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ORIGINAL RESEARCH

Evaluation of first trimester bleeding

Dr. Sanya Kumar[1], Dr. Payal Jain[2]

[1]3nd year resident, [2]Professor, Department of Obstetrics and Gynaecology, American International Institute of Medical Sciences, Near Transport Nagar, Bedwas Udaipur, Rajasthan, India

Corresponding Author
Dr. Sanya Kumar
3nd year resident, Department of Obstetrics and Gynaecology, American International Institute of Medical Sciences, Near Transport Nagar, Bedwas Udaipur, Rajasthan, India
Email: sanyakumar7595@gmail.com

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ABSTRACT

Background: Per vaginal bleeding in the first trimester is a common obstetrical situation ranging from an insignificant episode to life-threatening emergency. The major causes are subchorionic hematoma, abortion, ectopic and molar pregnancies. **Objectives of study:** Ultrasonography is playing an increasing role in diagnosis of causes of Per vaginal bleeding in the first. This study was taken up to evaluate the value & utility of ultrasonography in correlation to the clinical findings of Per vaginal bleeding in the first trimester (sonographic evaluation). **Materials & methods:** In this prospective study all obstetric cases (with a history of per vaginal bleeding in the first trimester of pregnancy between April, 2023 to November, 2023 (of 8 months) were included. A complete general physical examination including pelvic examination was done to arrive at a clinical diagnosis. Patients were then subjected to ultrasound examination. Clinical and ultrasound findings were correlated. We attempted to identify the causes of vaginal bleeding occurring in the first trimester by clinical and trans-abdominal sonography & to evaluate the outcomes after instituting appropriate obstetric management. **Results:** 42 of all obstetric cases (200) had the First trimester bleeding (incidence being 21%). The common causes were subchorionic hemorrhage (28.57%), abortion (57.11%), molar (9.52%) & ectopic (4.80%) pregnancies. The bleeding cases were common in the younger age group 21 to 25 years, and more in the multigravida within 5 to 8(47%) weeks of gestational age. The commonest cause of bleeding was subchorionic hemorrhage (28.57%). Early institution of treatment after a proper diagnosis has decreased morbidity and, at times mortality of women. Ultrasound not only clinched the diagnosis but also helped in the timely management of first-trimester vaginal bleeding. **Conclusion:** Ultrasound is a simple, non-invasive diagnostic modality available in the current day practice to diagnose and to manage first trimester vaginal bleeding.

Keywords: Subchorionic hemorrhage, Abortion, Molar pregnancy, Ectopic pregnancy.

INTRODUCTION

Bleeding in the first trimester is defined as bleeding that occurs at or within 12 weeks of pregnancy. Sonographic evaluation of the first trimester per vaginal bleeding in pregnancy is an integrated task considering the cases to be scanned, the knowledge of the sonographer relating to its anatomic, and pathophysiological changes, the technological advancement of the machine, and the composite of subtle findings of abnormalities.[1,2] Although the precise etiology of per vaginal bleeding within the first trimester remains to be determined, sonography is proven to be a major tool for diagnosis of this important condition[3,4]. There are many reasons and indications of sonography in cases of first-trimester bleeding in pregnancy. To detect the location of pregnancy whether intrauterine or extra-uterine, the gestational sac, number of pregnancies, embryo, yolk sac amnion, chorion, fetal pole, cardiac pulsation, CRL and its normalcy or any abnormality or severity of disorder related to all these above-mentioned indicators.[5,6]

Obstetrical disorders that may cause vaginal bleeding in early pregnancy include subchorionic hemorrhage, abortion, ectopic pregnancy, and trophoblastic neoplastic conditions such as hydatidiform mole and invasive mole[4]. This study aims to confirm, compile, and correlate the patients' complaints, and clinical sign-symptoms with the sonographic findings and provide suggestive information to the clinicians for the needful management of bleeding in first- trimester cases. Sonography can now be used to find the exact causes of bleeding so that appropriate therapeutic measures can be undertaken at the earliest possible time.[7,8] Since there are several causes of vaginal bleeding in the first trimester of pregnancy, sonography is very much needed to establish the causes of bleeding and the severity of the disorder.[9,10,6] Antenatal ultrasound can facilitate early diagnosis, appropriate decision-making, and suitable management of the causes of the first trimester bleeding.[11,12] It is notable that ultrasound is the first

