



## Bleeding Per Vaginum in First Trimester of Pregnancy-Role of USG Its Correlation with Clinical Assessment

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### Abstract

**Objective:** Study was done to know the role of USG in first trimester bleeding per vaginam and to correlates the findings with clinical assessment.

**Material of Method:** A hospital based cross sectional study was conducted over a period of 1 year between 1st July 2011 to June 2012 in the Department of Radio-diagnosis. Approved was obtained from the Institutional ethics review committees, AMCH.

After clinical correlation patients are subjected to ultrasonography abdomen with full bladder for transabdominal examination. In required cases transvaginal examination in empty bladder was performed. Diagnosis was made by trans abdominal and transvaginal USG by using 3.5 Mhz, and 7.5 Mhz sector transducer respectively.

**Result:** Ultrasound can diagnose viable and nonviable pregnancies accurately four weeks onwards. In our study intact pregnancy was found in 46%, incomplete abortion 24%, missed abortion in 7%, blighted ovum in 9%, complete abortion 2%, molar pregnancy 3%, ectopic pregnancy in 6% cases. Thus incomplete abortion was the commonest cause of vaginal bleeding among non viable pregnancies.

**Conclusion:** In our study ultrasound proved to be more accurate than clinical diagnosis with sensitivity and specificity of 100%. Thus USG has opened new dimension in early pregnancy complication so that specific management can be immediately instituted.

**Key word:** Vaginal bleeding, first trimester , pregnancy, USG, clinical assessment.

### INTRODUCTION

The introduction of Ultrasonography to obstetrics by Ian Donald and colleagues in 1958 is now regarded as one of the major milestones of modern medicines. Vaginal bleeding in the first trimester of pregnancy is a common obstetric problem and causes worry and anxiety both to the patient and the obstetrician. First trimester is a dynamic period in which ovulation, sperm fertilization, implantation and organogenesis

occur. 20-25% of pregnant women will have bleeding of some degree during early pregnancy in a given patient may range from an inconsequential episode to a life threatening emergency.

The three major causes of bleeding in first trimester are abortion, ectopic pregnancy and molar pregnancy and causes unrelated to pregnancy like cervical erosion, polyp, and vaginal varicose or cervical carcinoma.

Ultrasound helps in assessing the type of abortions.

Life threatening emergency like ectopic when evaluated by ultrasound gives scope for conservative approach without affecting the fertility status.

The social phenomena of increasing maternal age predisposing to abortion, general limitation of family size and heightened expectations of normal outcome have produced increased pressure on the obstetrician, thereby giving more importance to ultrasonography.

### MATERIALS AND METHODS

The present study was carried out in the department of Radiology, Assam Medical College and Hospital, Dibrugarh from July 2011 to June 2012, extending for a period of 12 months.

The present study was based on 100 cases presenting with spontaneous vaginal bleeding after a period of amenorrhea within twelve week of gestation.

#### Exclusion criteria:

- The patient who needs induction for abortion.
- Patient comes with vaginal bleeding following MTP.

**Techniques:** After clinical correlation patients are subjected to ultrasonography abdomen with full bladder for transabdominal examination. In required cases Transvaginal examination in empty bladder was performed.

**Equipments:** SIEMENS SONOLINE ADARA real time scanner with 3.5 MHz sector transducer for transabdominal examination. PHILIPS P- 600 and SIEMENS REAL TIME SCANNER using 6.5 Mhz and 7.5 MHz sector transducer for transvaginal examination.

**Evaluation:** The following features are noted to formulate ultrasonographic diagnosis.

Gestational Sac -intrauterine/ extrauterine, Volume, Contour, Contents, Echogenicity.

Yolk sac – size, if seen (iii) Embryo – CRL (iv)

Cervical status (v) Pouch of Douglas (vi) Adnexa

(vii) Fetal heart rate of embryo (viii) Location of

placenta (xi) Sub chorionic bleeding (x) Snowstorm appearance of molar pregnancy (xi) Anembryonic gestation- detection for blighted ovum.

### RESULTS AND OBSERVATIONS

The present study was carried out in the department of Radiodiagnosis, Assam medical college and hospital, Dibrugarh during the period July 2011 to June 2012 and a total of 100 consecutive patients. All patients who presented clinically as bleeding per vaginam during the first twelve weeks of gestation were assessed clinically and then examined by ultrasonography for confirmation of the diagnosis. All the patients were assessed in order to correlate the clinical and ultrasound diagnosis and ask to kind out the various causes of vaginal bleeding.

