

# First Trimester Pregnancy Loss Detection Using Ultrasound among Sudanese Women

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**Abstract:** ***Objectives:** The aims of the study were to review the value of ultrasound in evaluating the vaginal bleeding and early pregnancy miss and to point a related abnormalities. The problem of early pregnancy failure extends to the family and its economic status. **Materials and Methods:** This study was carried out during 2009-2010. A total of 90 patients were investigated by ultrasound machine across different Hospitals Department of ultrasound Radiology Khartoum State, Sudan. **Result:** The study revealed that the distribution of the patients according to different types of early pregnancy failure of abortion signified as In Complete, Complete, Threaten, Missed, Blighted ovum, Molar Pregnancy and Ectopic Pregnancy; 50%,22.2%,8.9%,12.2%, 3.3%,1.1% and 2.2% respectively. The vaginal bleeding was the most detectable symptoms related to early pregnancy failure 82.2%, followed by pelvic pain 11.1%, vomiting 5.6% and abdominal pain 1.1%. Passive smoking and alcohol consumption contribute 44.4% and 3.3%, respectively. Hypertension was higher caused by early pregnancy failure 44.4%, followed by uncontrolled diabetes mellitus 38.9% and allergic 16.7%. The incidence of visible gestational sac was 27.8 % and invisible gestational sac 72.2%. in addition to that, the shape of visible gestational sacs distributed as normal 17.8% and abnormal 15.2% but the size of visible gestational sacs distributed as normal 17.8 %,abnormal 15.2%. **Conclusion:** Most common type of early pregnancy failure is an incomplete abortion and the least common types are a molar pregnancy. The study showed that ultrasound is an easy and accurate in the diagnosis of early pregnancy failure.*

**Keywords:** Pregnancy failure, Ultrasound, First trimester

## 1. Introduction

Ultrasound technology as medical diagnostic tool has progressed so fast in the last decades, and now with transvaginal sonography (TVS), it is possible to visualize an embryo when it is in the size of a grain of rice.[1,2]

Early pregnancy failure is a general term that indicates failure of a clinically recognized pregnancy to progress to fetal viability and from an ultrasound perspective also, indicates the first trimester of pregnancy. Some authors may refer to the first trimester as 12weeks or 14weeks. The common uterine abnormalities associated with early pregnancy failure include mullerian anomalies, myomatous disease of the uterus and incompetence of cervix[3]. Ultrasound evaluation of an early pregnancy failure include detection of the pregnancy location (intrauterine or extrauterine), the type of pregnancy (one-fetus pregnancy, multiple pregnancy, molar pregnancy), the viability of the pregnancy and establishment of the gestational age. Ultrasonographer also recognizes the complications that occur in first trimester.[4]

## 2. Methodology

Each patient was scanned twice, applied an international scan guide lines and protocols, firstly by the investigator and secondly a qualified sinologists for more confirmation of the findings and accurate diagnosis, the parameters that have association with embryonic success or loss, include the proper size of gestational sac, location of gestational sac, fetal survey for congenital anomalies, valuation of uterine cervix, adnexa, the socioeconomic status has been considered. The sonographic findings were stated as incomplete abortion, complete abortion, missed abortion,

recurrent abortion, septic abortion, ectopic pregnancy, molar pregnancy.

The patients were requested to come with a full bladder by intake 20–30 Ounce of water around one hour before the investigation time. An empty bladder was recommended for endovaginal ultrasonography. Scanning of the female pelvis begins with longitudinal and transverse surveys of the uterus and pelvic cavity following by longitudinal and transverse surveys of the ovaries.

This study was a descriptive and analysis study conducted across different Hospitals Department of ultrasound Radiology Khartoum state, Sudan,(Hospital 1, N=45) (Hospital 2, N=45) from 2009 to 2010, The patients ages arranged between 18 and 50 years with vaginal bleeding before 20 weeks' gestation referred to the ultrasound department for pelvic scan, Structured history and physical examination, symptoms and signs, were performed to each woman as initial clinical assessment. The groups have been scanned with one U/S machine (Fukuda) to determine the status of pregnancy. The probe used was curve linear range from 1-5 MHz probe with utilization of U/S gel to avoid reflection of ultrasound and to maintain a good transmission of U/S beam inside the body. Trans - abdominal ultrasound scanning technique is performed with patient laying in supine position, most of the patients were scanned with full bladder for good viewing of the entire uterus and adnexa. Both longitudinal & transverse views of the patient's uterus, its contents and adnexa were applied.

## 3. Results

This study intended to review the value of ultrasound in evaluating the vaginal bleeding and early pregnancy miss

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and to point a related abnormalities. The distribution of the patients according to different types of early pregnancy failure of abortion has grouped as:-In Complete, Complete, Missed, Threaten , Blighted ovum, Ectopic pregnancy and Molar pregnancy. (45)50%, (20)22.2%, (11)12.2%, (8)8.9%,(3) 3.3%,(2)2.2%(1)1.1% respectively.

