

ROLE OF ULTRASOUND IN FIRST TRIMESTER VAGINAL BLEEDING. OBSERVATIONAL STUDY AT TERTIARY CARE HOSPITAL

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ABSTRACT

BACKGROUND: First trimester vaginal bleeding is the commonest presentation of early pregnancy loss and is a diagnostic challenge. This study highlights the importance of ultrasound in diagnosis and management of various causes of this obstetric emergency. **METHODS:** Observational study for period of nine months done at Radiology department of Ghulam Muhammad Mahar Medical College Hospital (GMC) hospital Sukkur. All patients with vaginal bleeding in first trimester were included in the study. Patients clinically evaluated and diagnosed were then referred for ultrasound examination. Both clinical and ultrasound findings were correlated. **RESULTS:** In study of 150 patients it was observed that 105 (70%) patients had non viable pregnancy diagnosed on ultrasound with 80 (76%) patients showed various types of abortion including 32 patients (40%) were missed abortion, 28 patients (35%) were incomplete abortion, 12 patients (15%) were complete abortion, 8 patients (10%) were blighted ovum, other included 15 patients (14%) patients had ectopic pregnancy and 10 patients (10%) had molar pregnancy. Among viable pregnancies 45 patients (30%) patients diagnosed as threatened abortion. **CONCLUSION:** Study concluded that ultrasound is a first line and non invasive imaging modality in diagnosis and management of patients with bleeding in first trimester. This study will help the clinician and sonologists in diagnosis of cause of bleeding by applying various diagnostic parameters on ultrasound.

Keywords: First trimester bleeding, ultrasound, abortion, molar pregnancy, ectopic pregnancy.

Introduction

First trimester vaginal bleeding is a common obstetric emergency and most frequent indication for ultrasound during first trimester. It seems to occur in 16% of all pregnant women with frequency of spontaneous abortion is about 10-20%. There are various causes including spontaneous abortion, ectopic pregnancy and molar pregnancy ranging from minor to life threatening blood loss.¹⁻² Besides clinical and laboratory evaluation, non invasive and cheap imaging by means of ultrasonography plays a crucial role in diagnosing a cause of bleeding per vagina. Ultrasound not only confirms the viability and location of pregnancy either intrauterine or extrauterine but also defines clearly its various causes of bleeding per vagina including placental localization.³

Three-dimensional (3D) ultrasound and Doppler ultrasound are recent advancements provides prognostic values in assessment of pregnancy failure by measuring 3D gestational sac volume and utero placental blood flow respectively.⁴

Material and Methods

This was an observational study. One hundred and fifty patients with history of vaginal bleeding in first trimester were included in the study. The study period was nine months from January - September 2020. Women with vaginal bleeding not related to pregnancy excluded from the study. All patients were clinically

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evaluated and provisional diagnosis was made by the clinician. Subsequently they were referred to ultrasound department. Trans abdominal ultrasonography was done in majority of patients using linear / sector 3.5 MHZ frequency transducer. Transvaginal exam was done in 20 patients using 5-7 MHZ transducer with inconclusive findings on trans abdominal scan. Majority of patients were diagnosed as ectopic pregnancy in 12 cases and another 8 cases had abnormal intrauterine gestation. Imaging findings were correlated with the clinical findings and patients were followed. The study was duly approved by ethical committee as well.

Results

Data from 150 patients was collected and results were made. Age group distribution was 16-35 yrs and majority of cases were in the age group of 26-30 yrs (39%), other age group distribution is presented in (Tab.1).

Age in years	No of cases (%)
16-20	30(20%)
21-25	41(27%)
26-30	58(39%)
31-35	21(14%)
Total	150(100%)

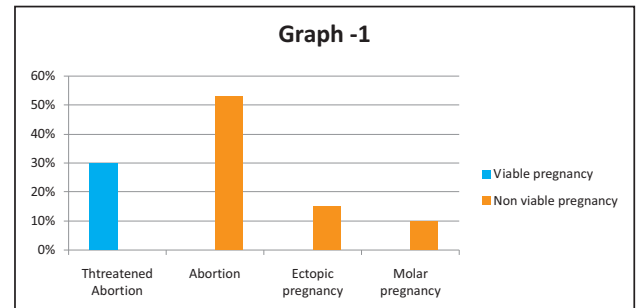
Table 1: Age and no of cases.

Majority of patients were primigravida included 95 patients (63%) and 55 patients (37%) were multi-gravida. The gestational age between 6-8 weeks were included 70 cases (47%), at 8-10 weeks were 48 cases (32%) and at 10-12 weeks were 32 cases (21%). (Tab. 2).

Gestational Age	No of cases (%)
6-8wk	70(47%)
8-10wk	48(32%)
10-12wk	32(21%)
Total	150(100%)

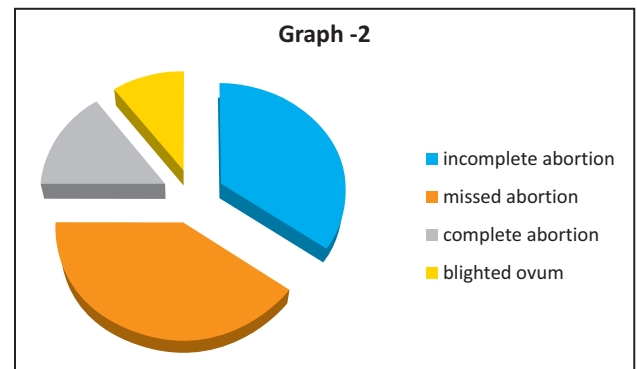
Table 2: Distribution of gestational ages.

In total 150 patients (Graph-1), ultrasound showed viable pregnancy with positive cardiac activity in 45 patients (30%) diagnosed as threatened abortion and were followed. Among them majority had delivery at term and few had abortion during followup.



