International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Sumathy KK. Int J Reprod Contracept Obstet Gynecol. 2019 Apr;8(4):1250-1253
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20191090

Original Research Article

A comparative study of ultrasonographic evaluation of vaginal bleeding in pregnancy with clinical examination

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Received: 25 February 2019
Accepted: 19 March 2019

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ABSTRACT

Background: Ultrasound helps in assessing the type of abortion. Life threatening emergency like ectopic pregnancy, when evaluated by ultrasound gives scope for conservative approach without affecting the fertility status. The objective of this study was to compare the utility of ultrasound with clinical examination findings in pregnant females having vaginal bleeding.

Methods: A hospital-based prospective study was conducted among 100 pregnant patients who have the problem of bleeding. A complete general physical and pelvic examination was done, and patients were then subjected to ultrasound examination. Epi info 7 software was used for statistical analysis. Chi- square test was used as the test of significance and correlation in terms of sensitivity, specificity was seen. $P<0.05$ is considered statistically significant.

Results: 72 cases were diagnosed by ultrasonography as viable pregnancies with sensitivity, specificity negative predictive value (NPV), and positive predictive value (PPV) of 82% and 28 cases were diagnosed as non-viable pregnancies by ultrasonography with sensitivity of 52%, specificity of 81%, and NPV of 72%. The clinical diagnosis had sensitivity of 82%, specificity of 52%, and PPV of 40% in diagnosing viable pregnancies. In diagnosing non-viable pregnancies, clinical diagnosis had a very poor statistical correlation with sensitivity of 52%, specificity of 81%, PPV of 64%, and NPV of 72%.

Conclusions: Judicious utilization of ultrasonography and a close connection with the sonologist is necessary. However, it should be realised that ultrasound is complementary in the pelvic examination and cannot substitute obstetric history and clinical examination.

Keywords: Abortion, Bleeding per vagina, Clinical examination, Ultrasound

INTRODUCTION

Vaginal bleeding is a common first trimester complication, often considered to be a sign of a problem in pregnancy. It 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. Vaginal bleeding during early pregnancy is associated with a 1.6-fold increased risk of many adverse outcomes, including preterm labor (PTL) preterm premature rupture of membranes (PPROM) and antepartum hemorrhage (APH).[2]

As bleeding persists or recurs later in pregnancy, the risk of associated morbidities grows. 50% of the women who suffer from vaginal bleeding during early pregnancy go on to have a normal pregnancy.[3] The major causes are abortion, ectopic pregnancy, and molar pregnancy.

Before the advent of ultrasonography (USG), these patients were managed only clinically. Ultrasonography has revolutionized the management of early pregnancy complications. The social phenomena of increasing maternal age and heightened expectations for a normal outcome have put increased pressure on the obstetrician, thereby leading to increased use of ultrasonography. This study was taken up to compare the utility of ultrasound with clinical examination findings in pregnant females having vaginal bleeding.

METHODS

This was a hospital-based prospective study done in 100 pregnant patients admitted in labour room or antenatal wards of Government SRMC, Mangalore. The study period was of 6 months from July 2016 to December 2016.

Inclusion criteria

- Patients presenting anywhere from first day of last menstrual cycle to 12 weeks of pregnancy with complaints of bleeding per vagina are included in study.

Exclusion criteria

- Women having non-obstetric causes for vaginal bleeding in the first trimester of pregnancy were excluded.
- Women of reproductive age with a missed period with negative urine pregnancy test.
- Patients who refuse to get admit to the hospital.
- All patients with more than 12 completed weeks of gestation.

Purposive sampling technique was used for sampling. Clinical data such as age, parity, obstetric history, personal history, menstrual history, and details of present pregnancy such as period of amenorrhea 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. After taking written informed consent from the patient's and clearly explaining the objectives the study was cleared by Institutional Ethics Committee of SRMC, Mangalore.

Statistical analysis

Recorded observations were analysed using Epi info software (version 7.0). The descriptive procedure was used to display univariate summary statistics for several variables in terms of frequency and Proportion. The Crosstabs procedure was used to measure of association for two-way tables. The Chi-square test was used to determine the strength of the association.

RESULTS

Table 1 shows age wise distribution of pregnant patients in which most common age group was found to be 21-30 years as 58% and the mean age group was found to be 25.4 years and was found to be statistically significant. (p=0.003). The total number of obstetric admissions was 1341, out of which 100 had bleeding per vagina in pregnancy constituting a percentage of 7%.

Table 1: Distribution of cases according to age groups (N=100).

Age groups	N	
<20 years	17	Mean ±SD=25.4±4.1
21-30 years	58	χ^2=44.4, p=0.003*
31-40 years	22	
>40 years	3	

χ^2-chi-square value, *p<0.05 is considered statistically significant.

Table 2: Diagnosis of bleeding per vagina in pregnancy through USG in <20 and >20 weeks (N=100).