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and foremost simple noninvasive diagnostic tool and the safest method for detecting causes of first-trimester bleeding.[9,21]

MATERIALS AND METHODS

In this prospective study, a total number of 200 women in their first trimester of pregnancy were studied. Out of which 42 women presented with vaginal bleeding. The patients were between 18 to 36 years of age. The study was conducted at GBH American Hospital and Medical College, Udaipur a period of eight months duration from April 2023 to November 2023.

Inclusion Criteria

1. Age group: 18 - 36 years,
2. Women with history of amenorrhea upto three months of pregnancy,
3. History of amenorrhea and per vaginal bleeding within three months of pregnancy,
4. Both Primigravida and multigravida,
5. Patient with positive pregnancy test.

Exclusion Criteria

1. Maternal age more than 36 years,
2. Amenorrhoea other than pregnancy,
3. Bleeding in 2nd and 3rd trimesters.,
4. Multiple gestations,
5. Congenital anomalies,
6. Medical termination of pregnancy.

Real-time ultrasound system was used. These were SAMSUNG MEDISON, SIEMENS X- CLASS. For real-time imaging system, the Probes employed were 3.5MHz curvilinear transducer. Though transvaginal transducer could provide the better information in the first trimester vaginal bleeding, it was not done due to refusal from all patients.

This study group consisted with the history of amenorrhoea, per vaginal bleeding and a positive pregnancy test. All patients underwent through sonographic examination of the lower abdomen including uterus and adnexa, the Mean Sac Diameter (MSD), presence of yolk sac and its character, the embryo, the Crown Rump Length (CRL), fetal cardiac activity through standard methodology. All patients were scanned on random basis from 5th to 12th weeks of amenorrhoea. The data included Variables - Independent Variable: Age, sex, menstrual History, Obstetrical History & Dependent Variables- Ultrasonography, Blood grouping, HIV status, Blood Sugar, VDRL, HBsAg, Urine for routine & microscopic examination & Pregnancy Test. The Data were collected through a Structured questionnaire. The data were collected interviewing the patients & the sonographic parameters were determined by ultrasound measurement by the principal researcher. The Patients were prepared and examined for the evaluation of first-trimester vaginal bleeding cases. The patients were in the supine position during sonography. The Patients' lower abdomen was exposed from the umbilicus to the Symphysis Pubis. Scanning was started with longitudinal scans in the middle between the umbilicus and pubic symphysis, then repeating more laterally, first on the left side and then on to the right. Next scanning was done transversely. Gain setting was adjusted to gain the best possible images.

Figure-1: The plane for measurements of gestational sac.

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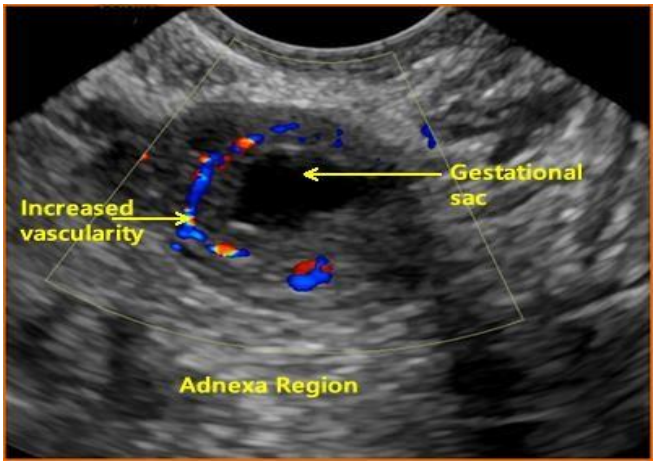

Figure-2: The plane for measurements of gestational sac.

