ASSESSMENT OF VAGINAL BLEEDING IN FIRST TRIMESTER OF PREGNANCY BY COMPARATIVE STUDY OF CLINICAL AND ULTRASONOGRAPHIC EVALUATION

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Abstract

Bleeding per vaginum in the first trimester of pregnancy is one of the most common obstetric problems. Bleeding in early pregnancy is an indicator of an abnormality interrupting the normal development and is a common cause of hospital admission. If the viability or non viability of pregnancy can be made on USG, then hormonal therapy and hospitalization can be avoided. This is usually impossible with history and clinical examination and can be established only by USG. Hence based on above findings the present study was planned for Assessment of Vaginal Bleeding in First Trimester of Pregnancy by Comparative Study of Clinical and Ultrasonographic Evaluation.

The present study was planned in Department of Obstetrics and Gynaecology, Madhubani Medical College and Hospital, Madhubani, Bihar. In the present study 30 females having history of bleeding per vaginum in the first trimester of pregnancy were enrolled.

The data generated from the present study concludes that USG is an extremely valuable non invasive tool in the identifying the causes of first trimester vaginal bleeding. It is also helpful in the decision-making algorithm about the safe continuation of the pregnancy and timely intervention for abnormal pregnancy. High incongruity was seen in our study between clinical diagnosis and USG diagnosis.

Keywords: Vaginal Bleeding, First Trimester, Pregnancy, Clinical, Ultrasonographic Evaluation, etc.

Introduction:

Early pregnancy bleeding refers to vaginal bleeding before 24 weeks of gestational age (during the first and second trimester). If the bleeding is significant, hemorrhagic shock may occur.[1] Concern for shock is increased in those who have loss of consciousness, chest pain, shortness of breath, or shoulder pain. [1]

Common causes of early pregnancy bleeding include ectopic pregnancy, threatened miscarriage, and pregnancy loss. Most miscarriages occur before 12 weeks gestation age. Other causes include implantation bleeding, gestational trophoblastic disease, polyps, and cervical cancer. Tests to determine the underlying cause usually include a speculum examination, ultrasound, and hCG. [1-2]

Treatment depends on the underlying cause. If tissue is seen at the cervical opening it should be removed. In those in who the pregnancy is in the uterus and who have fetal heart sounds, watchful waiting is

generally appropriate.[3] Anti-D immune globulin is usually recommended in those who are Rh-negative.[4] Occasionally surgery is required.

About 30% of women have bleeding in the first trimester (0 to 12 weeks gestational age). Bleeding in the second trimester (12 to 24 weeks gestational age) is less common. [5] About 15% of women who realize they are pregnant have a miscarriage. Ectopic pregnancy occurs in under 2% of pregnancies. [1]

The differential diagnosis depends on whether the bleeding occurs in the first trimester or in the second/third trimesters.

Obstetric causes of first trimester bleeding include the following:

- Early pregnancy loss is a term often used interchangeably with spontaneous abortion and miscarriage and refers to pregnancy loss during the first trimester. [6] It is the most common cause of early pregnancy bleeding and is associated only with heavy

(versus light) bleeding. [7] However, patients typically remain hemodynamically stable.

- Threatened early pregnancy loss, often considered a type of early pregnancy loss, refers vaginal bleeding in the presence of an intrauterine pregnancy and a closed cervix. The presence of fetal heart rate largely determines whether the pregnancy will progress to a viable outcome.[8]
- Ectopic pregnancy refers to a pregnancy outside the uterus, commonly in the fallopian tube. It is a less common but more serious cause of early pregnancy bleeding. Ectopic pregnancies can rupture, leading to internal bleeding that can be fatal if untreated.
- Implantation bleeding involves a small amount of bleeding that may occur 10 to 14 days after implantation of the fertilized egg. However, there is little evidence to support the existence of such bleeding.[9]
- Chorionic hematoma is the pooling of blood (hematoma) between the chorion, a membrane surrounding the embryo, and the uterine wall. It occurs in about 3.1% of all pregnancies and is the most common cause of first trimester bleeding.
- Gestational trophoblastic neoplasia, which refers to pregnancy-related tumors that be either cancerous or non-cancerous. This cause is extremely rare with non-cancerous gestational trophoblastic neoplasia found in 23 to 1,299 cases per 100,000 pregnancies and cancerous forms with a 10-fold lower incidence.[10]

