

**MATERNAL AND PERINATAL OUTCOMES IN PREGNANT
WOMEN WITH FIRST TRIMESTER VAGINAL BLEEDING**

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Dissertation submitted to

The Tamil Nadu Dr. M.G.R Medical university, Chennai

In partial fulfillment of the requirements for the degree of

Master of Surgery in Obstetrics and Gynecology



Under the guidance of

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April 2017

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This is to certify that the dissertation entitled, **“MATERNAL AND PERINATAL OUTCOMES IN PREGNANT WOMEN WITH FIRST TRIMESTER VAGINAL BLEEDING”** is a bonafide original work of **Dr. SUGANYA .K**, in partial fulfillment of the requirement for the degree of Master of Surgery in Obstetrics and Gynecology.

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To
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Ref: Project No. 14/385

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Dear Dr Suganya,

Institutional Human Ethics Committee, PSG IMS&R reviewed and discussed your application dated 04.12.2014 to conduct the research study entitled "*Maternal and perinatal outcomes in pregnant women with first trimester vaginal bleeding*" during the IHEC meeting held on 12.12.2014.

The following documents were reviewed and approved:

1. Project Submission form
2. Study protocol
3. Informed consent forms
4. Data collection tool
5. Current CVs of Principal investigator, Co-investigators
6. Budget

The following members of the Institutional Human Ethics Committee (IHEC) were present at the meeting held on 12.12.2014 at IHEC Secretariat, PSG IMS & R between 10.00 am and 11.00 am:

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1	Dr. P. Sathyan (Chairperson, IHEC)	DO, DNB	Clinician (Ophthalmology)	Male	No	Yes
2	Dr. S. Bhuvaneshwari (Member-Secretary, IHEC)	MD	Clinical Pharmacology	Female	Yes	Yes
3	Dr. S. Shanthakumari	MD	Pathology, Ethicist	Female	Yes	Yes
4	Dr. D. Vijaya	M Sc, Ph D	Basic Medical Sciences (Biochemistry)	Female	Yes	Yes

The study is approved in its presented form. The decision was arrived at through consensus. Neither PI nor any of proposed study team members were present during the decision making of the IHEC. The IHEC functions in accordance with the ICH-GCP/ICMR/Schedule Y guidelines. The approval is valid until one year from the date of sanction. You may make a written request for renewal / extension of the validity, along with the submission of status report as decided by the IHEC.



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ஓப்புதல் படிவம்

தேதி :

க. சுகன்யா, ஆகிய நான், பி. எஸ். ஜி. மருத்துவக் கல்லூரியின், மகப்பேறியல் மற்றும் பெண் நோயியல் துறையின் கீழ், "கர்ப்பகாலத்தின் முதல் 12 வாரங்களில் ஏற்படும் இரத்தப்போக்கும் அதன் பின் விளைவுகளும்" என்ற தலைப்பில் ஆய்வு மேற்கொள்ள உள்ளேன்.

என் ஆய்வு வழிகாட்டி: மரு. லதா மகேஸ்வரி

ஆய்வு மேற்கொள்வதற்கான அடிப்படை:

கர்ப்பத்தில் முதல் 12 வாரங்களில் ஏற்படும் இரத்தப்போக்கும் அதனால் தாய்க்கும் செய்க்கும் ஏற்படும் விளைவுகளும் பாதிப்புகளையும் பி. எஸ். ஜி. மருத்துவமனையில் ஆய்வு நடத்த உள்ளேன்.

ஆய்வின் நோக்கம்:

கர்ப்பத்தில் முதல் 12 வாரங்களில் ஏற்படும் இரத்தப்போக்கும் அதனால் தாய்க்கும் செய்க்கும் ஏற்படும் விளைவுகளை கண்டறிந்து தக்க சிகிச்சை அளித்தல்.

ஆய்வில் பங்கு பெறும் நபர்களின் எண்ணிக்கை: 60 + 60 (120)

ஆய்வு மேற்கொள்ளும் இடம்: பி. எஸ். ஜி. மருத்துவமனை, கோயம்புத்தூர்.

ஆய்வின் பலன்கள்:

கர்ப்பத்தில் முதல் 12 வாரங்களில் ஏற்படும் இரத்தப்போக்கும் அதனால் தாய்க்கும் செய்க்கும் ஏற்படும் விளைவுகளை கண்டறிந்து அதற்கான சிகிச்சை முறைகளை கண்டறிதல்.

ஆய்வினால் ஏற்படும் அசௌகரியங்கள் / பக்க விளைவுகள்: பக்க விளைவுகள் எதுவும் இல்லை.

இந்த ஆய்வில் கிடைக்கும் தகவல்கள் 5 வருடங்கள் பாதுகாக்கப்படும். இவை வேறு எந்த ஆய்விற்கும் பயன்படுத்தப்பட மாட்டாது. எந்த நிலையிலும் உங்களைப் பற்றிய தகவல்கள் யாருக்கும் தெரிவிக்கப்படமாட்டாது. அவை இரகசியமாக வைக்கப்படும்.

எந்த நேரத்தில் வேண்டுமானாலும் ஆய்விலிருந்து விலகிக்கொள்ளும் உரிமை உங்களுக்கு உண்டு. ஆய்விலிருந்து விலகிக்கொள்வதால் உங்களுக்கு அளிக்கப்படும் சிகிச்சையில் எந்த வித மாற்றமும் இருக்காது.

இந்த ஆராய்ச்சிக்காக உங்களிடம் சில கேள்விகள் கேட்கப்படும் / சில இரத்த மாதிரிகள் அல்லது திசு மாதிரிகள் எடுக்கப்படும்.

மேலும், இந்த ஆய்வில் பங்கு கொள்வது உங்கள் சொந்த விருப்பம். இதில் எந்த விதக் கட்டாயமும் இல்லை. நீங்கள் விருப்பப் பட்டால், இந்த ஆய்வின் முடிவுகள் உங்களுக்குத் தெரியப் படுத்தப்படும்.

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INTRODUCTION

In the field of obstetrics and gynecology , a health care provider will come across many patients with bleeding per vaginum who are not aware of their pregnancy status . Any female patient with vaginal bleeding in reproductive age group show be evaluated for possibility of pregnancy .

The causes of vaginal bleeding in early pregnancy is limited . But it is very challenging to differentiate between ectopic pregnancy and miscarriage which are the most common causes for first trimester

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INTRODUCTION

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The causes of vaginal bleeding in early pregnancy is limited . But it is very challenging to differentiate between ectopic pregnancy and miscarriage which are the most common causes for first trimester bleeding .

Differential diagnosis for first trimester vaginal bleeding

Originating from uterus, tubes, amniotic sac with its contents or placenta:

- Ectopic pregnancy
- Miscarriage
- Miscarriage with infection
- Molar pregnancy
- Sub-chorionic hemorrhage
- Idiopathic bleeding in a viable pregnancy

Originating from cervix or vagina:

- Infection (*Chlamydia*, etc.)
- Trauma (e.g. after intercourse, medical treatment)
- Malignancies, especially cervix cancer
- Cervical abnormalities (e.g. excessive friability or polyps)

Originating from anus, bladder or vulva:

- Hemorrhoids
- Lacerations of skin due to trauma, malignancy (rare) or infection
- UTI, schistosomiasis

Vaginal bleeding occurs in about one fourth of all pregnancies. Among them more than 50 % ends up in miscarriage. Maternal reassurance and watchful waiting is enough if the fetal cardiac activity is appreciated and if the patient is physically , mentally and medically stable and if there is no evidence of intra-peritoneal bleeding or adnexal mass . Trans-vaginal ultrasonogram and the serum beta human chorionic gonadotropin levels will help in differentiating among the various reasons of first trimester bleeding .

The beta HCG levels are helpful in predicting the pregnancy .

When the levels are 1500 – 2000 mIU per ml – a Gestational sac will be seen in normal pregnancy with trans-vaginal ultrasonography.

When there is 10mm diameter of Gestational sac the yolk sac will be seen . When the crown lump length reaches a level of more than 5 mm cardiac activity should be visible in a live embryo. The beta human chorionic gonadotropin levels increase more than 80% in 48 hours in normal pregnancy which is also called as physiological doubling of serum beta HCG. Any abnormality in the above values will result in failure of early pregnancy . But it cannot differentiate between a failed intrauterine pregnancy and an ectopic pregnancy.

Ultrasound findings of an adnexal mass or a free fluid mostly point towards an ectopic pregnancy unless proven otherwise. Bleeding in first trimester has 5.5% to 42% risk of ending up in complete miscarriage. Complications such as preterm labor, preterm premature rupture of membranes, low birth weight babies, antepartum hemorrhage and fetal demise are more common in women with threatened miscarriage.

Threatened miscarriage also causes serious burden and stress for the women. So it is very important for the clinician to diagnose any abnormalities as early as possible and manage to prevent the mortality and morbidity in the mother and the fetus. There are several studies which explains about the bleeding in early trimester and the adverse outcomes. There are very few studies which describes about the pregnancy outcome and bleeding in developing countries and their subsequent effects on the new born.

In clinical practice threatened miscarriage is diagnosed with the history of vaginal bleeding or spotting in the first trimester and the os closed in per vaginal examination. A definitive diagnosis is made when the fetal cardiac activity is seen intrauterine in the ultra sonogram.

Hence a better knowledge about the consequences following first trimester bleeding in the ongoing pregnancy is very important for the obstetricians and the mother. In this prospective study we evaluated these women and had a complete follow up throughout their pregnancies and the various adverse effects on the mother and the fetus was studied, as there was no studies publishing the obstetrical and fetal outcomes following threatened miscarriage in south Indian population as far as our knowledge.

Fig :1 - Management of first trimester vaginal bleeding



*—High-level TVUS entails a formal ultrasonography by radiology.

AIM AND OBJECTIVES

AIM :

To study the maternal and perinatal outcomes in pregnant women presenting with first trimester vaginal bleeding .

INCLUSION CRITERIA:

- All pregnant women presenting with first trimester vaginal bleeding

EXCLUSION CRITERIA:

- Multiple pregnancies
- Bad obstetric history
- Women with congenital uterine abnormality
- Known case of any bleeding disorders
- Women with chronic medical complications including diabetes and hypertension

EVALUATION PLAN:

All pregnant women (chemically proven UPT-+)attending antenatal clinic with first trimester vaginal bleeding (<12weeks) will be included in this study. The eligible subjects are explained about the study

and after getting consent they are put under surveillance till they deliver. Sonography was performed for all women as routine. The women should attend the clinic once a month during 6 months of pregnancy, once in two weeks during 7th and 8th month and weekly in the last month of pregnancy, the collected data will be analyzed and the important findings of the study will be highlighted.

REVIEW OF LITERATURE

First trimester vaginal bleeding is the commonest complication in pregnancy with the incidence of about 15-25%. More than half of these women will end in miscarriage before 20 weeks of gestation. While those who are continuing the pregnancy will have an increased risk of future complications in the pregnancy.

In the uterus the local hemostatic factors, which are present during implantation, early pregnancy like the tissue factors which are expressed in the cytotrophoblasts and decidualization and the various systemic factors in women with the ongoing pregnancy have a significant role in predicting the successful outcome. Any dysfunction of the above factors can lead to adverse pregnancy outcome for example thrombin formation locally and tyrosine kinase – 1 soluble filaments formations plays a major role. Both of these are involved in the development of pre eclampsia and placental abruption.

There are various causes of first trimester bleeding.

1) Implantation bleeding:

This is one of the earliest signs in pregnancy, which appears even before we can identify a missed periods. Implantation will occur either during ovulation or after ovulation. If there is a 30 day cycle, 13th to 16th day of the cycle is when the ovulation occurs. An additional ten days is required for the mature ovum to migrate through the fallopian tube to reach the uterus. Hence the ovum attachment to the uterine wall will be around 23rd to 28th day of the cycle. So the implantation bleeding will occur few days prior to the next expected date of the menstrual cycle. This implantation bleeding is a normal physiological phenomena, indicating a definite pregnancy.

