Original Article

Role Of Ultrasound In First Trimester Bleeding Per Vaginum

Dr. Deepali D. Pandya*, Dr. Rina V. Patel**,Shlok V. Patel***,Dhanvi J. Deliwala ****, Dr. Parul T. Shah*****, Dr. Megha S. Patel*****

*3rd Year Resident,**Associate Professor, ***Third Year MBBS Student, ****First Year MBBS Student, *****Professor, Department Of Obstetrics & Gynaecology, Smt. NHL Medical College, Ahmedabad, Gujarat, India–380016

Abstract: Background: Bleeding per vaginum in the first trimester is a common obstetric situation ranging from an insignificant episode to life threatening emergency. The major causes are abortion, ectopic, and molar pregnancy. Ultrasonography is playing an increasing role in the management of such patients. The aim of this study was to determine the role of first trimester bleeding on obstetrical ultrasound. Material And Methods: This was a retrospective observational study done at urban health care Hospital Ahemdabad, a tertiary care teaching hospital. All obstetric cases with a history of bleeding per vaginum in the first trimester of pregnancy between July 2019 and December 2019 were included. A complete general physical and pelvic examination was done to arrive at a clinical diagnosis. Patients were then subjected to ultrasound examination. Clinical diagnosis and ultrasound diagnosis were correlated. Result: 150 of all 2000 obstetric cases had the first trimester bleeding (incidence of 7.5%). Commonest causes were abortion (78.66%), ectopic (6%), and molar pregnancy (2%). Of 150 cases, 106 cases were correctly identified by ultrasonography. 44 cases proved by sonography were misdiagnosed by clinical examination with a disparity of 52.38%. In this study, 56% pregnancies were clinically diagnosed as viable, but only 34% pregnancies were viable. Conclusion: When the first trimester of pregnancy is complicated by vaginalbleeding, the history and clinical findings are often misleading and if relied upon can only lead to a delay in diagnosis and management. This study reinforces that USG is important to establish a definitive diagnosis, differential diagnosis and subsequent management. [Pandya D Natl J Integr Res Med, 2021; 12(3):35-40]

Key Words: Abortion, Ectopic pregnancy, First trimester bleeding, Molar pregnancy, ultrasonography

Author for correspondence: Shlok Patel, 3rd Year MBBS Student, Smt. NHL Medical College, Ahmedabad, Gujarat, India– 380016 E-Mail: pshlok27@gmail.com Mobile: 9099877487

Introduction: Bleeding per vaginum in the first trimester is commonest obstetric problem around the globe. It is leading reason for admissions to the obstetrics department and ultrasound examination in first trimester. Vaginal bleeding occurs in 20-25% of pregnant women[1]. The significance, initial diagnosis, and clinical approach to vaginal bleeding depend on the gestational age and the bleeding characteristics.

The causes of bleeding are various and include a spectrum of conditions ranging from a viable pregnancy to non viable pregnancy like extra uterine pregnancy, blighted ovum, hydatidiform mole and multiple pregnancy[2].Usg plays an important role in the evaluation of the causes of first trimester bleeding, prognosticate and predict the status of abnormal pregnancy. Real-time sonography is extremely useful to look for fetal viability, gestational age, diagnosis of abnormal pregnancy, localization of placenta, details regarding separation of membrane. Today diagnostic ultrasound is proved as useful subspecialty of obstetrics. It is most conclusive, non invasive and easily available modality[3]. It has safety, sensitivity and specificity.

The primary goal of ultrasound evaluation in the first trimester is to determine whether the pregnancy is intrauterine and whether the embryo is living3. Bleeding is by far the most predictive risk factor for pregnancy loss[2]. Overall, approximately half of them will abort, but the risk is substantially less if fatal cardiac activity is present[2]. Thus, by identifying threatened abortions pregnancy can be salvaged.

Material & Methods:
Type Of Study: Retrospective Cross-Sectional Study (Observational Study).
Sample Size: 150

Inclusion Criteria: Vaginal bleeding followed by history of amenorrhea in reproductive age. Patients presenting anywhere from first day of last menstrual cycle to12 completed weeks of pregnancy with complaints of bleeding per vagina are included in study.

Exclusion Criteria: All non-obstetrical causes of vaginal bleeding. All patients with more than 12 completed weeks of gestation.

