

# Ultrasound Evaluation of Vaginal Bleeding in First Trimester of Pregnancy

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**Summary :** One hundred cases of first trimester Vaginal bleeding were evaluated by Ultrasonography. Various types of abortions constituted the largest group (61%) followed by ectopic pregnancy (21%) and Vesicular mole (18%). There were 19 patients with threatened abortion with a pregnancy continuation rate of 79%. Sonographic findings were strongly suggestive of ectopic in 72% and diagnostic in 23% of cases. There were 3 cases of partial moles. Transvaginal sonography was more sensitive than transabdominal sonography in the diagnosis of abnormal intrauterine gestation, normal intrauterine gestation and ectopic pregnancy.

## Introduction :

Vaginal bleeding in the first trimester of pregnancy is a common obstetric problem and causes anxiety and worry both to the patient and obstetrician. The common causes of bleeding during first trimester include abortions, ectopic pregnancy, molar pregnancy. Clinical history and pelvic examination are inadequate in assessing the cause and the prognosis. Ultrasound (both abdominal and transvaginal sonography) plays an important role in evaluation of the causes of first trimester bleeding, prognosticate and predict the status of abnormal pregnancies.

## Material and Methods

One hundred patients admitted to our hospital with history of bleeding in the first trimester of pregnancy in whom ultrasound evaluation was done were studied. At admission a detailed obstetric history and clinical examination was done to arrive at a provisional diagnosis. Transabdominal ultrasonography was done in all cases with linear / sector 3.5 MHZ frequency transducer and transvaginal sonography using 5 MHZ probe was done in cases where findings were inconclusive. Transvagi-

nal sonography was also done in early gestation and in all cases suspected of having ectopic pregnancy.

Follow-up scans were done in cases of threatened abortion till delivery and maternal/foetal outcome evaluated. In patients with vesicular mole repeat HCG, ultrasound scans and chest X-ray were also done.

Role of ultrasound in diagnosis and subsequent management of these patients who presented with vaginal bleeding during first trimester was studied.

## Observations

One hundred patients with vaginal bleeding in first trimester of pregnancy formed the study group. The age of patients ranged from 25 to 29 years and gravidity from 1 to 8.

The commonest cause of bleeding during the first trimester of pregnancy was abortion (Table 1).

Clinically in 52 patients the bleeding was thought to be due to threatened abortion. Ultra-Sonography (USG) helped to diagnose non-viable pregnancy in 33 patients (Table II) and these underwent evacuation.

USG findings were very helpful in correlating the outcome in various types of abortions (Table III). All the patients with irregular gestational sac had an abnormal outcome. 16 patients with mean sac diameter of 8 mm by transvaginal sonography and 20 mm by abdominal

Table I

Causes of bleeding in first trimester

Causes	No.
Various types of abortions	61
Ectopic Pregnancy	21
Vesicular mole	18
Total	100

Table II

**Correlation of clinical diagnosis with ultrasound diagnosis**

S.No.	Clinical Diagnosis	No. of cases	Ultrasound Diagnosis	No. of Cases
01.	Threatened Abortion	52	Missed Abortion	19
			Threatened Abortion	19
			Blighted Ovum	13
			Incomplete Abortion	1
02.	Missed Abortion	8	Blighted Ovum	6
			Incomplete Abortion	1
			Missed Abortion	1
03.	Incomplete Abortion	1	Incomplete Abortion	1
04.	Ectopic Pregnancy	12	Ectopic Pregnancy	12
05.	PID/Ectopic Pregnancy	9	Ectopic Pregnancy	3
			USG Inconclusive	6
06.	Vesicular Mole	18	Complete Mole	14
			Partial Mole	3
			USG Inconclusive	1