The signs of implantation bleeding are scanty discharge which is usually light or dark in colour when compared to the normal menstrual flow, uterine cramps associated with the discharge because of the destruction of the blood vessels in the uterus when the fertilized eggs

embeds in the uterine muscles , discharge occurring at 23rd to 28th day of regular menstrual cycle , lasting for few hours to 1or 2 days with and basal body temperature drop below 98.6 degree Fahrenheit followed by a sharp rise .

2) Having sexual intercourse :

Bleeding can occur from the cervix or lower part of the uterus following a sexual intercourse according to the American College Of Obstetrics and Gynecology (ACOG)

3) INFECTIONS :

Any vaginal infections or the infection of cervix can cause bleeding or spotting per vagina .

4) ECTOPIC PREGNANCY :

Bleeding or spotting in the early pregnancy can also be a sign of ectopic pregnancy where the fertilized egg has not developed in the uterus and has implanted elsewhere , most commonly the fallopian tube. This ectopic pregnancy is a medical emergency where immediate diagnosis and management is essential to avoid maternal mortality.

Other than the above causes, there are several adverse effects which the bleeding in the early pregnancy will signify . Several studies have been done these years looking for the consequences of first trimester bleeding and the risk factors associated with it .

PATTERNS AND PREDICTORS OF VAGINAL BLEEDING IN FIRST TRIMESTER:

First trimester vaginal bleeding is although an alarming symptom, the prevalence and the predictors of vaginal bleeding have been investigated by several studies . The prevalence ranges from 7-24% . One such study was done by Rheem et al (5) on 4539 women between 25-34 years . They found a new evidence that the peak of the first trimester bleeding is in sixth and seventh weeks .

This peak of bleeding episode coincides with the hormonal developmental function of the placenta . The corpus luteum produces the progesterone in the early pregnancy . The shift of the production of progesterone from the placenta , from

The luteal production happens at this seventh week of pregnancy and this may result in decreased production of progesterone if the placenta cannot produce it sufficiently .

This reduced levels of progesterone are most commonly associated the onset of menses in pregnancy . In pregnancy too a similar episode of reduced progesterone will lead to bleeding and this will hinder the successful outcome of pregnancy (44)

First trimester bleeding can also occur because of premature onset of feto maternal circulation or the incomplete or abnormal formation of the placental membranes. (49) The maternal spiral arteries will be blocked by the trophoblastic shell in early pregnancy, which will maintain a low oxygen levels to the fetal development till ninth and tenth weeks when the fetal - maternal circulation begins . (49).

Any premature onset of this maternal fetal circulation can lead to first trimester vaginal bleeding. (50). Such a bleeding signifies an inappropriately developing placenta . This abnormal development of placenta plays a major role in causing adverse pregnancy outcomes such as miscarriage, pre-eclampsia .

MISCARRIAGE:

First trimester vaginal bleeding is the predisposing factor for spontaneous miscarriage. Ten to twenty percent of pregnancies which are clinically proven ends up in spontaneous miscarriage (20). When there is massive bleeding miscarriage becomes life threatening. Miscarriage is defined as a loss of pregnancy when the fetus has not reached a viable gestational age ie. Before 24 weeks of gestation (RCOG) .

TYPES OF MISCARRIAGE:

THREATENED MISCARRIAGE:

It is defined as bleeding during pregnancy, prior to the period of viability. Ultra sound will show a viable fetus and they can continue the pregnancy.

ANEMBRYONIC PREGNANCY:

It is also called as an “empty sac “or “blighted ovum”. It is defined as a condition where the gestational sac will develop normally , but the embryo formation of pregnancy is absent or stops to grow in a very early period .This is the most common form which accounts for more than half of all the miscarriages. All others are called embryonic miscarriages because the embryos will be seen in all other forms. Aneuploidy are seen in half of embryonic pregnancy.

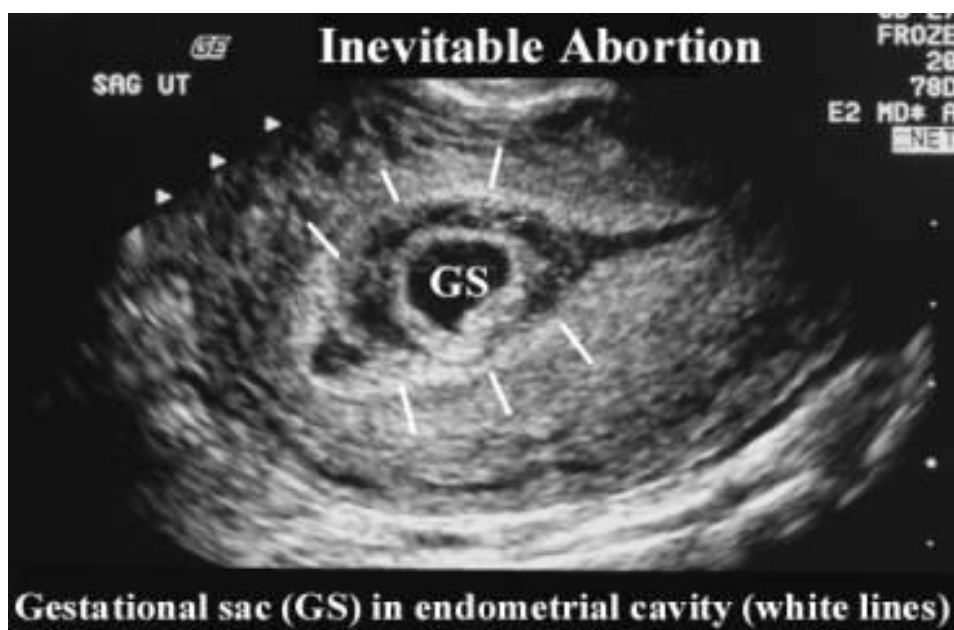
FIG: 2 - USG SHOWING ANEMBRYONIC PREGNANCY



INEVITABLE MISCARRIAGE:

It is a clinical type of abortion where the changes have progressed to a state from where the continuation of pregnancy is impossible . In this the cervical dilatation is present but the fetus is not completely expelled . This will usually progress to complete miscarriage . Cardiac activity may or may not be present . There will be increased vaginal bleeding ,colicky type of pain which is aggravating .

Fig: 3 - USG SHOWING INEVITABLE ABORTION



COMPLETE MISCARRIAGE:

In complete miscarriage all the products of conceptions has expelled out of the uterine cavity. This includes trophoblast, gestational sac , yolk sac , fetal pole and the chorionic villi or if it has occurred later the products will have the fetus , umbilical cord , the placenta , amniotic fluid and the membrane .

INCOMPLETE MISCARRIAGE:

It incomplete miscarriage some products of conception is still present inside the uterus. Trans vaginal ultra-sonogram an increased distance between the uterine walls can also be a thickened endometrium or a polyp . Doppler ultrasound will help in confirming the presence of fetus of polyp .

**FIG : 4 - USG SHOWING INCOMPLETE ABORTION WITH
RESIDUAL PLACENTAL TISSUES**



SIGNS AND SYMPTOMS:

Patients with spontaneous complete abortion will present with vaginal bleeding which may be heavy bleeding or spotting associated with pain abdomen , passage of clots / tissue . Usually they present with reduction in the symptoms following passage of the tissue .

Other related symptoms associated with this are fever sometimes associated chills – which denotes an infection most probably septic abortion . Septic abortions should be vigorously treated or it will be life threatening .

DIAGNOSIS:

Initial examination of any pregnant women with suspected pregnancy loss have the following

- Hemodynamic stability of the women should be assessed .
- Per abdominal examination : In case of a complete abortion , the bowel sound will be normal , there wont be any distension , no enlargement of liver or spleen , with mild supra pubic tenderness .
If there is rebound tenderness or abdominal distension then complete abortion is unlikely . But ectopic pregnancy should be ruled out .
- Pelvic examination : In case of a complete abortion some amount of blood may be present in the perineum or the vagina , but there wont be any active bleeding , cervical os will be closed , no cervical motion tenderness .The uterus will small than the expected date , uterus and the adnexa wont have any tenderness , no adnexal mass .

The cause of spontaneous miscarriage is mostly related to the embryo. Any morphological abnormalities or an-embryonic pregnancy represents more than 70% of miscarriages before 10 weeks.

The rate of loss of chromosomally normal or abnormal conceptions following first trimester vaginal bleeding was studied by Strobino BA et al. According to this study chromosomally abnormal fetuses have increased incidence of first trimester bleeding when compared to chromosomally normal fetuses.(16) Most identified chromosomal abnormalities are Downs syndrome (trisomy 21), polyploidy, monosomy X or Turners syndrome .

In a sectional analytical study conducted by ZhillaAmirkhani and Meisam et al , which included 60 pregnant women who attended the antenatal clinic in Islamic Azad university between march 2010 to march 2012 , it was found that 70 % of those pregnant women who had first trimester vaginal bleeding were found to continue the pregnancy successfully till term . Here evaluation of uterus and gestational sac by USG was used as a primary modality for diagnosis of first trimester bleeding . (1)

According to this study the outcomes of first trimester vaginal bleeding were as follows : abortion rate 20%(12/60), termination of pregnancy 10%(6/60), normal vaginal delivery 38.4%(23/60), cesarean section 41 %(25/60), minute 5 APGAR score 11%, admission in NICU (16%). There was also a significant co relation between the termination of pregnancy due to other causes for first trimester bleeding and the

gestational age. The limitations of this study is that it included only a small population and the frequency, amount and intensity of bleeding were not determined correctly (1)

The association between miscarriage and first trimester vaginal bleeding was studied by ReemHasan, Donna et al. It was a community based pregnancy cohort study. 4510 women were included in this study who had first trimester bleeding / spotting per vaginum. Heavy bleeding was reported in 8% of the study population .women who complained to have only spotting per vaginum had 1.1 unadjusted relative odds of miscarriage (95% confidence interval).Where as women who had heavy bleeding had three times increased risk of miscarriage compared to women who had only spotting p/v. Furthermore this study found that women with heavy bleeding with pain abdomen had elevated risk of ending in miscarriage (13)

In a study done by Snell's et al they found that 15-25% of pregnant women with vaginal bleeding had continued their pregnancies till term. According to this study the three major cause of bleeding in first trimester were spontaneous abortion, ectopic pregnancies and trophoblastic diseases in pregnancy. This study reviewed the development of early pregnancy, various etiologies of first trimester

vaginal bleeding, the evaluation strategies and the treatment of various diagnostic considerations. (4)

Some studies have demonstrated that pregnancy 1st trimester bleeding is often associated with bleeding in 2nd and 3rd trimesters also . This is because of the probability of disruption of the placenta and placenta previa and unknown place bleeding. (6,7). The same studies have found out that the incidence of premature rupture of membranes is increased to 2 - 4 times higher with 1st trimester bleeding (7)

PRE TERM LABOR:

Preterm labor is defined as regular uterine contractions in the uterus with associated changes in the cervix less than 37 weeks of gestational age. The cervical changes are the increased effacement and the dilatation of the cervix, and it complicates 12 % of all the pregnancies and its one of the major causes of prenatal morbidity and mortality. (21).

It is very concerning because those babies who are born pre term will not be developed fully. They will have serious health issues like cerebral palsy which has a lifelong effect. Other complications include delayed mile stones. These health issues will be more pronounced when the babies are born before 34 weeks.

The following factors are the major risk factors for have a preterm labor ,

- H/O previous pre term labor
- Short cervix
- Reduced inter pregnancy interval
- H/O previous surgeries in the cervix like LEETZ
- H/O threatened miscarriage
- Multiple pregnancies
- Low pre pregnant weight
- Smoking in pregnancy
- Substance abuse in pregnancy

SIGNS AND SYMPTOMS OF PRETERM LABOUR:

- Vaginal discharge which is watery , mucus or bloody
- Profuse amount of vaginal discharge
- Continuous low back ache
- Pelvic or lower abdominal heaviness
- Regular , frequent uterine contractions
- Preterm premature rupture of membranes

SUBTYPES OF PRETERM LABOUR :

Spontaneous PTB (sPTB)- Birth initiated by parturition process including membrane rupture, decidua activation and uterine contraction

Clinically indicated PTB - Birth induced by a physician secondary to maternal or fetal reasons

DIAGNOSIS OF PRETERM LABOUR: (ACOG 2012)

It is diagnosed by the cervical changes.