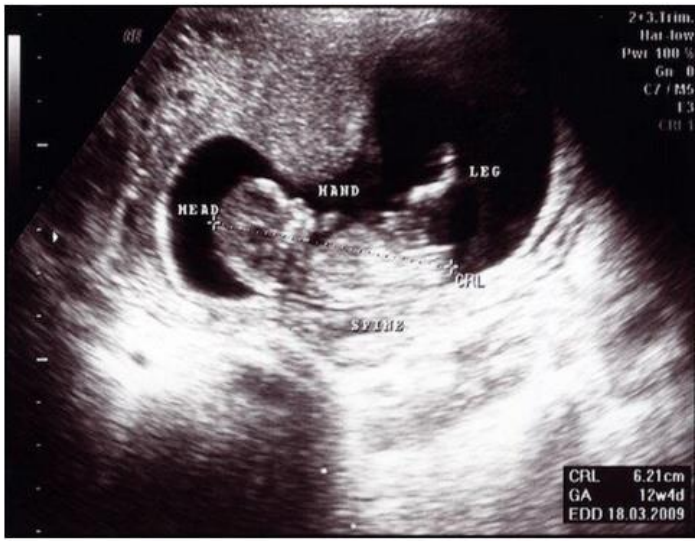

Figure-3: Plane for measurement of Crown Rump length (CRL).

A transverse scan was then made at the right angle to the longitudinal scan plane and the greatest width of the sac was measured. The mean dimension of the sac is the sum of these three measurements divided by 3 following the rule by Palmer-

Mean gestational sac dimension= length+ AP+ Width
3

The measurements had the following features:- the shape of the sac was oblong or oval (not a circular sac), Double echogenic ring is present, the inner ring was of uniform echcogenecity, encircling the entire sac, the outer ring was incomplete and it was the lining of the uterus, between the two rings there was an echogenic residual uterine cavity, the thickness of the margin was >or =2 mm. Yolk sac was seen as round cystic structure about 4 to 5 mm diameter adjacent to the fetus. A yolk sac diameter greater than 5.6 mm (between 5 and 10 weeks) was supposed to having an abnormal outcome. The dating measurement had been done using crown –rump length (CRL). Using scans in different direction, the longest length of the embryo was found and the measurement made from the head (Cephalic pole) to the outer edge of the rump. The fetal limb and the yolk sac were excluded in this measurement. Using trans-abdominal ultrasonography, it was abnormal to visualize the embryo without demonstrating cardiac activity. The risk of spontaneous abortion of a live embryo by trans-abdominal scan between 7 and 12 weeks of menstrual age was suspected. If the fetus was alive, the heart would be recognized lying in the mid-embryo usually seeming to lie anterior to the rest of the thorax.

RESULTS

The value of ultrasonogram in the diagnosis of total 200 cases of pregnancy in their first trimester were assessed. Distribution of total patients with vaginal bleeding was presented as tables 1, 2, 3 according to age in years, duration in pregnancy in weeks & causes of bleeding respectively.

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Table No-1: Distribution of the Study Group according to age

Age of the Patient	Number of the patients	Percentages
18 to 20 Years	8	19.50%
21 to 25 Years	20	47.40%
26 to 30 Years	10	23.50%
31 to 35 Years	4	9.6%
36 and above	0	0
Total	42	100%

Table No-2: Distribution of the Study Group according to the duration of Pregnancy

