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Role of ultrasonography in cases of first trimester vaginal bleeding and its correlation with clinical findings: A prospective observational study

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Abstract
Background: Bleeding per vaginum in early pregnancy is a common presentation in the emergency room. Approximately 20-25% of pregnant women can have bleeding during early pregnancy. 50% of women who have vaginal bleeding in the first trimester of pregnancy will continue to have a viable pregnancy. About 50% of first Trimester bleeding will lead to miscarriage. Considering these factors, we attempted to evaluate the role of ultrasonography in the diagnosis of bleeding per vaginum during pregnancy & its correlation with clinical findings.
Aims and Objectives: To establish the fundamental role of ultrasonography in first trimester vaginal bleeding and to avoid premature interventions in a putatively nonviable pregnancy where early intervention might lead to misdiagnosis and mismanagement
Methods and Materials: This prospective observational study was conducted among all the antenatal women with first trimester vaginal bleeding attending ante-natal clinic & emergency labour room who met the inclusion and exclusion criteria in Department of Obstetrics & Gynecology, Ruby Hall Clinic, Pune during the period May 2017 to April 2018.
Results: The mean ± SD of age of the entire group of cases studied was 26.9 ± 3.9 years and the minimum to maximum age range was 19 – 38 years. On clinical examination, out of 180 cases, 71.1% were threatened abortion, 10% as incomplete abortion, 8.9% missed abortion, and 4.4% complete abortion, 2.8% normal pregnancy, 1.7 % ectopic and 1.1 % hydatidiform mole. Ultrasonography in 180 cases of first trimester vaginal bleeding are viable pregnancy was seen in 105 (58.33%) cases, non-viable pregnancy in 67 cases, 6 cases of ectopic gestation and 2 cases of hydatidiform mole.
Conclusions: Ultrasonography is accurate safe and non-invasive diagnostic tool in differentiating various conditions of first trimester bleeding. Prompt treatment based on the ultrasound findings, not only reduces the maternal morbidity and mortality but also helps in less hospital stay and alleviates anxiety among the couples.

Keywords: frist trimester, ultrasound, bleeding per vaginum, missed abortion, ectopic pregnancy

Introduction
The first trimester is a period of rapid changes that spans fertilization, formation of blastocyst, implantation, gastrulation, neurulation, the embryonic period (week 6 to 10) and early fetal life. Imaging in the first trimester of pregnancy is important in assessment of early gestation to confirm the presence, number, viability of fetus, placentation and cervix can also be assessed [1].
Bleeding per vaginum in early pregnancy is a common presentation in the emergency room.
Approximately 20-25% of pregnant women can have bleeding during early pregnancy [2, 3]. 50% of women who have vaginal bleeding in the first trimester of pregnancy will continue to have a viable pregnancy [4]. About 50% of first Trimester bleeding will lead to miscarriage [5].
The technology has increased to such an extent that it is now possible to detect an intradecidual gestational sac as early as 29 to 35 days by transvaginal ultrasound [6]. The fetal cardiac activity is the earliest proof of a viable pregnancy and it has been documented in utero by transvaginal sonography as early as 36 days of menstrual age [7].
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 [8].
Maternal morbidity and mortality can be reduced with an early diagnosis of first trimester Vaginal bleeding.

Considering these factors, we attempted to evaluate the role of ultrasonography in the diagnosis of bleeding per vaginum during pregnancy & its correlation with clinical findings.

Aim and Objectives

Aim: To establish the fundamental role of ultrasonography in first trimester vaginal bleeding.

Objectives

- To study the role of ultrasonography in cases of first trimester vaginal bleeding & its correlation with clinical findings & differences.
- To avoid premature interventions in a putatively nonviable pregnancy where early intervention might lead to misdiagnosis and mismanagement.
- Assessment of both location (Intrauterine or extrauterine) and quality (Viable or nonviable) of pregnancy.

Material and Methods

This prospective observational study was conducted among all the antenatal women with first trimester vaginal bleeding attending ante-natal clinic & emergency labour room who met the inclusion and exclusion criteria in Department of Obstetrics & Gynecology, Ruby Hall Clinic, Pune during the period May 2017 to April 2018.