- **PTL**-regular uterine contractions one every 10 minutes/six per hour. Cervical effacement >80% , Cervical dilatation >2 cm
- **Threatened PTL**- one contraction every 10minutes.
Cervical Effacement< 80% , Cervical dilatation < 2 cm
- **False PTL** –contractions <one every 10 minutes
Cervical effacement < 80%, Cervical dilatation <1 cm

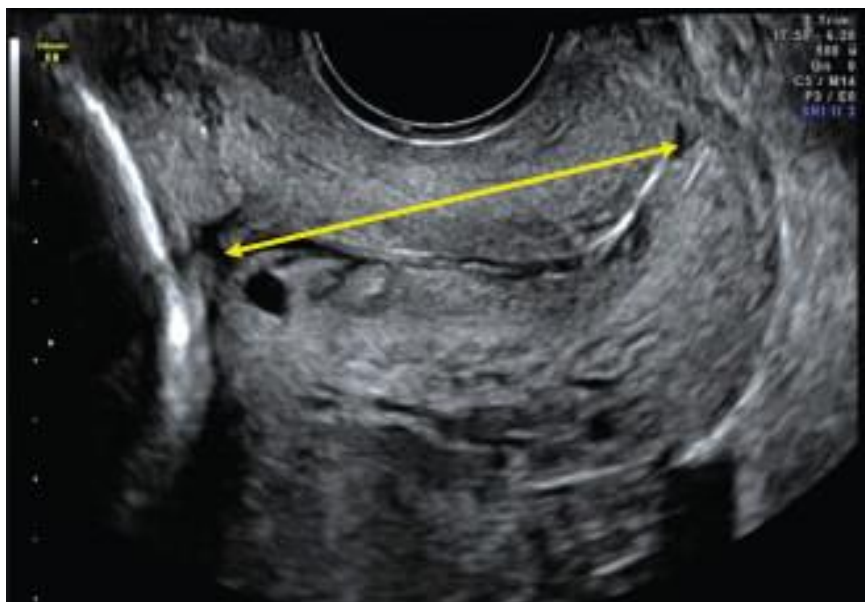
PREDICTION OF PRETERM LABOUR:

- Pre pregnancy predictors
- Assessment of cervical softness and microstructure
- HUAM (Home uterine activity monitoring)
- Salivary estriol
- Screening for BV

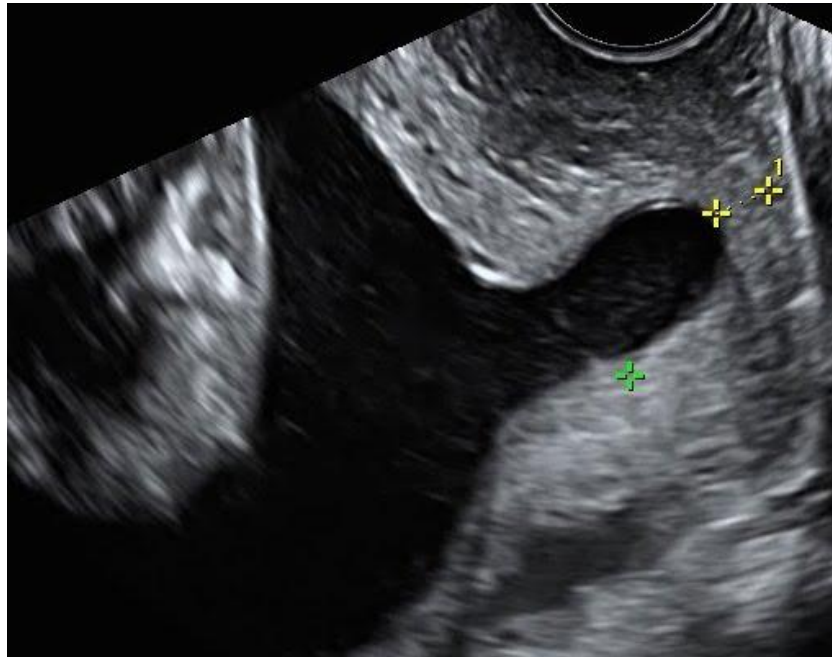
CERVICAL LENGTH SCREENING:

Transvaginal screening of cervical length is the gold standard for identifying the preterm labor . If the patient has any previous H/o preterm labor then the screening should begin at 16 weeks to 24 weeks .the average cervical length should be 2.5cm. Any measurements less than 2.5cm is considered as short cervix which warrants a cervical encercelage .

FIG : 5 - TRANSVAGINAL ULTRASOUND SHOWING THE MEASUREMENT OF CERVICAL LENGTH



**FIG :6 - TRANSVAGINAL ULTRASOUND SHOWING SHORT
CREVIX**



First trimester vaginal bleeding has a two fold increase in the risk of having a preterm labor (14).

In a prospective study done by Swati Agarwal, Susheela et al on predicting the adverse maternal and perinatal outcomes following threatened miscarriage, prematurity was the main poor outcome predicted following threatened miscarriage. There was no significant increase in incidence of antepartum hemorrhage, PIH, IUGR, perinatal mortality and congenital malformation. The strength of this study was that women were booked very early in pregnancy with multiple fetal as well as perinatal outcomes were studied and weekly AN checkups were done .(2)

Shahina Ishtiaq, Thseen et al conducted a prospective case control study on the outcomes of pregnancy following threatened miscarriage and they included 206 patients (106 case, 100 control group). Women who had threatened miscarriage had significantly higher preterm delivery rate (38.5%), PPRM (16%) when compared to the control group and no significant changes in mode of delivery, incidence of IUGR or still birth rate. (3)

Another study done by Seyedh Hajar Sharamietv al conducted a prospective case control study to study the relationship between first and second trimester abortion and preterm labor. They included 440 women. Findings showed that there was a threefold increase in risk of preterm delivery when compared with women who did not have threatened miscarriage. (22)

In another study done by Yang et al , which investigated about the relation between preterm births and self reported vaginal bleeding in 2829 women , the association between the first trimester vaginal bleeding and preterm labor was modest (risk ration was 1.3). Early preterm birth ie birth less than 34 weeks was mostly associated with threatened miscarriage, and rate of preterm premature rupture of membranes was the most common cause for preterm labor. Recurrent bleeding for several

days with increased amount was associated with two fold increase in preterm birth, PPRM, and preterm labor. But this association was not proved in African – American population. (32)

Study done by Betil Yakistiran et al studies about the pregnancy outcomes in 963 women with first trimester bleeding. They concluded that threatened miscarriage is very important predictor of late pregnancy outcomes . They also had 23.5% women who delivered preterm who had a history of first trimester bleeding per vaginum. (32)

The literature reports which studied about the association between the vaginal bleeding in first trimester and the pregnancy outcomes like preterm labor and Premature rupture of membranes is very conflicting. Many authors had reported a positive significance with increased incidence of Preterm labor and PROM but a few studies show no association between these two parameters and first trimester bleeding. (29).

SUB CHORIONIC HAEMORRHAGE:

Sub chorionic hemorrhage is a commonest sonographic findings following a threatened miscarriage . Ultra-sonographic visualization of this subchorionic hematoma is very important because any demonstrable hematoma have a poor pregnancy outcome when compared to those

women who did not have an hematoma . But asymptomatic and small subchorionic hematoma does not affect the prognosis .

In women who have a subchorionicheMATOMA, the outcome of the pregnancy depends on various factors such as size of the hematoma, age of the patient (higher maternal age - poor outcome).

Fig 7 : Small subchorionic hematoma at 8 weeks of gestation

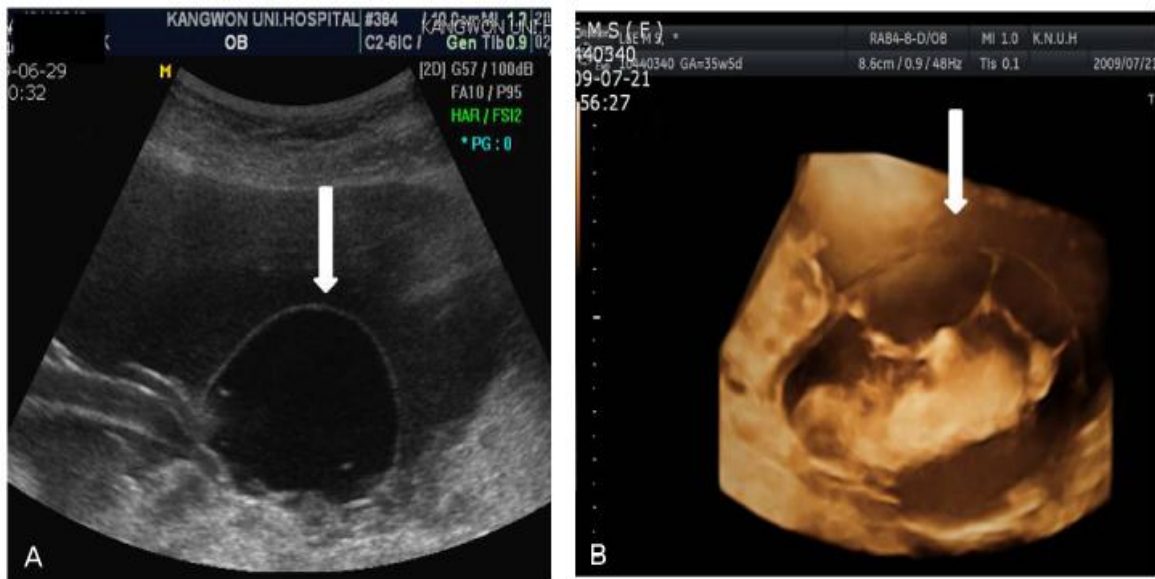


The risk of miscarriage, abruption placentae, preterm labour and still birth are more with women having subchorionic haemorrhage. It is the collection of blood between the chorionic membrane and the uterine wall which may leak through the cervical canal. These hematomas will strip the placenta partially in the late first and early second trimester. Such hematomas generally have poor outcomes. (23, 24) Some hematomas regress its its small in size. Few large hematomas which strips 40% of the placenta will enlarge more and it compresses the gestational sac and may cause premature rupture of membranes.

In a meta analysis of 7 studies which had 1735 women with threatened miscarriage with USG showing subchorionic haemorrhage, they were associated with increased incidence of 1st and 2nd trimester abortions, PPRM (preterm premature rupture of membranes, abruption. (25)

Breus' mole which is the massive subchorionic hematoma was also diagnosed in second trimester. Normal growth of the fetus and normal umbilical artery Doppler waveform has been described as being associated with the perinatal survival. (26)

FIG 8 : BREUS MOLE (Massive Subchorionic Hematoma)



There were various studies which looked for the subchorionic hemorrhage in first trimester and its outcome prediction with USG. One such study was done by Bennett GL et al where 516 patients with bleeding in 1st trimester were taken and their subchorionic hematoma size were measured and graded according to the circumference of chorionic sac which was elevated by the hematoma. The results of the study showed 9.3% (48/516) spontaneous abortion. The rate was doubled when there was a large separation (18.8%) when compared with small and moderate sized hematomas. And when seeing the maternal age , the abortion rate was much higher with increased maternal age of more than 35 years (13.8%). Those who had early bleeding (<8weeks) had more abortion rate (13.7%) when compared to those who had bleeding after 8 weeks (5.9%) (5)

In a study done by KurjakA , Schulman et al , who studied about the subchorionic hematomas in early pregnancy and the clinical outcomes and blood flow pattern , It was a case control study which included 59 women with subchorionic hemorrhage which was compared to 135 normal pregnant women

MODE OF DELIVERY

Saraswat et al study of outcomes of threatened abortion also showed that the mode of delivery is not associated with any first trimester bleeding. But there are few studies which showed that cesarean section was more common in these women (7)

In the study done by Zhila Amirkhani et al, the incidence of cesarean section was more in women with bleeding in first trimester which accounted for 41% when compared to normal delivery which was 28%.