Maximum numbers of patients studied were those in reproductive age group of 26-30 years which constituted of 45% of total population under study.

Maternal gravidity distribution shows that majority of the cases (35%) were G3 followed by G1 cases.

It can be seen that 82% of cases were from low socioeconomic status, 12% from intermediate and only 6% of cases from high class. 92% of cases presenting with vaginal bleeding had mild degree of anemia, 5% had moderate and 1% had severe degree of anemia. Indicating directly relating to bleeding and indirectly indicating poor nutritional status. 83% of cases presenting with vaginal bleeding had 8-12 weeks of amenorrhea. Pain was the commonest complaint besides bleeding in 58% of cases, nausea and vomiting was noted in many cases. On detailed clinical examination, patients were clinically diagnosed as threatened abortion (TA), incomplete abortion (ICA), missed abortion (MA), ectopic pregnancy (EP), molar pregnancy (MP) and inevitable abortion (IEA).

63 out of 100 presenting with bleeding per vaginam in early pregnancy were diagnosed as threatened abortion.

13 cases on examination were diagnosed to have incomplete abortion, missed abortion constituted 10%, 7 cases presented with features of ectopic pregnancy, molar pregnancy was diagnosed in 4% of cases and 3% of cases having inevitable abortion.

When the cases were taken up for ultrasonographic examination, the first and foremost idea was to carefully distinguish between viable and non viable pregnancies as the management entirely depends on whether fetal life is present or not and then to ascertain the cause of bleeding.

46 patients among 100 were diagnosed as threatened abortion. These patients on ultrasonography showed fetal heart rate, the gestational sac or crown rump length were approximating to their gestational age. There were very few patients who showed subchorionic hemorrhage.

23 patients were diagnosed as incomplete abortion. These cases showed a heterogenous or mixed echogenic mass inside the endometrial cavity with no proper fetal configuration, no fetal heart rate was seen inside the mixed echogenic mass.

8 patients were diagnosed by ultrasound as missed abortion as their gestational age did not correspond to the CRL or a fetal heart activity was not seen even after a repeat scan or an irregular broken gestational sac was diagnosed in many.

Blighted ovum was diagnosed in 9 patients showing a uniform gestational sac without fetal pole with no sight of growth, when scan were repeated a period of 1-2 weeks.

7 patients were diagnosed as molar pregnancy or a typical snow storm appearance was mostly were seen in the scan. No fetal heart activity or fetal parts were documented inside the uterus and was larger than their gestational age in most cases.

2 Cases of complete abortion were diagnosed in sonography and showed endometrial wall opposed to each other and uterus was completely empty with its normal size in most patients.

6 patients were diagnosed as ectopic pregnancy, these patients showed a variable degree of collection in pouch of Douglas or inside peritoneal cavity with a mass of mixed echogenicity in adnexa.

USG evaluation, 46 cases were diagnosed as threatened abortion, out of which 43 cases were diagnosed correctly by clinical examination.

80% cases of missed abortion could be correctly diagnosed by clinical means in the study of total 10 cases diagnosed clinically as missed abortion, 8 cases were confirmed by USG, another 10% as incomplete abortion and as blighted ovum each respectively.

4 cases of total 100 patients were diagnosed clinically as molar pregnancy but subsequently on USG evaluation, 3 cases of these were confirmed. The other 1 case were diagnosed as threatened abortion. So 70% cases of molar pregnancy could be correctly diagnosed clinically in this study.

Patients with ectopic pregnancy with pain or bleeding usually with or without a history of missed dates. 85.71% cases were diagnosed by USG correctly as ectopic pregnancy. A complete abortion with pelvic inflammatory disease (PID) was falsely diagnosed as ectopic pregnancy clinically. Later by USG, it was confirmed to be a case of complete abortion.

## DISCUSSION

Bleeding in early pregnancy is a common event that frequently heralds an abnormality interrupting the normal development of an early gestation. It is also one of the commonest cause for the majority of the emergency admission to obstetrics department and also a common reason for ultrasound examination in first trimester. Ultrasonography has opened new dimensions in management of early pregnancy bleeding pervaginum ,accurate diagnosis of the nature of the pregnancy (viable or non viable) can avoid unnecessary medical treatment and prolonged hospitalization. It also indicates the need for a D& C by diagnosing retained products in the uterine cavity. Ultrasonographic examination should be

done at the earliest possible so as to confirm the clinical findings.

The importance of ultrasonography in management is evident in our study of 100 patients which was carried out in the Department of Radiology, Assam Medical College, in a period of 1 year.