Inclusion criteria: Less than or equal to 12 weeks of pregnancy, those with confirmed pregnancy & presenting complaints of bleeding pe vaginum, brown discharge, spotting pe vaginum & passage of clots/mass pe vaginum

Exclusion criteria: All patients with more than 12 completed weeks of gestation, women of reproductive age with a missed period but negative urine pregnancy test and pregnant women with other causes of first trimester vaginal bleeding such as cervical polyp, cervical erosion, cervical growth or vaginal trauma are excluded from the study.

Methodology

Routine general examination & systemic examination of the patient was carried out. All patients were subjected to clinical examination, presence or absence of spotting, bleeding and clots or brownish discharge forniceal tenderness or fullness and provisional clinical diagnosis was made. Trans abdominal ultrasonography after keeping full bladder was done in all cases. Size and number of gestational sac, yolk sac, fetal pole, fetal cardiac activity, presence or absence of hematoma or internal bleeding and associated other parameters noted. Transvaginal ultrasonography was used in cases where findings were inconclusive. Both clinical diagnosis and ultra sound diagnosis were compared and analysed.

Statistical Method

The data on categorical variables is shown as n (% of cases) and the data on continuous variables is presented as Mean and Standard deviation (SD). The diagnostic efficacy measures such as sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy have been calculated for clinical diagnosis.

The entire data is statistically analyzed using Statistical Package for Social Sciences (SPSS version 21.0, IBM Corporation, USA) for MS Windows.

Results and Discussion

The mean ± SD of age of the entire group of cases studied was 26.9 ± 3.9 years and the minimum to maximum age range was 19 – 38 years. Out of 180 cases studied, 154 (85.6%) had spontaneous conception, 18 (10.0%) had conception through ovulation induction and timed intercourse (OI+TIC) and 8 (4.4%) had Intrauterine insemination (IUI) conception. 36(20.0%) had 4–6weeks of gestation, 82(45.6%) had 6–8 weeks of gestation, 41(22.8%) had 8–10 weeks of gestation and 21(11.7%) had 10 – 12 weeks of gestation. In our study group 121 (67.2%) had PV spotting, 57 (31.7%) had PV bleeding and 2 (1.1%) had brownish discharge. Ultrasound is the mainstay in the definitive diagnosis of cases of first trimester bleeding as it removes uncertainties/ambiguities in the clinical diagnosis [9, 10].

Table 1: The age distribution of cases studied.

Age group (years)	No. of cases	% of cases
19 – 23	29	16.1
24 – 28	85	47.2
29 – 33	59	32.8
34 – 38	7	3.9
Total	180	100.0

Table 1 shows, all 180 cases were distributed according to age group, the incidence of first trimester vaginal bleeding is seen more (47.2 % and 32.8%) in age group of 24-28 years and 29-33 years. In the study conducted by Shivanagappa *et al* [11] they found that incidence of first trimester vaginal bleeding was seen more (46% and 23%) in age group of 21-25 years and 26-30years.

