Journal of Cardiovascular Disease Research
ISSN: 0975-3583, 0976-2833 VOL16, ISSUE 1, 2025

A PROSPECTIVE CLINICAL STUDY OF ROLE OF ULTRASOUND IN FIRST TRIMESTER VAGINAL BLEEDING

Dr Annith Kumar VM[1*], Dr.K.A.M.Afsar[2], Dr.Meera Srinivasan[3]
[1*]Assistant Professor, Department of Obstetrics and Gynecology, Tagore Medical College, Chennai.
[2]Assistant Professor, Department of Obstetrics and Gynecology, Tagore Medical College, Chennai.
[3]Assistant Professor, Department of Obstetrics and Gynecology, Tagore Medical College, Chennai.
Corresponding Author: Dr Annith Kumar VM
Assistant Professor, Department of Obstetrics and Gynecology, Tagore Medical College, Chennai.

Abstract

Introduction: Vaginal bleeding is one of the most frequent and potentially serious causes that necessitate emergency consultation during pregnancy. The first trimester is a dynamic period that encompasses ovulation, fertilization, implantation, and organogenesis. Nearly 20-25% of pregnant women experience some degree of bleeding during the early months of gestation.[1]

Materials and methods: The study includes all obstetric cases attending department of Obstetrics and Gynecology, Tagore Medical College, Chennai with history of bleeding per vaginum in first trimester from January 2024 to December 2024. Sample size of 200 cases who presented with history of bleeding in first trimester of pregnancy have been included. It is a hospital based prospective study of patients who present with bleeding per vaginum in the first trimester of pregnancy during the study period. Clinical details like age, parity, obstetric history, personal history, medical history, past history, menstrual history and details of present pregnancy in terms of period of amenorrhoea at the time of first episode of bleeding, amount and duration of bleeding whether associated with pain abdomen or not and history of expulsion of fleshy mass /clots were noted. Clinical examination including general physical examination and pelvic examination was done to arrive at a provisional clinical diagnosis.

Results: Total obstetric cases was 8416, out of which 200 cases had bleeding per vagina in first trimester (2.37%). The above table shows, majority of them in the age group of 21-25 years constitutes 48%. 60 cases (30%) in 18-20 years, 28 (14%) in 26-30 years, 16 (8%) in 31-35 years. The mean age was 23 years. In the present study, 66 (33%) primigravida and 134 (67%) multigravida. Majority of cases 144 (72%) had uterine size <10 weeks and 32 (16%) between 10-12 weeks. Cervical os was open in 62(31%) cases and closed in 138 (69%) cases. Fornices was free in 184 (92%) cases and tender in 16 (8%) cases. In the study as per clinical diagnosis, majority of cases, 98 (49%) cases were clinically diagnosed as threatened abortion, 52(26%) cases as incomplete abortion, 18 (9%) cases as missed abortion, 8 (4%) cases as ectopic pregnancy, 14 case as complete abortion, 8 cases as inevitable abortion and 2 cases as molar pregnancy.

Conclusion: In the present study, USG played a very important role in the diagnosis of cause of first trimester bleeding. It can diagnose threatened abortion positively. Missed abortion, anembryonic gestation and incomplete abortion, ectopic gestation and molar pregnancy are reliably diagnosed. Patient with complete abortions were accurately identified, so that unnecessary curettage was avoided with a consequent reduction in morbidity. Therefore ultrasound diagnosis in first trimester bleeding is a key diagnostic tool. Ultrasonography has helped in establishing the correct diagnosis of clinically misdiagnosed cases, confirm the diagnosis in the others and provide the most appropriate management in all of them.

Key Words: Vaginal bleeding, ovulation, fertilization, implantation, and organogenesis.

INTRODUCTION

Vaginal bleeding is one of the most frequent and potentially serious causes that necessitate emergency consultation during pregnancy. The first trimester is a dynamic period that encompasses ovulation, fertilization, implantation, and organogenesis. Nearly 20-25% of pregnant women experience some degree of bleeding during the early months of gestation.[1]

The major causes of bleeding during pregnancy in the first trimester include abortion, ectopic pregnancy, and molar pregnancy, as well as certain conditions unrelated to pregnancy such as cervical erosion, cervical polyp, and cervical carcinoma. By relying solely on history or clinical examination, a definitive diagnosis is often impossible; however, ultrasonography has introduced new possibilities in managing early pregnancy complications, enabling timely and specific treatment.[2]

Ultrasonography aids in the early diagnosis, appropriate management, and post-evacuation follow-up of molar pregnancies. Coupled with serum βHCG monitoring, this approach makes follow-up of such cases feasible. In life-threatening emergencies like ectopic pregnancies, ultrasound is instrumental in confirming the diagnosis and determining the best course of action. When possible, conservative management can help preserve fertility.[3]