Scan (<20 weeks)	N (60)	Scan (>20 weeks)	N (40)	p-value
Live fetus	16	Upper seg placenta	9	0.005*, χ^2-192.3
Vesicular mole	7	Low lying placenta	7	
Missed abortion	3	Partial placenta previa	4	
Complete abortion	8	Total placenta previa	3	
Incomplete abortion	15	Placenta localisation not possible	2	
Blighted ovum	4	Intrauterine death	2	
No gestational sac	6	Vesicular mole	3	
Uncertain findings	1	Abruptio placenta	10	
Abnormal scan	0	Partial mole	0	

χ^2-chi-square value, *p<0.05 is considered statistically significant.

Table 2 shows causes of bleeding per vagina diagnosed through USG in <20 and >20 weeks. In <20 weeks the most common cause was found to be live fetus followed by incomplete abortion. In scan >20 weeks the most common cause evaluated was abruptio placenta. And the difference was found to be statistically significant (p=0.005).

Table 3: Clinical diagnosis of causes of bleeding per vagina (N=100).

Clinical diagnosis	N (100)
Placenta previa	25
Threatened abortion	15
Abruptio placenta	10
Vesicular Mole	10
Incomplete abortion	16
Complete Abortion	8
Ectopic gestation	7
Missed abortion	7
Intrauterine death	2

Table 3 shows the main clinical diagnosis in patients who presented before 20 weeks of gestation was threatened abortion (15%) and later in pregnancy was placenta previa (25%).

Table 4: Comparison of clinical, ultrasound and final diagnosis among the study participants (N=100).

Parameters	Clinical diagnosis	USG diagnosis	Final diagnosis
Placenta previa	25	7	7
Threatened abortion	15	3	3
Abruptio placenta	10	10	10
Vesicular Mole	10	10	10
Incomplete abortion	16	15	15
Complete Abortion	8	8	8
Ectopic gestation	7	6	6
Missed abortion	7	3	3
Intrauterine death	0	2	2

As per Table 4, out of 100 cases, clinical diagnosis was confirmed by sonography in 64 indicating accuracy of clinical diagnosis to be 64%. In the follow-up of clinically diagnosed cases, out of 15 cases of suspected threatened abortion, 3 cases were confirmed by sonography out of which 35 cases continued to term gestation. 3 cases of missed abortion, 15 cases of Incomplete abortion, 8 cases of complete abortion, 6 cases ectopic were diagnosed as final through sonography. All these causes of bleeding per vagina were confirmed by USG.

Table 5: Correlation of clinical diagnosis with USG diagnosis.

Parameters	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Viable	82	52	40	88
Non- viable	52	81	64	72

PPV-positive predictive value, NPV-negative predictive value

Table 5 shows the correlation between viable and non-viable pregnancy causes as per clinical and USG diagnosis which shows 81% of specificity and 72% of negative predictive value. This shows there is a 72% disparity between clinical and USG diagnosis.

DISCUSSION

Bleeding in early pregnancy is an indicator of an abnormality interrupting the normal development. It is a common cause for emergency admissions. If a diagnosis of the viability or non-viability of pregnancy can be made then, hormonal therapy and hospitalization can be avoided.[4] By clinical history and examination, this is usually impossible and therefore USG is required. In this study, 100 clinically diagnosed cases were confirmed on ultrasound with the disparity of 72%. The present study is comparable to the study by Ghorade et al, whereas Khanna and Reddi Rani noted a disparity of 50% and 42% between clinical and ultrasound diagnosis, respectively.[2,5,6] In this study, all cases of threatened abortion, missed abortion, incomplete abortion, complete abortion, anembryonic gestation, and molar pregnancy were diagnosed accurately on ultrasound with an accuracy of 100%. The results of present study are comparable with that of Sofat and Bharadwaj.[7,8] In a study conducted by Sofet compared and correlated clinical diagnosis and ultrasound diagnosis.[7] They found that ultrasound had a definite edge over clinical diagnosis by about 30% in case of threatened abortion, 40% in missed abortion, 95% in molar pregnancy, and 35% in incomplete abortion. Lyer and Bhattacharya in their evaluation of 200 patients of complicated first trimester clinically and by ultrasonography found that of the 74 patients clinically diagnosed as threatened abortions, only 36 showed supporting ultrasonographic findings same seen by Malhotra and Mamatha S.[9-11]

To summarize, in this study, the causes of bleeding covered a spectrum of conditions ranging from a viable pregnancy to non-viable pregnancy. Ultrasound examination was a good indicator for evacuation in cases of abortion. Using ultrasound, pregnancy with higher chances of a viable birth could be differentiated from a pathological pregnancy warranting an immediate termination.

CONCLUSION

Ultrasound is supportive in the decision-making algorithm about the safe continuation of the pregnancy and timely intervention for abnormal pregnancy. Judicious utilization of ultrasonography and a close connection with the sonologist is necessary. However, it should be realised that ultrasound is complementary in the pelvic examination and cannot substitute obstetric history and clinical examination.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Sumathy KK. A comparative study of ultrasonographic evaluation of vaginal bleeding in pregnancy with clinical examination. Int J Reprod Contracept Obstet Gynecol 2019;8:1250-3.