ORIGINAL ARTICLE

Evaluation of the Efficacy of Ultrasound-Guided Interventions in Managing First-Trimester Vaginal Bleeding

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ABSTRACT

Objective: Aim was to evaluate the efficacy of ultrasound-guided interventions in managing first-trimester vaginal bleeding.
Study Design: Observational study
Place and Duration: Gynaecology and Obstetrics Department people university of Medical and health sciences jamshoro Hyderabad. January 2022-December 2022
Methods: Total 116 pregnant females of first trimester were presented in this study. All the presented women had complaint of vaginal bleeding. Included patients had gestational age between 6-12 weeks. After a thorough clinical evaluation and diagnosis, patients were sent for an ultrasound. Ultrasound results were evaluated in terms of pregnancy type and types of abortions. SPSS 23.0 was used to analyze all data.
Results: There were majority primi-gravida women 72 (62.1%) and 44 (37.9%) females were multigravida. Females mean age 27.5±12.19 years and had mean BMI 27.8±4.23 kg/m^2. Mean gestational age of the females was 10.2±4.17 weeks. Frequency of viable patients was 36 (31.03%) and non-viable patients was 80 (68.97%). Among 80 non-viable cases, different type of abortions was found in 62 (67.5%) cases, ectopic pregnancy in 10 (12.5%) cases and molar pregnancy in 8 (10%) cases.
Conclusion: Ultrasonography is the most accurate and non-invasive diagnostic method for distinguishing between the various conditions and phases of first trimester bleeding in pregnant women. The use of ultrasonography for prenatal screening has opened up new avenues for the timely treatment of patients, which has been shown to minimize death rates associated with pregnancy complications.
Keywords: Abortion, First Trimester, Molar pregnancy, Ectopic Pregnancy

INTRODUCTION

The first 12–13 weeks of a pregnancy are called the "first trimester," and they are counted from the first day of the last menstrual period (LMP). Diagnostic and imaging follow-up procedures during the first trimester of pregnancy often include transvaginal ultrasonography (TVUS). Ultrasound imaging has several benefits, such as being accessible to a large population at a cheap cost and allowing for the capture of high-resolution pictures in real time. The presence of serum beta-human chorionic gonadotropin (-hCG) is often used as a first-line diagnostic for pregnancy. The ultrasound is then used in the first and second trimesters to determine the pregnancy's gestational age and afterwards to assess the fetus's anatomy. An intrauterine gestational sac may be seen and the pregnancy's viability assessed by pelvic ultrasonography in the first trimester. It may also be used to assess issues during pregnancy, such as an ectopic pregnancy. The American Institute of Ultrasound in Medicine has established guidelines for the safe and effective use of ultrasound technology during pregnancy [1].

In the first trimester of pregnancy, vaginal bleeding is the most common obstetric emergency. According to the previous research, 16% of all pregnant women have the vaginal bleeding. Vaginal bleeding during the first trimester may have serious consequences, ranging from a missed abortion to a haemorrhage that might be fatal [2,3]. Abortions occur at a rate of between 10%-20%. The reason of vaginal bleeding may be evaluated with the help of an ultrasonographer in the first trimester of pregnancy [3,4]. This evaluation helps doctors determine if the foetus is developing normally within the uterus or outside of it [5]. Colour Doppler imaging in conjunction with high-resolution transvaginal sonography may be used to estimate uteroplacental vascularization volumes, which in turn measure uteroplacental blood ow and offer predictive values [6,7]. Therefore, with the development of increasing technology, we can now identify intra-decidual gestational adenomas within 35 days of pregnancy [8].

A missed miscarriage is described as the retention of a foetal or embryonic death. It's one of the most annoying pregnancy problems, and improper treatment may have serious consequences for the woman's future fertility or even end her life. The World Health Organisation estimates that 67,000 women lose their lives each year as a result of untreated early pregnancy loss [9].

Early pregnancy loss has been traditionally treated with dilatation and surgical evacuation [10]. Incomplete evacuation of the products of conception, which may lead to intrauterine infection and subsequent intrauterine synechia and adhesions, is one of numerous potential consequences. Over curettage may also harm the endometrium and raise the risk of developing Asherman syndrome [11].

Prostaglandin was widely used as an adjunct or as a replacement for surgical treatment of miscarriage in the early stages of pregnancy. Prostaglandins have been the subject of several investigations to establish the optimal dose and administration technique for preventing miscarriage in early pregnancy [9, 10].

Vacuum suction was first used in 1973 to remove implantation retention and cure miscarriage [4-6]. Due to its simplicity and reduced risk of complications, it has gained widespread acceptance as a method for dealing with miscarriage. Either blindly or with ultrasonographic supervision, the vacuum aspiration might be performed.

Miscarriages account for around half of all occurrences of vaginal bleeding in the first trimester. Early detection of first trimester bleeding is necessary to lower the ratio of maternal death, and advances in ultra sonography are paving the road for such diagnosis [10].

