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Original Research Article

## Ultrasonographic evaluation of first trimester bleeding

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### ABSTRACT

**Background:** Vaginal bleeding in the first trimester is a common obstetric situation ranging from an insignificant episode to life threatening emergency. The major causes are abortion, ectopic, and molar pregnancy. Ultrasonography is playing an increasing role in the diagnostic process. This study was taken up to evaluate its utility vis-à-vis clinical examination findings.

**Methods:** A Prospective study was carried out on all inpatients admitted to Gopnath Maternity Home, Sir T. Hospital, Bhavnagar with complaints of bleeding per vaginum in the first trimester of pregnancy during the study period from December 2016 to May 2017. A complete general physical and pelvic examination was done to arrive at a clinical diagnosis. Patients were then subjected to ultrasound examination. Clinical diagnosis and ultrasound diagnosis were correlated.

**Results:** Among these 200 cases, threatened abortion was the commonest cause of bleeding. This was observed in 74 cases (37%). There were 40 (20%) cases of missed abortion in the present study. Incomplete abortion and complete abortion in 14 and 6 cases respectively. There were 26 (13%) cases of ectopic pregnancy.

**Conclusions:** Ultrasound is a valuable tool in the differentiation of causes of first trimester vaginal bleeding. Ultrasound is helpful in the decision-making algorithm about the safe continuation of the pregnancy, timely intervention for abnormal pregnancy.

**Keywords:** Abortion, First trimester, Per vaginum bleeding, Ultrasonography

### INTRODUCTION

Ultrasonography is one of the most important and useful diagnostic tool in the field of modern medicine. Being non-invasive, safe and without hazards of radiation, it has gained wide acceptability, as an integral part of basic investigative procedures.

The convenience, high portability, rapidity, and accuracy are few of the advantages of ultrasound over the other procedures. In the last two decades, ultrasound has become an essential diagnostic imaging modality in the field of obstetrics and is being extensively used for evaluation of pregnancy. Obstetrical ultrasound enables

the clinician to evaluate the development, growth, and wellbeing of the fetus. The ability to study the fetus in the intrauterine environment has been notably enhanced by dramatic improvement in imaging.

Transvaginal ultrasound in the first trimester of pregnancy. He commented that recent improvements in transvaginal ultrasound permit the extremely detailed observation of the morphology of the early conceptus in utero.<sup>1</sup>

Vaginal bleeding is a common presentation in the emergency department during the first trimester.

Approximately half of patients who present with vaginal bleeding have a spontaneous abortion.<sup>2</sup>

The primary causes of first trimester bleeding are spontaneous abortion, ectopic pregnancy, and gestational trophoblastic disease; however, the most common cause of bleeding is spotting caused by implantation of the conceptus into the endometrium. A complete assessment of the first trimester pregnancy requires correlation of serum b human chorionic gonadotropin (bhCG) levels with the appearance of the gestational sac (GS) using sonography.

**METHODS**

This was a hospital-based prospective study. The study included patients attending Sir T. Hospital, Bhavnagar with a history of bleeding per vaginum in the first trimester of pregnancy. The study period was 6 months between December 2016 and May 2017. Women having non-obstetric causes for vaginal bleeding in the first trimester of pregnancy were excluded.

Relevant clinical history, physical examination including pelvic examination was done in all patients and a provisional clinical diagnosis was made. In all cases routine investigations like haemoglobin blood grouping and Rh-typing, urine pregnancy test by card were done. Then the patients were subjected to ultrasound examination. All the data was recorded in a proforma.

**Inclusion criteria**

Patients presenting anywhere from first day of last menstrual cycle to 12 weeks of pregnancy with complaints of bleeding per vagina are included in study.

**Exclusion criteria**

- Women of reproductive age with a missed period with negative urine pregnancy test.
- Patients who refuse to get admit to the hospital.
- All non-obstetrical causes of vaginal bleeding
- All patients with more than 12 completed weeks of gestation.

**RESULTS**

This is a prospective study in which the value of USG for the diagnosis of cause of vaginal bleeding in the first trimester in 200 cases was assessed.

All patients in age group of 18-45 years included. Most common age group is 21-25 years (39%) and least common age group is 41-45 years (1%) in present study (shown in Table 1).

Among these 200 cases, threatened abortion was the commonest cause of bleeding. This was observed in 74

cases (37%). There were 40 (20%) cases of missed abortion in the present study.

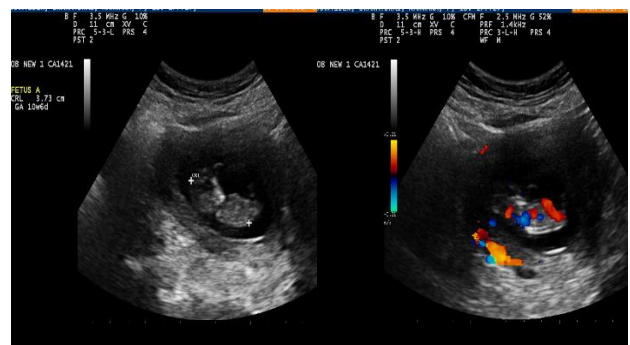
**Table 1: Distribution of cases according to age.**

