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"EVALUATION OF CAUSES OF BLEEDING PER VAGINUM IN THE FIRST TRIMESTER OF PREGNANCY BY ULTRASOUND"

Radio-Diagnosis

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KEYWORDS

INTRODUCTION

Bleeding per vaginum in the first trimester is one of the most common obstetric problems. It is also one of the commonest cause for the majority of the emergency admissions to the obstetrics department and also a common reason for ultrasound examination in first trimester. Bleeding per vaginum occurs in up to 25% of pregnancy1 . About 50% of first trimester bleeding leads to miscarriage2 .Causes range from nonlife threatening conditions like threatened miscarriage to emergency conditions with severe haemorrhage such as incomplete induced or spontaneous abortions and molar pregnancies. About 50-70% of case of spontaneous abortions is due to genetic abnormalities. Life threatening conditions like ectopic pregnancy may present with minimal vaginal bleeding, and when there is no obvious hemodynamic changes the diagnosis may be missed in the absence of ultrasound. By history and clinical examination a definitive diagnosis is usually difficult.

Ultrasonography helps in accurately diagnose the causes of bleeding per vaginum in the first trimester of pregnancy. It does not employ any ionizing radiation which is harmful to the patient and the fetus and it is a non- invasive, less time consuming, easy to perform, repeatable modality that causes minimal discomfort to the patient. The social phenomena of increasing maternal age an heightened did expectation for normal outcome have put increase pressure in the obstetrician there by leading to increase use of ultrasonography. This study was taken upto compare the utility of ultrasound vis,-a-vis, clinical examination finding in first trimester vaginal bleeding. Ultrasound helps in diagnosing pregnancy and qualify whether it is intra or extra uterine, multiple pregnancies and to assess the period of gestation ,viability of the fetus , confirm or rule out suspected hydatidiform mole, and to assess the first trimester pregnancy failure such as blighted ovum, incomplete, complete or missed abortion and other pelvic causes for bleeding. Ultrasonography has open new dimensions in early pregnancy complications so that specific treatment medical or surgical can be immediately instituted.

Accurate diagnosis of nature of pregnancy (viable or non viable) can avoid unnecessary hormonal treatment and prolonged hospitalisation. It also indicate the need for a dilatation and curettage by diagnosing retained product in the uterine cavity.

Ultrasonographic examination should be done at the earliest possible period so as to confirm the clinical finding. Ultrasound is a valuable tool in the differentiation of causes of 1st trimester vaginal bleeding. Ultrasound is helpful in the decision making algorithm about the safe continuation of the pregnancy, timely intervention for abnormality. Poor history given by patients is often a diagnostic challenge both to the obstetrician and the radiologist. In assessingthe cause and the prognosis, clinical history and pelvic examination alone are inadequate. Ultrasound (both transabdominal and trans- vaginal sonography) can play an important role in the evaluation of the first trimester bleeding causes, prognosticate and predict the status of abnormal pregnancy. Real- time sonography has proved itself to be a non-invasive modality that is very useful to arrive at an accurate diagnosis.

Ultrasound in a woman who presents with bleeding in the first trimester helps:

1. In confirming the pregnancy.
2. To know if the pregnancy is intrauterine or extra-uterine.
3. To know the period of gestation.
4. In early recognition of any associated pelvic abnormality.
5. To know the viability of the fetus.
6. To confirm or rule out suspected hydatidiform mole.
7. To look for the presence of intrauterine contraceptive device (IUCD) and confirmation of pregnancy associated with IUCD.
8. Helps in prompt management of the patients.
9. Helps in early detection of anembryonic pregnancy which is commonly associated with chromosomal anomalies.
10. Evaluation of suspected blighted ovum and threatened, incomplete, complete or missed abortion.
11. Localization and textural evaluation of placenta. In the present study of 50 patients, we have evaluated the role of ultrasound in the accurate diagnosis of causes of bleeding in the first trimester and role of ultrasound in the management of first trimester bleeding.

MATERIALS AND METHODS

Source Of Data:

The main sources of data for this study are patients from teaching hospitals attached to Netaji Subhash Chandra Bose Medical College , Jabalpur (M.P.) .

Method Of Collection Of Data:

We studied 50 cases of pregnant women who presented with bleeding per vaginum during the first trimester between March 2021 and September 2022. All patients referred to the Dept of Radio diagnosis with clinically suspected first trimester bleeding were evaluated with clinical history, clinical examination and ultrasonography as per standard proforma. All patients were evaluated using transabdominal sonography and transvaginal ultrasound was preferred whenever transabdominal study was inconclusive or equivocal. Ultrasonographic examination of patients was done using the following machines:

1. MINDRAY DC-30
2. ALPINION E-CUBE -i7

Images were recorded using DICOM software (ESOATE) and Digital Camera. All cases of threatened abortion were followed up till full term and delivery.

Follow up ultrasound was performed whenever indicated.

Inclusion Criteria:

- All pregnant clinically suspected females having 1st trimester bleeding (< 12 completed weeks)

Exclusion Criteria:

- All pregnant females having non-obstetrical causes of vaginal bleeding.
- All pregnant females with more than 12 completed weeks of gestation
- All pregnant females who were uncooperative and not giving consent