INFANT OUTCOMES - NICU ADMISSION AND APGAR <7

APGAR score was first invented in 1952, which helps us to summarize the health of the new born children . The APGAR scale has 5 criteria and it's a scale measuring from zero to two. It was developed by an anesthesiologist to determine the effects of obstetric anesthesia on the babies.

The five criteria's are Activity, Pulse, Grimace. Appearance, Respiration.

CHART 1: The criteria for APGAR score

	Score of 0	Score of 1	Score of 2	Component of acronym
Appearance Skin color	blue or pale all over	blue at extremities body pink (acrocyanosis)	nocyanosis body and extremities pink	A ppearance
Pulse rate	absent	< 100 beats per minute	> 100 beats per minute	P ulse
Reflex irritability grimace	no response to stimulation	grimace on suction or aggressive stimulation	cry on stimulation	G rimace
Activity	none	some flexion	flexed arms and legs that resist extension	A ctivity
Respiratory effort	absent	weak, irregular, gasping	strong, lusty cry	R espiration

INTEPRETATION OF SCORES:

This test is done after birth at one and fifth minute. It can also be repeated later if the score are found to be very low. Score above seven are generally normal, four to six are fairly low, critically low levels are below 3.

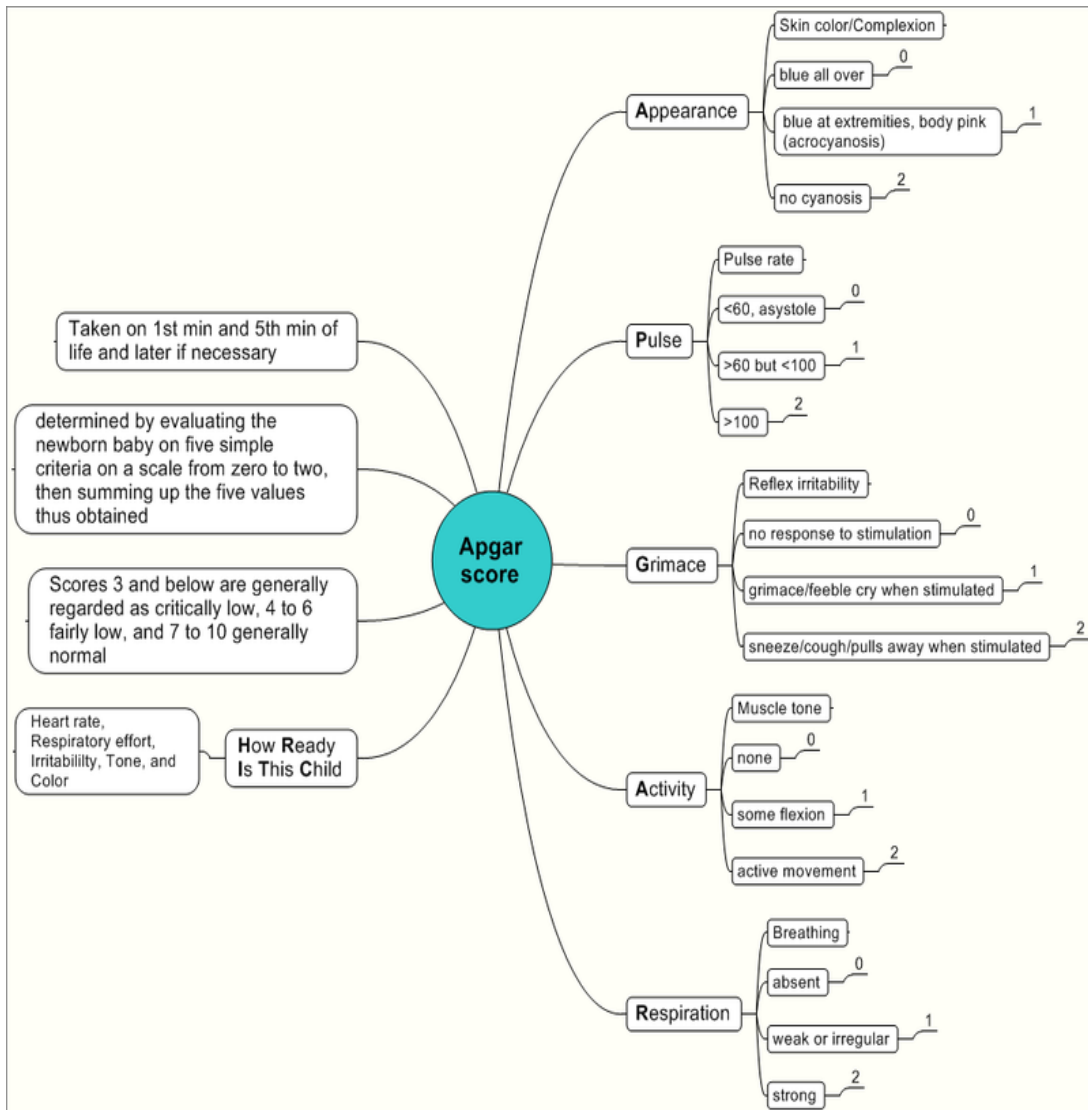
A baby with low APGAR score will need

- Oxygen and the airway should be cleaned to help the babies breath properly
- To make the heart breath at a healthy rate – physical stimulation is needed

Most of the time, 1 minute low APGAR will become near normal at 5 minutes .

Low APGAR score in women with first trimester bleeding is mainly because of the preterm labor, low birth weight, abruption, Preterm premature rupture of membranes. Since these babies are born very preterm they have a tendency to have a low APGAR and thee by increases the Neonatal intensive care unit admission rate.

FIG: 9 - Mind map showing summary of APGAR score:



Infant outcomes after threatened abortion was studied by Williams MA et al which included 11,444 non diabetic women who had first trimester bleeding. They found out that low birth weight (LBW), shortened gestation, Neonatal death and low birth weight at term occurred most commonly after a first trimester bleeding p/v. All these results were statistically significant. Double the risk of delivering a preterm infant was found in these women than those with no bleeding in first trimester.

There was 1.6 fold increased risk of delivering a term LBW infant. As a result from this study it is evident that first trimester vaginal bleeding is associated with adverse neonatal outcomes. (14)

There was a prospective case control study conducted by Riahejad et al showed no significant difference in Premature Rupture Of Membranes, Intra Uterine Growth Restriction, Intra Uterine Death, mode of delivery, NICU admission. But the incidence of second trimester bleeding , preterm labor and placenta accrete rate was much high. (8)

SIGNS AND SYMPTOMS OF VIABLE PREGNANCY:

The viability following threatened abortion can be predicted by few signs and symptoms which was studied by Chung TK et al. (15) They selected 1000 consecutive women presenting with vaginal bleeding in first trimester. An initial clinical assessment was made with a proper history and examination .This was followed by transvaginal ultrasonography to determine the pregnancy status. A logistic regression was done to find out which signs and symptoms were most independent predictors of miscarriage and viability.

History of passing a fleshy mass, open cervix and products of conception present in the vagina were the only symptoms and signs which had a greater (>90%) chance of non viable pregnancy. Maternal

age more than 35 years, bleeding through the vagina similar to normal menstrual bleeding, vaginal passage of clots, heavy bleeding and discrepancy of more than or equal to 4 weeks were found to be the independent predictors of spontaneous miscarriage or non viable pregnancy . Vomiting history is a predictor of viable pregnancy. (15)

USG – AN IMPORTANT DIAGNOSTIC TOOL

The leading cause of emergency care presentation is vaginal bleeding in pregnancy especially in first trimester. The assessment of pregnancy outcome clinically is less reliable. USG examination at this situation in determining the early pregnancy failure is very crucial. But due to the recent advances in high frequency transvaginal transducers, the diagnosis of early pregnancy failure can be made reliable even before the embryo is visible (9)

The rate of fetal loss following first trimester bleeding was studied by Poulouse et al. The purpose of that study was to determine the outcome of a viable single fetus in an early pregnancy which has been complicated by bleeding. 370 women with single fetus were prospectively studied. They were grouped into 3 categories according to the degree of blood loss as mild moderate and severe .Intra uterine hematomas were also included in this study. The spontaneous miscarriage rate was 11.1% and

more than 90 % of these women continued their pregnancies. Intrauterine hematoma rate of about 14% and they had a 2.6times higher rate of miscarriage than others (23% vs 9%). Hence this study was used in guiding the women with bleeding having a single fetus and the chance of miscarriage. (10)

The gold standard for diagnosing any pregnancy loss is by the ultrasound . The role of USG imaging in investigating and diagnosing the early pregnancy loss was studied by various authors. Jauniaux, Johns, Burton et al conducted a study in Boston. The presence of high resolution transvaginal ultrasonography has completely revolutionized the understanding about the physiology and pathology of early pregnancy loss and its management. Sound knowledge about the USG findings of normal pregnancy and its development and its limitations are very much needed for the proper diagnosis of the early pregnancy failure. The first structure to appear in an USG is the celomic cavity and the secondary yolk sac. (11)

FIG: 10 Trans vaginal ultrasound showing Gestational sac and fetal pole



There was no single measurement in ultrasound of the different anatomical features has shown high positive predictive value in first trimester in determining the early pregnancy outcome. Even the Doppler studies could not demonstrate the blood flow indices which are abnormal in the first trimester utero-placental circulation which ends up in pregnancy loss.

Combination of the various in-vitro experiments and ultrasound have shown that the peripheral placental circulation starts at the 9 weeks of gestational age and this is in direct relation with the physiological

oxidative stress which will be the stimulator for the placental membrane formation. Any abnormalities in the membrane development cause the subchorionic hemorrhage and threatened abortion and in long term can lead to preterm rupture of membranes and preterm labor. The blood flow in the intervillous space using colour Doppler in first trimester miscarriage also helps in predicting the expectant management success rate (11)

FIG 11: Colour Doppler showing blood flow in the intervillous space



ABRUPTION:

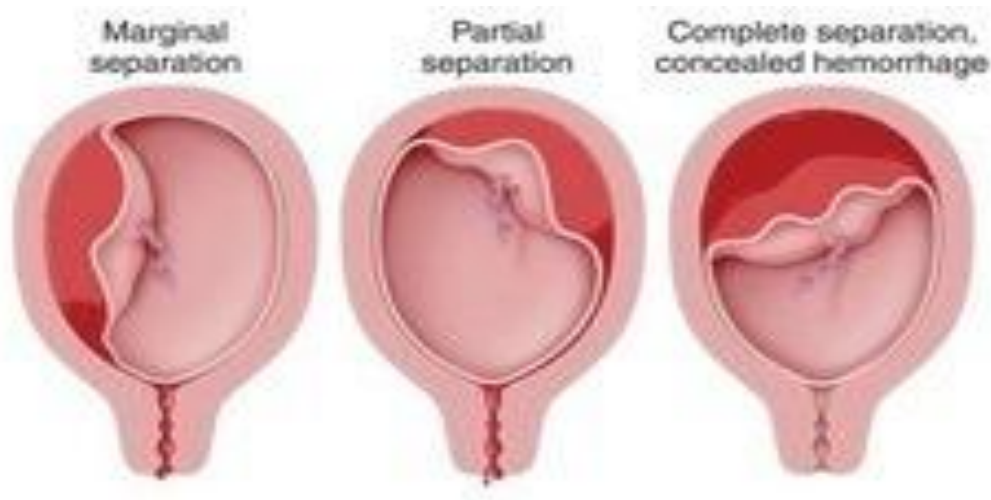
The most common cause of placental abruption is the tearing of the maternal blood vessels from the decidua basalis. Very small number of abruption occurs because of trauma which stretches the uterus. When there is any anatomical factors , the placenta will not get attached to a proper place where it can get proper support so it does not develop appropriately and eventually it will be separated as it grows .