In this study, it was seen that the patients with first trimester vaginal bleeding were between 26-30 years constituting 45% of the study population correlating with study of Ilyas et al<sup>10</sup> and Seemal Vehra et al studies, there were 31 cases in the age group 21-25 and 11 cases in 31-35 age group. 35% of cases were third gravid (G3) correlating with study of Thangaleela and Vijayalakshmi<sup>13</sup> and Pushpa o lokade, Vinod Karanjekar<sup>11</sup> (2012). 32% of them were primigravida, 22% cases were comprised by second gravid and 7% were forth gravid. 82% of them were from low socioeconomic status and in 92% of cases mild anemia was present. Low socioeconomic status especially poor education and income strongly influenced the degree of anemia through bad nutritional status.

A study conducted in 159 pregnant women in antenatal clinic of Jinnah hospital (Lahore) in 2012 by Seemal vehra, Farooq Ahmad et al<sup>12</sup> on effect of age, gravidity, interval sine last pregnancy and socioeconomic status on the development of iron deficiency anemia. The findings of study, that most of the pregnant women who had anemia, in age group of 20-30 years, most of them are from low socioeconomic status, and usually early marriage take place, cases with higher gravid shows adverse effect on hg level, these results are same as those of Thangaleela and Vijayalakshmi<sup>13</sup> (1994), educational status seemed to show a generalized trend of relatively higher hg levels in subjects having higher educational status. Likewise, women of affluent classes consume relatively high quality of food, resulting in higher Hg concentration.

Verena T valley, MD (2006) reported that age and increased parity affect a women's risk of a

miscarriage. In women younger than 20 years, miscarriage occurs in an estimated 12% of pregnancies, in women older than 20 years, miscarriage occurs in an estimated 26% of pregnancies.

### **Period of Amenorrhea**

In the present study, 87% of cases had 8-12 weeks of amenorrhea which is comparable to 91% Campbell<sup>9</sup> and Rajan.

Raj Chauhan (1990), Gorade<sup>8</sup> (1991) and Neelam Bhardwaj<sup>3</sup> found 59.6%, 57% and 57% cases respectively within 12 weeks of pregnancy.

### **Associated Signs and Symptoms**

Bleeding in threatened abortion is usually painless but there may be tolerable backache or dull pain in the lower abdomen.

Inevitable abortion has aggravation of pain in the lower abdomen which may be colicky in nature. Incomplete abortion is also accompanied by colicky pain with profuse bleeding, abdominal pain in ectopic pregnancy is the most constant feature of the triad including amenorrhea and vaginal bleeding. Varying degrees of lower abdominal pain may be present in molar pregnancy also.

In the present study also, abdominal pain was the most constantly associated symptoms which was found in 58 % of patients.

### **Clinical Diagnosis**

Romero et al<sup>6</sup> (1984) reported that the differential diagnosis of early pregnancy bleeding relied heavily on the results of a pelvic examination. If the cervix is closed, the diagnosis of a threatened abortion is made. If the cervix is open and no tissue has been passed, the condition is referred to be inevitable abortion. A grossly enlarged uterus is labeled in hydatiform mole and tender adenexal mass raised the suspicion of ectopic pregnancy.

The clinical approach has limited value, except in situations, where cervical os is open, and could be inaccurate as well.



In the series of study by different authors in clinical diagnosis present study correlates well with Malhotra et al<sup>7</sup> (1987) and Gorade et al<sup>8</sup> (1991).

63% of cases diagnosed as threatened abortion clinically in present study which is comparable to 62.5 % and 70% with Malhotra<sup>7</sup> and Gorade.<sup>8</sup>

In this series of study, most of the patients were assessed as threatened abortion (63%), 37% cases were diagnosed on the basis of per abdominal and per vaginal examination as having pregnancy failure either in the form of missed abortion (10%), incomplete, complete abortion 13% molar pregnancy (4%) and ectopic pregnancy (7%).

In present study various abortions contributed to a major cause of first trimester bleeding constituting 89%. In P Reddi Rani<sup>5</sup>, Satish K Bhargava's study group also abortion is the leading cause of early pregnancy bleeding with an incidence of 61% and 81.6% respectively. The incidence of ectopic pregnancy is 7%. The incidence of mole in present study is 4% compared to other studies of P Reddi Rani et al<sup>5</sup> and Satish K Bhargava who had an incidence of 18% and 4.35% respectively. USG findings.

First and foremost the role of ultrasound was to differentiate viable from non viable pregnancies and secondly to find out the cause of bleeding. In the study, 49% had intact intrauterine pregnancies and 52% had non-viable ones.