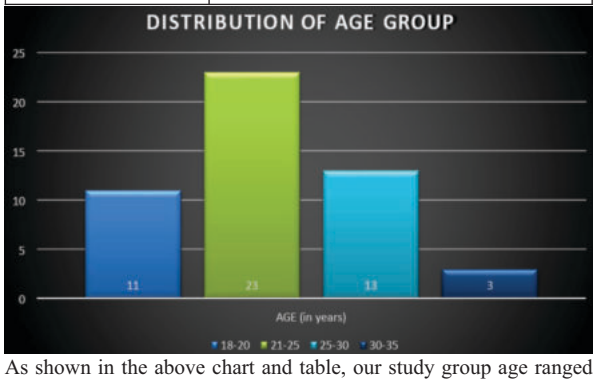
Figure 7 MINDRAY DC-30

Figure 8 ALPINION E-CUBE -i7

OBSERVATIONS AND RESULTS

Table 1: Age distribution of subjects studied

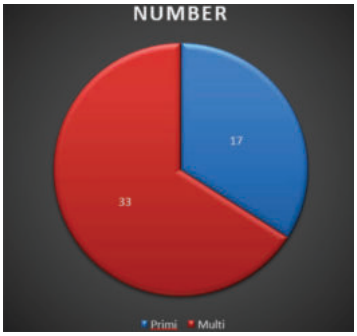
Age in years	Number	%
18-20	11	22.0
21-25	23	46.0
26-30	13	26.0
31-35	3	6.0
Total	50	100.0
Mean SD	24.24 4.13	



As shown in the above chart and table, our study group age ranged from 18 to 35 years. A majority of patients were from the age group of 21-25 years, totaling 23 (46%). 13 patients (26%) were between 26-30 years, 11 patients (22%) were < 20 years and the least common age group was between 31-35 years constituting only 6%.

Table 2: Parity distribution of subjects studied

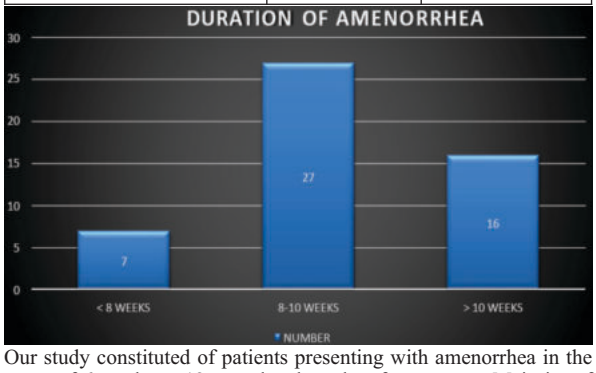
Parity distribution	Number	%
Primi	17	34.0
Multi	33	66.0
Total	50	100.0



In the present study 66% of the patients were multipara compared to 34% of primipara

Table 3: Duration of Amenorrhea

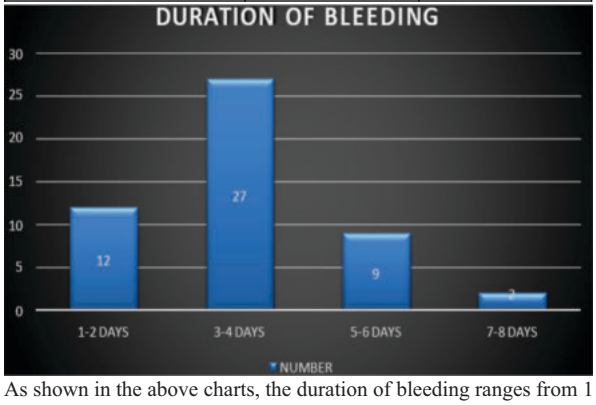
Duration of Amenorrhea	Number	%
< 8 Wk	7	14.0
8-10 Wk	27	54.0
> 10 Wk	16	32.0
Total	50	100.0



Our study constituted of patients presenting with amenorrhea in the range of 6 weeks to 12 completed weeks of pregnancy. Majority of patients presented between 8-10 weeks of pregnancy constituting 54%, and least common presentation was of < 8 weeks

Table 4: Duration of bleeding

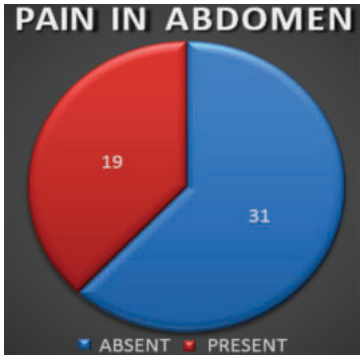
Duration of bleeding	Number	%
1-2 days	12	24.0
3-4 days	27	54.0
5-6 days	9	18.0
7-8 days	2	4.0
Total	50	100.0



As shown in the above charts, the duration of bleeding ranges from 1 day to 8 days with majority presenting with 3 to 4 days (54%) of bleeding. Least common was between 7 to 8 days constituted 4 % . 12 patients (24%) presented with 1-2 days of bleeding, 9 (18%) patients presented with 5-6 days of bleeding.

Table 5: Pain abdomen

Pain abdomen	Number	%
Absent	31	62.0
Present	19	38.0
Total	50	100.0



In present study 19 patients (38%) were presented with pain abdomen before, during or after bleeding. Out of 5 ectopic pregnancies all were associated with pain abdomen. Out of 4 cases of inevitable pregnancies 3 cases (75%) were associated with pain abdomen. Out of 10 cases of incomplete abortion 4(40%) patients were presented with pain abdomen. Only 4(22%) of 18 cases of threatened abortion were presented with pain abdomen. Only one case (25%) of 4missed abortion presented with pain abdomen. Two cases were complete abortion. One case of blighted anembryonic gestation was presented with pain abdomen.