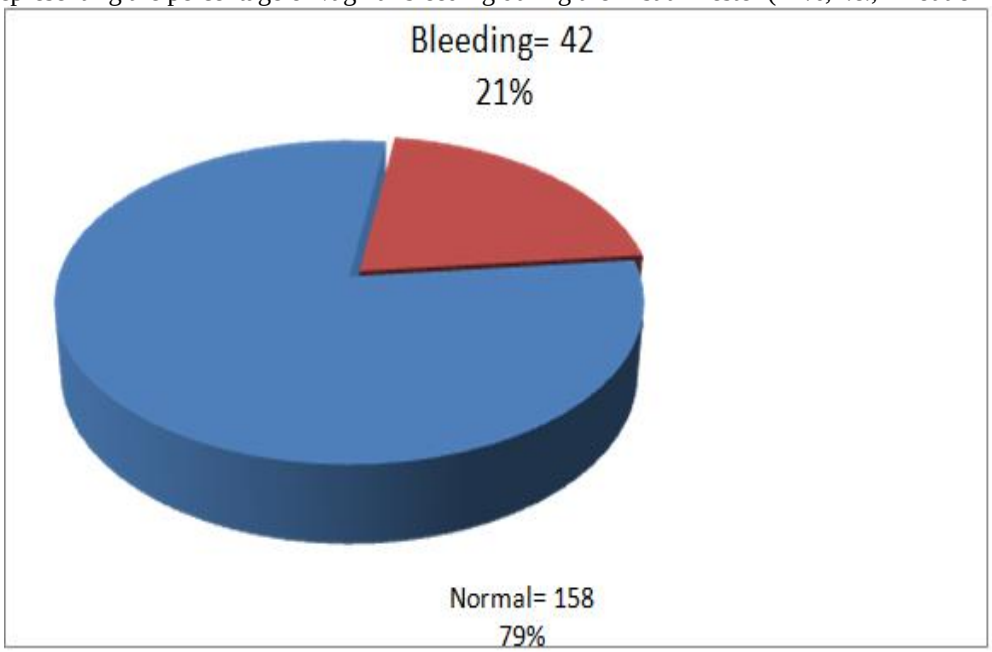
Gestational age in weeks	Number of the patients	Percentages
5 to 8 weeks	20	47%
9 to 10 weeks	14	33.33%
11 to 12 weeks	8	19.04%
Total	42	100%

Table No-3: Distribution of the Study Group according to the Causes of bleeding

Causes of bleeding	Number of the patients	Percentages
Subchorionic hemorrhage	12	28.57%
Threatened abortion	8	19.07%
Incomplete abortion	7	16.6%
Missed abortion (fetal demise)	5	11.92%
Blighted Ovum	4	9.52%
Molar pregnancy	4	9.52%
Ectopic Pregnancy	2	4.80%
Total	42	100%

Among them total 42 (21%) women were found with bleeding in their first trimester. The remaining 158 (79%) of women were without any bleeding which were shown in the graphical form (graph-1). Among these cases, subchorionic hemorrhage was the most common cause of bleeding. It was 12 cases constituting 28.57% of the causes of early pregnancy bleeding.

Graph 1 representing the percentage of vaginal bleeding during the first trimester (42%, i.e., 42 out of 200).



GRAPH 1: PERCENTAGE OF STUDY POPULATION IN THE FIRST TRIMESTER VAGINAL BLEEDING.