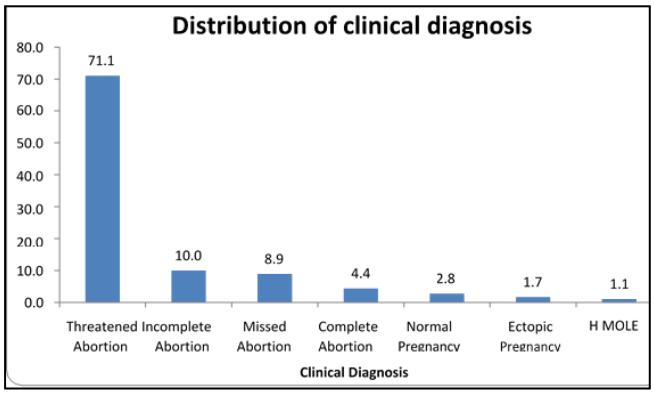

Fig 1: The distribution of clinical diagnosis among the cases studied

In present study, Figure 1 on clinical examination, out of 180 cases, 71.1% were threatened abortion, 10% as incomplete abortion, 8.9% missed abortion, and 4.4% complete abortion, 2.8% normal pregnancy, 1.7 % ectopic and 1.1 % hydatidiform mole. Similar to our study L V Khatod *et al* [12], on clinical examination out of 107 cases, 76.64% were diagnosed as threatened abortion, 4.67% as complete abortion, 6.54% as incomplete abortion, 3.74% as inevitable abortion, 3.74% as missed abortion, 4.67% as ectopic pregnancy. Aronu ME *et al* [13] out of 101 cases on the clinical diagnosis, 65.3% were diagnosed as threatened abortion, 6.9 % incomplete abortion, 5.9 % missed abortion, 3% ectopic pregnancy and, 8.9 % complete abortion and 3% as hydatidiform mole. In similar study by Shivanagappa *et al* [11], on clinical examination out of 165 cases, 57% were threatened abortion, 31% incomplete abortion, 4% missed abortion, 6 % ectopic pregnancy and 1.2% hydatidiform mole and 0.8 % complete abortion.

Table 2: Distribution of clinically diagnosed cases according to ultrasonography diagnosis.

	Clinical Diagnosis															
	Threatened Abortion		Incomplete Abortion		Missed Abortion		Complete Abortion		Normal Pregnancy		Ectopic Pregnancy		H mole		Total	
USG diagnosis	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Threatened Abortion	78	60.9	1	5.5	6	37.5	0	0.0	3	60.0	0	0.0	0	0.0	88	48.9
Missed Abortion	20	15.6	1	5.5	5	31.2	0	0.0	0	0.0	0	0.0	0	0.0	26	14.4
Incomplete Abortion	5	3.9	8	44.4	2	12.5	3	37.5	0	0.0	0	0.0	0	0.0	18	10
Normal Pregnancy	15	11.7	0	0.0	0	0.0	0	0.0	2	40.0	0	0.0	0	0.0	17	9.4
Complete Abortion	0	0.0	6	33.3	0	0.0	4	50.0	0	0.0	0	0.0	0	0.0	10	5.6
Inevitable Abortion	6	4.7	0	0.0	1	6.2	1	12.5	0	0.0	0	0.0	0	0.0	8	4.4
Ectopic Pregnancy	1	0.8	2	11.1	0	0.0	0	0.0	0	0.0	3	100.0	0	0.0	6	3.3
Blighted Ovum	3	2.3	0	0.0	2	12.5	0	0.0	0	0.0	0	0.0	0	0.0	5	2.8
H mole	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	100.0	2	1.1
Total	128	100.0	18	100.0	16	100.0	8	100.0	5	100.0	3	100.0	2	100.0	180	100

Ultrasonography was done in all patients clinically diagnosed as threatened abortion. Table 2 shows Out of 128 cases of threatened abortion, 78 cases were identified as threatened abortion on ultrasonography. Rest of the cases, 20 cases had missed abortion, 15 cases as normal pregnancy, 5 cases as incomplete abortion, 6 cases as inevitable abortion, 3 cases of blighted ovum and 1 case of ectopic pregnancy. Shivanagappa *et al* [11], in his study 46/ 94 cases were confirmed as threatened abortion on ultrasonography. Remaining cases were 14 incomplete abortion, 14 an embryonic gestation, 15 missed abortion, 3 complete abortion, and 7 ectopic and 3 molar pregnancy.

Table 3: Comparison of positive predictive value of clinical diagnosis of threatened abortion with other study.

Clinically diagnosed threatened abortion cases on ultrasonography turned out to be	Present study		Deepti Kurmi *et al* [99]	
	No of cases	%	No of cases	%
Threatened abortion	78	60.9%	50	58.13%
Incomplete abortion	5	3.9%	4	4.65%
Missed abortion	20	15.6%	11	12.79%
Inevitable abortion	6	4.7%	1	1.16%
Molar pregnancy	0	0	1	1.16%
Ectopic pregnancy	1	0.8%	0	0
Complete abortion	0	0	12	13.95%
Blighted ovum	3	2.3%	7	8.13%
Normal pregnancy	15	11.7%	0	0
Total	128	100%	86	100%

Deepti Kurmi *et al* [14], in her study as shown in table 3, out of 86 cases ultrasonography confirmed 50 cases as threatened abortion and 12 cases as complete abortion, 4 cases incomplete abortion, 11 cases of missed abortion,1 case of inevitable abortion, 7 cases blighted ovum,1 as hydatidiform mole.