Study Design: Clinical data such as age, parity, obstetric history, personal history, menstrual history, and details of present pregnancy such as period of amenorhea at the time of first episode of bleeding, amount and duration of bleeding, pain abdomen and history of expulsion of fleshy mass/clots were noted. A detailed general physical and pelvic examination was done to arrive at a provisional clinical diagnosis. All patients were subjected to transabdominal sonography.

Ultrasonography was done using Siemens Sonoline G608 and Toshiba Nemio machines. Transvaginal sonography (TVS) was performed whenever transabdominal sonography was inconclusive or equivocal. Transabdominal sonography was done and TVS using 5-7 MHz transducer. The clinical examination findings and operative procedures were noted. Clinical and ultrasound findings were correlated. A $P < 0.05$ was used to assess for statistical significance.

Results: The total number of 150 patients had bleeding per vaginum in the first trimester. In this study, 64.67% cases fall under 25-year age group. In most parts of the world, 20–24-year-old women tend to have the highest abortion rate and the bulk of abortions are accounted by women in their twenties because it is the common age n which women conceive[4,2]. The rate of clinical miscarriage is almost doubled when one of the parents is older than 40 years[2]. The incidence of spontaneous abortion is 10-15% in women less than 35 years, which increases to 25% at age of 35-39 years[5]. (Table1).

Table 1: Age Distribution

Age Of Pt. (Years)	No. Of Pt.	(%) In Present Study	Gupta et al[16]
< 25	97	64.67%	42% in 21-25 years age group
			26% in 18- 20 years age group
26-35	42	28%	28% in 26-30 years age group
36-45	11	7.33%	4% in 30-35 years of age

45(30%) cases were primigravida, and 105 (70%) were multigravida. This study result shows that in comparison to primigravida, multigravida has high incidence of first trimester bleeding per vaginum during pregnancy. Out of 105 multigravida patients, 40% cases had H/O abortion, 13.3% had H/O PTD, 12.4% had H/O MTP pills taken and 2.85% had H/O contraception failure. 84(56%) Out of 150 cases were diagnosed clinically as threatened abortion[12]. (8%) were diagnosed clinically as incomplete abortion 15(10%) were diagnosed clinically as missed abortion.8(5.33%)out of 150 diagnosed as ectopic pregnancy and 2 (1.33%) as molar pregnancy. 7 (4.67%) as complete abortion. The distribution of cases according to clinical diagnosis was statistically significant (P = 0.000) (Table 2).

Table 2: Clinical Diagnosis

Clinical Diagnosis	No. Of Cases	(%) In Present Study	Borah at al[8]	Awdhut Tiparse at al[17]
Threatened Abortion	84	56%	63%	37%
Missed Abortion	15	10%	10%	20%
Inevitable Abortion	13	8.67%	7%	-
Incomplete Abortion	12	8%	13%	7%
Complete Abortion	7	4.67%	-	3%
Hydatidiform Mole	2	1.33%	4%	6%
Ectopic Pregnancy	8	5.33%	3%	13%
Delayed Period	9	6%	-	-

On sonography of 150 cases, 40(26.67%) showed signs of viable pregnancy, 24(16%) showed incomplete abortion, in 27 (18%) missed abortion, in 18 (12%) anembryonic gestation, in 9 (6%) ectopic pregnancy, 9(6%) complete abortion, and 3(2%) were diagnosed as molar pregnancy. The difference in the Ultrasonographic features were statistically significant (P = 0.000) (Table 3).Out of 150 cases, 118 (78.66%) had the abortion as the major cause

of bleeding. Out of 84 cases of threatened abortion diagnosed clinically, only 40 cases were threatened abortion which without the aid of ultrasonography would not have received appropriate treatment. The disparity in case of incomplete abortion was 12 and in missed abortion was 12. The disparity in cases of ectopic was 1, and in case of molar pregnancy disparity was 1. The total disparity between clinical diagnosis and ultrasound diagnosis was present in 134 cases (89.99%) (Table 4).

sonographically confirmed as threatened abortion. There was disparity in 44 cases of 49 out of 150 (32.7%) of viable pregnancies continuation of pregnancy advised. 53(35.3%) and 20(13%) abnormal pregnancies were terminated by D & E and Misoprostol respectively. 6(4%) cases needed Laparotomy for ectopic pregnancy. In 15% cases including delayed period, complete abortion and medical management of ectopic pregnancies no other intervention was required.(Table 5).