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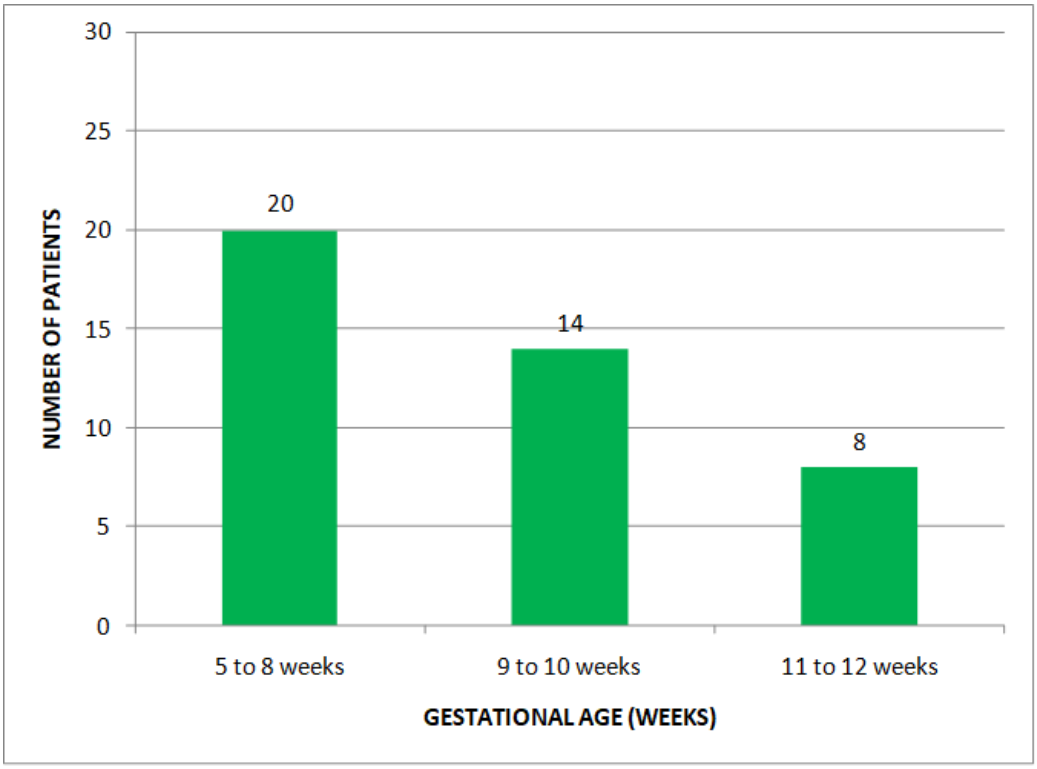
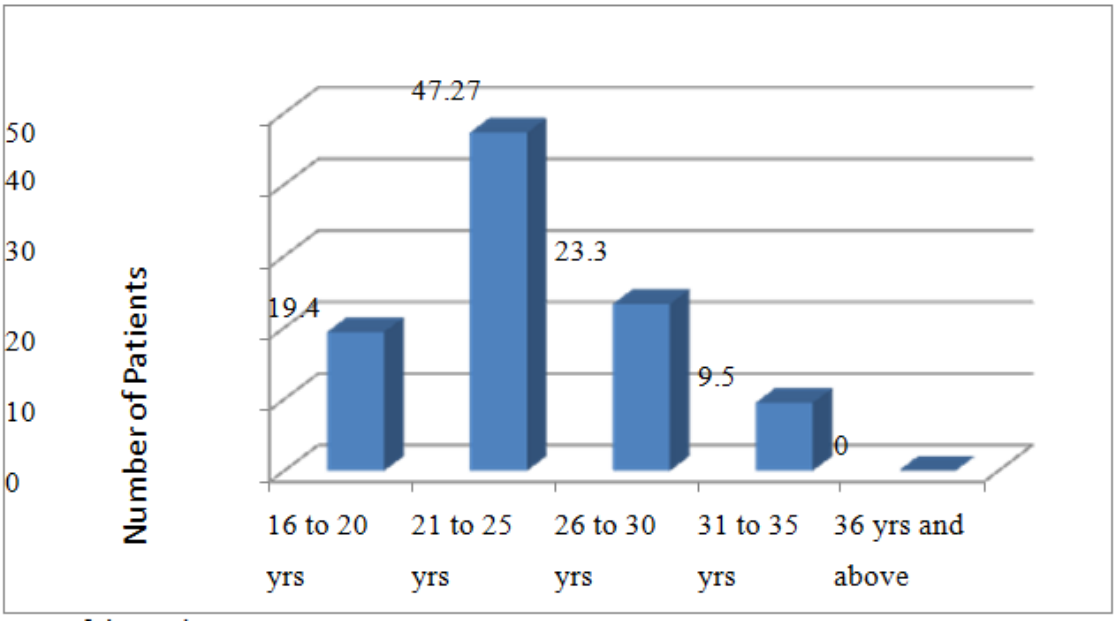
Graph 2 Representing the duration of pregnancy which showed that the most of the bleeding cases were found between 5 to 8 weeks of pregnancy, which was 47.40% of the total study population.



GRAPH 2: GRAPHICAL PRESENTATION OF STUDY GROUP ACCORDING TO DURATION OF PREGNANCY.

Graph 3 representing the bleeding cases in age group showed that maximum bleeding occurred within 21 to 25 years of maternal age (47.27%).



