



ULTRASONOGRAPHIC EVALUATION OF VAGINAL BLEEDING IN THE FIRST TRIMESTER OF PREGNANCY AND ITS CLINICAL CORRELATION

Obstetrics & Gynaecology

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ABSTRACT

Introduction- Spotting or bleeding per vaginum is a frequent event during the first trimester of pregnancy. Bleeding unless proved otherwise is considered a symptom of impending abortion and treated with utmost care and urgency. Ultrasonography plays a vital role in its evaluation as well as management.

Aims And Objective- Our aim was to find out the Causes of bleeding & to ascertain whether the pregnancy is ongoing or failed and compare the clinical impression with the diagnosis made by USG to plan the line of treatment.

Materials & Methods- A hospital-based study in women admitted to Obstetrics & Gynaecology department; SMCH, Silchar was conducted with sample size of 160 patients to ascertain the causes of first trimester abortion and compare the clinical findings with USG findings. Management was done according to the hospital protocol and follow up was done by ultrasonography.

Results- Clinical evaluation was correct in only 62.5% of cases. USG could diagnose 100% of non-viable pregnancy accurately from 7th week of gestation. The sensitivity in detection of non-viable pregnancy in this study was 97.8% and specificity was 97% with overall accuracy of 97.5%.

Conclusion- To conclude, ultrasonography in the evaluation of vaginal bleeding in the first trimester of pregnancy, complemented by the safety and non-invasiveness of the procedure has become indispensable not only in their diagnosis but has also assumed the status of a decisive factor in their management strategy.

KEYWORDS

first trimester bleeding, bleeding per vaginum, ultrasonography

INTRODUCTION

Spotting or bleeding through vagina is a frequent phenomenon during the first trimester of pregnancy. It is rather difficult to say which of the cases may land up in problem and which may not. However, bleeding unless proved otherwise should be considered a symptom of impending abortion.

About 80% of the spontaneous pregnancy losses occur in first trimester of pregnancy¹. Vaginal bleeding is an important variant in the genesis and prevalence of early pregnancy failure. About 15-20% of known pregnancies terminate in spontaneous abortion^{1,2}. Using serial human chorionic gonadotropin (hCG) measurements to detect early subclinical pregnancy, the percentage increases to about 30% (Novak Gynaecology, 13th edition).

Bleeding per vaginum is a perplexing and fascinating entity because of the diverse clinical presentations and discordance between the severity of the lesions and symptoms. The pregnancy outcome in these depends upon the severity of hemorrhage, gestational age, maternal age. Viability of gestation cannot be satisfactorily evaluated with clinical assessments alone, hence ultrasonographic evaluation has become the mainstay of the examination. It is also the most specific and the most informative test regarding abortion. A major breakthrough in the field of diagnostic ultrasonographic evaluation has been the emergence of the transvaginal sonography (TVS), which has resulted in a better detection of the pathology and better resolution of the images³. TVS can detect all pathologies at least 5-7 days before a TAS (trans abdominal sonography) assessment in an early pregnancy scan.

AIMS & OBJECTIVES

1. To find out the cause of bleeding in the first trimester of pregnancy and to ascertain whether the pregnancy is ongoing or failed.
2. To compare the clinical impression with the diagnosis made by ultrasonography.
3. To plan the line of treatment after confirming the cause of bleeding.

MATERIALS AND METHODS

The present study was carried out in the department of Obstetrics and Gynaecology in Silchar medical college, Silchar Assam. The period of study was from 1st October 2018 to 31st September 2019. For this study, 160 pregnant women with clinically manifested bleeding per vaginum during the first trimester i.e. up to 12 weeks of gestation were selected.

All of them had attended either the outpatient department or presented as emergency cases in the labour room in the department of Obstetrics and Gynaecology, SMCH. After taking a proper history of present illness, menstrual history and obstetrical history, an enquiry was made about any past medical or surgical history, family history and personal history. A routine urine pregnancy test was done to confirm the pregnancy. They were then clinically assessed first along with a single, sterile digital examination; a provisional diagnosis made and then subjected to ultrasound scanning. Routine blood test with CBC, RBS, ABO & Rh grouping, VDRL, URE and viral marker tests were done. The cases were then followed up by regular ultrasonographic examination in intact intrauterine pregnancies.⁴ Repeated ultrasound scanning was also done to follow up and confirm anembryonic pregnancies, missed abortion etc. especially the ones diagnosed in very early weeks of gestation. In case of other non-viable pregnancies, the cases were followed up after evaluation or diagnostic laparoscopy, laparotomy etc. and thereby correlated with the ultrasound findings.