Obstetric causes of second/third trimester bleeding include the following:

- Bloody show refers to the passage of a small amount of blood or blood-tinged mucus resulting from labor or cervical weakness.
- Pregnancy loss refers to death of the fetus at any time during pregnancy. Pregnancy loss most commonly occurs during the first trimester, when it is referred to as early pregnancy loss.
- Placenta praevia or vasa praevia refers to the placenta or fetal blood vessels, respectively, covering or being located close to the opening of the uterus. More than half of women affected by placenta praevia (51.6%) have bleeding before delivery.[11] Vasa praevia occurs in about 0.6 per 1000 pregnancies.[12]

- Placental abruption involves the separation of the placental lining from the uterus of the mother. It occurs most commonly around 25 weeks of pregnancy.
- Uterine rupture is when the muscular wall of the uterus tears during childbirth or, less commonly, during pregnancy.
- Nontubal ectopic pregnancy refers to an ectopic pregnancy that occurs occurs in the ovary, cervix, or intra-abdominal cavity.

Other causes of early pregnancy bleeding include the following:

- Postcoital bleeding, which is vaginal bleeding after sexual intercourse that can be normal with pregnancy.
- Iatrogenic causes, or bleeding due to medical treatment or intervention, such as sex steroids, anti-coagulants, or intrauterine contraceptive devices.[13]
- Vaginal or cervical bleeding, which may arise from many causes including fibroids, polyps, warts, tumors, vaginitis, or trauma. Importantly, these causes may co-occur with other causes of early pregnancy bleeding.
- Lower genitourinary tract bleeding, which may result from a urinary tract infection (UTI), strenuous exercise, or bladder cancer.

Early pregnancy bleeding is usually from a maternal source, rather than a fetal, one. The maternal source may be a disruption in the vessels of the decidua or a lesion in the cervix or vagina. Vasa praevia is a rare condition that can result in bleeding from the fetoplacental circulation.

The initial evaluation of early pregnancy bleeding involves a history and physical examination. The relevant history includes determining the gestational age of fetus and characterizing the bleeding. Bleeding that is at least as heavy as menstrual bleeding or associated with clots, tissue, lightheadedness, or pelvic discomfort is associated with increased risks of ectopic pregnancy and spontaneous abortion. Discomfort in the middle of the abdomen is more closely associated with spontaneous abortion; discomfort on a side of the abdomen is more closely associated with ectopic pregnancy. Risk factors for ectopic pregnancy or spontaneous abortion should also be considered. [14]

The physical examination includes assessing vital signs and performing an abdominal and pelvic examination. Signs of hemodynamic instability or peritonitis require emergent intervention. A pelvic examination may reveal non-obstetric causes of bleeding such as bleeding from the vagina or cervix. It may also show visible products of conception suggestive of an incomplete abortion. [14]

If the person is stable and a pelvic exam is unrevealing, ultrasonography and/or serial measurement of hCG is generally recommended to assess fetal location and viability. Before 10 weeks gestation, a slower than normal increase in hCG suggests early pregnancy loss or ectopic pregnancy.[14] By approximately 10 weeks, hCG plateaus and ultrasound is preferred to determine the location of the pregnancy (i.e., intrauterine or ectopic). In the presence of prior pelvic imaging, fetal heart tracing with Doppler sonography is sufficient to assess fetal viability beginning at 10–12 weeks of gestation. Bleeding associated with an intrauterine, viable pregnancy suggests threatened early pregnancy loss. Bleeding associated with an intrauterine, nonviable pregnancy suggests early pregnancy loss. If the viability of an intrauterine pregnancy is uncertain, repeat ultrasonography coupled with laboratory measurement of progesterone and/or serial hCG can be helpful. The absence of either intrauterine or ectopic pregnancy on imaging is suggestive of a complete early pregnancy loss (if the pregnancy was previously seen on imaging) or a pregnancy of unknown location (if the pregnancy was not previously seen on imaging). [14]