Table III

**Ultrasound findings in abortions and correlation with outcome**

S.No.	Prognostic factors	Total No.	Outcome	
			Pregnancy Contd.	Aborted/ Evacuated
01.	Gestational Sac 25mm by TAS 16mm by TVS Embryo: Present	20	0	20*
	Absent	12	0	12**
02.	Gestational Sac 20mm by TAS 8mm by TVS Yolk sac: Present	5	3	2
	Absent	16	0	16
03.	Cardiac Pulsations	19	15	4
04.	Sub Chorionic Haematoma	6	1	5
05.	MSD - CRL < 5 mm	2	0	2
06.	Irregular Gestational Sac	19	0	19
07.	Low Implantation	1	1	0

\* All cases had absent Cardiac Pulsations (Missed Abortion)

\*\* Blighted Ovum

MSD Mean Sac Diameter

CRL Crown Rump Length

TVS Trans Vaginal Sonography

Table IV

**Sonographic Findings in Ectopic Pregnancy**

Sonographic Findings	No. of Patients.	Percentage
<u>Adnexa:</u>		
Complete Adnexal Mass	17	80.9
Adnexal Gestational Sac	5	23.8
Foetal Pole in Adnexa	2	9.5
Adnexal live embryo	1	4.7
Normal Adnexa	1	4.7
<u>Uterus</u>		
Normal	17	80.9
Thickened Endometrium	1	4.7
Pseudo - Sac	1	4.7
Enlarged Uterus	2	9.5
<u>Fluid:</u>		
Cul-de-Sac Fluid	11	52.3
Intra Abdominal Fluid	7	33.3
Echogenic Fluid	2	9.5

More than one finding was seen in several patients.

sonography; and those patients with absent yolk sac had an abnormal outcome (100%).

Nineteen patients with viable pregnancies were followed up, fifteen of whom continued their pregnancy till term. One patient had a preterm delivery because of pregnancy induced hypertension. There were 21 patients with ectopic pregnancy. USG helped to clinch the diagnosis in 15 patients. In the remaining 6 patients USG findings were inconclusive and required Laparoscopy/Laparotomy for diagnosis.

Table IV lists the USG findings in ectopic pregnancy. The commonest Sonographic finding in ectopic was an adnexal mass and a normal uterus (81%). Table V shows the correlation of clinical diagnosis, USG findings and laparotomy findings in cases of ectopic pregnancy.

Molar pregnancy was seen in 18 patients. USG helped to diagnose partial mole in 3 cases.

Ultrasound diagnosis correlated accurately with final

clinical outcome in 89% patients. In 11% it helped in diagnosis and subsequent management though findings were only suggestive but not diagnostic (Table VI).

Majority of patients diagnosed as having abnormal pregnancy had active management. Nineteen patients with non-viable intrauterine pregnancy progressed to inevitable abortion. The rest were evacuated. All patients with confirmed ectopic pregnancy had laparotomy. Six patients with inconclusive sonogram had laparoscopy followed by laparotomy. All patients with vesicular mole had spontaneous expulsion except in three who were evacuated. These patients were followed up with repeat sonograms and HCG estimations.

**Discussion**

Vaginal bleeding during early part of pregnancy often implies presence of an underlying abnormality which cannot be diagnosed conclusively by clinical examination. Ultrasonography (USG) is helpful in all such cases. In the present prospective study 100 patients were evaluated. Abortions constituted the single largest group of 61%. 19% were threatened abortions with a successful outcome of 79%. Mantoni (1985) reported 87% successful outcome in threatened abortions who had foetal cardiac activity. Similar outcome was also reported by Ericksen et al (1980).

Nyberg et al (1986) found that an irregular gestational sac is associated with abnormal outcome in 100% of cases. Similar results were found in our study. Mantoni et al (1981) correlated the presence of large chorionic haematoma with increased risk of subsequent abortion. There were 6 cases in our study who had a large chorionic haematoma, five of whom aborted.