In our study all case of threatened abortion, missed abortion, incomplete abortion, complete abortion, anembryonic gestation and molar pregnancy were diagnosed accurately on ultrasound with accuracy of 100%. The results of present study comparable with Sofat Rama<sup>4</sup>, Neelam S.Bharadwaj<sup>3</sup> in diagnosing, missed abortion, incomplete abortion, anembryonic gestation and Hydatidiform mole with 100% accuracy.

In our study the incidence of viable pregnancies on ultrasound is 46% and 54% of non viable pregnancies which is similar to Nyberg et al<sup>2</sup> study. Hertz et al, Charles W Schauburger et al and Stabile et al had an incidence of 58%, 28%

and 64% of viable pregnancies and 42% 72%, 36% of non viable pregnancies respectively.

In the present study, ultrasound diagnosed 42% cases of non viable pregnancies out of 100 cases, 24 cases of incomplete abortion, 7 cases of missed abortion, molar pregnancy in 3% blighted ovum in 9%, complete abortion in 2%, inevitable abortion in 3% cases and ectopic pregnancy in 6% cases. Thus, the highest number of cases recorded was of incomplete abortion (24%) and then the followed by blighted ovum in 9% and missed abortion in 7%.

Tewari et al<sup>1</sup> (1991) found that amongst the non viable pregnancies, empty sac was observed in 38, indistinct uterine echoes in 3, fetal echoes with no sign of life in 12, molar pregnancies in 3 and empty sac with no fetal in 2 patients. Of the 38 patients with empty G.S, 8 showed fetal pole on repeat examination after one week, thus, empty sac was the most common findings, next common finding was missed abortion, molar pregnancy was the most infrequent observation.

In our study 100 clinically diagnosed cases were confirmed on ultrasound with disparity of 27% the present study is comparable to T G Ghorade's<sup>8</sup> study with a disparity % of 31.74. Anuradha Khanna<sup>14</sup>, P Reddi Rani<sup>5</sup> has got disparity of 58% and 42% between clinical and ultrasound diagnosis respectively.

## CONCLUSION

From our study, it appears that USG is a very valuable tool in the diagnosis of various causes of bleeding per vaginum in first trimester of pregnancy. It not only helps in ruling out the dilemma when assessed clinically but also is more accurate, safe, non invasive and quick in diagnosis and management of such cases.

Ultrasound positively helps in accessing the safe continuation of pregnancy, timely intervention for abnormal pregnancy and avoiding unnecessary intervention in those cases that do not need them.

Anembryonic gestation is diagnosed only by sonography.



Table 8 DISPLAYING THE ULTRASONOGRAPHIC FEATURES OF THE CASES IN THE STUDY

Viability	No. of cases	Percentage (%)
Viable pregnancies	46	46
Non viable pregnancies	54	54%

Table 9 : ULTRASONOGRAPHIC ASSESSMENT (100 cases)

Ultrasound diagnosis	NO OF CASES	Percentage
Threatened abortion	46	46%
Inevitable abortion	3	3%
Incomplete abortion	23	23%
Missed abortion	8	8%
Blighted ovum	9	9%
Complete abortion	2	2%
Molar pregnancy	7	7%
Ectopic pregnancy	6	6%

TABLE 10: THREATENED ABORTIONCORRELAT DIAGNOSIS WITH ULTRASOUND DIAGNOSIS OF TH

Clinical Diagnosis	No.	%	Usg Diagnosis
Threatened Abortion	63	63%	Threatened abortion
			Missed abortion
			Blighted ovum
			Complete abortion
			Incomplete abortion
			Molar pregnancy
			Total

TABLE 11: MISSED ABORTION CORRELATION OF CLINICAL DIAGNOSIS WITH ULTRASOUND DIAGNOSIS OF MISSED ABORTION

Clinical Diagnosis	No.	%	Usg diagnosis	No.	%
Missed Abortion	10	10%	Missed abortion	8	80%
			Incomplete abortion	1	10%
			Blighted ovum	1	10%
			Molar pregnancy	0	-
			Total	10	100

TABLE 12: MOLAR PREGNANCY CORRELATION OF CLINICAL DIAGNOSIS WITH USG DIAGNOSIS

Clinical Diagnosis	No.	%	Usg Diagnosis	No.	%
Molar Pregnancy	4	4%	Molar Pregnancy	3	75%
			Threatened Abortion	1	25%