The management of early pregnancy bleeding depends on its severity and cause. [1] People with significant blood loss who become hemodynamically unstable require rapid intervention. Laboratory studies that may be helpful include hemoglobin/hematocrit, coagulation studies, and type and crossmatch. Regardless of hemodynamic stability, a red blood cell antibody screen is usually checked. Patients who are Rh-negative are usually given anti-D immune globulin to prevent RhD isoimmunization. [4] The fetal heart rate can also be checked to assess the need for delivery.

Ectopic pregnancy is treated with methotrexate therapy or surgery. Surgery is required for patients who have failed or have contraindications to

methotrexate therapy, are experiencing significant blood loss, or have signs of ectopic rupture. [1] Threatened early pregnancy loss is often treated with watchful waiting. [3] Bed rest and progesterone therapy have not been shown to increase the likelihood of a viable outcome. [14-15] Early pregnancy loss can be treated with watchful waiting, medication, or uterine aspiration based on shared decision-making between the patient and provider. [14]

It has been shown to be associated with an increased risk of poor obstetric outcomes such as preterm labour, Low birth weight and premature rupture of Membranes. Moreover when pregnant - women have bleeding, it may cause stress and anxiety for the Mother to be about the outcome of pregnancy. This can be a difficult time for women because of uncertainty of outcome, lack of preventive measures and emotional significance of early pregnancy loss. Although few studies have evaluate outcomes other than viability at term. Most agree that adverse pregnancy outcome is associated with first trimester vaginal Bleed. The outcome of ongoing pregnancies after first firmest bleeding is of relevance to women and obstetricians for planning antenatal care and clinical interventions in pregnancy. The Prognosis of threatened Abortion is very unpredictable whatever method treatment is employed either in hospital or at home. Threatened Abortion is such an event during pregnancy which needs meticulous attention to fulfil the Purpose. Since the knowledge of increased risks associated with first trimester Bleed may facilitate decision making regarding management and decisions regarding mode, place and timing of delivery which will inevitably improve neonatal outcome, the purpose of this study is to evaluate the outcome of early pregnancy with a viable singleton fetus that has been complicated by Bleed.

Bleeding per vaginum in the first trimester of pregnancy is one of the most common obstetric problems. Bleeding in early pregnancy is an indicator of an abnormality interrupting the normal development and is a common cause of hospital admission. If the viability or non viability of pregnancy can be made on USG, then hormonal therapy and hospitalization can be avoided. This is usually impossible with history and clinical examination and can be established only by USG. Hence based on above findings the present study was

planned for Assessment of Vaginal Bleeding in First Trimester of Pregnancy by Comparative Study of Clinical and Ultrasonographic Evaluation.

Methodology:

The present study was planned in Department of Obstetrics and Gynaecology, Madhubani Medical College and Hospital, Madhubani, Bihar. In the present study 30 females having history of bleeding per vaginum in the first trimester of pregnancy were enrolled.

Clinical data such as age, obstetric 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. All patients were subjected to transabdominal sonography using GE Logiq P5 Pro ultrasound machine. Transvaginal sonography (TVS) was performed whenever transabdominal sonography was inconclusive or equivocal. On USG examination presence or absence of gestational sac, location of the gestational sac, size of gestational age compared to the period of amenorrhea, margins of the gestational sac, presence or absence of foetal pole, crown rump length (CRL), cardiac activity and presence of fluid in the cul-de-sac were noted.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion Criteria:

Exclusion Criteria: Women having nonobstetric causes for vaginal bleeding and all patients with more than 12 completed weeks of gestation were excluded.

