ORIGINAL RESEARCH PAPER

Radiodiagnosis

SONOGRAPHIC EVALUATION OF BLEEDING PER VAGINUM IN FIRST TRIMESTER OF PREGNANCY

Dr. Indra Kumar Batham	Associate Professor , Dept. of Radiodiagnosis ,G.R. Medical College, Gwalior.
Dr. Harendra Singh Bharti *	Resident Doctor , Dept. of Radiodiagnosis ,G.R. Medical College Gwalior. *Corresponding Author

ABSTRACT

Bleeding per vaginum is a frequent complication in early pregnancy in which Ultrasonography is one of the most important and useful diagnostic tool. Being non-invasive , without ionizing radiation and wide availability , if forms the first base line investigation in bleeding P/V in first trimester pregnancy. The common causes of bleeding per vaginum include abortions of various types , ectopic pregnancy, hydatidiform mole, placental abnormality and various pathological conditions of genital tract etc. There are so many newer diagnostic method to assess fetal well being are now used, e.g. hormonal assay, amniocentesis and Ultrasonography. Since subnormal hormone levels may occur relatively ,late in the clinical course , Ultrasound scanning yields more useful result compared with hormone assay. The purpose of this study to evaluate the cause and diagnostic accuracy of ultrasound that will help in the early management of bleeding per vaginum during first trimester of pregnancy.

Methodology: This is a prospective study was conducted on 100 pregnant women for a period of 1 year from October 2019 to October 2020 in Gajra Raja Medical College and Kamla raja hospital who attended obstetrics OPD or indoor department with bleeding per vaginum were scanned and included in our study.

Results: Among 100 patients presenting with bleeding per vaginum , most common cause is threatened abortion which was observed in 40 cases. There was 23 cases of missed abortion in the present study. Incomplete and complete abortion was present in 11 and 6 cases respectively. There was 4 cases of ectopic pregnancy. Blighted ovum was present in 7 cases. There was 5 cases of inevitable abortion. Rest of the cases were 1 case of H. Mole , 2 cases of hemorrhagic ovarian cyst and 1 case of anencephaly.

Conclusion: Sonogarphy is most important non invasive tool in the diagnosis of first trimester vaginal bleeding which is helpful to the clinician about the continuation of pregnancy or to timely intervene the abnormal pregnancy.

INTRODUCTION

The first trimester of pregnancy is a dynamic period that spans ovulation, fertilization , implantation and organogenesis associated with this eventful period of pregnancy is a fairly common complication, bleeding per vaginum. The most common indication for emergency referral in early pregnancy is vaginal bleeding[1]. The clinician dealing with this problem has limited number of tools with which he can assess the foetal well being. The history and physical examination are frequent inconclusive and additional information is desired for management of patients. During the least several years, ultrasonic methods have attained a central role in the diagnosis of various problems in early pregnancy. Diagnostic ultrasound offers a glimpse of the foetal status during the early months of pregnancy and in this respect it is a unique diagnostic method which, whole being safe provides an accurate and reliable diagnosis enabling more precise management. The common causes of first trimester vaginal bleeding could be abortions of various types (threatened abortion, missed abortion, inevitable abortion, incomplete and complete abortions), ectopic gestation, hydatidiform mole ,blighted ovum, multiple gestations , placental abnormalities like low lying and abruption of placenta and various pathological conditions of vaginal tract like cervical polyp , cervical fibroid , cervical erosions , cervical carcinoma etc. Uncommon causes of bleeding P/V in first trimester are pregnancy associated with gynaecological disorder like uterine fibroid and bicornuate uterus pregnancy etc. Approximately half of the patient who present with vaginal bleeding have a spontaneous abortion[2]. Ultrasound offers a glimpse of the fetal status during the early months of pregnancy especially the demonstration of fetal heart activity which is an excellent prognostic sign in patients with bleeding p/v in early pregnancy because most of these patients will continue their pregnancies to term. Transvaginal scanning permit the extremely detailed observation of the morphology of the early conceptus in utero[3].