FIG 12: ultrasound showing placental abruption



Diagnosis of placental abruption can be made the mother has a sudden localized abdominal pain without bleeding. The height of the fundus will be increased suddenly. Ultrasound can be helpful if looking for placenta previa but not abruption. The diagnosis of abruption is one of the exclusion which means after excluding all other causes of vaginal bleeding the diagnosis of abruption can be made.

FIG 13: Types of placental abruption



Classification of abruption is based on the severity.

CLASS 0: asymptomatic

CLASS 1: Mild symptoms with no to mild vaginal bleeding / slight uterine tenderness / vitals stable / no coagulopathy / no fetal distress

CLASS 2: Moderate symptoms with no to moderate vaginal bleeding / moderate to severe tenderness in the uterus / maternal tachycardia / fetal distress.

CLASS 3: Severe symptoms with heavy bleeding / very painful tetanic uterus / maternal shock / hypofibrinogenemia / coagulopathy / fetal death

Several studies showed that abruption is one of the main complications of first trimester bleeding. In a study done by Weiss et al suggested that the risk of abruption was two fold increased in women who had threatened miscarriage (19-25).

In the study done by Zhila Amirkhani et al showed that there was 13.3% risk of women having abruption in later trimester (1-2).

In the study done by Ananth CV et al which compared the association of first trimester bleeding in early pregnancy with placental lesions , they found out that any episode of bleeding per vagina less than 20 weeks in pregnancy has an increased risk of placental abruption which had an adjusted relative risk 1.6 , with confidence interval of 95%. The highest risk occurred when the bleeding has occurred in both first and second trimester bleeding . (29)

INTRA-UTERINE FETAL DEATH :

Fetal death is defined as loss of fetus at any stage of pregnancy. According to the National Centre for Health Statistics, fetal death was defined as “the death of fetus prior to the complete expulsion or extraction from the mother of a product of human conception, irrespective of the pregnancy duration and it should not be an induced termination of pregnancy.

Fetal losses can be classified according to the gestational age of fetal demise. A death which occurs before 20 weeks is called spontaneous abortion and those fetal death after 20 weeks it is called fetal demise or

still born. Birth weight of more than 500gms is considered as fetal demise.

In 2006, the average still birth rate was 6.05 per 1000 births according to National Vital Statistics.

Diagnosis of fetal death:

History of the patient and physical examination are of very limited value in diagnosing the fetal death. Most of the patient will complain of decreased or absent fetal movements. Absent fetal heart tone in examination suggests fetal demise. Ultrasound helps in confirming the diagnosis of fetal death by visualizing fetal heart with absent heart sound

Management of fetal death:

The patient should be informed about the fetal demise. Termination is the only management. If the dead fetus is in utero for more than 4 weeks, there will be a drop in the fibrinogen levels which may lead to coagulopathy but induction won't be delayed too long after diagnosing fetal death. However this condition can be seen in case of a twin pregnancy where one twin had an IUD and we have to wait for the maturity of the second twin.

Induction with cervical ripening agents initially followed by intravenous oxytocin . In case of a previous cesarean delivery induction should be done very cautiously in order to avoid uterine rupture .

Early fetal demise can be managed with the insertion of laminaria tent followed by dilatation and evacuation . Fetal death before 28 weeks induction is done with prostaglandin E2 10-20mg q6h , misoprostol orally or vaginally 400mcg q4h with or without oxytocin .

Causes of fetal death : Maternal

- Prolonged pregnancy (>42 weeks)
- SLE ,Antiphospholipid syndrome
- Infection
- Hypertension , pre eclampsia
- Uncontrolled diabetes
- Advanced maternal age
- Inherited thrombophilias

Fetal causes: Multiple gestation, congenital abnormality, intra uterine growth restriction, hydrops.

Placental causes: cord accident, abruption, premature rupture of membranes, vasa previa, fetomaternal haemorrhage, placental insufficiency .

In various studies there was no significance between the incidence of intrauterine fetal death and first trimester threatened miscarriage. But a very few studies done by Zhila Amirkhani (1) suggested that there is one fold increase in rate of IUD in women with first trimester bleeding.

INTRAUTERINE GROWTH RESTRICTION:

Intrauterine growth restriction is a condition where in the fetus is smaller than it normally should be and the rate of growth of the fetus is poor. Almost 60% of the 4 million neonatal death is because of low birth weight which is caused by the intra uterine growth restriction, genetic or chromosomal abnormalities, preterm labour .

Intrauterine growth restriction will result in small for gestational age babies which is defined as a birth weight which is less than 10th percentile for that corresponding gestational age. There are two types of IUGR. It is classified as symmetrical and asymmetrical. Among this asymmetrical IUGR is more common accounting for about 70 % where there is a restriction of weight followed by length. There is a brain sparing effect where the head will continue to grow to that corresponding gestational age but the abdominal circumference will be less than 10th percentile for that particular gestational age. In these fetuses they will grow normally upto second trimester where as there is a growth restriction in the third trimester.

Most common causes of asymmetrical IUGR includes

- Chronic high blood pressure
- Genetic mutations
- Severe malnutrition

Symmetrical IUGR is comparatively less common. Which accounts to about 20- 25%. This is also called as Global growth restriction. In this the fetus has got affected much earlier in the second trimester itself. The head circumference is similar to the rest of the body. Most of the neuronal development will occur at the 18th week of gestation and hence the fetuses with symmetrical IUGR will have a permanent neurological sequelae .

The most common causes for symmetrical IUGR are

- Anaemia
- Early intrauterine infection like rubella / toxoplasmosis / cytomegalo virus
- Chromosomal abnormalities
- Fetal alcohol syndrome / maternal smoking.

Intrauterine uterine growth restriction is also classified as early onset and late onset IUGR

Early onset constitutes 20-30% of IUGR and late onst is 70-80%

EARLY ONSET IUGR :29-34WEEKS

Long latent period

- Problem: Management the babies with early onset IUGR is more difficult .
- Placental disease: severe high association with preeclampsia
- Umbilical artery Doppler will be abnormal first followed by Ductusvenosus
- Severe Hypoxia:systemic cardiovascular adaptation
- Immature fetus=higher tolerance to hypoxia=natural history
- High mortality and morbidity ; lower prevalence

LATE ONSET IUGR:

Short latent period

- Problem: diagnosing these babies is difficult
- Placental disease: mild, low association with preeclampsia
- Umbilical artery normal, abnormal CPR
- Hypoxia may or may not be present :Central cardiovascular adaptation
- Mature fetus=lower tolerance to hypoxia=no(or very short)natural history
- Lower mortality(MC cause of stillbirth);poor long term outcome; affects large fraction of pregnancies

The association between intra uterine growth restriction and threatened miscarriage was studied by various authors. One such study done by Salah Roshdy et al showed that the rate of intra uterine growth restriction was two fold increase in women with threatened miscarriage when compared to normal population (28). Yet few other studies done by Batzofin et al suggested no relationship between intrauterine growth restriction and threatened preterm.

In the study done by Hossain which included 2678 deliveries , he found that late pregnancy complications are common in these women with first trimester bleeding . (27)

Another study done by Saadiya Aziz et al in 71 women with first and second trimester bleeding which was compared to 173 women in the control group 12% of women had preterm labour with intrauterine growth restriction when compared to only 4% in the control group . Further low birth weight was also associated with first trimester bleeding .(42)

RISK FACTORS FOR FIRST TRIMESTER MISCARRIAGE

Most clinicians lack a proper tool to identify the miscarriage risk factors . Hence a study was done by ArckPC, Rucke M , Rose M et al to identify the risk factors associated with first trimester miscarriage in women with no obvious risk for pregnancy loss . In this study 1098 women were included who belong to the gestational age of 4 and 12 in whom there was no clear signs of any threatened pregnancy was identified and recruited. The anamnestic, demographic , biological and psychometric data were collected and documented at the initial visit and their pregnancy was closely monitored. Among them 809 women had successful pregnancy outcome whereas 55 of them ended up in miscarriage. This study found out that the miscarriage rate was higher in women with higher age group >33 years, women with low BMI <20kg/m(2), the levels of progesterone concentration of less than 12ng/ml prior to miscarriage. They also found out that these women had higher levels of stress/ demands which was demonstrated by increase in levels of corticotrophin- releasing hormone. (12)

Hence by identifying these risk factors in pregnant women will help the clinicians to give extra monitoring of their pregnancy and early intervention.

MANAGEMENT OF MISCARRIAGE :

Management of first trimester bleeding was studied by Ciro et al, which was an observational study which included 1096 patients. 70% of women with retained products of conception chose to have an expectant management. Management without surgical intervention had a successful outcome in 81 % of cases. 70% of women within 14 days completed their miscarriage. (17)

In the expectant management with medical treatment with anti progesterone and prostaglandin E 1 analogs and their subsequent outcome was studied by Neisen et al. They compared the efficacy of anti progesterone (Mifepristone) in combination with Prostaglandin E 1 analogs (Misoprostol). Pharmacological treatment given to 82% of women and expectant management given to 76% of women had an empty uterine cavity at 5th day. The duration of complete evacuation was 1.8 days longer in pharmacological treatment. Other symptoms such as bleeding and pain were almost equal in both the groups (18)

Misoprostol which is used in the management of first trimester miscarriage can be given sublingually or vaginally. The efficacy of both these routes were studied by Tang OS et al . It was a randomized control study . The success rate of medical management were almost the same in

both these groups (87.5% and 95%) . The incidence of symptoms such as diarrhea was higher in sublingual group (70%) when compared to vaginal rout (27.5%). All other effects were equal in both these groups . Hence by this study sublingual misoprostol will offer an alternative for those women who do not want repeated vaginal administration of the drug (19)

MATERIALS AND METHODS

This study is a prospective case control study. We included 60 women aged between 19-35 years with first trimester bleeding as case group who met the inclusion and exclusion criteria and 60 normal pregnant women as control.

Women with first trimester vaginal bleeding with chemical test positive (UPT +)



Explained about the study and informed consent obtained



USG-Pelvis to look for any subchorionichaemorrhage/RP clots



Patients are put under surveillance till delivery and 1 week post delivery



Maternal and perinatal outcomes which are analyzed

1. Premature labour
2. PROM
3. Placental abnormalities
4. IUD
5. IUGR
6. Abortion – miscarriage / 2nd trimester abortions

7. Delivery – normal vaginal delivery / CS
8. Apgar <7
9. Ectopic pregnancy
10. No complications

PROFORMA

MATERNAL AND PERINATAL OUTCOMES IN WOMEN WITH FIRST TRIMESTER VAGINAL BLEEDING

NAME :

AGE :

IP NUMBER :

OP NUMBER :

GRAVIDA : PARA : LIVE : ABORTION:

1STTRIMESTER :

- ONSET OF BLEEDING / SPOTTING IN FIRST TRIMESTER :
- USG FINDINGS :
- (RETROPLACENTAL CLOTS / SUBCHORIONIC
HAEMORRHAGE , CERVICAL LENGTH)
- ABORTION(SPONTANEOUS/MISSED/INEVITABLE) -
- NT SCAN :

2NDTRIMESTER :

- ANY BLEEDING / SPOTTING :
- ABORTION :
- USG FINDINGS : (PLACENTAL POSITION , ANOMALIES ,
EFW ,GROWTH)

3RD TRIMESTER:

- ANY BLEEDING/SPOTTING P/V:
- USG FINDINGS (AFI/GROWTH/DOPPLER)

OBSTETRIC COMPLICATIONS :

- ANAEMIA –
- GESTATIONAL DIABETES MELLITUS / GGI -
- MULTIPLE PREGNANCY-
- GESTATIONAL HYPERTENSION/PRE
ECLAMPSIA/ECLAMPSIA
- HYPOTHYROIDISM-

DELIVERY DETAILS:

- TERM/PRETERM:
- PROM/PPROM :
- MODE OF DELIVERY :
- DATE : TIME : SEX:
- APGAR: WEIGHT :

STATISTICAL ANALYSIS

Data collected from the patients were initially entered in to the Microsoft excel – sheet and data analyzed using SPSS . Pearson’s chi-square was used to compare the association between the first trimester vaginal bleeding and the adverse maternal and fetal outcomes . A predictive value of less than 0.05 was taken as statistically significant

RESULTS

In this study 120 women were included (those who met the inclusion criteria) among which 60 women were in control group and 60 in case group. The case and control group were selected based on the following demographic characteristics .The demographic data in each of these groups are represented in Table 2.