GRAPH 3: GRAPHICAL PRESENTATION OF THE STUDY ACCORDING TO AGE GROUP OF THE PREGNANCY CASES.

Graph 4 representing the relative population of the patients with the causes of per vaginal bleeding in the third trimester where subchorionic hemorrhage was 28.57%, threatened abortion 19.07%, incomplete abortion 16.6%, missed abortion 11.92%, blighted ovum 9.52%. Other than abortion, the causative molar

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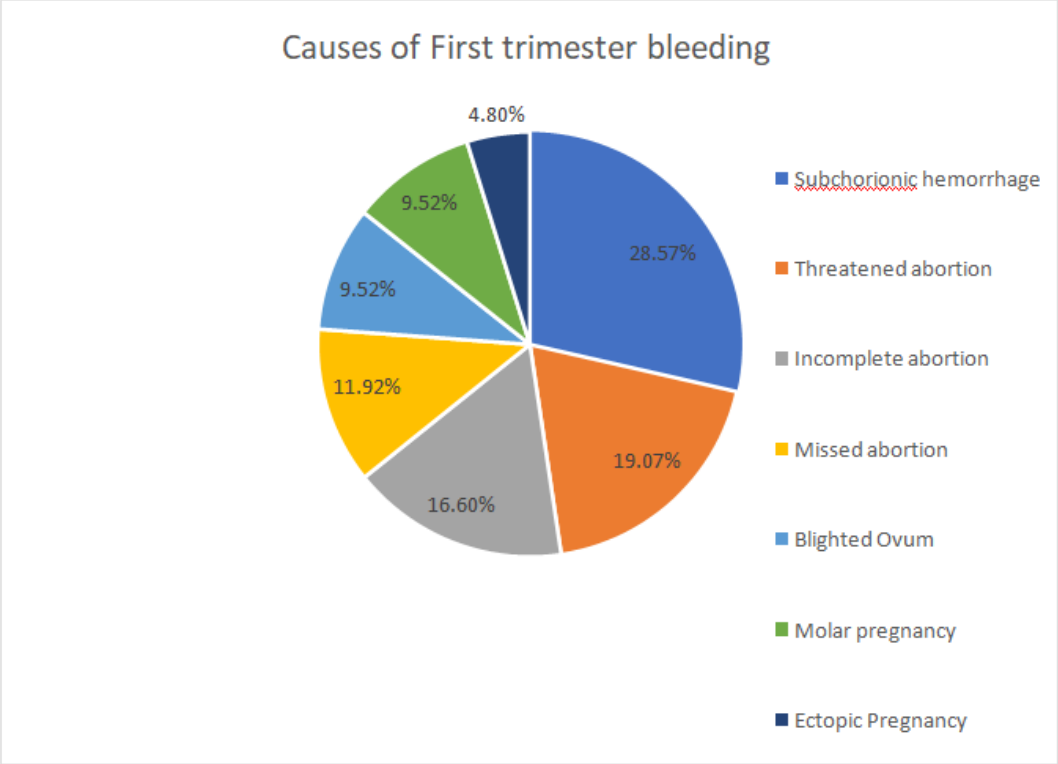
pregnancy was 9.52% and the ectopic pregnancy was 4.76%. Total number of Incomplete cases were 7 constituting 16.6% of early pregnancy bleeding & these were treated surgically by dilatation and curettage, subsequent rest and relevant advice. Missed abortion cases were 5 constituting 11.90% and they needed hospitalization, surgical intervention and some cases needed blood transfusion as a life saving measure. There were 4 cases of blighted ovum constituting 9.52% of the vaginal bleeding in the first trimester of pregnancy. Total number of molar pregnancies were 4 constituting 9.52% of early pregnancy bleeding which were managed by surgical intervention and followed up by histopathological examination and subsequent hormone study of beta hCG and regular follow up. Number of ectopic pregnancies were 2 contributing 4.76% of causes of early pregnancy bleeding which needed immediate hospitalization and surgical intervention without any delay. One of these cases was treated laparoscopically and another one by laparotomy. Among all the tools required here for diagnosis & treatment were proper history taking, thorough clinical examination, and laboratory investigations including imaging by Ultrasonogram of the pelvic organs. Ultrasonography was done for a total 800 patients in 8 months of period. Out of them 200 cases were in the first trimester of pregnancy. Out of these 200 cases, 42 women (21%) Presented with per vaginal bleeding. Table 1 showing bleeding in the first trimester of pregnancy was common in the age group of 20 years to 30 years, less common before 21 years and after the age of 30 years and not found beyond 36 years of age.