MATERIAL AND METHODS

This is a prospective study was conducted for a period of 1 year from Oct. 2019 to Oct. 2020 in Gajra Raja Medical College & Kamla raja hospital who attended Obstetric OPD or indoor department with bleeding were scanned in the department of Radiodiagnosis, Gajra Raja Medical College, Gwalior (M.P.).

Sample size: 100 pregnant women

INCLUSION CRITERIA

All patients presenting with bleeding P/V and <14 week of amenorrhoea with positive urine pregnancy test.

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 14 completed weeks of gestation

METHOD

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

Equipment:

These studies conducted with real time equipment as follows:
1. Ultrasound machine with transducer frequency 3-5 MHZ.
2. High resolution sonography (frequency 6-9 MHZ).
3. Colour doppler sonograph.

Sonography (both TAS & TVS) done in each and every patient who came to us with bleeding per vaginum in their first trimester. Doppler sonography was done in selected patients to look for pattern of vascularity. All study performed in the Department of Radiodiagnosis, Gajra Raja Medical College, Gwalior (M.P.) with following high resolution ultrasound machines:

1. Aloka α6 (colour doppler & gray scale)
2. Mindray DC 30 (colour doppler & gray scale)

All patients were scanned after taking a brief history and physical examinations, pelvic examination, some relevant basic investigation were also required for selected cases as:

- CBC
- Urine examination – Routine/Microscopic

OBSERVATIONS
Table 1 : Distribution of cases according to age

Age group (years)	No. of cases	Percentage
18-25	25	25
26-30	45	45
31-35	15	15
36-40	9	9
41-45	6	6
Total	100	100

In our study , most of the patient (45 %cases) were in the age group of 26 to 30 years.

Table 2 : Distribution of viable cases according to different age groups

Age group (years)	No. of cases	Viable Cases	Percentage of Viable Cases (%)
18-25	25	17	68
26-30	45	23	51
31-35	15	9	60
36-40	9	6	66.6
41-45	6	1	16.6
Total	100	56	56

In this study maximum numbers of viable pregnancies were in age group 26-29 years which is 23 cases. Lowest viable cases is found above age 40 years which is 1.

Table 3 : Distribution of viable cases according to different age groups

Parity Distribution	Number	Percentage (%)
Primigravida	42	42
Multigravida	58	58
Total	**100**	**100**

In our study most of patients of first trimester vaginal bleeding is seen in multigravida which is 58.

Table 4 : Distribution of cases according to gestational age

Gestational age (weeks)	No. of cases	Percentage
6-7	43	43
8-9	33	33
10-11	14	14
12-13	10	10
Total	100	100

This study showing incidence of first trimester bleeding is most common during 6-7 wks and comprises of 43 cases (43%).

Table 5 : Distribution of patients according to clinical diagnosis

Clinical diagnosis	No. of cases	Percentage
Threatened abortion	73	73
Missed abortion	12	12
Incomplete abortion	5	5
Complete abortion	0	0
Inevitable abortion	3	3
Blighted ovum	0	0
Vesicular mole	2	2
Ectopic pregnancy	5	5
Total	100	100

Clinically most common causes of early pregnancy vaginal bleeding is various types of abortion in which threatened abortion were most common. In this study 73 % of patients diagnosed clinically as threatened abortion.

Table 6 : Ultrasonic diagnostic in patients with bleeding per vaginum

Diagnosis	No. of cases	Percentage
Threatened abortion	40	40
Missed abortion	23	23
Incomplete abortion	11	11
Complete abortion	6	6
Inevitable abortion	5	5
Blighted ovum	7	7
Vesicular mole	1	1
Ectopic pregnancy	4	4
Hemorrhagic ovarian cyst	2	2
Anencephaly	1	1
Total	100	100

In this study majority of cases with first trimester bleeding diagnosed on ultrasound as threatened abortion and comprises 40 cases (40%).