All sonographic evaluation was done by a B-mode real time ultrasound system with curvilinear probe of 3.5 MHz pulse for transabdominal scanning and 7.5 MHz endovaginal probe for transvaginal scanning make Wipro GE, RT 3200 Advantage- II. Transabdominal scanning was carried out as a routine procedure in all cases. Transvaginal sonography was done in those cases where the findings of the transabdominal scanning were equivocal, especially in cases presenting in very early weeks of gestation and in some cases for reinforcement of the diagnosis and proper evaluation of the clinical entity e.g. in ectopic pregnancy. For, transabdominal scanning the patient was advised to lie in supine position with her bladder full. Transverse or axial, longitudinal and oblique images were obtained as seemed necessary and documented. For transvaginal scanning the patient was placed in lithotomy position with an empty urinary bladder.⁵ Sequential scans were then made both in longitudinal and transverse planes. Transvaginal ultrasonography was not performed in a suspected vaginal infection. The uterus was identified and its size and shape were ascertained and any abnormalities looked for. Next the uterine cavity was searched for the presence or absence of a gestational sac & fetal pole was identified when the sac was present. In cases where the G Sac was empty or there was no fetal cardiac activity in the identified fetal pole on colour doppler or the initial diagnosis was equivocal, the scan was repeated after one week before labelling the pregnancy as anembryonic gestation or missed abortion respectively⁴.

Pathological entities like chorio-decidual haemorrhage⁵, incomplete abortion, cervical & uterine fibroids and polyps were also looked for. Abnormal gestations like molar pregnancy (partial/complete) and ectopic pregnancy along with the competency of the cervix was also noted. The adnexae were evaluated for the presence of any abnormalities. The following diagnostic signs were looked for differential diagnoses.⁴ **Blighted ovum**⁶ was defined as the presence of a gestational sac with a volume of 2.5 mL or more or a sac diameter of 3 cm or more in which a fetal pole cannot be identified; or the failure of this gestational sac to increase by at least 75% over a period of 1 week; or failure to locate the fetal pole by eight completed weeks from the date of LMP; or the appearance of the sac which is quite irregular in shape and thin walled (reduced echogenicity); or the separation of the sac from the wall. The normal growth rate for the gestational sac diameter was considered as 8mm for 5 weeks at 1-2mm per day, 14 mm at 6 weeks, 25mm at 7 weeks and 34 mm at 8 weeks⁷. **Threatened abortion** was defined as bleeding per vagina with the presence of a healthy gestational sac (regular with bright echogenic rim) and/or fetus with a definite fetal heart motion visualised within the uterus and/or CRL corresponding with the period of amenorrhoea.⁶ **Missed abortion** was defined as a demonstrable fetus with the absence of fetal cardiac activity and/or size discrepancy between fetus and the gestational sac⁶. **Molar pregnancy** was defined as clear transonic peaks of equal size and amplitude within the whole uterine cavity with the absence of gestational sac ('snow-storm appearance') with the occasional presence of theca lutein cysts. **Incomplete abortion** was defined as uterine cavity filled up with products of conception which gave the echoes of amorphous masses of different sizes and shapes and hetero-echogenicity representing placental tissue, blood clots etc with uterine size definitely smaller than the period of amenorrhoea⁶. **Complete abortion** was defined as uterine size of normal or slightly enlarged size with the cavity showing no echo or retained products. **Ectopic pregnancy** was defined as extrauterine location of the pregnancy with or without a pseudo-gestational sac in the adnexa or as an adnexal mass with free fluid in the cul-de-sac.¹⁰

Follow Up Of The Cases

The cases with an intact intrauterine pregnancy were followed up by repeat ultrasound examination after 1-2 weeks. Cases of anembryonic gestation and missed abortion were subjected to repeat scans after one week if there were doubts regarding the initial scanning especially in those presenting in very early weeks of gestation. If the findings persisted, then dilatation and evacuation was carried out, the products examined thoroughly. Cases of molar pregnancy were followed up with suction and evacuation and the products subjected to histopathological examination and follow up done as per standard protocol for H. Mole. Incomplete abortion cases were followed up at dilatation and evacuation. When the USG findings showed no products of conception retained within the uterine cavity i.e. complete abortion, the patients were discharged after 24-48 hours, advised to report if bleeding persisted and patients with significant uterine were treated by evacuation even if sonographic findings were negative. Management of ectopic pregnancy cases were not managed by sonographic findings alone. Confirmation of the diagnosis was done by laparoscopy and at times emergency laparotomy was carried out depending upon the severity of the condition. Thus, the various cases were followed up.