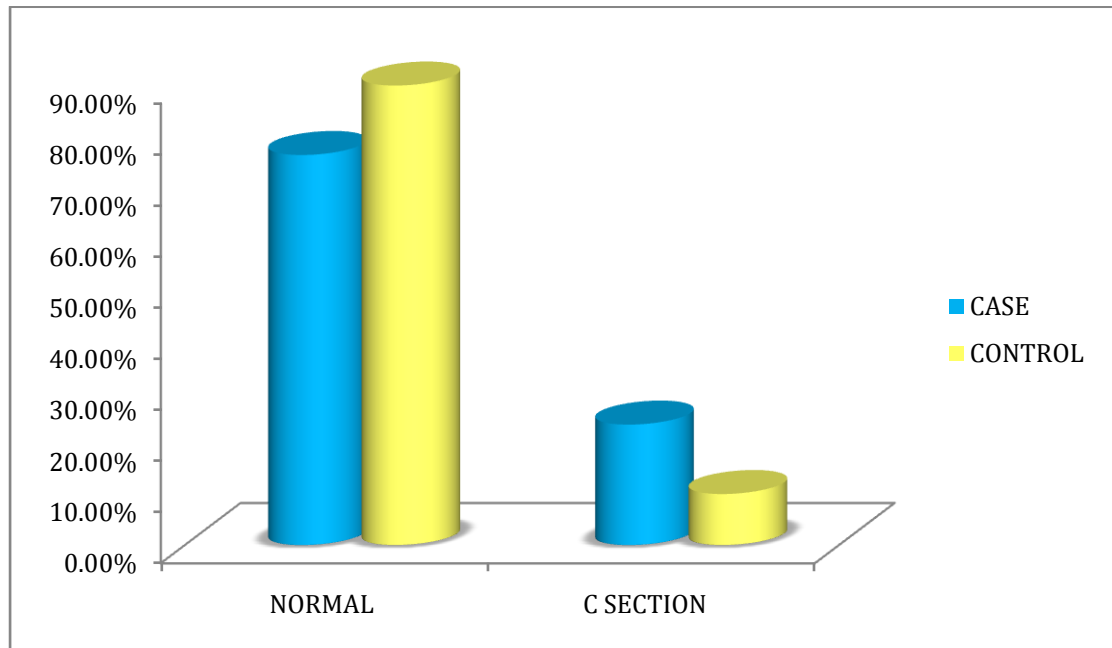
TABLE 2: DEMOGRAPHIC CHARATERISTICS IN WOMEN WITH FIRST TRIMESTER THREATENED MISCARRIAGE IN CASE AND CONTROL GROUP.

CHARACTERISTICS	CASE GROUP	CONTROL GROUP
Mean maternal age range	19 – 35 years	19-35 years
Mean BMI at booking	23.4	22.5
Maternal BMI range	21.5 to 34.6	19.5- 33.4
GA at booking range	6-9 weeks	6-9 weeks
GA at delivery range	34-40 weeks	38-40 weeks

The mean maternal ages in both the groups were 23.4 and 22.5 respectively. More than 90 % of the women who had first trimester bleeding had their first episode at 7 to 8 weeks and more than 70% of these women were primigravida.

Women who had normal vaginal delivery and cesarean section in the case and control group is demonstrated in the chart 1.

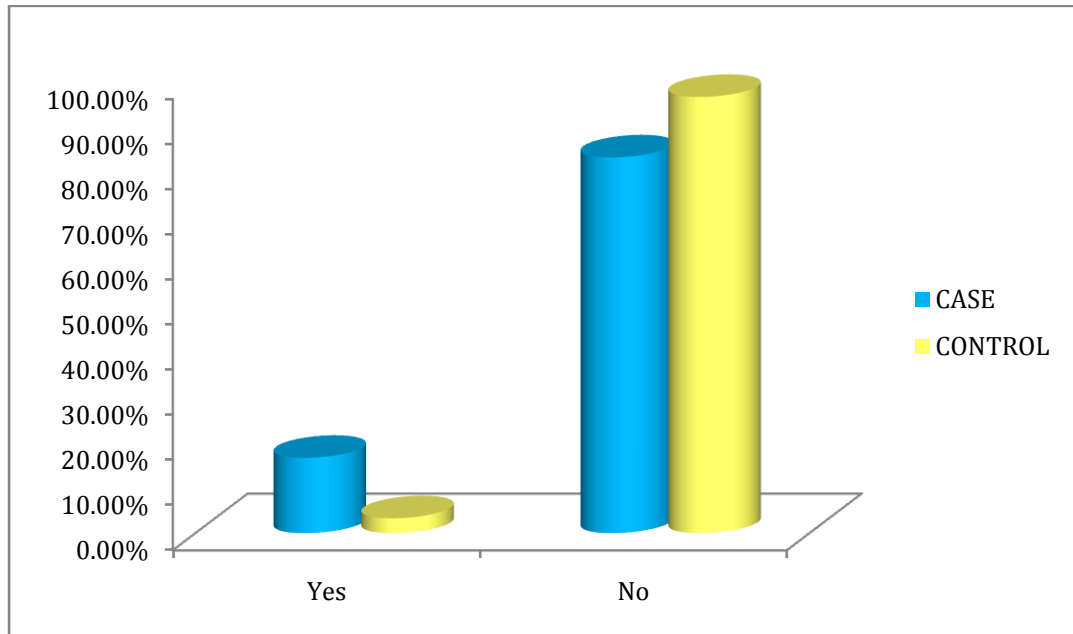
CHART 2: OUTCOME OF PATIENT (NORMAL VS CESARED SECTION) IN WOMEN WITH FIRST TRIMESTER VAGINAL BLEEDING



In the case group 68.3% (41/60) of women had normal vaginal delivery and 8.3% (5/60) had cesarean section . In the control group 90% (54/60) had normal delivery and 8.3% has cesarean section. From the above result in this study the incidence of normal vaginal delivery is significantly more in women with no bleeding in first trimester .

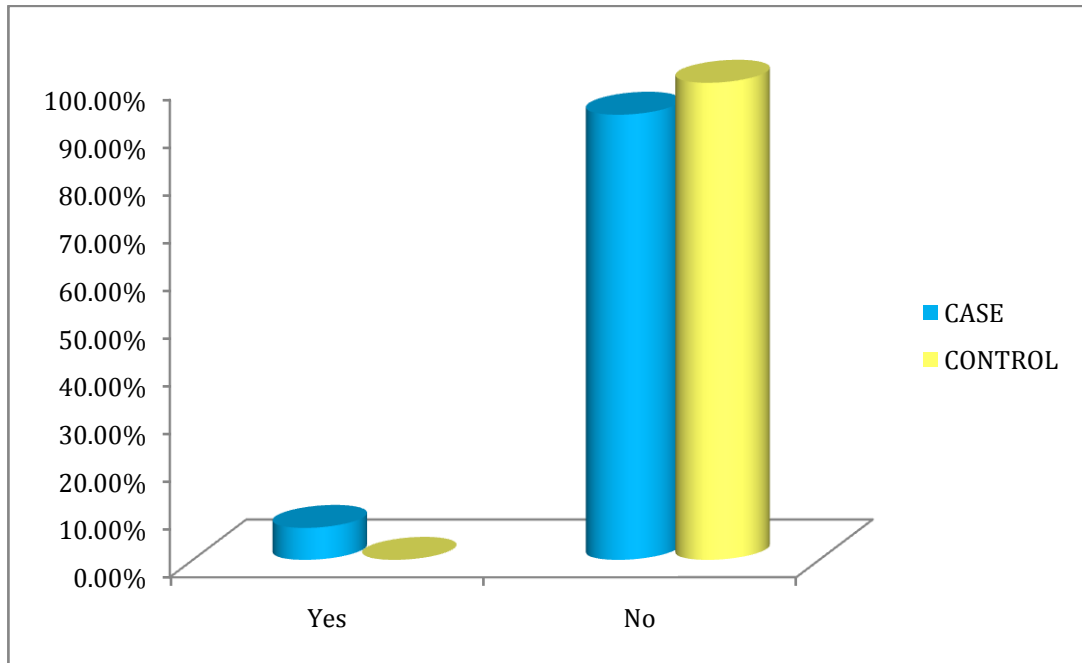
The outcomes of these patient are described in the following chart

**CHART 3: OUTCOME: 1ST TRIMESTER ABORTIONS IN THE
CASE AND CONTROL GROUP**



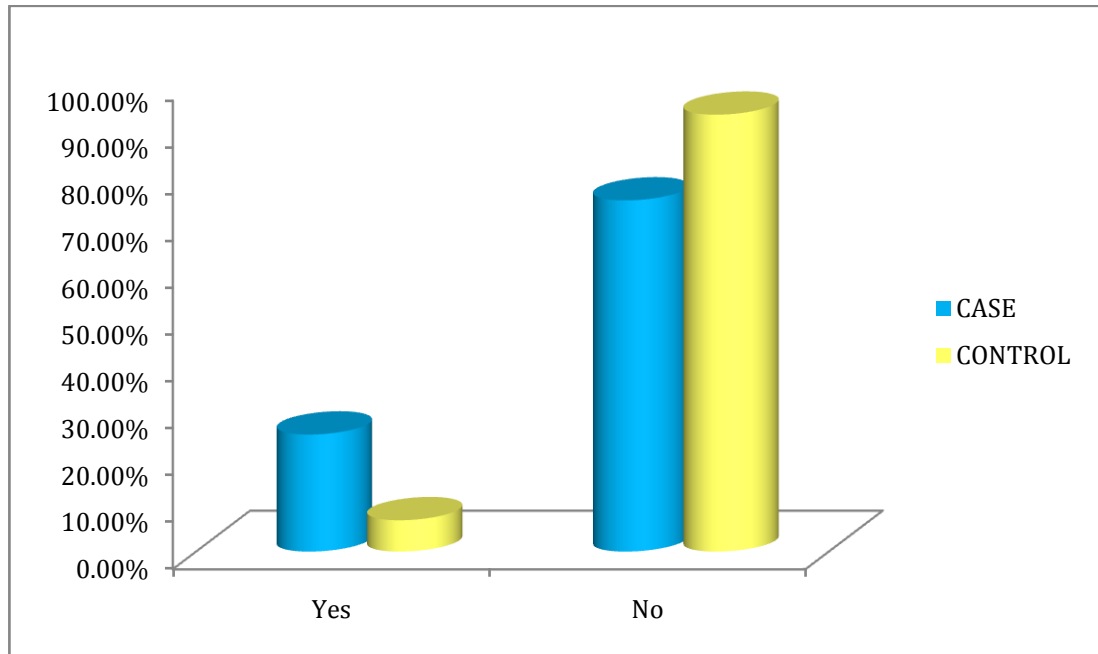
In my study the incidence was 16.7% ie. 10 among the 60 women in case group had first trimester abortion . In the control group 3.3% ie 2 among 60 patient had first trimester abortion . Among the 10 women 8 had heavy vaginal bleeding in the case group . So this study shows that bleeding in first trimester has statistically significant increase in first trimester abortion rate than compared to the control group with the p value of 0.015..