GRAPH 4: GRAPHICAL PRESENTATION OF THE STUDY TO AGE GROUP ACCORDING TO THE CAUSES OF BLEEDING IN FIRST TRIMESTER OF PREGNANCY.

DISCUSSION

Diagnostic ultrasound is a safe, valuable and noninvasive tool used in the field of obstetrics for more than last 35 years. It is a very important technique for examining the pregnant women and can be used when clinically indicated in any time during pregnancy.[1,2,15,16] Some 25% of all women may have one or more miscarriages. There is a complex relationship between maternal age over 35 years and nearly menarche.[4,7,13,14] In our study most of the bleeding cases were between 21 to 25 years of age, and in the context of our country (South & East Asian), it differs with the study of western countries where bleeding occurs in higher age groups probably because of socio-cultural issue.[11,15] Among 42 vaginal bleeding cases, 30 cases were multigravida (71.42%) and 12 cases were primigravida (28.57%) which indicates that abortion is related to gravidity. In our study about 47.27% abortion occurred within 5th to 8th weeks of gestation & the most common cause of bleeding in first trimester was subchorionic hemorrhage. It was 12 cases out of 42 women with per vaginal bleeding (28.75%). Rest of the cases were of threatened abortion (8 cases corresponding to 19.04%), incomplete abortion (7 cases corresponding to 16.60%), fetal demise/missed abortion (5 cases corresponding to 11.92%), blighted ovum (4 cases corresponding to 9.52%), molar pregnancy (4 cases

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corresponding to 9.52%), ectopic pregnancy (2 cases corresponding to 4.80%). Ultrasonography was done for a total 800 patients in eight months period. Out of them, 200 cases were found in their first trimester. Of these 200 cases, 42 (21%) (as shown in the graph-1) women presented with vaginal bleeding. About 47.27% bleeding occurred between 5th & 8th week of gestation (as shown in the graph-2. In our study, bleeding in first trimester of pregnancy was common in the age group of 21 to 25 years, less common before 20 years of age and after 30 years of age, and above 36 years of age it is not common (as shown in the graph 3). The most common cause of bleeding in the first trimester in this study was found as threatened abortion 28.75% (as shown in the graph 4). The above findings of discussion shows that by means of ultrasonogram, we can detect and identify the causes of bleeding in the first trimester. Bleeding in early pregnancy occurs in 12-24% of recognised pregnancies. The true rate is probably higher as many may occur before a woman has realized that she is pregnant[16,17,18]. In the UK there were 0.05-0.[18] reported deaths due to miscarriage per 100,000 maternities in the period 1985-2008.[19,20,21] In UK, It's thought that around one in 10 women experiences some bleeding when she is in early part of pregnancy and for the vast majority, it signifies nothing serious. Less common than miscarriage, ectopic pregnancies occur in approximately 1 out of 100 pregnant women and bleeding can be a sign.[22,23,24] Though this is a prospective study, the duration of this study period is only 8 months. And the Place of study and study population of this study are confined within the Udaipur city. So this study is not a large scaled multi-centered study. All cases were examined by trans-abdominal sonography because of patients refusal to give consent by trans-vaginally. So further multi-centred study in large scales are required to have more concrete results about first trimester bleeding in our country.

CONCLUSION

In this study subchorionic hemorrhage constituted the commonest causes of vaginal bleeding. Confirmation of abnormal and nonviable pregnancies by ultrasound facilitated early institution of appropriate treatment thereby lessening the physical and psychological morbidity for the patients. Complications like infection & future infertility could be avoided by suitable early effective treatment. The study therefore agrees with the assumption given and satisfies the hypothesis.

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