RESULTS AND DISCUSSION

When the cases were taken up for ultrasonography our first and foremost objective was to discriminate accurately and diligently, the ongoing pregnancies and the failed pregnancies, as the management strategy depended solely on the presence or absence of fetal life signs and thence the cause of bleeding. USG examination revealed 66 viable pregnancies with positive fetal live signs in the first scanning constituting 41.25% of the total and 94 non-viable pregnancies i.e., 58.75% including those in whom the process of abortion had already started and the conceptus occupied the lower pole of the uterus and cervix was dilated even though a live foetus was present on USG. In this study it was observed that maximum number of cases of vaginal bleeding in the first trimester of pregnancy were in the age group 26-30 years (45%) followed by 21-25 years (36.25%). 35% of the cases were third gravida and 32.5% patients were primigravida and 25% were second gravida. Majority of cases belonged to the lower socio-economic status. Lower abdominal pain was the most common associated symptom (57.5%) cases. 77.5% patients were in 8-12 weeks of amenorrhoea at the time of bleeding. **Clinical diagnosis**- In the present study, 90 (56.75%) cases were clinically diagnosed as

threatened abortion, 15% as missed abortion, 18.75% as incomplete abortion, 6.25% as molar pregnancy and 3.75% as ectopic pregnancy. The clinical diagnosis was mainly based on symptoms and clinical examination. **Ultrasonographic evaluation**- Our first objective was to differentiate failed pregnancy from the viable ones and to find out the cause of the bleeding. In our study, 66 cases had intact intrauterine pregnancy (41.25%). Out of the 90 clinically diagnosed threatened abortion cases, only 62 cases were ultrasonographically diagnosed to have live intra uterine pregnancies (68.8%). In the present series out of the cases of intact intrauterine pregnancies, 14 cases (19.4%) had subchorionic hematoma. Of these 14 cases only 2 cases (14.2%) subsequently aborted. Our observations are similar to Pederson et al⁸ and Bloch et al.⁹ Out of the 24 clinically diagnosed cases of missed abortion, 10 cases (41.66%) were ultrasonographically confirmed to be missed abortion; 6 cases (25%) turned out to be blighted ovum; 4 cases (16.66%) were threatened abortion and two cases each of incomplete abortion and inevitable abortion.

Table 1: Showing Distribution Of Cases Of Present Study According To Ultrasonographic Diagnosis

Ultrasonographic diagnosis	No. of cases	Percentage
Intact intrauterine pregnancy	66	41.25
Incomplete abortion	26	16.25
Missed abortion	22	13.75
Blighted ovum	16	10.0
Molar pregnancy	10	6.25
Complete abortion	10	6.25
Ectopic pregnancy	6	3.75
Inevitable abortion	4	2.5
Total	160	

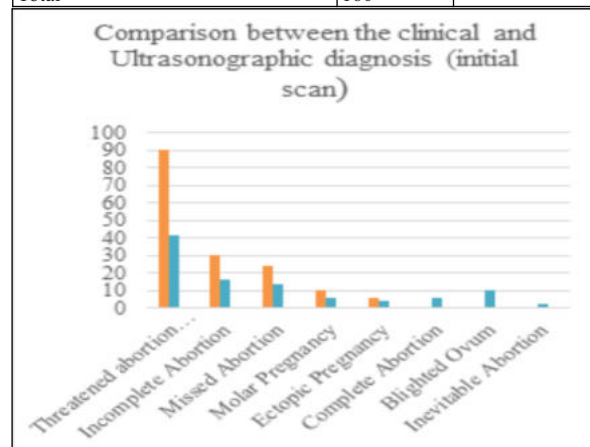


Chart 1: Showing Comparison Between The Clinical And Ultrasonographic Diagnosis (initial Scan)

Table 2: Showing Comparison Between The Clinical And Ultrasonographic Diagnosis, The Difference Was Statistically Significant

Entry	Clinical Diagnosis		Ultrasonographic Diagnosis	
	No. of cases	%age	No. of cases	%age
Threatened abortion (intact IUP)	90	56.25	66	41.25
Incomplete Abortion	30	18.75	26	16.25
Missed Abortion	24	15	22	13.75
Molar Pregnancy	10	6.25	10	6.25
Ectopic Pregnancy	6	3.75	6	3.75
Complete Abortion	-	-	10	6.25
Blighted Ovum	-	-	16	10.0
Inevitable Abortion	-	-	4	2.5
Statistical Significance	p-value <0.001			

Blighted Ovum- the greatest contribution that USG has offered until now in cases of early pregnancy failure is the diagnosis of blighted ovum which is impossible to diagnose by clinical methods alone^{10,11,12}. But, implementation TVS helped in the detection of cases at an earlier gestational age. Out of the total 160 cases, 16 cases (10%) turned out to be blighted ovum. Of these 16 cases, 10 were initially diagnosed clinically as threatened abortion and 6 cases as missed abortion. 8 cases were called for re-scanning one week later. 4 cases were found at 6 weeks gestation and re-scanning done. Only one of the criteria adopted for diagnosis was present along with a well-defined gestational sac at 7 weeks gestation in another 4 cases. Re-scanning confirmed all the previous findings and confirmed the diagnosis of blighted ovum. Thus, USG is 100% accurate in the diagnosis of blighted ovum.