Table 6: Physical examination

Physical examination	Number (n=50)	%
UT size		
<10	23	46.0
10-12	26	52.0
Bulky	1	2.0
Cervix		
Closed	47	94.0
PO	3	6.0
Fornices		
FF	45	90.0
Tenderness	5	10.0

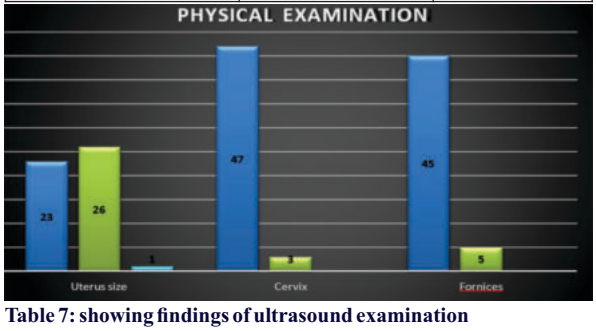
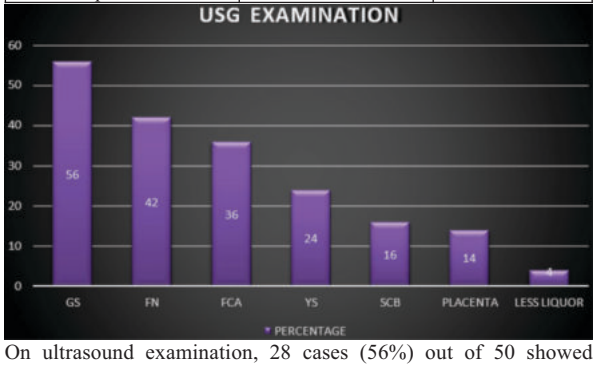


Table 7: showing findings of ultrasound examination

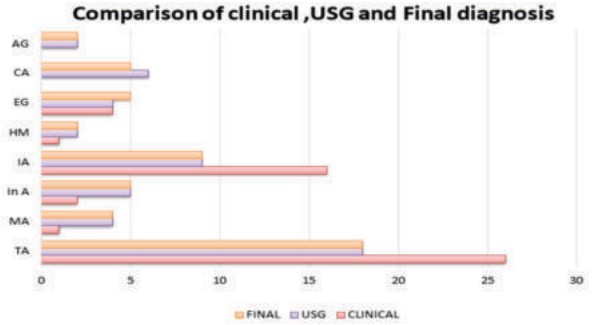
USG examination	Number (n=50)	%
1.GS	28	56.0
2.FN	21	42.0
3.FCA	18	36.0
4.YS	12	24.0
5.SCB	8	16.0
6.Placenta	7	14.0
7.Less Liquor	2	4.0



On ultrasound examination, 28 cases (56%) out of 50 showed Gestational sac out of which 18 cases were of threatened abortion. Out of 21 cases in which Fetal node was visualized, 18 cases showed fetal cardiac activity. 2 cases with absent fetal cardiac activity were diagnosed as inevitable abortion and one case as missed abortion. Of the 2 cases which demonstrated less liquor 2 cases were inevitable abortion and one case was threatened abortion. Yolk sac was detected in 12 cases. All were diagnosed as threatened abortion. Placenta was visualized in 7 cases and all were of more than 11 weeks gestation.

Table 8: Comparison of Clinical, USG and Final diagnosis

Clinical findings	Clinical		USG		Final	
	Number	%	Number	%	Number	%
AG	-	-	2	4.0	2	4.0
CA	-	-	6	12.0	5	10.0
EG	4	8.0	4	8.0	5	10.0
HM	1	2.0	2	4.0	2	4.0
IA	16	32.0	10	20.0	10	20.0
In A	2	4.0	4	8.0	4	8.0
MA	1	2.0	4	8.0	4	8.0
TA	26	52.0	18	36.0	18	36.0
Total	50	100.0	50	100.0	50	100.0



- As shown in above table and figure, there is significant disparity between the clinical diagnosis and final diagnosis whereas ultrasound diagnosis has got greater reliability.
- There is 100% sensitivity of ultrasound diagnosis in all cases except ectopic gestation in which it has 80% sensitivity.

Table 9: Follow up of cases diagnosed clinically

Cases	No. of cases clinically diagnosed	Follow up and results
Threatened Abortion	26	Out of 26 cases 12 cases- normal pregnancy 5 cases-IA 4 cases-CA 2 cases- In A 1 case- MA 1 case- HM 1 case- AG
Ectopic Gestation	4	Out of 4 cases all 4 cases were correctly diagnosed
Incomplete Abortion	16	Out of 16 cases 5 cases –IA 3cases –TA 3cases-CA 2cases-MA 1case-In A 1case- EG 1case- AG
Inevitable abortion	2	1case- In A 1 case- IA
Missed abortion	1	1case-MA
Hydatidiform mole	1	1 case-HM

In the present study follow up of clinically diagnosed cases showed out of 26 cases of suspected threatened abortion, only 18 cases were confirmed on sonography out of which 12 cases continued to term gestation. 5 cases of incomplete abortion were misdiagnosed as threatened abortion. 4 cases of clinically diagnosed threatened abortion turned out to be complete abortion. 2 cases of inevitable abortion and one case each of missed abortion, HM and anembryonic gestation were misdiagnosed as threatened abortion. Out of 16 cases of incomplete abortion which were diagnosed clinically, only 5 were confirmed. 3 cases of missed abortion and threatened abortion were misdiagnosed as incomplete abortion. 2 cases of missed abortion and 1 case each of inevitable abortion, ectopic and anembryonic gestation were misdiagnosed as incomplete abortion clinically. One case each of inevitable abortion, missed abortion and Hydatidiform mole were correctly diagnosed clinically. Of the 4 clinically suspected ectopic

pregnancies, were confirmed on ultrasound.

Table 10: Follow up of cases diagnosed on USG

Cases	No. of cases diagnosed on USG	Follow up and results
Threatened Abortion	18	1. 1cases of TA were continued as normal pregnancy 2. cases presented with missed abortion 3. cases presents with incomplete abortion 2 cases presented with complete abortion
Ectopic Gestation	4	Out of 4 cases all 4 cases were correctly diagnosed
Complete abortion	6	5 cases were diagnosed correctly 1 case of EG was misdiagnosed as CA
Incomplete Abortion	10	All 9 cases were correctly diagnosed as CA
Inevitable abortion	4	All cases correctly diagnosed
Missed abortion	4	All cases were correctly diagnosed
Hydatidiform mole	2	Both cases were correctly diagnosed
Anembryonic gestation	2	Both cases were correctly diagnosed

As shown in the above table, on follow-up of sonologically diagnosed cases, out of 18 cases of threatened abortion 12 cases continued to normal term gestation while 6 cases present with miscarriage. On repeat ultrasound, out of these 6 cases, 2 were missed abortion, 2 incomplete abortion and 2 cases with complete spontaneous abortion. All 4 cases of ectopic gestation were correctly diagnosed on ultrasound. Of the 6 cases of sonologically diagnosed complete abortion, only 5 were correctly diagnosed whereas one case of ectopic gestation was misdiagnosed as complete abortion.