MATERIALS AND METHODS

This observational study was conducted at Gynaecology and Obstetrics Department people university of Medical and health

sciences jamshoro Hyderabad and comprised of 116 pregnant females. Case enrollment included collecting thorough demographic information after receiving informed written consent. Patients were not considered if their gestational age was greater than 13 weeks, if they were female, and if they did not provide written consent.

In the first trimester, all the pregnant women who had bleeding went to the hospital. Women presenting with vaginal bleeding who were not pregnant were excluded from the research. All patients had their preliminary diagnoses made by doctors and nurses. Following the clinical assessment, it was recommended that ultrasonography be performed. The transducer used for the transabdominal ultrasound had a frequency of 3.5 MHz. Transvaginal ultrasonography with a transducer operating at a frequency of 5-7 MHZ was recommended for a subset of individuals whose transabdominal ultrasonography had shown equivocal results. Imaging findings were compared to clinical findings to determine their consistency. The data was analysed statistically using the Statistical Package for the Social Sciences (SPSS) version 23.0 (IBM Corporation, USA). For categorical data, N (percent of cases) was used, while for continuous data, Mean and Standard Deviations were calculated. Clinical diagnosis was made after extensive statistical analysis. Quantitative measures such as sensitivity, specificity, PPV, NPV, and accuracy were determined.

RESULTS

There were majority primi-gravida women 72 (62.1%) and 44 (37.9%) females were multigravida. Females mean age 27.5±12.19 years and had mean BMI 27.8±4.23 kg/m^2. Mean gestational age of the females was 10.2±4.17 weeks. 53 (45.7%) patients were educated among all cases.(table 1)

Table-1: Characteristics of the Patients

Variables	Frequency	Percentage
Gravidity		
Primigravida	72	62.1
Multigravida	44	37.9
Mean age (years)	27.5±12.19	
Mean BMI (kg/m^2)	27.8±4.23	
Mean Gestational age (weeks)	10.2±4.17	
Education status		
Educated	53	45.7
Non-educated	63	54.3

Frequency of viable pregnancy was 36 (31.03%) and non-viable pregnancy was 80 (68.97%).(figure 1)
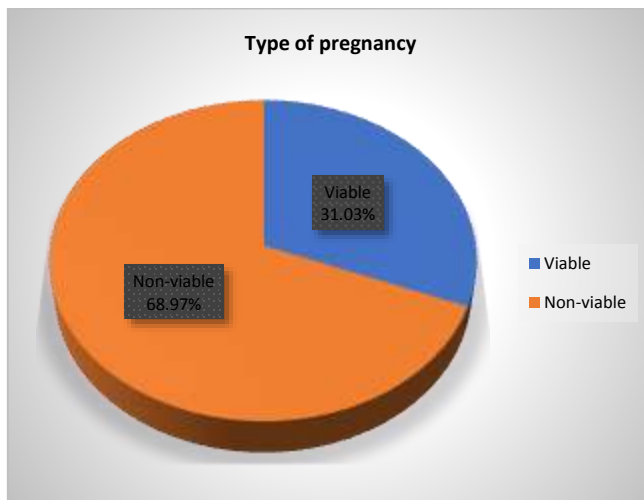

Figure-1: Frequency of viable pregnancy

Among 80 non-viable cases, different type of abortions was found in 62 (67.5%) cases, ectopic pregnancy in 10 (12.5%) cases and molar pregnancy in 8 (10%) cases.(table 2)

Table-2: Outcomes among non-viable pregnancies among enrolled cases

Variables	Frequency (80)	Percentage
Outcomes		
Abortions	62	67.5
ectopic pregnancy	10	12.5
molar pregnancy	8	10

Among 62 abortion cases, 25 (40.3%) were missed abortions, incomplete abortion found in 17 (27.4%) cases, complete abortion was found in 12 (19.4%) cases and blighted ovum was in 8 (12.9%) cases.(figure-2)
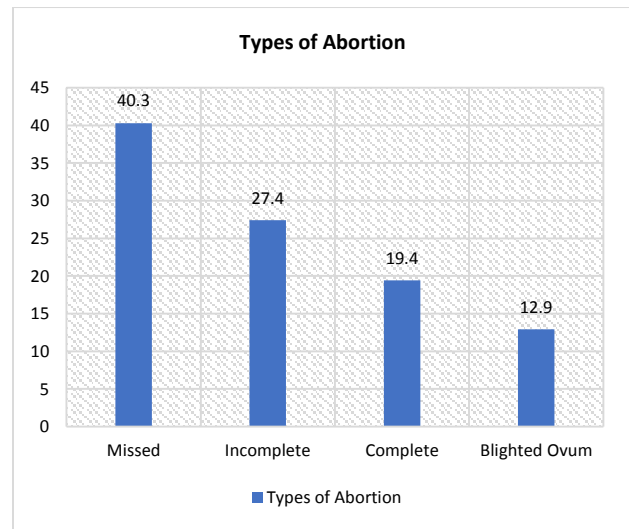