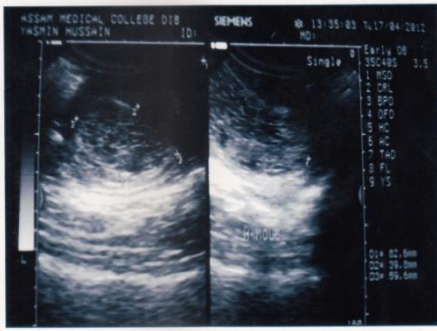
TABLE 13: ECTOPIC PREGNANCY CORRELATION OF CLINICAL DIAGNOSIS WITH USG DIAGNOSIS OF ECTOPIC PREGNANCY

Clinical Diagnosis	No.	%	Usg Diagnosis	No.	%
Ectopic pregnancy	7	7%	Ectopic pregnancy	6	85.71%
			Complete abortion with PID	1	14.285%

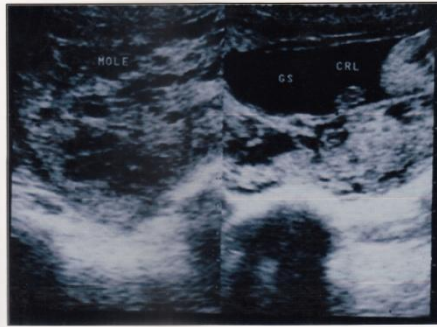
TABLE 14: ACCURACY OF CLINICAL DIAGNOSIS AFTER USG EVALUATION

Conditions	Clinical Diagnosis	Usg Diagnosis	Accuracy (%)	No. of Discrepancy	% of Discrepancy
Threatened Abortion	63	43	68.25	20	31.74
Incomplete Abortion	13	10	76.92	3	23
Missed abortion	10	8	80	2	20
Inevitable abortion	3	3	100	-	-
Molar pregnancy	4	3	75	1	25
Ectopic pregnancy	7	6	85.71	1	14.25
Total	100	73	73	27	27





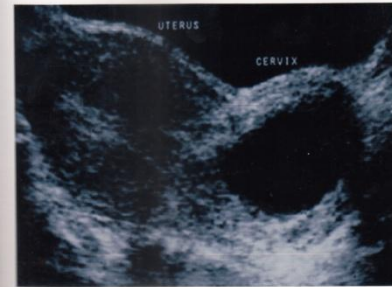
HYDATIFORM MOLE( Complete)



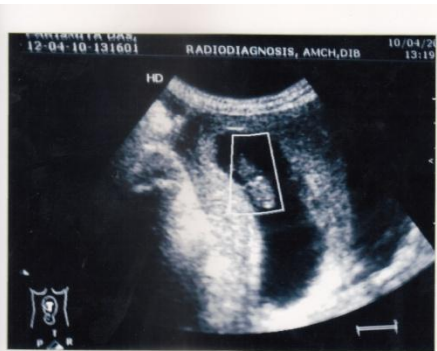
PARTIAL MOLE



BLIGHTED OVUM



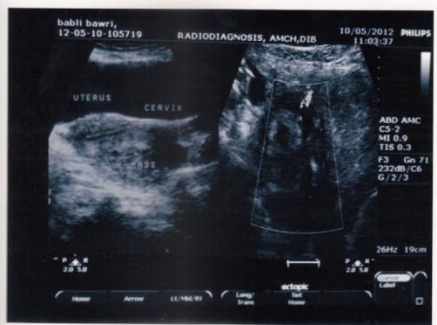
INEVITABLE ABORTION



MISSED ABORTION



NORMAL PREGNANCY

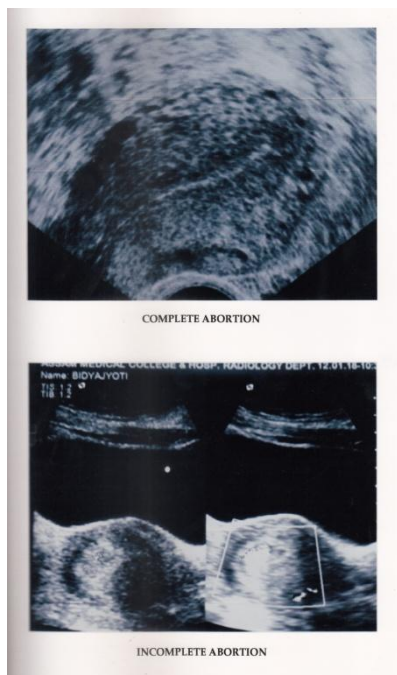


ECTOPIC PREGNANCY



RETRO CHORIONIC HAEMORRHAGE





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