Results & Discussion:

Bleeding in early pregnancy may be life threatening. A small amount of bleeding or spotting per vaginum which may be dismissed as trivial can be catastrophic. Hence, it is mandatory for all health care providers to understand the condition and aim at an early diagnosis. There are three important causes of bleeding in early pregnancy namely abortion, ectopic pregnancy and hydatidiform mole in the order of frequency of their occurrence. However of the three,

ectopic pregnancy keeps best of the clinicians perplexed and may prove fatal earlier and more often than abortion and hydatidiform mole.

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

Bleeding in this trimester is a common presentation in the emergency room and is difficult to tackle, as a decision is to be made whether the pregnancy is viable or non viable and intrauterine or extra uterine. The main differential considerations of first trimester bleeding are spontaneous abortion, ectopic pregnancy or gestational trophoblastic disease. About 25% of all gestations present with vaginal spotting or frank bleeding in the first few weeks of pregnancy and half of these progress to miscarriage or abortion. Clinical examination and hormonal studies are not always conclusive in making a definite diagnosis in these cases.

Vaginal bleeding during the first trimester is not something that should make you too worried as it is a normal occurrence. Usually women mistake vaginal bleeding as a miscarriage or a light period, but this is not always the case. This kind of bleeding may last from a few hours to a few days. The reason behind a pregnant woman bleeding during her first trimester is implantation bleeding, which is caused when the fertilized egg has planted itself into the lining of the uterus. Implantation bleeding occurs in the first 6 to 12 days of conceiving. About 20% women experience vaginal bleeding in the first trimester, and a study shows that over 90% women who experience vaginal bleeding in the first trimester do not miscarry.

The application of ultrasonography in this context has an indispensable value because it is safe, quick, reliable and relatively inexpensive modality of investigation. It is a valuable non invasive tool to clinch the diagnosis. The technique of ultrasound has revolutionised medicine in which echoes from deep within the body provide clues about its working and state of health. The first application of diagnostic ultrasound to obstetrics and gynaecology by Donald

and associates has made a major contribution to improvement in prenatal diagnosis.

The location, appearance and size of the gestational sac and presence of intact foetal echoes give the obstetrician a complete picture and help in initial management of the patient and also predict the outcome. The patient is relieved psychologically once the diagnosis is established.

Table 1: Age & No. of cases

Age	No. of cases
18-20 yrs	10
21-25 yrs	12
26-30 yrs	5
31-40 yrs	3
Total	30

Table 2: indicates Ultrasonographic diagnosis seen in the selected population.

	Clinical Examination	USG Diagnosis
Threatened abortions	21	18
Missed abortions	1	3
Blighted ovum	0	2
Incomplete abortions	2	3
Complete abortions	2	3
Ectopic gestation	4	1
Molar pregnancy	0	0
Total	30	30

Rosati P, Exacoustos C, Masini L, Mancuso S (1989) studied about the usefulness and limits of the ultrasonic examination in the diagnosis and prognosis of early pregnancies with vaginal bleeding and concluded that there are no significant differences between normal or abnormal ultrasonic examinations. The ultrasound scanning in patients with early pregnancy bleeding is able to differentiate between live gestation or abortion but cannot predict the future. [16]

Bloch C, Altchek A, Levy Ravetch M (1989) made a study on the significance of subchorionic hemorrhage by using sonography in pregnancy with first trimester bleed and they concluded that the prognosis of pregnancy in the group of women with bleed and sonographic evidence of subchorionic hemorrhage and fetal cardiac activity was 80% favourable. [17]