Ultrasound (both abdominal and TVS) plays a crucial role in managing patients with bleeding in the first trimester by confirming the pregnancy and determining whether it is intrauterine or extrauterine. Real-time sonography is a non-invasive and readily accessible approach that is highly beneficial for a specific diagnosis to be achieved.[4] It also helps assess gestational age and facilitates the early detection of anembryonic pregnancies, which are often associated with chromosomal anomalies. Furthermore, ultrasound can evaluate the type of abortion-whether threatened, incomplete, complete, or missed and identify any associated pelvic abnormalities. Additionally, it is essential for assessing fetal viability and confirming or ruling out suspected hydatidiform mole.[5]

The purpose of this study is to show the importance of ultrasound in identifying the cause of vaginal bleeding occuring in first trimester, to assess the prognosis and to institute appropriate obstetric management.

MATERIALS AND METHODS

The study includes all obstetric cases attending department of Obstetrics and Gynecology, Tagore Medical College, Chennai with history of bleeding per vaginum in first trimester from January 2024 to December 2024.

Sample size of 200 cases who presented with history of bleeding in first trimester of pregnancy have been included. It is a hospital based prospective study of patients who present with bleeding per vaginum in the first trimester of pregnancy during the study period. Clinical details like age, parity, obstetric history, personal history, medical history, past history, menstrual history and details of present pregnancy in terms of period of amenorrhoea at the time of first episode of bleeding, amount and duration of bleeding whether associated with pain abdomen or not and history of expulsion of fleshy mass /clots were noted. Clinical examination including general physical examination and pelvic examination was done to arrive at a provisional clinical diagnosis.

Patients were then subjected to ultrasound examination. Data was collected in a preformed proforma. Clinical and ultrasound findings were correlated. Transvaginal sonography was done using 7-12 mhz transducer. Analysis were made based on appropriate statistical methods.

Inclusion criteria:

All patients who present with bleeding per vagina and admitted for the same in first trimester of pregnancy

Exclusion criteria: Nil.

Statistical methods

The descriptive procedure displays univariate summary statistics for several variables in a single table and calculates standardized values (z scores). Variables can be ordered by the size of their means (in ascending or descending order), alphabetically, or by the order in which the researcher specifies.

Following descriptive statistics were employed in the present study-mean, standard deviation, frequency and percent.

RESULTS

Total obstetric cases was 8416, out of which 200 cases had bleeding per vagina in first trimester (2.37%). The above table shows, majority of them in the age group of 21-25 years constitutes 48%. 60 cases (30%) in 18-20 years, 28 (14%) in 26-30 years, 16 (8%) in 31-35 years. The mean age was 23 years.

Age in years	Number of patients	Percentage
18-20	60	30
21-25	96	48
26-30	28	14
>30	16	16
Total	200	200

Table 1: Age distribution

In the present study, 66 (33%) primigravida and 134 (67%) multigravida. Majority of cases 144 (72%) had uterine size <10 weeks and 32 (16%) between 10-12 weeks. Cervical os was open in 62(31%) cases and closed in 138 (69%) cases. Fornices was free in 184 (92%) cases and tender in 16 (8%) cases.

In the study as per clinical diagnosis, majority of cases, 98 (49%) cases were clinically diagnosed as threatened abortion, 52(26%) cases as incomplete abortion, 18 (9%) cases as missed abortion, 8 (4%) cases as ectopic pregnancy, 14 case as complete abortion, 8 cases as inevitable abortion and 2 cases as molar pregnancy.

The above graph shows the ultrasonographic features of 200 cases, 26 (13%) showed signs of viable pregnancy. 60 (30%) cases showed disorganised gestational sac or few echogenic debris indicating incomplete abortion. 44(22%) cases were visualised as fetal echoes with absence cardiac activity indicating missed abortion, 14 (7%) showed an empty gestational sac with no fetal pole indicating anembryonic gestation which is totally a sonographic diagnosis. In 18 (9%) cases uterus was empty but with an adnexal mass hence diagnosed as ectopic pregnancy, 18 (9%) cases with empty uterus was suggestive of complete abortion, 20 (10%) cases were diagnosed as molar pregnancy by the presence of vesicles in the uterine cavity.

According to ultrasound diagnosis, out of 200 cases, 26 (13%) were diagnosed as threatened abortion, 54 (27%) as incomplete abortion, 44 (22%) as missed abortion, 18 (9%) as complete abortion, 14 (7%) as anembryonic gestation, 18 (9%) as ectopic pregnancy and 20 (10%) as molar pregnancy.