10 case of incomplete abortion, 4 cases of inevitable abortion, 4 cases of missed abortion, 2 cases of HM and 2 cases of anembryonic gestation were all correctly diagnosed on Ultrasound.

We have divided our study group into 3 main categories for the purpose of statistical correlation. The 3 groups are:

1. Viable intrauterine pregnancies
2. Nonviable intrauterine pregnancy
3. Ectopic pregnancy/gestation

The groups were formed on the basis of the subsequent line of management in the particular cases.

All cases of viable intrauterine pregnancies were to be followed up without intervention; while other cases were managed as appropriate based on the ultrasound findings.

Table 11a: Correlation of Clinical diagnosis with Final diagnosis- an observation

Parameters	True positive	False Positive	False negative	True negative
Viable intrauterine pregnancy	15	11	3	21
Ectopic Pregnancy	4	0	1	45
Nonviable intrauterine pregnancy	16	4	11	19

Table 11b: Correlation of Clinical diagnosis with Final diagnosis- an evaluation

Parameters	Sen	Sp	PPV	NPV	Accuracy	P value
Viable intrauterine pregnancy	83.33	65.65	57.69	87.50	72.00	<0.001**
Ectopic Pregnancy	80.00	100.00	100.0	97.83	98.00	<0.001**
Nonviable intrauterine pregnancy	59.28	82.61	80.00	63.33	70.00	0.003**

- 15 out of 50 cases of suspected viable intrauterine gestation on clinical examination were confirmed whereas it has got high false positive cases (n=11).
- This shows a sensitivity of 83.33%, specificity 65.65%, PPV of 57.69% and accuracy of 72.0% with significant p value (<0.001).
- Of the 4 ectopic pregnancies diagnosed clinically, all were confirmed with specificity of 100% and PPV of 100%. 1 case of ectopic pregnancy not diagnosed clinically turned out to be ectopic with sensitivity of 80%, NPV of 97.83% and accuracy of 98% with a significant p value (<0.001).
- In diagnosing nonviable pregnancies, clinical diagnosis has got very poor statistical correlation with a sensitivity of 59.28%, specificity of 82.61%, NPV 63.33% and accuracy of 70%. This shows p value of 0.003.

Table 12a: Correlation of USG diagnosis with Final diagnosis- an observation

Parameters	True positive	False Positive	False negative	True negative
Viable intrauterine pregnancy	18	0	0	32
Ectopic Pregnancy	4	0	1	45
Nonviable intrauterine pregnancy	27	1	0	22

Table 12b: Correlation of USG diagnosis with Final diagnosis- an evaluation

Parameters	Sen.	Sp	PPV	NPV	Accuracy	P value
Viable intrauterine pregnancy	100.00	100.00	100.00	100.00	100.00	<0.001**
Ectopic regnancy	80.00	100.00	1000.00	97.83	98.00	<0.001**
Nonviable intrauterine pregnancy	100.00	95.65	96.43	100.00	98.00	<0.001**

- In present study, 18 cases of viable intrauterine pregnancies were correctly diagnosed on ultrasound with zero false positive and zero false negativity with sensitivity, specificity, PPV, NPV and accuracy of 100% each.
- 80% of ectopic pregnancies were correctly diagnosed with a specificity and PPV of 100 % whereas 1 case was missed on sonography with a sensitivity of 80% and NPV of 97.83% with an accuracy of 98%.
- Of the nonviable pregnancies diagnose on ultrasound were confirmed with a sensitivity and NPV of 100% whereas 1 case of false positive complete abortion was made on ultrasound with a specificity of 95.65%, PPV of 96.43% and accuracy of 98%.
- Ultrasound diagnosis proved to be very accurate on statistical evaluation with a very significant p value of <0.001.

Table 13a: Correlation of Clinical diagnosis with USG diagnosis- an observation

Parameters	True positive	False Positive	False negative	True negative
Viable intrauterine pregnancy	15	11	3	21
Ectopic Pregnancy	3	1	1	45
Nonviable intrauterine pregnancy	16	4	12	18

Table 13b: Correlation of Clinical diagnosis with USG diagnosis- an evaluation

Parameters	Sen.	Sp	PPV	NPV	Accuracy	P value
Viable intrauterine pregnancy	83.33	65.63	57.69	87.50	72.00	<0.001**
Ectopic Pregnancy	75.00	97.93	75.00	97.83	96.00	<0.001**
Nonviable intrauterine pregnancy	57.14	81.82	80.00	60.0	68.00	0.052+

Sen. Sensitivity; Sp: Specificity, PPV: Positive predictive Value; NPV: Negative Predictive value and Accuracy