Transvaginal sonography (TVS) was more sensitive to visualise foetal pole, yolk sac and cardiac activity compared to transabdominal sonography (TAS). Yolk sac was visualised in 44% cases by TVS, none by TAS. Cardiac activity was visualised in 9 cases compared to 3 cases by TAS. Pennell et al (1987) reported that cardiac activity was seen in 8 cases by TVS compared to only 2 cases by TAS; Yolk sac was seen in 83% by TVS but

Table V

**Correlation of Clinical Diagnosis with ultrasound diagnosis and laparotomy findings in ectopic pregnancy**

S.No.	Clinical Diagnosis	Total No.	USG Diagnosis			Laparotomy Diagnosis		
			(a)	(b)	(c)	(d)	(e)	(f)
01.	Ectopic Pregnancy	12	10	2	0	6	2	4
02.	PID / Ectopic	9	2	1	6	3	4	2
	Total	21	12	3	6	9	6	6

- |                          |                          |
|--------------------------|--------------------------|
| a. Ruptured Ectopic.,    | b. Un-ruptured Ectopic., |
| c. Inconclusive          | d. Tubal abortion        |
| e. Un-ruptured Ectopic., | f. Ruptured Ectopic      |

Table VI

**Comparison of ultrasound results with final diagnosis in patients with first trimester vaginal bleeding**

Ultrasound Result	(a)	(b)	(c)	(d)	(e)	Total
Definitive Diagnosis	16	19	3	36	15	89
Increased Confidence	2	0	0	3	6	11

- a. Vesicular Mole
- b. Threatened Abortion
- c. Incomplete Abortion
- d. Missed abortion & Blighted Ovum
- e. Ectopic Pregnancy

only in 33% of cases by TAS. Transvaginal sonography demonstrated intrauterine embryo, its heart motion and yolk sac more clearly and more often when these structures were not apparent in TAS.

The incidence of prematurity following threatened abortion reported by Verma et al (1992) was 19%. Our study showed only one case.

The recent improvements in sonography with endovaginal probes have allowed better visualisation of pelvic structures and consequently an increase in diagnostic accuracy and in active management of ectopic pregnancy under sonar guidance. Ultrasonographic findings in ectopic pregnancy may be diagnostic or suggestive.

The various findings seen in ectopic gestational sac, thickened endometrium and cul-de-sac fluid. Presence of ectopic gestational sac or ectopic embryo is diagnostic of

ectopic pregnancy.

Diagnostic findings of extrauterine gestational sac with or without foetus were seen in 23% of our cases. Stable et al (1990) reported sonographic findings diagnostic of ectopic pregnancy in 22% of cases by transabdominal sonography and 38% of cases by transvaginal sonography. In the present study in 9 cases, transvaginal sonography was diagnostic of ectopic in 4 cases and transabdominal sonography in 2 cases. Adnexal gestational sac was visualised with greater accuracy using TVS. Kivikoski, et al (1990) found adnexal findings highly suspicious of ectopic pregnancy in 68% cases by TAS and in 84% of cases by TVS.

Thickened endometrium/pseudosac was seen in 9.5% of cases in the present study which is comparable to 9% reported by Coleman et al (1985).

Freefluid in cul-de-sac was seen in 52% of cases in present study. Nyberg et al (1990) reported similar finding in about 63% of their patients. Fleischer et al (1990) reported echogenic free fluid in 26% of their cases by transvaginal sonography which is superior to transabdominal sonography in detecting free fluid.

Sonography remains the most important non-invasive diagnostic tool in molar pregnancy. In our study 17% had partial moles. Disaia and Creasman (1993) reported an incidence of 14.3% partial moles from Charing Cross Hospital.

In our series of 18 patients with molar pregnancy ultrasonographic diagnosis of partial mole was made in 3 patients (16%). In all the 3 cases normal placental tissue along with vesicles was documented at the time of curettage. However even with latest equipment early cases of partial mole may be confused with missed abortion (Debas et al 1995).

Ultrasonographic evaluation is a sensitive investigation which helps in early diagnosis of causes for Vaginal bleeding in first trimester of pregnancy. Major morbidity or mortality are prevented by early surgical intervention. In addition duration of hospital stay and hospital costs are reduced. Ultrasonography should be done in all patients with vaginal bleeding during first trimester of pregnancy. Transvaginal sonography is recommended in all cases when transabdominal sonography is inconclusive.

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