Parity distribution	Number	Percentage
Primigravida	66	33
Multigravida	134	67
Total	200	100

Table 2: Distribution of cases according to parity

Causes	Number	Percentage
Abortion	162	81
Ectopic pregnancy	18	9
Hydatiform mole	20	10
Total	200	100

Table 3: The causes of bleeding per vagina in first trimester of pregnancy

DISCUSSION

Bleeding per vaginum in the first trimester is one of the most common emergency encountered which warrants for an ultrasound examination. The causes of bleeding are many and cover a spectrum of conditions ranging from a viable pregnancy to that of a non-viable one. Accurate diagnosis of the nature of pregnancy (viable or non-viable) can help institute the appropriate treatment.[6]

The sonographic landmarks of the first trimester of pregnancy have been well recognized which includes identification of gestational sac, fetal pole, fetal cardiac activity, movements, yolk sac and amnion. The invaluable role of these landmarks, gestational sac and fetal biometry in diagnosing abnormalities and predicting the pregnancy outcome has been clearly documented. Ultrasonography has opened new dimensions in early pregnancy bleeding so that specific treatment, medical or surgical, can be immediately instituted.[7,8]

Clinical history and pelvic examination are inadequate in assessing the cause and the prognosis. Ultrasound thus plays a dominant role in such cases and aid in managing them in the most appropriate way.[9]

In the present study various abortions contributed to a major cause of first trimester bleeding constituting 81%. In Rani et al, Bhargava et al study, Mamatha Shivanagappa et al study group also abortion is the leading cause of early pregnancy bleeding with an incidence of 61%, 81.6%, 83% respectively. The incidence of ectopic pregnancy is 9% and molar pregnancy is 10%. But the incidence of ectopic pregnancy and molar pregnancy in Rani et al, Bhargava et al and Mamatha Shivanagappa et al study is 21% and 18%, 13% and 4.35% and 13% and 4% respectively.[10]

CONCLUSION

In the present study, USG played a very important role in the diagnosis of cause of first trimester bleeding. It can diagnose threatened abortion positively. Missed abortion, anembryonic gestation and incomplete abortion, ectopic gestation and molar pregnancy are reliably diagnosed. Patient with complete abortions were accurately identified, so that unnecessary curettage was avoided with a consequent reduction in morbidity. Therefore ultrasound diagnosis in first trimester

bleeding is a key diagnostic tool. Ultrasonography has helped in establishing the correct diagnosis of clinically misdiagnosed cases, confirm the diagnosis in the others and provide the most appropriate management in all of them.

Today, Ultrasound definitely has an edge over clinical diagnosis in evaluating the cause for bleeding in the first trimester and can be rightly expressed as a component of the obstetrician's diagnostic armamentarium.

REFERENCES

1. Sandyashree PK, Nayak SCV. Clinical study of role of Ultrasound in first trimester vaginal bleeding. Int J Reprod Contracept Obstet Gynecol 2020; 9:4010-5.
2. Funderbert et al, First trimester bleeding. Clinics OBG. 2000:24; 59-71.
3. Scott JR. Ultrasound in first trimester, Evaluation of early bleeding. British J Obstet Gynaecol. 1999; 23:45-9.
4. Pandey K, Arya S, Tyagi G. Pregnancy outcome in patients with first trimester vaginal bleeding. Asian J Obs Gynaec.2000; 2:34-8.
5. Jagadeswari,Role of Ultrasound in Evaluation of Vaginal Bleeding in First Trimester of Pregnancy, J Res Med Dent Sci, 2021, 9(10): 274-276.
6. Reddirani P, Sunita V. Ultrasound evaluation of cause of vaginal bleeding in first trimester of pregnancy. J Obstet Gynecol Ind. 2000;50(1):54-8.
7. Bhargava SK, Dimri R. Transvaginal sonography in Obstetrics and Gynaecology, New Delhi, India 1988;44:97-159.
8. Mamatha S, Sagar SG, Manoli N. Ultrasound evaluation of vaginal bleeding in first trimester of pregnancy: a comparitive study with clinical examination. Int J Sci Stud. 2015;3(7):202-6.
9. Hertz JB, Mantoni M,Svenstruck B. Threatened abortion studied by estradiol 17 beta in serum and ultrasound. Obstet Gynecol. 1980:55; 324-8.
10. Nyberg DA, Laing FC, Filly RA, Simmons MUN, Jeffrey RB. Ultrasonographic differentiation of the gestational sac of early intrauterine pregnancy from pseudo gestational sac of ectopic pregnancy. Radiol. 1983; 146:755-9.