**Table 1:** Frequency distribution of the subject according to the socioeconomic status

Types of abortion	Frequency	Percentage%
In complete	45	50
Complete	20	22.2
Missed	11	12.2
Threaten	8	8.9
Blighted ovum	3	3.3
Ectopic pregnancy	2	2.2
Molar pregnancy	1	1.1
Total	90	

The study results reported in table 2 that the Vaginal bleeding was the most symptoms related with early pregnancy failure which contributed 82.2%, followed by pelvic pain 11.1%, vomiting 5.6% and abdominal pain 11.1%. Passive smoking and alcoholic consumption contribute 44.4% and 3/3%, respectively. (Table 3)

**Table 2:** Clinical presentation

Symptoms	Frequency	Percentage%
Vaginal bleeding	74	82.2
Pelvic pain	10	11.1
Vomiting	5	5.6
Abdominal pain	1	1.11
Total	90	

**Table 3:** Social habits

Social habits	Frequency	Percentage%
Smoking	40	44.5
Alcoholic	3	3.3

#### 4. Discussion

The statistical analyses of the above results showed highly incidence of spontaneous abortion of incomplete abortion about 50%, also the House wife is most jobs associated with early pregnancy failure.(Table 4), this can be easily explained that most of Sudanese women are house wife. It is important to note that study result showed that over 40% of the failed pregnancy cases their partner were smokers similar to the international studies reported as smoking is one of the main causes of pregnancy failure even no one of investigated cases was smoking. The other types of early pregnancy failure were blighted ovum 3.3%, ectopic pregnancy 2.2 % and molar pregnancy represent the least incidence 1.1%.

A similar study conducted by Riahinejad S, Motamedi N et al in 2011 showed same results suggest, that first and second trimester vaginal bleeding correlates with adverse infant outcomes.[12]

Szulman AE, et al in his study titled he syndromes of hydatidiform mole. ii.morphologic evolution of the complete and partial mole by sonar concluded that the Ultrasound

was found to provide a reliable method of demonstrating hydatidiform mole. [7]

Table 4shows the relation between early pregnancy failure and Occupation. The highest incidence of early pregnancy failure was in House wife which contributed 85.6% followed by Employee women which contributed 25.6%.

Table 5,6,7 shows the percentage of normal Crown Rump Length(CRL), Cardiac activity and the visibility of embryo in compare with Abnormal. CRL was normal in 13 women which contributed 14.4% and Abnormal in 9 (10%) women. Cardiac activity was normal in 13 (14.4%) cases and Abnormal in 9 (10%)cases. Embryo was Visible in 15(16.7%) subjects and Non visible in 75(83.3%) subjects.

When likened to other similar results; that FHR and CRL are good sonographic markers to predict pregnancy outcome in women with threatened miscarriage. Ultrasound is an accurate method for evaluating threatened abortion, because it can clearly demonstrates the presence or absence of embryonic cardiac motion in Egyptian study in 2018.[11]

Hypertension in patient family showed a higher cause of early pregnancy failure 44.4% compared to other factors, followed by uncontrolled diabetes mellitus 38.9% & allergy 16.7%. No reported study regarding the impact of diabetes mellitus in open literature in pregnancy failure as far as I know.

The incidence of visible gestational sac 27.8% and non-visible gestational sac was 72.2%. So, it is important to note that the pregnancy failure is related to invisible gestational sac and it can be used as indicator for pregnancy failure in ultrasound examinations.

The locations of visible gestation sacs intra-uterine was 27.8% and extra uterine was 2.2%. The shape of visible gestational sacs the normal was 17.8%, abnormal was 15.2%. The majority of the gestational sac was intrauterine which may specify that the incidence of ectopic pregnancy is within the normal range. A similar conclusion by Jouppila P, Hava T and Donald I, Morley P,Barentt E.[8,10]

The medical history revealed that the higher incidence is related to early pregnancy failure ,history of early pregnancy failure 44,4%,following by trauma 21.1%,CS 8.9%, PID 2.2% & IUCD 2.2%. [13]

**Table 4:** Occupation distribution in 90 patients

Occupation	Frequency	Percentage%
House wife	77	85.6
Employee	23	25.6
Total	90	

**Table 5:** Crown rump length, Cardiac activity and the visibility of embryo

Crown rump length	Frequency	Percentage%
Normal	13	14.4
Abnormal	9	10

**Table 6:** Cardiac activity

Crown rump length	Frequency	Percentage%
Positives	13	14.4
Negative	9	10

**Table 7:** Visibility of embryo

Embryo visibility	Frequency	Percentage%
Visible	15	16.7
Non visible	75	83.3

## 5. Conclusion

Ultrasound has important role in fetal screening in first trimester of pregnancy had estimate pregnancy in case of vaginal bleeding or any of pregnancy complication. Every pregnant lady should examined by ultrasound in order to reduce the risk of bleeding and infections. Therefore, all clinics should be equipped with ultrasound machine with competent staff over all the regions of Sudan for emergency cases.

The results in this study showed that the most common type of early pregnancy failure is an incomplete abortion and the least common types is molar pregnancy and the incidence of early pregnancy failure higher in house wife than employee. The passive smoking also was a highest predisposing factor caused early pregnancy failure. The hypertension is most disease associated with early pregnancy failure. Vaginal bleeding is most symptom presenting early pregnancy failure.

## 6. Recommendations

The study recommends for counseling of the women with first trimester bleeding and infections, especially with previous bad obstetric history. Proper antenatal care and follow up has to be given to women who present with first trimester bleeding. More advance ultrasound machine should be used to obtain accurate diagnosis. We cannot estimate the risk of alcohol on pregnant women due to lack of information's about traditions in the questionnaire. Due to high incidence of abortion in first trimester pregnancy found which need further investigation and studies.

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