



DIAGNOSTIC ACCURACY OF TRANSVAGINAL ULTRASONOGRAPHY IN THE EVALUATION OF FIRST TRIMESTER VAGINAL BLEEDING: A PROSPECTIVE OBSERVATIONAL STUDY

Radio-Diagnosis

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ABSTRACT

First-trimester vaginal bleeding is a common clinical condition encountered in early pregnancy and may indicate both normal and abnormal gestational outcomes. Clinical examination alone is often insufficient for accurate diagnosis in early gestation. The present study evaluates the diagnostic accuracy of transvaginal ultrasonography (TVUS) in patients presenting with first-trimester vaginal bleeding. A prospective observational study was conducted from July 2025 to December 2025 involving fifty pregnant patients. TVUS findings were compared with clinical diagnosis, follow-up, and surgical confirmation where required. Missed abortion was the most common diagnosis, followed by threatened abortion. TVUS accurately identified ectopic and anembryonic pregnancies missed clinically. Transvaginal ultrasonography is therefore an essential imaging modality in evaluating first-trimester vaginal bleeding.

KEYWORDS

Transvaginal Ultrasonography, First-Trimester Bleeding, Ectopic Pregnancy, Abortion

INTRODUCTION

Bleeding during the first trimester occurs in a considerable proportion of pregnancies and poses diagnostic uncertainty (1,2). Causes include threatened abortion, ectopic pregnancy, and early pregnancy failure(3). Transvaginal ultrasonography allows early confirmation of pregnancy location and viability (4).

MATERIALS AND METHODS

This prospective observational study included fifty pregnant patients presenting with first-trimester vaginal bleeding between July 2025 and December 2025. Ultrasound findings were correlated with clinical diagnosis and follow-up (4,5).

RESULTS

Missed abortion was the most frequent diagnosis followed by threatened abortion. TVUS demonstrated improved diagnostic accuracy compared with clinical evaluation. Overall diagnostic disparity between clinical and ultrasound diagnosis was 84%.

haemorrhage(yellow star).GA: 5w6d. 2b: Vesicular mole: Bulky uterus with intrauterine echogenic mass containing multiple cystic spaces (yellow star). 2c: Ectopic pregnancy ring-of-fire sign on Doppler. 2d: Ectopic pregnancy: Adnexal gestational sac with empty uterus, free fluid.

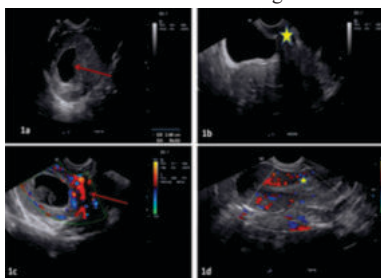


Figure 1: 1a:Anembryonic pregnancy: Irregular or empty gestational sac without fetal pole(red arrow).GA: 8w2d. 1b: Inevitable abortion: Crumpled gestational sac in lower uterine segment with open internal os (yellow star). 1c:Missed abortion: Gestational sac with fetal pole but absent cardiac activity(red arrow). 1d:Incomplete abortion: Heterogeneous endometrial echo complex with minimal vascularity(yellow star).

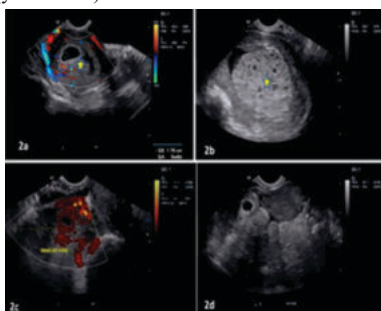


Figure 2: 2a:Threatened abortion: Gestational sac with subchorionic

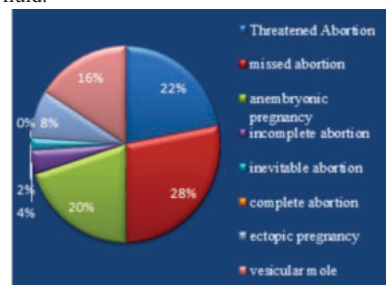


Figure 3: Causes of Bleeding

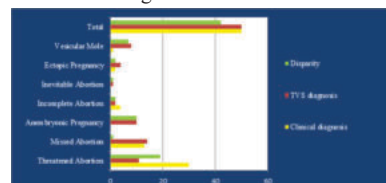


Figure 4: Correlation of Number of Cases Based on Ultrasound and Clinical Diagnosis with Disparity.

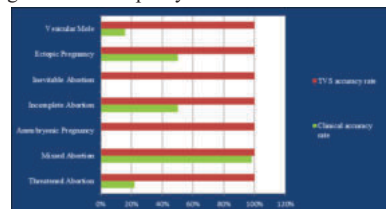


Figure 5: Comparison of clinical and ultrasound diagnostic accuracy

DISCUSSION

The findings confirm the importance of transvaginal ultrasonography in early pregnancy evaluation. Previous studies demonstrate similar diagnostic superiority of TVUS (5,6). Missed abortion constituted the most common diagnosis, followed by threatened abortion, consistent with previously published studies (6,7) Early identification of ectopic pregnancy is critical for preventing maternal morbidity (7). In this study, TVUS demonstrated 100% diagnostic accuracy for ectopic pregnancy, with all cases confirmed surgically

CONCLUSIONS

Patients presenting with first-trimester vaginal bleeding are at high risk of abnormal pregnancy outcomes. When clinical evaluation is

inconclusive, transvaginal ultrasonography is essential for establishing an accurate diagnosis. It facilitates timely clinical decision-making, helps avoid mismanagement, and plays a critical role in improving patient outcomes in early pregnancy complications.

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