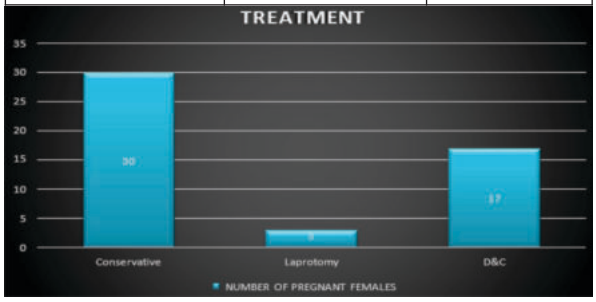
- In present study, when compared to the ultrasound diagnosis, clinical diagnosis has true positive of 15, false positive of 11 and true negative of 21 in diagnosing viable pregnancies that constitutes threatened abortion . Clinical diagnosis has high false negative and true negative in diagnosing non viable intrauterine pregnancies.
- Our study has a sensitivity of 83.3, PPV of 57.7 and accuracy of 72% in diagnosing viable pregnancies with a very significant p value (< 0.001).
- Clinical diagnosis of ectopic pregnancy has good specificity (97.93%), NPV (97.83%) and accuracy (96%) with p value < 0.001 which is very significant.
- Clinical diagnosis has got very poor statistical correlation when

compared to ultrasound diagnosis in evaluating non viable intrauterine pregnancies with a sensitivity of 57.14 %, NPV of 60% and accuracy 68.0 % which shows a p value of 0.052.

- This data shows that ultrasound diagnosis is considerably more accurate than clinical diagnosis.

Table 14: Treatment

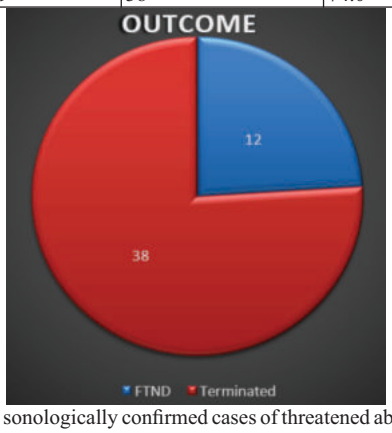
Treatment	Number (n=50)	%
Conservative	30	60
Laparatomy	3	6.0
D & C	17	34.0



Out of 50 cases of in our study, 30 cases were managed conservatively. All threatened cases were managed with bed rest either in the hospital on in the home. All 4 cases of inevitable abortion were spontaneously aborted on expectant management. 1 out of the 4 missed abortions and 2 out of the 5 ectopic pregnancies were managed conservatively. All cases of complete abortion were treated with bed rest. 3 cases out of 5 of ectopic pregnancy were treated by laparotomy. All incomplete abortions and anembryonic gestation were surgically evacuated. 2 cases of H mole were treated by D&C.

Table 15: Outcomes

Outcome	Number (n=50)	%
FTND	12	26.0
Terminated	38	74.0



12 out of 18 sonologically confirmed cases of threatened abortion were followed up to term gestation with successful outcome. 6 cases of threatened abortion were terminated on follow-up with 2 cases as complete abortion, 2 cases as missed abortion and 2 cases with repeat bleeding showed incomplete abortion.

RESULTS:

- Of the fifty cases of first trimester bleeding, 26 cases were diagnosed as threatened abortion clinically, out of which only 12 cases were confirmed. Ultrasound examination confirmed 12 cases of clinically suspected threatened abortions and aids in correctly diagnosing 8 cases which were missed on clinical examination. 12 cases out of 18 threatened abortions continued to term gestation with a successful outcome of 66%.
- All cases of threatened abortion (n=18), incomplete abortion (n=10), missed abortion (n=4), ectopic (n=4), inevitable abortion (n=4), blighted ovum (n=2), and Hydatiform Mole (n=2), were correctly diagnosed on USG.
- 48 out of 50 cases were correctly diagnosed on ultrasound compared to 18 out of
- 50 cases on clinical diagnosis with a disparity of 64%. 4 out of 5 proved ectopic pregnancies were correctly diagnosed both on ultrasound and clinical examination.

Case Images

Normal Early Pregnancy

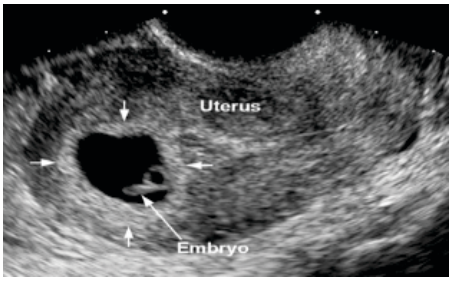


Fig-9a. On Tvs , (Grey Scale) Intrauterine G-sac Showing Embryonal Pole With Yolk Sac

Fig-9b. On Tas , Intrauterine Crl Is Seen With Adequate Liquor

Fig-9-c. Another Image Showing Intrauterine Crl Showing Developing Placental Tissue (on Tas)

inevitable Abortion

Fig-10 A.

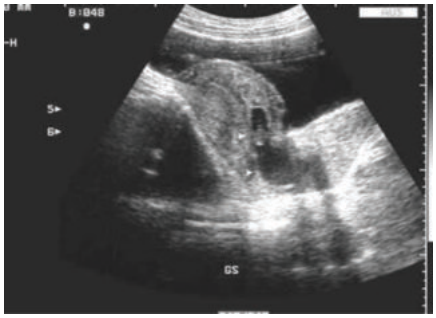


Fig-10 B. Above Tas Images Showing Inevitable Abortion ,showing Collapsed Gestational Sac In Lower Uterine Region

Blighted Ovum

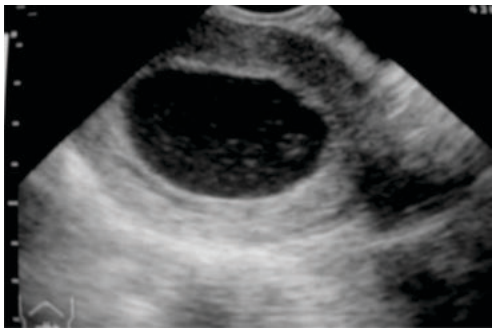


Fig-11a.