Table 7 : Shows disparity between clinical and sonographic diagnosis

Cases	Clinical Diagnosis	Ultrasonography Diagnosis	Disparity
Threatened abortion	73	40	33
Missed abortion	12	23	11
Incomplete abortion	5	11	6
Complete abortion	0	6	6
Inevitable abortion	3	5	2
Blighted ovum	0	7	7
Vesicular mole	2	1	1
Ectopic pregnancy	5	4	1
Hemorrhagic ovarian cyst	0	2	2
Anencephaly	0	1	1
Result	100	100	70

The total disparity between clinical and sonographic diagnosis was present in 70 cases.

Table 8 : Shows major causes of bleeding per vaginum in first trimester of pregnancy.

Causes	Number	Percentage (%)
Abortions	92	92
Ectopic	4	4
Hydatidiform mole	1	1
Hemorrhagic ovarian cyst	2	2
Anencephaly	1	1

The above table shows that the major cause for bleeding per vaginum in first trimester is abortion. In this study out of 100 cases 92 cases had abortion as the major cause of bleeding in first trimester.

Table 9 : Shows follow up of cases which is diagnosed clinically

Cases	Number of cases diagnosed clinically	Follow up
Threatened abortion	73	Pregnancy continued-40 Complete abortion-4 Incomplete abortion-6 Inevitable abortion-4 Missed abortion-14 Blighted ovum -4 Ectopic pregnancy-1

Missed abortion	12	Missed abortion-8 Blighted ovum -2 Complete abortion-2
Incomplete abortion	5	Incomplete abortion -3 Missed abortion-1 Blighted ovum -1
Complete abortion	0	-
Inevitable abortion	3	Inevitable abortion-1 Incomplete abortion -2
Blighted ovum	0	-
Vesicular mole	2	vesicular mole-1 anencephaly-1
Ectopic pregnancy	5	Ectopic pregnancy-3 Hemorrhagic ovarian cyst-2

Table 10 : Shows follow up of cases which is diagnosed sonographically

Cases	Number of Cases Diagnosed on Ultrasound	Follow up of Cases
Threatened abortion	40	All 40 cases continue as normal pregnancy
Missed abortion	23	All cases were confirmed
Incomplete abortion	11	All cases were confirmed
Complete abortion	6	All cases were confirmed
Inevitable abortion	5	All cases were confirmed
Blighted ovum	7	All cases were confirmed
Vesicular mole	1	All cases were confirmed
Ectopic pregnancy	4	All cases were confirmed
Hemorrhagic ovarian cyst	2	All cases were confirmed
Anencephaly	1	All cases were confirmed

In this study , 40 sonographically diagnosed cases of threatened abortion , all 40 cases were continued as normal pregnancy. Rest of the causes of bleeding per vaginum were confirmed on ultrasound.

Table 11 : Distribution of threatened abortion cases

Finding	No. of cases	Percentage
Low lying placenta	8	20
Low lying placenta with marginal abruption	18	45
Concealed haemorrhage with normal position of fetus	12	30
Partially separated placenta with low position of fetus	2	5
Total	40	100

Table 12 : Distribution of ectopic pregnancy cases

Diagnosis	No. of cases	Percentage
Well defined gestation sac with foetus/embryo outline with clear cul-de-sac with cardiac activity	1	25
Ill-defined adnexal complex mass without free fluid in cul-de-sac	2	50
Ill-defined adnexal complex mass with fluid in cul-de-sac	1	25
Total	4	100

Table 13 : Ultrasonic diagnosis of small for date uterus

Ultrasonic diagnosis	No. of cases	Percentage
Missed abortion	23	48.9
Blighted ovum	7	14.8
Incomplete abortion	11	23.4
Complete abortion	6	12.7
Total	47	100

Table 14 : Ultrasonic diagnosis of large for date uterus

Ultrasonic diagnosis	No. of cases	Percentage
Vesicular mole	1	25
Hemorrhagic ovarian cyst	2	50
Anencephaly (with associated polyhydramnios)	1	25
Total	4	100

DISCUSSION

In our study , the age group which is showing maximum incidence of bleeding per vaginum is 26-30 years and comprises of 45%. Studies have shown increased risk of abortion with advancing maternal age and parity. In this study, 6 cases were in age 41 and above and 5 cases were nonviable pregnancies and hence terminated. Only one case was viable and continue as normal pregnancy. Increasing maternal age is associated with adverse pregnancy outcome, which is also studied by Cziezel, Zoltan Bognar and Magda Rockenbauer[4]. In study done by Deepti kurmi et al[1] , maximum number of viable pregnancy was obtained in age group 25 to 29 years and it was 21 cases(48%), In our study , maximum viable pregnancy outcome in age group 26 to 30 years is 23 cases (51%). In present study only one case (16%) is viable in age group 41 & above. In Deepti kurmi et al[1] study , least viability is obtained in age group 40 to 44 years which was 0%.

