maternal outcomes. It is possible that the risk of adverse outcome may be different in women who experience 'light' versus 'heavy' bleeding. Reasons for the association between first-trimester bleeding and adverse pregnancy outcomes are poorly understood. Bleeding in the first trimester may be associated with a chronic inflammatory reaction in the decidua. It is known that in about two-thirds of early pregnancy failures, there is evidence of defective placentation, characterised by thinner and fragmented trophoblast shell and reduced cytotrophoblast invasion of the spiral arterioles.

Later pregnancy complications such as pre-eclampsia, preterm labour and PPRM have been shown to be associated with impaired placentation and failure of physiological invasion of the spiral arterioles. Problems with placental development may therefore explain why women with threatened miscarriage are more likely to have placenta previa, placental abruption and APH of unknown origin. While some of the incidences of prematurity can be linked to maternal complications such as APH, growth restriction suggests a degree of placental compromise.

Differences in the methodologies, age range, incidence of infections and other risk factors could justify the wide range of differences in the prevalence of first trimester vaginal bleeding. Threatened miscarriage is the most common complication in the first half of pregnancy. Most of these pregnancies continue to term with or without treatment. Further research is recommended to justify the detected high first trimester vaginal bleeding rates and to identify potentials of prevention or improvement of the outcomes of bleeding.

First-trimester vaginal bleeding is common, occurring in 15-20% of all viable pregnancies (Nagy S et al 2003 [33]). However, unexplained prenatal haemorrhage, similar to threatened miscarriage, probably exerts an indirect effect (as they were not independent risk factors for early neonatal death) on perinatal outcome through the increased risk of preterm delivery.

This suggests that a threatened miscarriage is possibly related to uteroplacental dysfunction. Mulik states that threatened miscarriage was associated independently with the risk of placental abruption and unexplained antenatal haemorrhage (Mulik V et al 2004 [15], Tannirandorn Y et al 2003 [34]).

First trimester vaginal bleeding is an important predictor of adverse fetal outcomes. In a study

conducted by Gabbe et al, compared with women who did not bleed during pregnancy, the risks of preterm delivery, delivery of an LBW infant, delivery of a term LBW infant, and neonatal death were significantly elevated among women who bled only in the first trimester, as well as among those who bled in the first and subsequent trimesters. Even so-called implantation bleeding (blood loss into the gland lumina adjacent to the implantation site of the syncytium into the decidua) may not be innocent. Indeed, implantation bleeding is already thought to be associated with many first-trimester spontaneous abortions (Gabbe SG et al 1986 [35]).

Das states that, placenta previa is a common cause of obstetric vaginal bleeding. It is possible that first trimester bleeding could be a reflection of placenta previa in some patients. Currently, there is no information in the literature regarding threatened abortion and cesarean delivery (Das et al, 1996 [31]).

Physicians should be aware of the adverse outcomes that are associated with first-trimester bleeding and remain alert for signs of these complications.

## Conclusion

In spite of tremendous advances in obstetric care, obstetric hemorrhage is challenging to obstetricians. Patients with early antenatal bleeding are at increased risk of adverse fetal and neonatal outcome. Uterine bleeding during pregnancy represents definite threat to developing embryo. Bleeding during early pregnancy may indicate abnormal placentation and can also lead to complications during late pregnancy.

Patient may remain anaemic throughout pregnancy and labour, if proper antenatal care not given. Anticipating these problems obstetrician should remain alert for signs of complications. It is also essential to reassure women with early pregnancy bleeds and should be followed closely. Further research is required to expand knowledge and understanding of early pregnancy bleeding. This will improve strategies for prevention and improvement in outcome.

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