CHART 4 :2ND TRIMESTER ABORTION IN THE CASE AND CONTROL GROUP



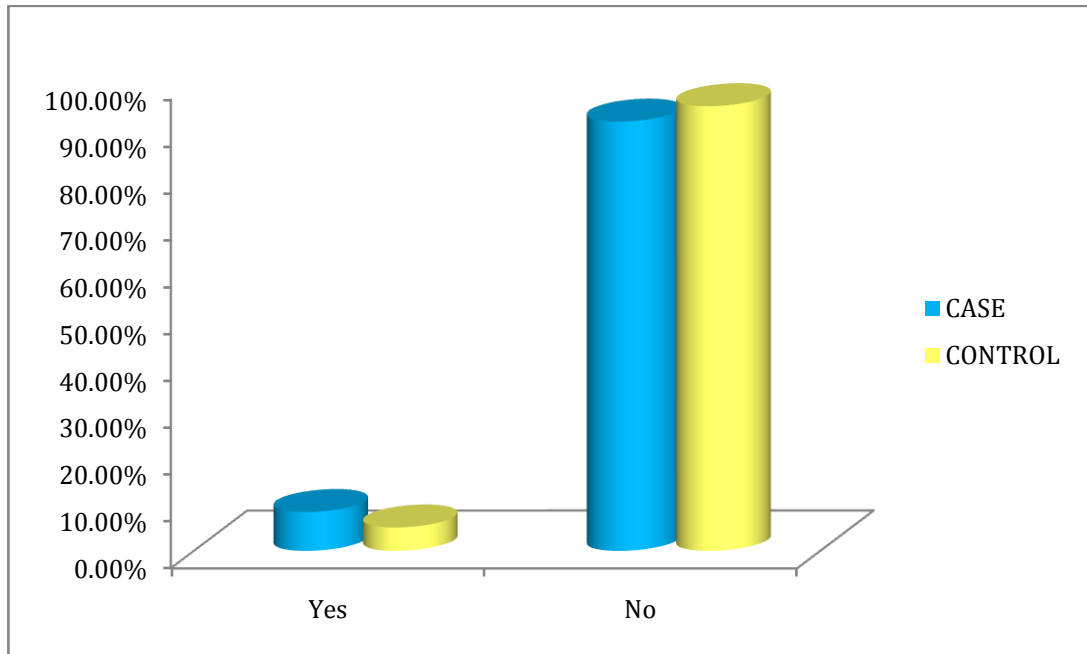
About 6.7 % in the case group(4 among 60 women) had second trimester abortion. While no women in control group had abortion in second trimester. This is statistically significant with the P value of 0.042.

CHART 5: PRETRM LABOUR IN CASE AND CONTROL GROUP



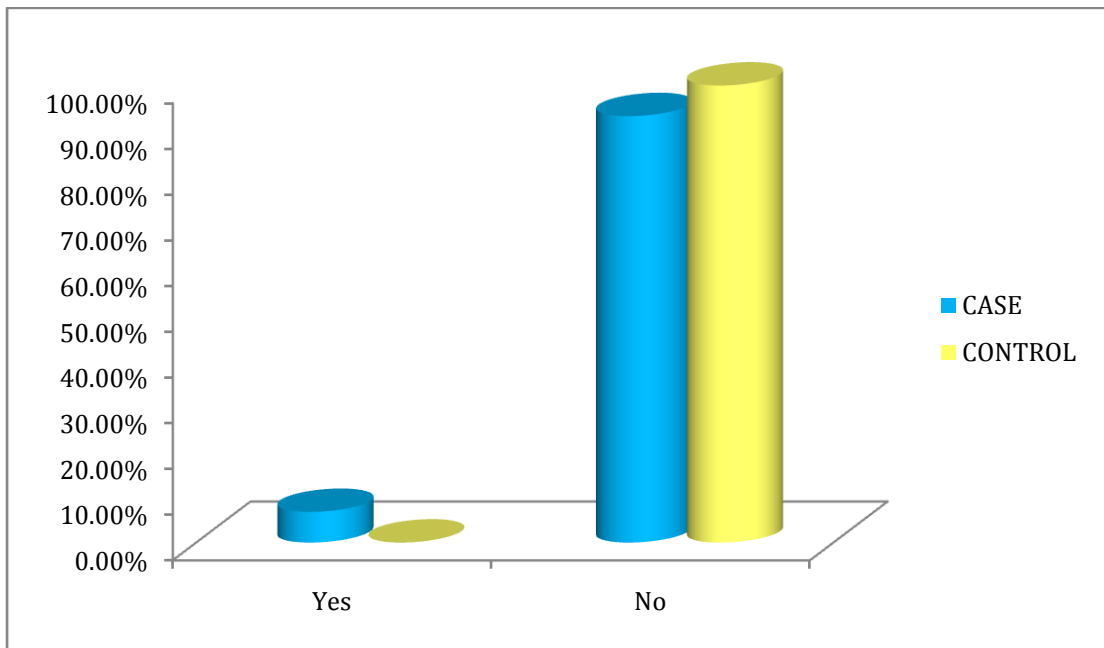
In my study 15 women (25%) in case group had preterm labour compared to 4 women (6.7%) in control group with preterm labour . This result was statistically significant with the p value of 0.006. The average gestational age at which these women presented with preterm labour is 34- 36 weeks . All were given tocolytics to prevent labour but more than 98% delivered preterm .

CHART 6 : INCIDENCE OF PROM IN CASE AND CONTROL GROUP



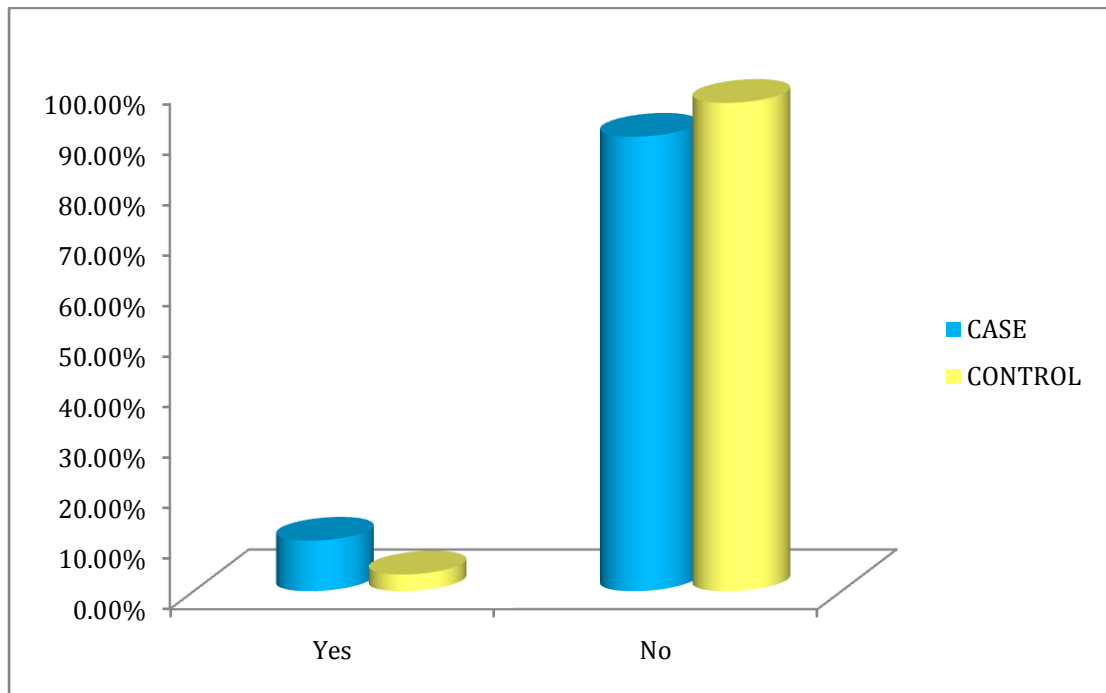
In the case group 5 women out of 60 had PROM (8.3%) when compared to 3 women in control group (5%). Hence by this study the incidence of PROM is almost equal in both case and control group. This result is not statistically significant .

CHART 7: ABRUPTION IN CASE AND CONTROL GROUP



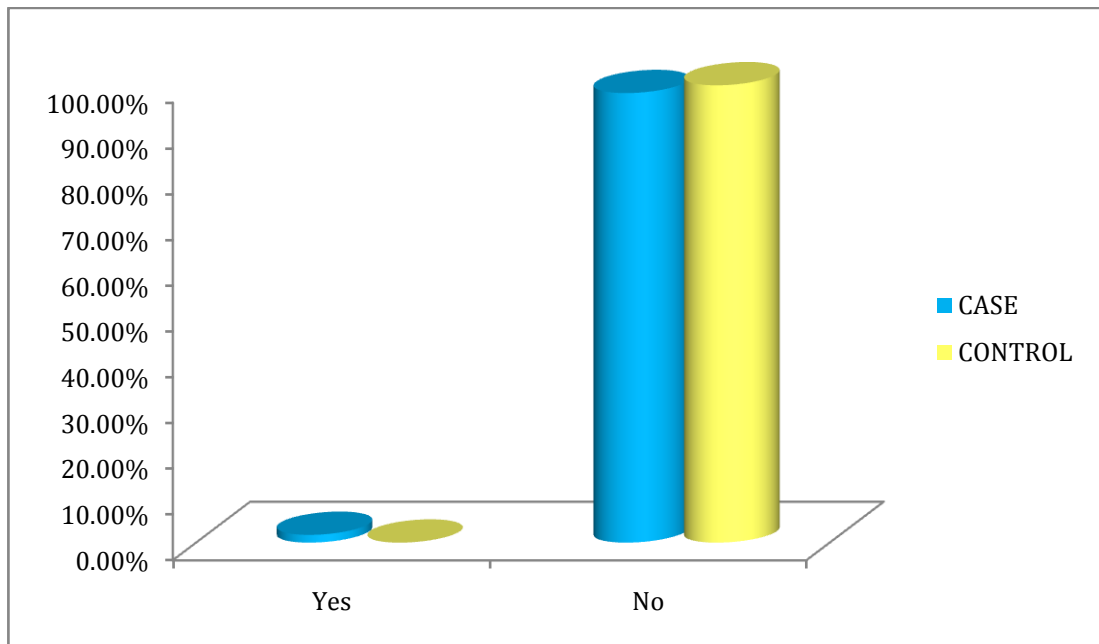
In my study the incidence of placental abruption in case group was 6.7 % (4/60) and there was no abruption in control group. From the above data the incidence of abruption in women with first trimester vaginal bleeding is statistically significant with P value of 0.042.

CHART 8: IUGR IN CASE AND CONTROL GROUP



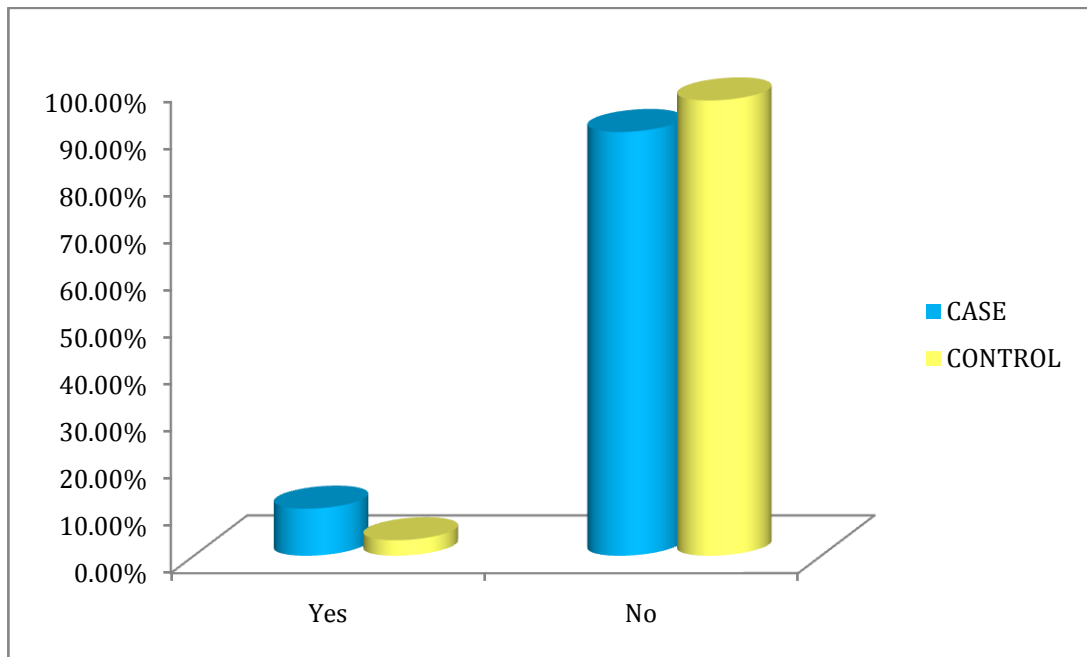
The incidence of IUGR in case group was 10% (6/60) and in control group was 3.3% (2/60). This result was not statistically significant with the p value of 0.143.