Increasing parity is associated with increasing risk of spontaneous abortion and hence first trimester bleeding per vaginum. In our study 58% women were multiparous and 42 percent women primiparous. Study done by Andrew Cziezel, Zoltan Bognar and Magda Rockenbauer[4] also shown that increasing parity is associated with increased risk of spontaneous abortion.

In our study 43% of patients had vaginal bleeding in between 6-7 weeks of gestation. There are many studies on incidence of vaginal bleeding according to gestational age. A study done by Deepti kurmi et al[1] shown that 45% of cases had vaginal bleeding during 6-7 wks. In this study , 33% cases had bleeding during 8-9wks. Deepti kurmi et al[1] shown that 32% of cases had bleeding in between 8-9 weeks. In our study , 24% had bleeding between 10-13 weeks, which is comparable to the Deepti kurmi et al[1] study which is 23 %.

In our study , 73 cases clinically diagnosed as threatened abortion in which 40 cases continued as normal pregnancy. Rest 33 cases misdiagnosed clinically were-4 cases of complete abortion, 6 cases of incomplete abortion, 4 cases of inevitable abortion, 14 cases of missed abortion , 4 cases of blighted ovum and 1 case of ectopic pregnancy. In 12 clinically diagnosed cases of missed abortion , 8 cases came out to be missed abortion on follow up . Rest 4 cases were , 2 blighted ovum and 2 cases of complete abortion. In 5 clinically diagnosed cases of incomplete abortion , only 3 cases were rightly diagnosed on follow up , rest 2 cases were , 1 missed abortion and 1 case of blighted ovum. In 3 clinically diagnosed cases of inevitable abortion , 1 cases came out to be missed abortion on follow up . Rest 2 cases were incomplete abortion. Vesicular mole was clinically diagnosed on 2 cases in which 1 case was correctly diagnosed as vesicular mole , rest 1 case was anencephaly. In 5 clinically diagnosed cases of ectopic pregnancy , only 3 cases were rightly diagnosed on follow up , rest 2 cases were hemorrhagic ovarian cyst.

In our study, all cases of threatened abortion, missed abortion, incomplete abortion, Blighted ovum, H. Mole, ectopic gestation, complete abortion and inevitable abortion were diagnosed correctly on ultrasound with an accuracy of 100%. The results of present study are comparable with Rama Sofat[5]

and Neelam Bharadwaj et al[6] in diagnosing threatened abortion, missed abortion, blighted ovum and H Mole with 100% accuracy.

In our study, various type of abortions is the most common causes of vaginal bleeding in the first trimester which contribute to the 92% . Ectopic pregnancy ,H Mole , hemorrhagic ovarian cyst and anencephaly making up the rest of the cases which comprises of 4% , 1% , 2% and 1% respectively. The study done by Shivanagappa et al[7] et al. , Rani et al[8], Tiparse et al[9] , Deepti kurmi et al[1] , and Rama Sofat et al[5] also shown that abortion is the leading cause of early pregnancy bleeding.

In our study, out of 40 cases of sonographically diagnosed threatened abortion, low lying placenta with marginal abruption was noted in 18 cases (45%) in which 17 cases continued to term gestation while 1 case went to spontaneous abortion. Shivanagappa et al[7] , Steven et al[10] and Pederson et al[11] shown that the subchorionic bleed is present in 71% , 10% and 18% respectively.

In this study , out of total 100 clinically diagnosed cases of vaginal bleeding , were confirmed on ultrasound with disparity of 70 %. Ghorade et al[12] , Khanna et al[13] and Reddi rani[8] noted 68% , 50 and 42% disparity between clinical and ultrasound diagnosis respectively.