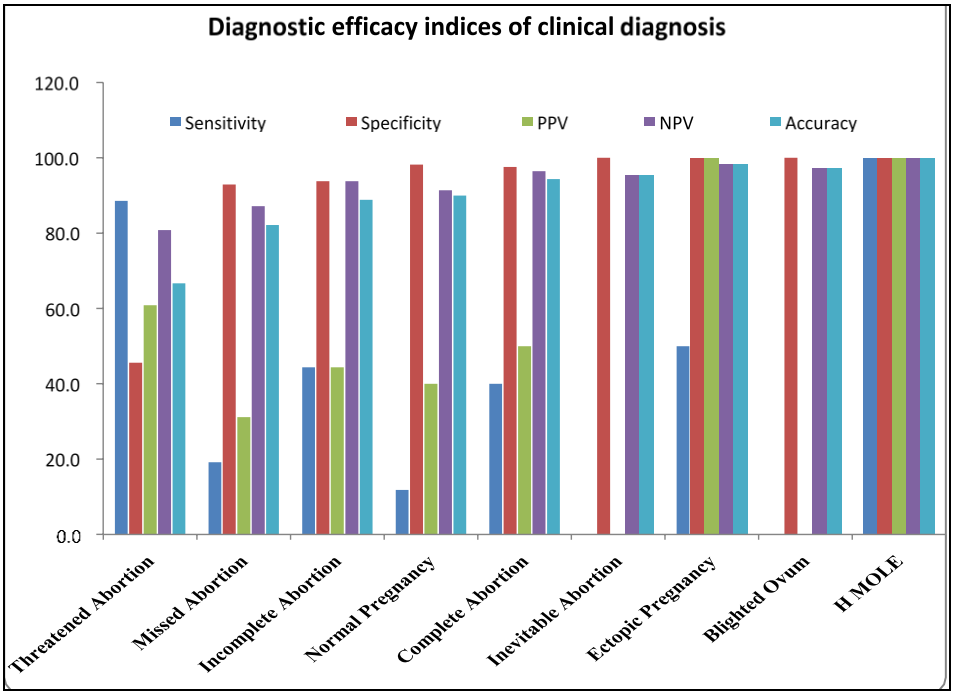

Fig 2: Diagnostic efficacy indices of clinical diagnosis against ultrasonography diagnosis

In our study, Figure 2 shows positive predictive value of clinical diagnosis for threatened abortion is 60.9%, missed abortion in present study is 31.2%, incomplete abortion 44.4%, complete abortion 50 %, ectopic pregnancy 100% & hydatidiform mole 100% and comparable with Deepti kumara *et al*.

In present study, the pregnancy outcome after doing ultrasonography in 180 cases of first trimester vaginal bleeding are viable pregnancy was seen in 105 (58.33%) cases, non-viable pregnancy in 67 cases, 6 cases of ectopic gestation and 2 cases of hydatidiform mole.

Table 4: Outcome of pregnancies after ultrasonography

Reference	Year	Viable	Non-Viable	Ectopic	H mole	Empty Uterus
Stabile *et al* [15]	1986	64%	36%	0	0	0
Schaubergeret *al* [16]	2005	44%	33%	5%	0	18%
DeeptiKurmiet *al* [14]	2015	50%	46%	3%%	1%	0
Shivanagappaet *al* [11]	2015	46%	55.7%	12.7%	3.63%	0
Present Study	2018	58.3%	37.22	3.33%	1.11%	0

Stabile *et al* [15] viable pregnancy was seen in 64% cases, non-viable pregnancy was seen in 36% cases. Deepti Kurmi *et al* [14], viable pregnancy was seen in 50 (50%) cases. Non-viable pregnancy was seen in 46% cases, 3% cases of ectopic pregnancy and 1% case of complete mole. Shivanagappa *et al* [11], viable pregnancy was seen in 46(27%) cases. Non-viable pregnancy was seen in 92(55.75%) cases, 21 cases of ectopic pregnancy and 6 cases of hydatidiform mole. Schau Berger *et al* [16] viable pregnancy was seen in 44% cases, non-viable pregnancy in 33% cases, empty uterus in 18% cases and ectopic pregnancy in 5% cases.