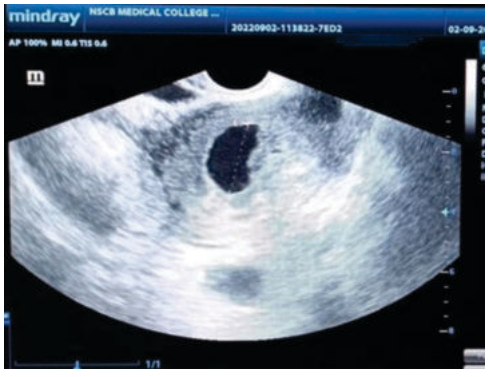


Fig-11 B. Tas And Tvs Images Showing Empty Gestational Sac (Feature Of Blighted Ovum)

Missed Abortion

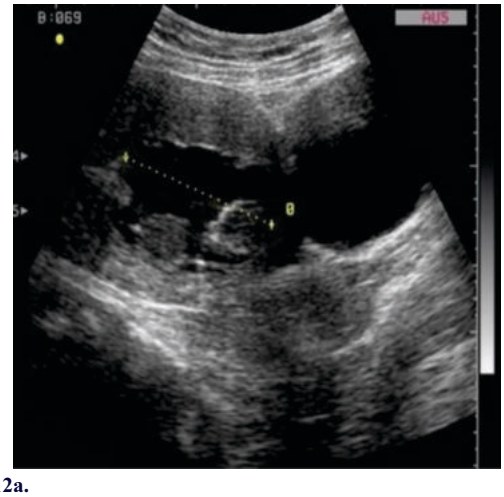


Fig-12a.

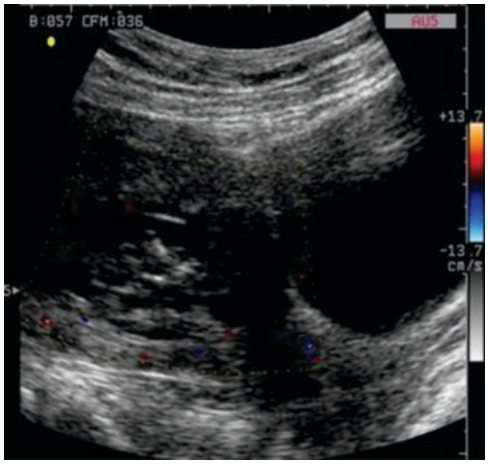


Fig-12 B. Above Images Showing Intrauterine Embryo Without Cardiac Activity

incomplete Abortion

Fig-13a.

Fig-13b. Above Tvs Images Showing Residual Trophoblastic Tissue In The Endometrial Cavity.(A Feature Of Incomplete Abortion)

Subchorionic Bleed (large)

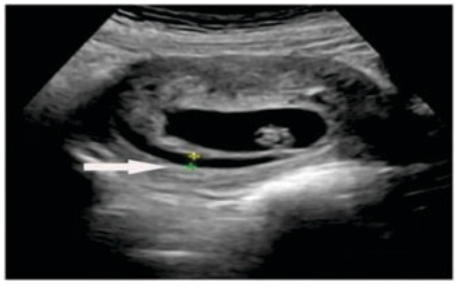


Fig-14a.

Fig-14b Above, Tas Images Showing Large Subchorionoic Bleed

Subchorionic Bleed (small)

Fig-15 A. Similar Subchorionic Bleed Is Seen But Of Small Size On Tas

Retroplacental Bleed

Fig-15 B. Tas Image Showing Retroplacental Bleed In Early Gestation

Oligohydramnios

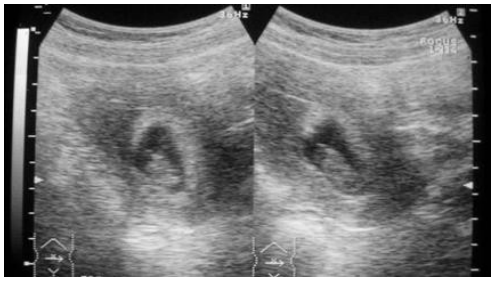


Fig-16 On Tas Image Showing Oligohydramnios

Ectopic Pregnancy

Fig-17. TVS Image Showing Early Ectopic Pregnancy

Ruptured Ectopic

Fig-18 A.

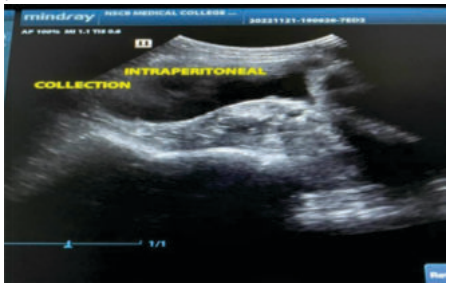


Fig 18 B Above Images , Showing Features Of Ruptured Ectopic Pregnancy (right Adnexal Lesion With Intraperitoneal Collection)

Hydatidiform Mole

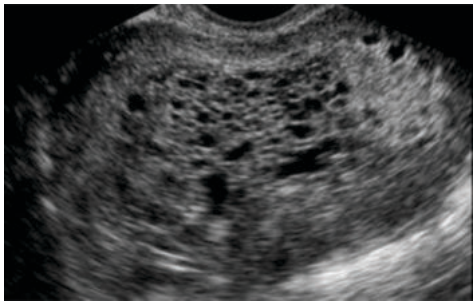


Fig-19 A.

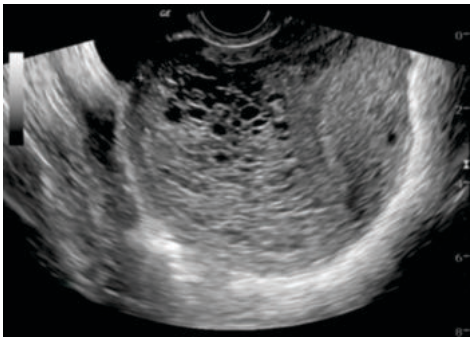


Fig-19 B.