Age groups (years)	No. of cases	%
18-20	56	28
21-25	78	39
26-30	46	23
31-35	12	6
36-40	6	3
41-45	2	1
Total	200	

**Table 2: Ultrasonographic confirmation in first trimester bleeding.**

Clinical diagnosis	No. of patients	Ultrasonographic confirmation
Threatened abortion	74	36
Incomplete abortion	14	10
Missed abortion	40	28
Complete abortion	6	4
Vesicular mole	12	4
Ectopic pregnancy	26	12
Pregnancy with ovarian cyst	6	2
Prgnancy with fibroid	4	2
Empty non-pregnant uterus	18	4

Incomplete abortion and complete abortion in 14 and 6 cases respectively. There were 26 (13%) cases of ectopic pregnancy. All 20 were tubal pregnancies out of which 16 cases were correctly diagnosed by USG rest 4 are diagnosed as complete abortion. 12 out of 26 patients underwent emergency laparotomy and unilateral salpingectomy.



**Figure 1: Threatened abortion.**

Rest cases were managed medically. There were 12 cases of hydatidiform mole. All cases were diagnosed correctly by USG. Molar pregnancy was diagnosed after evacuation and confirmed with histopathological examination. Hence it is concluded that the accuracy of

USG in diagnosing the cause of bleeding per vagina in the first trimester is 96%. Due to high prediction rate, accurate assessment of first trimester bleeding can be done by ultrasound and management can be done accordingly.



**Figure 2: Retained Gestational sac with subchorionic haemorrhage.**



**Figure 3: Blighted ovum.**

Of the 74 patients clinically diagnosed as threatened abortions, only 36 showed ultrasonographic findings of the same. USG was diagnostic of a non-viable pregnancy in the remaining 34 of these patients.



**Figure 5: Incomplete abortion.**

Eight of the 40 patients suspected to have a missed abortion were diagnosed as normal viable pregnancies and 2 cases had an empty non-pregnant uterus. In 2 patients clinically diagnosed as complete abortion, significant products of conception were seen on USG.



**Figure 6: Pregnancy with fibroid.**

Twelve of the 18 cases suspected to be having a delayed period turned out to be either missed abortion (n=6) or incomplete abortion (n=6). Six of the 12 cases with suspected vesicular mole, 6 patients with suspected ectopic pregnancy and 2 with fibroid uterus were diagnosed on USIG as having normal viable pregnancies. Twelve of the 26 cases with clinical suspicion of ectopic gestation could also be proved otherwise by sonography.



**Figure 7: Missed abortion.**

## DISCUSSION

Ultrasonography is an excellent tool to assess the prognosis of the pregnancy like whether the safe continuation of pregnancy is possible or not, especially in subjects who present with a poor obstetric history, vaginal bleeding or abdominal cramps in early pregnancy who pose a diagnostic challenge to the clinicians and sonographers. Clinical history and pelvic examination are inadequate in assessing the cause of bleeding and the prognosis. Ultrasound (both TAS and TVS) plays an important role in the evaluation of the causes of the first trimester bleeding, prognosis and predict the status of abnormal pregnancy. Ultrasonography is a non-invasive modality which is extremely useful to arrive at an accurate diagnosis and management of cases appropriately.

Beginning with Nielsen and Hahlin in 1995, a number of authors have advocated for expectant management of some inevitable abortions.<sup>3-8</sup> Hurd et al and Luise et al both demonstrated rates of successful miscarriage of 70%

with expectant management, whereas Jurkovic et al reported only 25% successful spontaneous abortion.<sup>3,4,9</sup> In our population of patients who were managed expectantly, approximately 1 in 8 underwent an emergency curettage.

Ultrasonography has opened new dimensions in early pregnancy complications so that specific treatment, medical or surgical, can be immediately instituted. Accurate diagnosis of the nature of the pregnancy (viable or non-viable) can avoid unnecessary hormonal treatment and prolonged hospitalisation. It also indicates the need for a dilatation and curettage by diagnosing retained products in the uterine cavity. Ultrasonographic examination should be done at the earliest possible period so as to confirm the clinical findings. As shown in our study, the clinical findings were confirmed by ultrasonography in only 51% of cases, while in 41 % cases, it played the diagnostic role. Thus, overall accuracy is nearly 92%, which almost doubles the clinical accuracy. Also, this means that 41 of cases would have been wrongly managed in the absence of USG. These results compare favourably with a similar study by Duff who could confirm the clinical findings in only 50% cases.<sup>10</sup>

The sonographic landmarks of the first trimester pregnancy have been well recognised and they include identification of the gestational sac, fetal pole, fetal cardiac activity, movements, yolk sac and the amnion. The invaluable role of these landmarks, the gestational sac and fetal biometry in diagnosing pathological pregnancies and predicting the pregnancy outcome has been clearly documented by Decherney et al.<sup>11</sup>

## CONCLUSION

Ultrasound is a valuable tool in the differentiation of causes of first trimester vaginal bleeding. Ultrasound is helpful in the decision-making algorithm about the safe continuation of the pregnancy, timely intervention for abnormal pregnancy. Judicious utilization of ultrasonography and a close liaison with the sonologist is necessary. However, it should be remembered that ultrasound is an extension of the pelvic examination and cannot replace obstetric history and clinical examination.

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