CHART 9: IUD IN CASE AND CONTROL GROUP



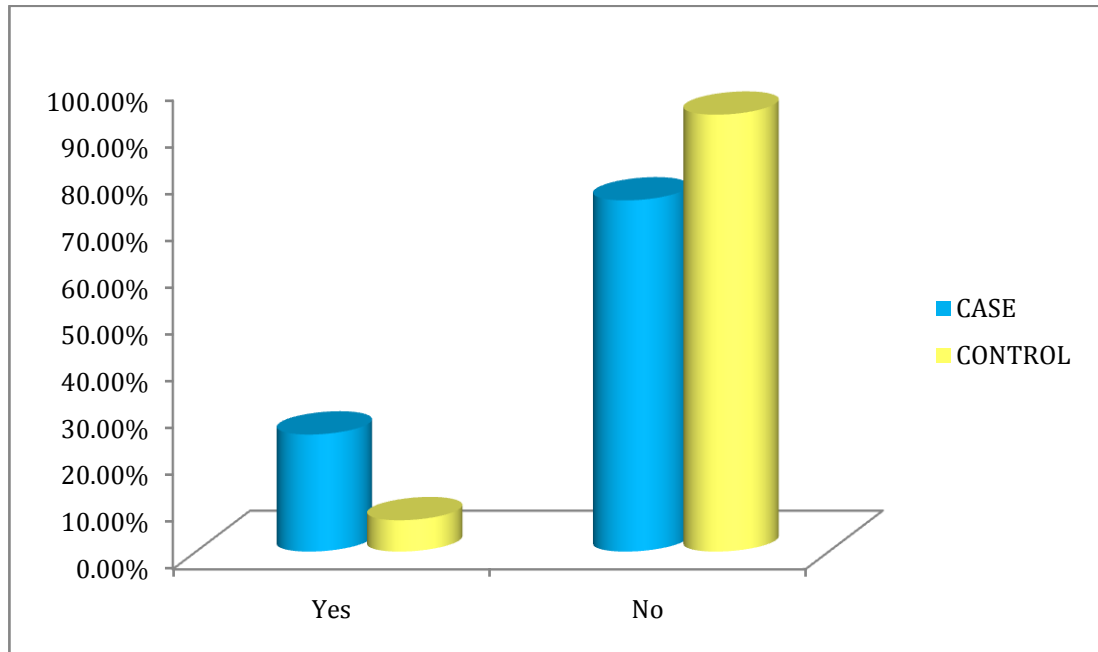
The incidence of IUD in case group was 1.7% (1/60) and there was no IUD in control group. This result was not statistically significant.

CHART 10: APGAR <7 IN CASE AND CONTROL GROUP



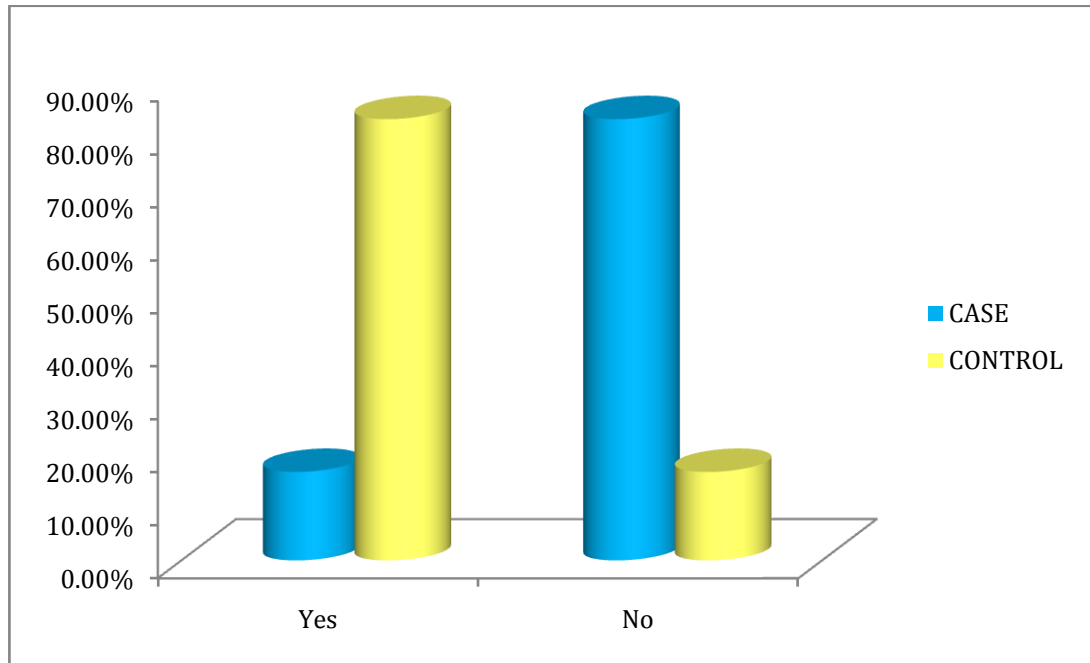
APGAR score <7 was seen in 6 women in case group (10%) when compared to 2 women in case group (3.3%). This result was not statistically significant .

CHART 11 : NICU ADMISSION IN CASE AND CONTROL GROUP



The incidence of NICU admission in case group was 25% when compared to 6.7% in control group which was statistically significant with the p value of 0.006.

CHART 12: NO COMPLICATIONS – IN CASE AND CONTROL GROUP



16.7% women in case group had no complications like preterm labour, PROM, IUGR , IUD or abortion when compared to 83.3% in control group. Hence there is significant amount of women who didn't have any complications in the control group . This result is statistically significant with the p value of 0.00.

DISCUSSION

Vaginal bleeding is the most common and an alarming early pregnancy symptom. The aim of our study was to evaluate the risk factors associated with first trimester bleeding and the various adverse outcomes . Several studies had reported the association between vaginal bleeding in first trimester and the adverse maternal and perinatal outcomes which includes abortion , preterm labour , low birth weight , intra uterine growth restrictions . Most of these studies were retrospective . In my study we will discuss in detail about each of these adverse outcomes .

FIRST AND SECOND TRIMESTER ABORTIONS :

From my study, the amount of blood loss is also important in predicting the miscarriage risk . 8 among 10 women in the case group who ended in first trimester miscarriage had heavy bleeding ie more than 80% of these women had heavy bleeding . Further analysis also suggests that pain associated with this heavy bleeding is also a great risk . Where as women with spotting per vaginum had comparatively good outcome . This result is similar to other studies which also indicates greater risk with heavy bleeding .

Several studies have been done in estimating the risk of miscarriage and first trimester bleeding . In my study the incidence of

first trimester bleeding is 16.7% and second trimester abortion is 6.7%. When comparing this with the control group the results are statistically significant. Many other studies have also documented that the rate of approximately 20%. (1-4)

PRETERM LABOUR AND PROM

Preterm labour and delivery is the most leading cause of neonatal death. Our study shows that women with first trimester bleeding have significantly increased risk of having a preterm labour(study group = 25% when compared to control group = 6.7%) and premature rupture of membranes (study group = 8.3% when compared to control group = 5%) . This result is similar to the previous studies (1-3). Study by Saraswat et al which was a meta analysis also suggestive a higher incidence of preterm labour and premature rupture of membranes. (3-7)

But a similar study which was done by Strobino et al didn't not show any significance between the first trimester bleeding and preterm labour .

The reason for Preterm Rupture Of Membranes was not very clear but a study done by Weiss et al hypothesized that the chorioamniotic plate disruption caused by the hemorrhage will make the membranes more prone for rupture because of increased radical production within the

placental membranes . Moreover this hematoma will be the common source of infection which will further cause increased incidence for early rupture of membranes .

Hence antenatal surveillance should be increased , by measuring the cervical length or by testing the vaginal fibronectin levels will help to identify the women at risk of developing preterm labour or premature rupture of membranes and it also helps us to intervene early with administration of appropriate antibiotics and progesterone for maintaining the pregnancy , which will improve the pregnancy outcomes.

PLACENTAL ABRUPTION:

Placental abruption occurs approximately in 2% of all the pregnancies. And among them the most common cause is first trimester bleeding. The hematoma which was collected in between the chorionic plate and the uterus will gradually increase in size and separated the placenta and causing heavy bleeding and eventually leading to abruption.

In my study the abruption rate was 6.7% whereas there was no abruption in control group . Hence this study suggests that women with threatened miscarriage has very high risk of abruption hence close monitoring in very essential.

My study is almost similar with the findings of Weiss et al (31) and Ananth et al which also showed a significant incidence in abruption in women with first trimester bleeding . But on the contrary studies done by Wijesiriwardana and Jihn's et al didn't not show any significant in the relationship between the two .(29,30)

INTRA UTERINE GROWTH RESTRICTION :

In my study the incidence of intra uterine growth restriction in women with first trimester vaginal bleeding was not statistically significant. The incidence of IUGR in case group was only 10% and in control group was 3.3 %. There was not much difference in the incidence of IUGR in the case and control group.

INTRAUTERINE FETAL DEATH:

In my study the incidence of intrauterine fetal death was 1.7% which means only one women in the case group had an IUD when compared to control group which had no women with IUD . This result was not statistically significant . A similar outcome was seen in a study done by ZhilaAmirkahani which also had an incidence of 1.7% in women with first trimester vaginal bleeding .

INFANT OUTCOMES – APGAR <7 WITH NICU ADMISSION :

In my study the infant outcomes of Apgar score <7, 10 % of women in the case group had low apgar score when compared to 3.3% in the control group . This result was much similar to many other studies which also had a positive relationship between the Apgar score less than 7 and first trimester vaginal bleeding . A similar study done by William et al also suggested that there was double the risk of delivering a preterm infant with fetal distress and thereby with the low APGAR score.

Since the rate of pre term delivery was more in these women the rate of neonatal intensive care admission was also high in these women . In my study the rate of Nicu admission was 8.3% when compared with 5% in the control group.

NO COMPLICATIONS:

To our surprise some women also had a positive outcome by delivering a live baby without any complications such as preterm labour, placental abnormalities, PROM, IUD, NICU admissions or intra uterine growth restriction. In my study about 16.7% in the case group ie .women with first trimester vaginal bleeding had a good outcome with none of the above mentioned complications. When compared with the control; group where 83.3% women had no complications .this was statistically significant.

This result suggest that women who are having first trimester threatened miscarriage , if given proper antenatal care and by routine ultrasound and regular follow up and specific management , they can deliver a live term baby without any complications .

LIMITATIONS

The limitation of our study is that we included a small population of 60 women and their outcomes were evaluated. The risk factors such as smoking, ethnicity, socio economic status which are also associated with preterm labour and low birth weight were not included in the investigations. History of any infertility treatment was not included . Treatment with gonadotropins have a higher incidence of miscarriage. A larger population can be used to study about the correlation between Intrauterine growth restriction and intrauterine fetal death which were not statistically significant in my study.

CONCLUSION

Our study provides a good evidence that spotting or light bleeding per vaginum, without pain abdomen , do not increases the risk of any miscarriage . Considering the outcome of my study, the symptom of first trimester vaginal bleeding has several adverse outcomes of both the mother and the fetuses , and it is very important to explain about these outcomes and ensure proper follow up with close care antenatal check ups.

Further, the intervention by the clinicians has an important role in not only helping the women to continue the pregnancy but also help in reducing the maternal and fetal complications in the high risk pregnancies. Hence a precise treatment and planning is very essential by the physicians.

RECOMMENDATION FOR FURTHER STUDY

Further study need to be done in a larger population. Demographics such as socioeconomic status, race, occupation and underlying pathology should be included. It is very important that there is a continued education of the pregnant women to recognize that bleeding in first trimester does not always result in an adverse maternal or fetal outcome.

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