Above Tvs , Images Showing Featues Of Hydatiform Mole , Aprears As A Heterogenous Mass In The Uterine Cavity With Multiple Anechoic Spaces Giving " Snow Storm Appearance

DISCUSSION

Bleeding per vaginum in the first trimester is one of the most routine obstetric problems. It is also one of the commonest cause for the majority of the emergency admissions to the obstetrics department and also a common reason for ultrasound examination in first trimester.

Nearly twenty five percent (25%) of all pregnant women in their first trimester complains of bleeding. In these women who present with bleeding per vaginum, during their first trimester several diagnostic possibilities can be considered. By mere clinical history and examination definitive diagnosis is usually impossible. The causes of bleeding are many and cover a spectrum of conditions ranging from a viable pregnancy to non-viable pregnancy.

Ultrasonography has opened new dimensions in early pregnancy bleeding so that specific treatment, medical or surgical, can be immediately instituted. Accurate diagnosis of nature of the pregnancy (viable or non-viable) can avoid unnecessary hormonal treatment and prolonged hospitalization. It also indicates the need for a Dilatation and Curettage by diagnosing retained products of conception in the uterine cavity. Ultrasonographic examination provides good index for evacuation in cases of abortion. Curettage is necessary if residual contents are seen but not when the uterus though bulky appears empty.A normal pregnancy with excellent chances for a viable birth could be differentiated using USG from a pathological pregnancy which warrants an immediate termination. The Sonographic landmarks of the first trimester of pregnancy have been well recognized and they include 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 pathological pregnancies and predicting the pregnancy outcome has been clearly documented.

A woman, who presents with poor history, poses a diagnostic challenge both to the obstetrician and the sonologist. Clinical history and pelvic examination are inadequate in assessing the cause and the prognosis. Ultrasound (both trans- abdominal and trans- vaginal sonography) plays an important role in the evaluation of the causes of the first trimester bleeding, prognosticate and predict the status of abnormal pregnancy. Real- time sonography is a non-invasive modality that is extremely useful to arrive at an accurate diagnosis.

Table 16: Shows comparison of causes of bleeding in the first trimester of pregnancy with few studies

Study	P Reddi Rani et al.[72]		Rama Sofat et al.[73]		Present study	
Causes of bleeding	No	%	No	%	No	%
Various types of abortions	61	61	70	77.5	43	86
Ectopic pregnancy	21	21	8	9	5	10
H.Mole	18	18	5	5.5	2	4

In present study, various abortions contributed to a major chunk of 1st trimester bleeding constituting 86% with ectopic pregnancy and H Mole making up the rest of the cases with frequencies of 10% and 4% respectively, when compared with P. Reddi Rani et al. and Rama Sofat et al.

Table 17: Prevalence of subchorionic bleeds in TA comparison with few studies available

Studies	No. of cases	Percentage
Steven R. et al[74] in 1983	10	20
Jan Fog Pedersen et al[75] in 1990	62	18
Present study	5	27

In our study, out of 18 cases of sonologically diagnosed threatened abortion; subchorionic bleed was noted in 5 cases; one out of which spontaneously aborted. Remaining 4 continued to term gestation. When compared to the Steven R. et al[74] and Jan Fog Pedersen et al[75], our study has got slightly more incidence of subchorionic bleeds.

Table 18: Showing comparison of Clinical vs. USG diagnosis of few studies

Study	Clinical diagnosis	USG diagnosis	Disparity	
			No.	%
Jaideep malhotra et al.[76] in 1987	150	102	48	32
P Reddi Rani et al.[72] in 2000	100	58	42	42
Present study	50	18	32	64

In our study, only 18 clinically diagnosed cases were confirmed on ultrasound with a disparity of 64%. The present study, when compared to Jaideep malhotra et al.[76] And P Reddi Rani et al.[72] has got more disparity between clinical and ultrasound diagnosis.

Table 19: Showing comparison of frequency of occurrence of outcomes after ultrasound for bleeding in first trimester.

Study	Viable	Nonviable
Hertz et al.[77] in 1980	0.58	0.42
Nyberg et al.[2] in 1986	0.44	0.52
Stabile et al. [78] in 1986	0.64	0.36
Charles W Schauberger et al.[30] in 2005	0.44	0.33
Present study	0.36	0.64

In our study, 18 cases of threatened abortion were diagnosed on ultrasound based on viability of the fetus corresponding to 36% of cases of First trimester bleeding. Our study is comparable to Nyberg et al. and Charles W Schauberger et al.

Table 20: Comparison of USG accuracy with some of the studies available

Causes of bleeding	Study Of Rama Sofat[72]	Study Of Neelam SB[79]	Present study
Threatened abortion	95.5	98.2	100
Missed abortion	100	100	100
Incomplete abortion	50	100	100
Blighted ovum	100	0	100
Ectopic pregnancy	87.5	-	80
H. mole	100	100	100
Inevitable abortion	100	-	100
Complete abortion	-	-	100

In our study, all cases of threatened abortion, missed abortion, incomplete abortion, blighted ovum, H Mole and inevitable abortion were diagnosed correctly on ultrasound with an accuracy of 100%. 1 out of 5 cases of ectopic pregnancy and 1 out of 6 complete abortions were misdiagnosed with accuracy of 80 and 83% respectively. The results of present study are comparable with Rama Sofat[72] and Neelam SB[79] in diagnosing threatened abortion, missed abortion, blighted ovum and H Mole with 100% accuracy.

Causes Of First Trimester Bleeding

Threatened Abortion:

- Threatened abortion is vaginal bleeding before 20 weeks without cervical dilatation or effacement.
- Sonographic findings depend on the stage of gestation and may show an empty bulky uterus or intrauterine GS with or without an embryo.
- The findings at ultrasound examination in patients with threatened abortion are often both crucial and pivotal because in most cases the sonographic findings not only can determine the precise diagnosis but can also be used to guide therapy.