Graph 1: Showing various causes of vaginal bleeding on transabdominal USG

Non viability of pregnancy seen in 105 patients (70%). Among them 80 patients (76%) showed various types of abortion (Graph-2).



Graph 2: Showing various types of abortion on USG

Among them 32(40%) cases were either with no cardiac activity or gestational age not corresponds with mean sac diameter(MSD) or crown lump length (CRL) diagnosed as missed abortion. 28 (35%) cases showed irregular sac with echogenic retained fetal parts were diagnosed as incomplete abortion. 12 (15%) cases showed irregular thickened or normal endometrium with no gestational sac were diagnosed as complete abortion. 8 (10%) cases showed sac diameter of 25mm with no fetal pole were diagnosed as blighted ovum.

15 patients (14%) were diagnosed as ectopic pregnancy on basis of normal endometrium with adnexal mass containing gestational sac or fetal pole and 10 patients (10%) had molar pregnancy with characteristic

findings of enlarged uterus with complex echogenic cystic endometrial lesion with or without fetal pole. (Fig.1)

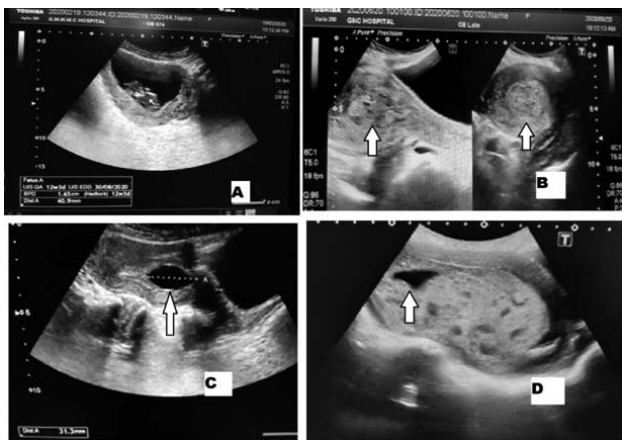


Figure 1A: showing intrauterine pregnancy of 12 weeks with CRL of 4.0 cm and no cardiac activity noted corresponds to missed abortion. **B** showing complex echogenic thickened endometrium in a patient of 10 weeks pregnancy correspond to RPOC,s. **C** showing intrauterine gestational sac measuring 3.1 cm without fetal pole or yolk sac consistent with anembryonic pregnancy. **D** showing enlarge uterus filled with complex echogenic mass with cystic spaces and small gestational sac without fetal pole diagnostic of complete molar pregnancy.

Discussion

Ultrasound is the first line imaging modality in evaluation of various causes of first trimester bleeding. Vaginal bleeding in first three months seen in about quarter of pregnancies, and half of them ends in loss of pregnancy.⁵

Ultrasound plays a diagnostic role in confirmation and detection of various causes of first trimester bleeding. Gestational sac seen as rounded anechoic fluid collection in endometrium in majority of pregnant patients.⁶

There are various sonographic parameters to predict pregnancy outcome described in previous studies. The most important findings on ultrasound are abnormal gestational sac size either large or small, irregular shape, abnormally large or irregular yolk sac size, low implantation site, a weak decidual reaction, and a bradycardias.⁷⁻⁸

Other parameters for diagnosis of pregnancy loss includes yolk sac size usually larger than 7 mm and a smaller sac size in relation to size of embryo when difference is more than 5mm.⁹⁻¹⁰

The Society of Radiologists in Ultrasound 2012 con-

sensus defines diagnostic criteria of diagnosing viability of pregnancy.

1. In first 12 weeks crown-rump length (CRL) measured from the head (crown) to the buttocks (rump), is the most accurate measurement of gestational age.
2. Mean sac diameter of at least 25 mm, embryo should be visualized.
3. Cardiac activity should be seen with CRL of 7 mm or more.¹¹

Multi centre observational study done by Abdallah et al. suggested that diagnosis of miscarriage not only depends on growth rate of gestational sac, but sac with out embryo or absence of heartbeat in embryo was also definite parametre.¹²

Another study results by Abdallah showed that almost definite diagnosis could be made by using certain cut-off values as described above.¹³

Study by Tan et al. showed that larger yolk sac size larger than 5mm had more chance of pregnancy loss.¹⁴

Retained products of abortion usually seen on ultrasound as either irregular thickened endometrium, echogenic mass in endometrium either focal or diffuse, with or without fetal pole.¹⁵⁻¹⁶ In our study of 150 cases, 40 cases showed these different presentation of RPOC,s most commonly as thickened endometrium more than 1.2cm.

The most common ultrasound findings of ectopic pregnancy is well define extrauterine complex cystic mass in adnexa usually without embryo. Normal endometrium without gestational sac seen.¹⁷ In our study this was also the most common ultrasound findings in 15 cases.

Molar pregnancy diagnosed as thickened endometrium similar to RPOC but with cystic spaces, in partial mole embryo also seen. Complete mole difficult to diagnose but needs lab and histopathology correlation.¹⁸⁻¹⁹ In our study 7 cases were partial mole and 3 were complete molar pregnancy.

In the study by Dogra et al states that abortion, ectopic pregnancy and molar pregnancy were the three major causes for bleeding in the first trimester of pregnancy.²⁰ In present study results also showed the same reasons for first trimester bleeding.

Conclusion

Ultrasound can timely and accurately diagnose and confirms the pregnancy to label as viable or non viable. Ultrasound will help and guide the consulting clinician to appropriately manage the patient with either medical or surgical treatment, preventing undue complications and will reduce maternal morbidity and mortality. This study evaluates the role of ultrasound in diagnosis of various types and causes of first trimester pregnancy loss.

Conflicts of Interest: None

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