Table 5: Mistaken therapies that would have been given without ultrasonography diagnosis

Mistaken therapies that would have been given without ultrasonography diagnosis	No of cases
Conservation in cases of missed abortion diagnosed clinically as threatened abortion	20
Conservative in cases of incomplete abortion diagnosed clinically as threatened abortion	5
Conservation in cases of inevitable abortion diagnosed clinically as threatened abortion	6
Conservation in cases of blighted ovum diagnosed clinically as threatened abortion	3
Conservative in cases of ectopic pregnancy diagnosed clinically as threatened abortion	1
D & E in cases of threatened abortion diagnosed clinically as missed abortion	6
Laparoscopy in cases of ectopic pregnancy diagnosed clinically as incomplete abortion	2
D & E in cases of complete abortion diagnosed clinically as incomplete abortion	6
D & E in cases of threatened abortion diagnosed clinically as incomplete abortion	1
Conservative in cases of incomplete abortion diagnosed clinically as complete abortion	3

Table 5 shows cases which could have received mistaken therapies if ultrasonography had not been performed in our study.

Conclusion

Ultrasonography is accurate safe and non-invasive diagnostic tool in differentiating various conditions of first trimester bleeding. Prompt treatment based on the ultrasound findings, not only reduces the maternal morbidity and mortality but also helps in less hospital stay and alleviates anxiety among the couples.

Ethical clearance: Obtained.
Conflict of Interests: None.

References

1. Al-Memar M, Kirk E, Bourne T. The role of ultrasonography in the diagnosis and management of early pregnancy complications. The obstetrician & Gynecologist. 2015; 17:173-81.
2. Deutchman M, Tubay AT, Turok D. First trimester bleeding. American family physician. 2009; 79(11):985-94.
3. Mark D, Amy T. First trimester bleeding. Am Fam Physician. 2009; 79:985-992.
4. Kaplan BC, Dart RG, Moskos M, Kuligowska E, Chun B, Hamid MA, Northern K, Schmidt J, Kharwadkar A. Ectopic pregnancy: prospective study with improved diagnostic accuracy. Annals of emergency medicine. 1996; 28(1):10-7.
5. Dianabasi E, Uduma F, Okere P, Edmund E. Obstetric sonography in first trimester bleeding (A single institution study). Merit Research Journal of Medical Sciences. 2016; 4:356-362.
6. Dutta D, Konar H. (n.d.) DC Dutta ‟s textbook of obstetrics. 21st ed.p.68.
7. Tezuka N, Sato S, Kanasugi H, Hiroi M. Embryonic heart rates: development in early first trimester and clinical evaluation. Gynecologic and obstetric investigation. 1991; 32(4):210.
8. Lee R, Dupuis C, Chen B, Smith A, Kim YH. Diagnosing ectopic pregnancy in the emergency setting Ultrasonography. 2018; 37:78-87.
9. Kalyani S. Assessment of first trimester vaginal bleeding using ultrasound sonography. Asian J. of Biomed and Pharm. Sci. 2016; 6:54-56.
10. Krishna K, Pransy P, Charusmita C. Bleeding PV. In First trimester of pregnancy - Role of Ultrasound, its correlation with Clinical Assessment. J. Med. Sci and Clin. Researc. 2016; 9:9573-9581.
11. Shivanagappa M, Sagar SG, Manoli N. Ultrasound Evaluation of Vaginal Bleeding in First Trimester of Pregnancy: A comparative study with clinical examination. Int J Sc study. 2018, 3(7).
12. LV Khatod, Darshana Legha. Clinical evaluation of first trimester bleeding reported in tertiary care institute. Med Pulse. International Journal of Gynaecology. 2017; 3(3):118-121.
13. Aronu ME, *et al*. A Review of the Correlation between Clinical Diagnosis and Ultrasound Diagnosis in First Trimester Vaginal Bleeding. Ann Med Health Sci Res. 2018; 8:120-124.
14. Kurmi D, Jadhav VR, Misri A, Mishra N, Prabhu S, Savani

G. Role of pelvic sonography in first trimester bleeding. Journal of Evolution of Medical and Dental Sciences. 2015; 4(49):8516-25.
15. Stabile I, Campbell S, Grudzinskas JG. Ultrasonic assessment of complications of first trimester of pregnancy. The lancet. 1987; 2:1237-1240.
16. Schauberger CW, Mathiason MA, Rooney BL. Ultrasound assessment of first- trimester bleeding. Obstetrics & Gynecology. 2005; 105(2):333-8.