Table 3: Ultrasonography Diagnosis

Ultrasonography Diagnosis	No. Of Cases	(%) In Present Study	Deepti Kurmi et al[18]	Awdhut Tiparse et al[17]
Threatened Abortion	40	26.67%	50%	18%
Missed Abortion	27	18%	11%	14%
Incomplete Abortion	24	16%	4%	5%
Blighted Ovum	18	12%	7%	-
Complete Abortion	9	6%	12%	2%
Ectopic Pregnancy	9	6%	3%	6%
Hydatidiform Mole	3	2%	1%	2%
Placenta Implanted Over LUS	9	6%	-	-
Delayed Period	9	6%	-	-
Normal USG	2	1.33%	-	

Table 4: Disparity Between Clinical And USG Diagnosis

Miscarriage Type	No. Of Cases Diagnosed		Disparity Of Clinical And USG Diagnosis Number Of Cases	Clinical Disparity % In Present Study	Borah et al[8]
	Clinically	USG			
Threatened Abortion	84	40	44	52.38%	32%
Missed Abortion	15	27	12	44.44%	20%
Incomplete Abortion	12	24	12	50%	23%
Ectopic Pregnancy	8	9	1	11.11%	14%
Hydatidiform Mole	2	3	1	33.33%	25%
Inevitable Abortion	13	0	13	100%	-
Blighted Ovum	0	18	18	100%	-

Graph 1: Disparity Between Clinical USG Diagnosis, Comparison
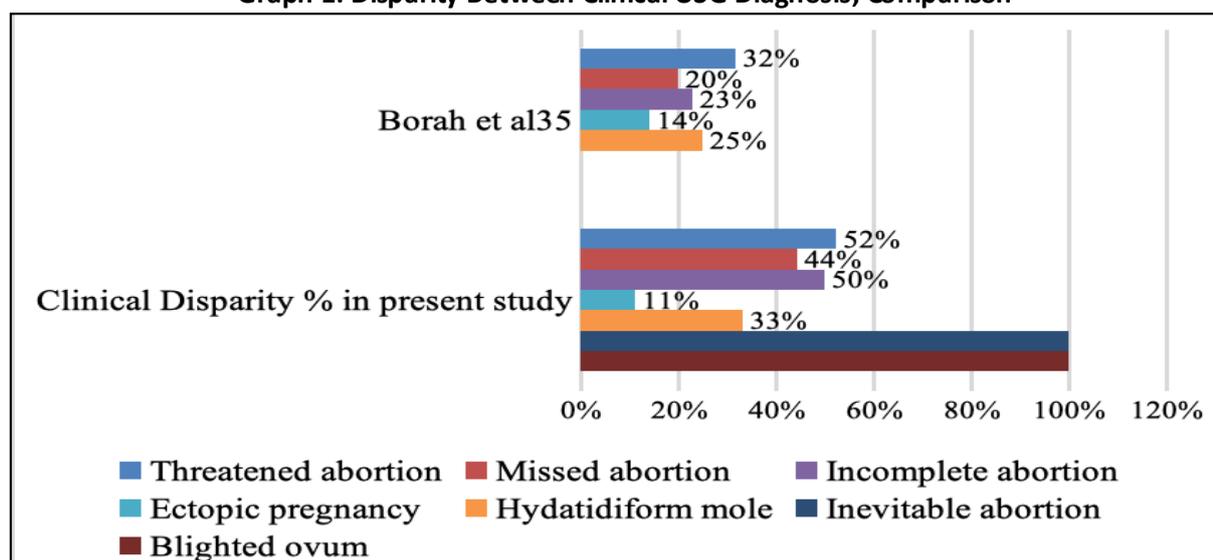
Table 5: Management

Management According To USG Diagnosis	No. Of Cases	(%) In Present Study	Vishwanath et al[19]
Conservative	49	32.67%	46.1%
Misoprostol (Medical Intervention)	20	13.33%	-
D & E Followed By Curettage/ S & E (Surgical Intervention)	53	35.33%	49.0%
Medical Mx Of Ectopic Pregnancy	3	2.0%	-
No Intervention	19	12.67%	-
Surgical Mx Of Ectopic Pregnancy	6	4.0%	4.9%

Discussion: Bleeding in early pregnancy is an indicator of an abnormality interrupting the normal development. If a diagnosis of the viability or non-viability of pregnancy can be made definitely then, hormonal therapy and hospitalization can be avoided[5]. By clinical history and examination, this is usually impossible. The availability of ultrasonography has changed the scenario[5]. In this study, 48% patients had 8-10 weeks amenorrhea, 23% Patients had >10 weeks amenorrhea and 29% cases had <8 weeks amenorrhea. Results are comparable to other studies. More than 80% of spontaneous abortions occur within the first 12 weeks of gestation. Abortion rates decrease as gestation advances as most abortions occur before 8 weeks[2].