Figure-2: Types of abortion among females

DISCUSSION

Nearly 25% of pregnant women have bleeding during the first trimester. They need to have numerous medical options considered, as there are several problems that might cause bleeding, from a viable pregnancy to an inviable one. Clinical history and physical examination alone are insufficient for a correct diagnosis. Obstetricians now have the benefit of a clear diagnosis provided by ultrasonography, allowing them to quickly begin specialised medicinal or surgical treatment. A precise diagnosis of the nature of the pregnancy (viable or non-viable) can save unnecessary hormone care and lengthy hospitalisation. Diagnosing retained conception products also indicates the need for uterine dilatation and curettage. In the event of an abortion, ultrasonography surveillance can provide an evacuation success index. When the uterus appears empty but still bulky, curettage is not necessary. In this study, various abortion procedures were found to be the primary cause of bleeding (82%). A similar finding was made in all other studies. A higher proportion has been recorded by certain research, while a lower one has been discovered by others. Similar to previous studies, ectopic pregnancies were the second most common cause of bleeding during the first trimester of this study. The second most common reason is pregnancy in the third trimester. All cases of threatened abortion, missed abortion, incomplete abortion, blighted ovum, H Mole, and inevitable abortion in our sample were accurately diagnosed via ultrasound with a diagnostic accuracy of 100%. Complete abortion was incorrectly identified in 1 of every 6 cases of ectopic pregnancy, for a total accuracy rate of 98%. Except for those investigations, ultrasonography was completely accurate in diagnosing imminent abortion every time.[12-14]

In current study, 116 pregnant females of first trimester had vaginal bleeding were presented. There were majority primi-gravida women 72 (62.1%) and 44 (37.9%) females were multigravida. Females mean age 27.5±12.19 years and had mean BMI 27.8±4.23 kg/m². Mean gestational age of the females was 10.2±4.17 weeks. Results were comparable to the previous studies.[13,14] The clinical definition of a miscarriage, also known as a spontaneous abortion, is the loss of a pregnancy before to the 20th week of gestation or the evacuation of a foetus weighing less than 500 g [15]. A spontaneous abortion can occur in a number of different ways. Any clinical circumstance in which a patient arrives with vaginal spotting/bleeding and cramping/contractions and a closed cervical os is considered a threatening abortion. There may be no outward signs of trouble during pregnancy or there may be a variety of anomalies. Abnormal morphology (such as a tiny or malformed gestational sac), foetal bradycardia, and a big SCH [16] are all markers of a poor prognosis.

In our study, frequency of viable pregnancy was 36 (31.03%) and non-viable pregnancy was 80 (68.97%). Among 80 non-viable cases, different type of abortions was found in 62 (67.5%) cases, ectopic pregnancy in 10 (12.5%) cases and molar pregnancy in 8 (10%) cases. These findings were inline with the previous studies.[16,17] Among 62 abortion cases, 25 (40.3%) were missed abortions, incomplete abortion found in 17 (27.4%) cases, complete abortion was found in 12 (19.4%) cases and blighted ovum was in 8 (12.9%) cases. The results of the study by Khatod et al. on the 107 patients showed that 76.64 percent of the pregnancies were threatened abortions, 4.67 percent were complete abortions, 6.5 percent were incomplete abortions, 3.74 percent were inevitable abortions, 3.74 percent were missed abortions, and 4.67 percent were ectopic pregnancies [18,19]. When compared to Deepti Kurmi's clinical findings, our study demonstrates that it does more than just clear up any doubts about the diagnosis; it paves the road for the most precise diagnosis possible. This suggests that women between the ages of 23 and 27 have a higher incidence of vaginal bleeding during the first trimester of pregnancy than any other age group at a ratio of 50%. Females aged 18 to 22 represented the second most numerous demographic (20%; see also)[20]

Ultrasound has been shown to be a very effective method for determining the precise source of vaginal bleeding in the first trimester, with a specificity rate of one hundred percent in identifying an assaulted abortion, partial abortion, lacking abortion, hydatiform mole, anembryonic conception, or inevitable abortion. This is due to the fact that ultrasound has a 100% success rate in identifying these conditions. Both a complete abortion and an ectopic pregnancy had a diagnosis accuracy of 98 percent when evaluated with USG.[21]

CONCLUSION
Ultrasonography is the most accurate and non-invasive diagnostic method for distinguishing between the various conditions and phases of first trimester bleeding in pregnant women. The use of ultrasonography for prenatal screening has opened up new avenues for the timely treatment of patients, which has been shown to minimize death rates associated with pregnancy complications.

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