Complete Abortion:

- Complete abortion is vaginal bleeding with complete expulsion of all products of conception before 20 weeks.
- Sonography shows empty uterus.

Incomplete Abortion:

- Incomplete abortion is vaginal bleeding with partial expulsion of products of conception before 20 weeks of gestation.
- Sonographic findings are blood clots and residual trophoblastic tissue in the endometrial cavity.

Missed Abortion:

- Missed abortion is intrauterine embryonic demise before 20 weeks of gestation without expulsion of products of conception; may or may not present with vaginal bleeding.
- Sonographic findings are intrauterine embryo without cardiac activity. The embryo and GS may be small for the gestation age and are disproportionate.

Recurrent Abortion:

- Recurrent abortion is three or more consecutive spontaneous abortions.
- Sonographic findings depend on the stage of gestation and type of abortion.

Septic Abortion:

- Septic abortion is uterine infection associated with any of the above described abortions
- Sonographic findings are thick and irregular endometrial lining with fluid in the endometrial cavity

Inevitable Abortion:

- Patients with an open cervical OS found on pelvic examination but without a history or evidence of passage of tissue are diagnosed as having aninevitable miscarriage.
- On ultrasound examination, an anechoic area is seen around the sac, where the sac has dissected away from the uterine wall. The separated sac is seen lying low in the uterus. The dilated cervical canal confirms the diagnosis even though a heartbeat may still be detected. Sometimes the sac will be seen to move in position during the course of the scan.

Ectopic Pregnancy:

- The term ectopic gestation refers to a gestation where the fertilized ovum gets implanted in a sit other than intrauterine cavity. Tubal pregnancy is the commonest site accounting for 95-97%. Ampullary region is the common site in the tubal pregnancy. Less common sites include ovaries (0.5-1%), cervix (0.1%) and abdominal cavity.

Molar Pregnancy:

- The trophoblastic elements of the developing blastocyst are thought to undergo proliferative changes initiated by the persistence of chorionic villi from a blighted ovum and continue to undergo hydrated swelling. It can be complete mole or partial mole.
- In complete molar pregnancy, trophoblastic hyperplasia occurs with absenceof identifiable embryo and amniotic membrane. Approximately 90% of molar pregnancies are this type.
- In partial form the hydatidiform changes are focal and affect only a variable portion of the placenta. An abnormal placenta may co-exist.

Summary

Ultrasonography is an inexpensive, easily available, non-invasive, radiation free investigative modality. In our study we have evaluated 50 cases of bleeding in the first trimester of pregnancy to identify the role of ultrasound examination. On mere clinical examination, it was

not feasible to diagnose many cases correctly. There was a disparity of 64% between clinical and sonological diagnosis.

Out of 26 cases which were clinically diagnosed as threatened abortion, 16 cases were confirmed on ultrasound. Of the 16 cases of incomplete abortion only 5 cases were confirmed on USG examination. 3 cases of threatened abortion, 3 cases of complete abortion, 2 cases of missed abortion and 1 case each of incomplete abortion, blighted ovum & inevitable abortion was misdiagnosed as incomplete abortion on clinical examination, all of which were correctly diagnosed on USG. All of the 4 cases of ectopic gestation suspected clinically were confirmed as ectopic gestation on USG. One case of suspected threatened abortion was proved to be ectopic pregnancy. USG was able to diagnose 4 cases out of 5 proved ectopic pregnancies while one case was misdiagnosed on sonography as complete abortion but actually proved to be a case of ectopic pregnancy. In this study out of 2 cases of suspected inevitable abortion on clinical examination, 1 case was confirmed while the other case turned out to be incomplete abortion. Each of the cases of onemissed abortion & one HM was correctly diagnosed on clinical examination. All cases of threatened abortion (n=18), incomplete abortion (n=10), missed abortion (n=4), ectopic (n=4), inevitable abortion (n=4), blighted ovum (n=2), and HM (n=2), were correctly diagnosed on USG. One case was misdiagnosed as complete abortion on sonography but proved to be ectopic on laparotomy.

Out of the 18 cases of threatened abortion diagnosed on USG, 12 cases (66%) continued as normal pregnancy when followed up while 6 cases came back with repeat bleeding per vaginum and repeat USG showed 2 incomplete abortions, 2 complete spontaneous abortions & 2 missed abortions. In our study, 5 out of 18 cases of threatened abortion showed evidence of subchorionic bleed, out of which 4 cases continued to term gestation. One case ended up with spontaneous abortion. 2 cases out of 4 missed abortions showed SCB. Out of the 5 cases of ectopic pregnancy, 3 cases showed complex adnexal mass, 1 showed tubal ring and 1 revealed gestation sac with live embryo. In our study, ultrasound proved to be more accurate than the clinical diagnoses. Out of 50 clinical diagnoses, 18 cases were confirmed on ultrasonography while 32 were proved on sonography to have been misdiagnosed with a disparity of 64 % between clinical and sonographic diagnoses.

CONCLUSION

Bleeding per vaginum in the first trimester of pregnancy is a very routine obstetric problem and is a cause of anxiety and worry both to the patients and the obstetrician. Pelvic examination and clinical history are inadequate in assessing the cause and the prognosis. Abortions, ectopic pregnancy and molar pregnancy are the commonest causes of bleeding during first trimester. Ultrasound is a non- ionizing and non- invasive, easily available method of investigation to assess the patients with first trimester bleeding. It is highly accurate in diagnosing the actual causes of bleeding and directs the clinician in selecting the appropriate line of management and prevents mismanagement of the cases. It can also help in predicting the prognosis of the pregnancy.

In the current study, 48 out of 50 cases were correctly diagnosed on ultrasound compared to 18 out of 50 cases on clinical diagnosis with a disparity of 64%.

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