Kanji and associates noted that 75% of aneuploid abortions occur by 8 weeks2. In this study, 46% cases had bleeding since 3-4 days duration, 33% cases had bleeding since 1-2 days and 21% cases had neglected the bleeding episodes and came to our institute with complaint of bleeding since more than 5 days.25% cases had moderate amount of bleeding and 8.7% cases had heavy amount of bleeding, and 66.3% cases had only spotting. Results are comparable to Kamble et[6] and Hasan et al[7].In the present study, abortions contributed to a major cause of the first trimester bleeding constituting 78.66%.

The incidence of ectopic pregnancy was 6% .The incidence of mole in present study was 2%. In this study, 56% were clinically diagnosed as threatened abortion, while 38% were clinically diagnosed as nonviable pregnancies, which include 10% Missed abortion, 9% inevitable abortion, 8% incomplete abortion, 5% complete abortion, 1% Hydatidiform mole, 5% Ectopic pregnancy. UPT was positive in all these cases. Results correlate well with Borah et al[8]. In 6%, UPT was negative and clinical picture was confusing; they were diagnosed as delayed

period. As spontaneous abortion goes through several stages in its natural course, each of these may not be clinically identifiable. Inevitable abortion is a clinical diagnosis, a state from where pregnancy cannot be salvaged and it needs USG to be done to categorize the type of abortion[4,9]. In this study, highest clinical disparity (52%) was observed in threatened abortion cases. Clinically over diagnosed cases of threatened abortions; which are mostly managed conservatively, categorized correctly with help of USG. Lowest disparity (11%) was observed in ectopic pregnancy cases; still it is important to identify because we cannot afford to miss even single case due to increased morbidity and even mortality.

Disparity of diagnosis in 50% cases of incomplete abortions identified with help of USG.18 cases (100%) of blighted ovum were identified with USG, which were missed on clinical examination. Blighted ovum can only be diagnosed with USG[5]. Clinical diagnosis disparity in few types of miscarriages exceeded above 50%. Results are comparable to Borah et[8] and Duff et al[10]. So, relying on clinical diagnosis alone would lead to mismanagement of patients. In correlating the clinical and ultrasound diagnosis, there was a significant variation between the clinical and USG diagnosis in patients with first trimester bleeding.

Overall accuracy of clinical diagnosis was28%, which is poor which correlate with Shivanagappa et al[11]. Different studies, where ultrasound was available in emergency rooms, reported the same trend[12]. In this study, 56% pregnancies were clinically diagnosed as viable, but only 34% pregnancies were viable. Results are comparable to Nyberg et al study13. Nonviable pregnancies include Blighted ovum, Missed abortion, incomplete abortion, complete abortion, H.Mole and ectopic pregnancy. In 32.7% of viable pregnancies continuation of pregnancy advised, 35.3% nonviable pregnancies terminated by D &

E or S & E. 13% abnormal pregnancies terminated by Misoprostol for which weekly follow up was required to confirm complete removal of products of conception[2,9,14].In 4%pregnancies, Laparotomy was done for ectopic pregnancy. 2% were medically managed ectopic pregnancy cases which followed up till Beta-HCG levels were in normal range. In 13% cases, which included delayed period and complete abortion, no intervention was needed. Results are comparable to study by Vishwanath et al[15].

Conclusion: Ultrasound is a valuable tool in the differentiation and management of causes of first trimester vaginal bleeding. Ultrasound is helpful in the decision-making algorithm about the safe continuation of the pregnancy, timely intervention for abnormal pregnancy. Judicious utilization of ultra sonography and a close liason with the sonologist is necessary. However, it should be remembered that ultrasound is an extension of the pelvic examination and cannot replace obstetric history and clinical examination.