Table:3 Showing The Accuracy Of USG Diagnosis Of Failed Pregnancies At Different Gestational Weeks

Week of gestation	Blighted ovum	Missed Abortion	Incomplete abortion	Inevitable abortion	Complete Abortion	Molar pregnancy	Ectopic pregnancy	Total	USG accuracy %
6 th	4	2	-	-	-	-	-	6/8	75
7 th	6	4	-	-	-	-	-	10/10	100
8 th	4	4	4	2	2	-	4	20/20	100
9 th	2	6	8	2	4	-	2	24/24	100
10 th	-	4	8	-	-	4	-	16/16	100
11 th	-	-	4	-	-	2	-	6/6	100
12 th	-	-	-	-	-	4	-	4/4	100

Our study detected 30 cases (18.75%) of incomplete abortion clinically. USG confirmed the diagnosis in 20 cases while 10 cases turned out to be complete abortion. USG also revealed 4 clinically diagnosed cases of threatened abortion and 2 clinically diagnosed case of missed abortion to be incomplete abortion. Thus, final USG assessment obtained 26 cases (16.25%) of incomplete abortion. In this study, we got 10 cases (6.25%) of complete abortion on USG which were clinically diagnosed as incomplete abortion. All incomplete abortion cases were immediately taken up for dilatation and evacuation. Complete abortion cases were treated conservatively. However, one case of complete abortion had more than the expected amount of bleeding and was taken up for D&E during the observation period but no significant products were found on D&E.

Out of 10 clinically diagnosed cases of molar pregnancy, 8 were found to be molar gestations and 2 cases to be of complete abortion on USG. Also, two clinically diagnosed case of threatened abortion turned out to be a case of molar pregnancy on USG examination. So, total 10 cases were found to be molar gestation (6.25%). Histopathological confirmation was done in all the cases after suction and evacuation of the molar pregnancies. As regards to ectopic pregnancy, we had 6 cases diagnosed clinically which was also detected on USG examination. Laparoscopy was done in 5 cases and one case underwent laparotomy as the patient was haemodynamically unstable. In 4 of the 6 cases, urine pregnancy test was positive (66.6%) and our findings corroborate with Barnes et al¹³ (1985). In 4 of the cases USG demonstrated an empty uterus with an adnexal mass with ring like structure. Finally, the comparative accuracy of ultrasonographic diagnosis was found as follows. The sensitivity in detection of non-viable pregnancy in this study was 97.8% and specificity in diagnosis of intact intrauterine pregnancy was 97%. The overall accuracy was found to be 97.5%. There was a false negative result of 2.17% and a false positive result of 2.94%. USG has proved to be a very useful and efficient tool in the assessment of early pregnancy bleeding. TAS was quite efficient in detection of various abnormal gestations but TVS definitely scored over the former, in attenuating the diagnostic precision and implementation of TVS in the equivocal cases, greatly contributed in upholding the overall diagnostic significance of the procedure undertaken.

SUMMARY AND CONCLUSION

To summarise, majority of the cases of first trimester bleeding occurred in the age group of 26-30 years, especially in 8-12 weeks gestation coming from lower socio-economic status, with more cases seen in

primigravida than multigravida. Besides vaginal bleeding, pain abdomen was the most common symptom. Clinically, majority cases were diagnosed as threatened abortion (56.25%) followed by incomplete abortion (18.75%), missed abortion at 15%, molar pregnancy and ectopic pregnancy at 6.25% and 3.75% respectively. Clinical evaluation was correct in only 62.5% of cases. Of the 90 cases diagnosed as threatened abortion, USG diagnosis of intact intrauterine pregnancy was done in 62 cases. USG could diagnose 100% of non-viable pregnancy accurately from 7th week of gestation. After confirming the diagnosis by USG, appropriate management protocol was followed to treat the patients. Thus, it can be concluded that the unchallenging role of ultrasonography in the evaluation of vaginal bleeding in the first trimester of pregnancy, complemented by the safety and non-invasiveness of the procedure has become indispensable not only in their diagnosis but has also assumed the status of a decisive factor in their management strategy.

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