Bleeding during the first 20 weeks of pregnancy is very common and poses significant threats to the

developing embryo or the fetus with possible poor maternal outcome. [18] Various incidences of bleeding in early pregnancy has been reported by different authors from different centers. In general, the reported incidences ranged between 12% and 40%. These studies showed high rates of pregnancy losses or abortions, preterm births, low-birth weight, and neonatal mortality. [19] Most of these studies were either retrospective and often times were only interview-based studies. Furthermore, no such study has been carried out in this environment. Similar studies carried out on patients who achieved pregnancies following assisted reproductive technique showed that bleeding in early singleton pregnancy increases the risk for poor pregnancy outcome. [20]

The present study is comparable to the study by Ghorade et al [21] . Sofat et al [23] in their study compared and correlated clinical diagnosis and ultrasound diagnosis. 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. Malhotra J et al [22] in his prospective evaluation of 150 patients with first trimester bleeding found that ultrasonography helped in establishing the correct diagnosis in 32% of clinically misdiagnosed cases. He concluded that ultrasonography was the only imaging modality, by which an accurate assessment of first trimester bleeding can be done from the diagnostic and prognostic point of view.

Diagnosis of cases with first trimester bleeding per vaginum was traditionally based on history, physical examination and clinical findings. Many times symptoms are misleading resulting in delay in diagnosis and treatment. Real time ultrasonography has now opened a complete new dimension in obstetrics in diagnosis of early normal and abnormal pregnancy. This has enabled us to institute immediate specific treatment (medical or surgical), thereby preventing mismanagement and saving time and cost.

A potential limitation of this study is that the severity of vaginal bleed was based on a subjective description by the patient. However the ultimate assessment of vaginal bleeding is based on patient report. Therefore we believe the results of this study can be applied to clinical practice. Results of this

study support other evidence to indicate that in some patients first trimester vaginal bleeding may indicate underlying placental dysfunction which may manifest in later pregnancy by a variety of adverse outcomes that have also been related to placental dysfunction.

Conclusion:

The data generated from the present study concludes that USG is an extremely valuable non invasive tool in the identifying the causes of first trimester vaginal bleeding. It is also helpful in the decision-making algorithm about the safe continuation of the pregnancy and timely intervention for abnormal pregnancy. High incongruity was seen in our study between clinical diagnosis and USG diagnosis.

References:

1. Breeze, C (May 2016). "Early pregnancy bleeding". *Australian Family Physician*. 45 (5): 283–6. PMID 27166462.
2. Stables, Dorothy; Rankin, Jean (2010). *Physiology in Childbearing: With Anatomy and Related Biosciences*. Elsevier Health Sciences. p. 423. ISBN 978-0702044113.
3. Deutchman, M; Tubay, AT; Turok, D (1 June 2009). "First trimester bleeding". *American Family Physician*. 79 (11): 985–94. PMID 19514696.
4. Coppola, PT; Coppola, M (August 2003). "Vaginal bleeding in the first 20 weeks of pregnancy". *Emergency Medicine Clinics of North America*. 21 (3): 667–77. doi:10.1016/S0733-8627(03)00041-5. PMID 12962352.
5. Beebe, Richard; Myers, Jeffrey (2010). *Professional Paramedic, Volume II: Medical Emergencies, Maternal Health & Pediatrics*. Cengage Learning. p. 704. ISBN 9781285224909.
6. "ACOG Practice Bulletin No. 200". *Obstetrics & Gynecology*. 132 (5): e197–e207. November 2018. doi:10.1097/aog.0000000000002899. ISSN 0029-7844.
7. Hasan, R.; Baird, D. D.; Herring, A. H.; Olshan, A. F.; Jonsson Funk, M. L.; Hartmann, K. E. (2009). "Association Between First-Trimester Vaginal Bleeding and Miscarriage". *Obstetrics & Gynecology*. 114 (4): 860–867. doi:10.1097/ AOG.0b013e3181b79796
8. Harville, E.W. (2003-09-01). "Vaginal bleeding in very early pregnancy". *Human Reproduction*. 18 (9): 1944–1947. doi:10.1093/humrep/deg379. ISSN 1460-2350.
9. Altieri, Andrea; Franceschi, Silvia; Ferlay, Jacques; Smith, Jennifer; La Vecchia, Carlo (November 2003). "Epidemiology and aetiology of gestational trophoblastic diseases". *The Lancet. Oncology*. 4 (11): 670–678. doi:10.1016/s1470-2045(03)01245-2. ISSN 1470-2045. PMID 14602247.
10. Fan, Dazhi; Wu, Song; Liu, Li; Xia, Qing; Wang, Wen; Guo, Xiaoling; Liu, Zhengping (01 09, 2017). "Prevalence of antepartum hemorrhage in women with placenta previa: a systematic review and meta-analysis". *Scientific Reports*. 7: 40320. doi:10.1038/srep40320. ISSN 2045-2322. PMC 5220286. PMID 28067303. Check date values in: |date= (help)
11. Ruiter, L.; Kok, N.; Limpens, J.; Derks, J. B.; de Graaf, I. M.; Mol, Bwj; Pakr, E. (July 2016). "Incidence of and risk indicators for vasa praevia: a systematic review". *BJOG: an international journal of obstetrics and gynaecology*. 123 (8): 1278–1287. doi:10.1111/1471-0528.13829. ISSN 1471-0528. PMID 26694639.
12. Brenner, Paul (September 1996). "Differential diagnosis of abnormal uterine bleeding". *American Journal of Obstetrics and Gynecology*. 175 (3): 766–769. doi:10.1016/s0002-9378(96)80082-2. PMID 8828559.
13. Hendriks, Erin; MacNaughton, Honor; MacKenzie Maricela Castillo (02 01, 2019). "First Trimester Bleeding: Evaluation and Management". *American Family Physician*. 99 (3): 166–174. ISSN 1532-0650. PMID 30702252. Check date values in: |date= (help)
14. Coomarasamy, Arri; Devall, Adam J.; Cheed, Versha; Harb, Hoda; Middleton, Lee J.; Gallos, Ioannis D.; Williams, Helen; Eapen, Abey K.; Roberts, Tracy; Ogwulu, Chriscasimir C.; Goranitis, Ilias (2019-05-09). "A Randomized Trial of Progesterone in Women with Bleeding in Early Pregnancy". *New England Journal of Medicine*. 380 (19): 1815–1824. doi:10.1056/ NEJMoA 1813730. ISSN 0028-4793. PMID 31067371.
15. Rosati P, Exacoustos C, Noia G, Masini L, Mancuso S., Usefulness and limits of the ultrasonic examination in the diagnosis and prognosis of early pregnancies with vaginal bleeding, *Minerva Ginecol*. 1989 Oct;41(10):485-8.
16. Bloch C, Altchek A, Levy-Ravetch M., Sonography in early pregnancy: the significance of subchorionic hemorrhage, *Mt Sinai J Med*. 1989 Sep;56(4):290-2.

17. Wu YH. Spontaneous abortions. In: Bader JT, editor. *Obstetrics/Gynaecology Secrets*. 3rd ed., Vol. 18. Philadelphia, Pennsylvania: Elsevier Mosby; 2005. p. 100-5.
18. Johns J, Jauniaux E. Threatened miscarriage as a predictor of obstetric outcome. *Obstet Gynecol* 2006;107:845-50.
19. De Sutter P, Bontinck J, Schutysers V, Van der Elst J, Gerris J, Dhont M, et al. First-trimester bleeding and pregnancy outcome in singletons after assisted reproduction. *Hum Reprod* 2006;21:1907-11.
20. Gorade TG, Shorothri AN. Ultrasonography in early pregnancy bleeding. *J Obstet Gynaecol India*. 1991;41:13-6.
21. Malhotra J, Saxena K, Malhotra N. Ultrasound evaluation of first trimester bleeding per vaginum. *J Obstet Gynecol India*. 1987;37:341-3.
22. Sofat R. Ultrasound evaluation of bleeding in early pregnancy. *J Obstet Gynaecol India*. 1987; 31:344-7.