References:

1. Deutchman M, Tubay AT & Turok DK. First trimester bleeding. American Family Physician. 2009; 79(11): 985-992.
2. Cunningham FG. Williams's Obstetrics. 24th Edition. New York: McGraw-Hill; 2014
3. CALLEN'S ULTRASONOGRAPHY IN OBSTETRICS AND GYNECOLOGY SIXTH EDITION, 2017, by Elsevier, Callen, Peter W. | Norton, Mary E. (Professor in maternal health) | Scoutt, Leslie M. | Feldstein, Vickie A.
4. Bleeding Per Vaginum in First Trimester of Pregnancy-Role of USG Its Correlation with Clinical Assessment , Dr Krishna kumar Borah, Dr Pranoy Phukan, Dr [Mrs] Charusmita Choudhary , JMSCR Vol||4||Issue||02||Page 9573-9581||February 2016 (www.jmscr.igmpublication.org)
5. Ian Donald's Practical obstetrical problems, Wolters Kluwer, 7th edition
6. First trimester bleeding and pregnancy outcome Pradnya Digambar Kamble*, Amarjeetkaur Bava, Mansi Shukla, Y. S. Nandanvar, International Journal of Reproduction, Contraception, Obstetrics and Gynecology Kamble PD et al. Int J Reprod Contracept Obstet Gynecol. 2017Apr;6(4):1484-1487 www.ijrcog.org
7. Association Between First-Trimester Vaginal Bleeding and Miscarriage, Reem Hasan,Donna D. Baird, Amy H. Herring,A ndrew F. Olshan,Michele L. Jonsson Funk, and Katherine E. Hartmann, Obstetrics & Gynecology. 114(4):860-867, OCT 2009
8. Bleeding Per Vaginum in First Trimester of Pregnancy-Role of USG Its Correlation with Clinical Assessment , Dr Krishna kumar Borah, Dr Pranoy Phukan, Dr [Mrs] Charusmita Choudhary , JMSCR Vol||4||Issue||02||Page 9573-9581||February 2016 (www.jmscr.igmpublication.org)
9. Aria's practical guide to high risk pregnancy and delivery A south Indian perspective, 4th edition, Elsevier HS3575719, 2015
10. 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
11. 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;3:202-206.
12. Vidya A, Guruvaj D, Uma A, Rum N. Ultrasonographic evaluation of first trimester vaginal bleeding. Al Ameen J. Med. Sci. 2016;9:107-111.
13. Nyberg DA, Laing FC, Filly RA. Margaret UNSimmons, R. Brooke Jeffrey. Ultrasonographic differentiation of the Gestational sac of early intrauterine pregnancy from pseudo-gestational sac of ectopic pregnancy. Radiology. 1983; 146:755-759.
14. Levi CS, Lyons EA, Zheng XH. Endovaginal US: demonstration of cardiac activity in embryos of less than 5.0 mm in crown rump length. Radiology; 1990; 176: 71–74
15. Ultra sonographic Evaluation and Management of the First Trimester Bleeding , Dr. Vishwanath Yadav1, Dr. Santosh2, Dr. Bharathi3 . IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 12 Ver. VI (Dec. 2015), PP 43-46 www.iosrjournals.org
16. international Journal of Reproduction, Contraception, Obstetrics and Gynecology Gupta N et al. Int J Reprod Contracept Obstet Gynecol. 2016 Sept;5(9):3085-3087 www.ijrcog.org
17. Ultrasonographic evaluation of first trimester bleeding Awdhut Tiparse, Birwa Gandhi, Arpita Patel . International Journal of Reproduction, Contraception, Obstetrics and Gynecology Tiparse A et al. Int J Reprod

Contracept Obstet Gynecol. 2017 Aug;6(8):3614-3617 www.ijrcog.org

18. 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.

19. Mulik V, Bethel J, Bhal K. A retrospective population-based study of primi gravid women on the potential effect of threatened miscarriage on obstetric outcome, Obstet Gynaecol. 2004;24(3):249-53

Conflict of interest: None
Funding: None
Cite this Article as: Pandya D, Patel R, Patel S, Deliwala D, Patel M, Patel P. Role Of Ultrasound In First Trimester Bleeding Per Vaginum. Natl J Integr Res Med 2021; Vol.12(3): 35-40