Out of 4 cases of ectopic pregnancy , 1 case was of ruptured ectopic pregnancy and 3 cases of intact ectopic pregnancy. In this study, the most common finding in ectopic pregnancy is an ill defined adnexal mass without free fluid in POD in 50 % cases.

In our study the most common cause of small for date uterus is missed abortion which is found in 23 cases (48%) and the most common cause of large for date uterus is hemorrhagic ovarian cyst which is found in 2 cases.

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 currettage 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[9]. There is clinical disparity present in our study in 70% cases , so ultrasonography is necessary to confirm the clinical diagnosis as cases would wrongly managed in the absence of USG. Similar results shown by Duff et al[14] ,Deepti kurmi et al[1] .

CONCLUSION

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. To treat the cause with undue delay on the basis of a definitive diagnosis based on clinical findings poses a problem to the obstetricians, causes an unnecessary prolonged stay at the hospital and delayed management of the case.

Ultrasonography is a non-invasive modality which is extremely useful to arrive at an accurate diagnosis and management of cases appropriately.

However, it should be remembered that ultrasound is an extension of the pelvic examination and cannot replace obstetric history and clinical examination.

REFERENCES
1. Deepti Kurmi, Vaishali R. Jadhav, Amrita Misri, Nigamanada Mishra, Santoshi Prabhu, Gayatri Savani. "Role of Pelvic Sonography in First Trimester Bleeding". Journal of Evolution of Medical and Dental Sciences 2015;Vol. 4, Issue 49, June 18; Page: 8516-8525, DOI: 10.14260/jemds/2015/1234
2. Paspulati RM, Bhatt S, Nour S. Sonographic evaluation of first trimester bleeding. Radiol Clin North Am. 2004;42:297.
3. Takeuchi H. Transvaginal ultrasound in the first trimester of pregnancy. Early Human Develop. 1992;29(1-3):381-4.
4. Andrew Cziezel, Zoltan Bognar and Magda Rockenbauer Journal of Epidemiology and Community Health, 1984, 38, 143-148.
5. Rama Sofat: ultrasound evaluation of bleeding in early pregnancy. Journal of obstetrics and Gynaecology of India 37, 344: 1987.
6. Neelam Bharadwaj. Sonography evaluation as an aid in the management of bleeding in early pregnancy. Journal of obstetrics and Gynecology of India. 1988; vol 38: pg 640-642.
7. Mamatha S, Sagar SG, Manoli N. Ultrasound Evaluation of Vaginal Bleeding in First Trimester of Pregnancy: A Comparative Study with Clinical Examination. Int J Sci Stud 2015;3(7):202-206.
8. P. Reddirani, V Sunita, Ultrasound Evaluation of cause of vaginal bleeding in first trimester of pregnancy, J Obstet Gynecol Ind Feb 2000; vol.50, No.1: Pg 54-.
9. Tiparse A, Gandhi B, Patel A. Ultrasonographic evaluation of first trimester bleeding. Int J Reprod Contracept Obstet Gynecol 2017;6:3614-7.
10. Steven R Goldstein, Bala R Subramaniam, B Nagesh Raghavendra, Steven C Horii, Susan Hilton. Subchorionic bleeding in threatened abortion. Sonographic findings and significance. AJR. Nov 1983; 141:975-78.
11. Jan Fog Pederson, Margit Mantoni. Prevalence and significance of subchorionic hemorrhage in threatened abortion. A sonographic study. AJR. 1990; 154:535-7.
12. Gorade T G: Shorothri A.N.Ultrasonography in early pregnancy bleeding, Journal of obstet and Gynaecol of India, vol 41, 1991 pg 13-16.
13. Khanna A, Prakash C, Agarwal A, Khanna AK. Ultasonography in the diagnosis of bleeding per vaginum during pregnancy. J Obstet Gynaecol 1992;42:120-3.
14. Duff GB. Prognosis in threatened abortion: a comparison between predictions made by sonar, urinary hormone assays and clinical judgement. Br J Obstet Gynecol. 1975;82:858-62.