

Study of Factors Associated with First Trimester Abortion in a Tertiary Care Hospital of Mumbai

Dipali Sivasane¹, Rekha G. Daver²

Author's Affiliation:

¹Assistant Professor, Department of Obstetrics & Gynecology, Surat Municipal Institute of Medical Education and Research, Surat, Gujarat 395101, India. ²Ex Professor & Head, Department of Obstetrics & Gynecology, GMC hospital and JJ Hospital, Mumbai, Maharashtra 400008, India; Head of Medical Education, Sir H. N. Reliance Foundation Hospital and Research Centre, Mumbai, Maharashtra 400004, India.

Corresponding Author:

Dipali Sivasane, Assistant Professor, Department of Obstetrics & Gynecology, Surat Municipal Institute of Medical Education and Research, Surat, Gujarat 395101, India.

E-mail: dazzlingdip@gmail.com

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Abstract

Introduction: First trimester abortion is the pregnancy loss in first trimester of pregnancy, before 12 weeks of gestation. Threatened miscarriage is a relatively common complication during pregnancy, occurring in approximately 20% of all pregnancies. Vaginal bleeding during the first trimester is associated with an approximate 5.5%–42.7% risk for subsequent complete miscarriage. Previous miscarriage, increasing maternal age, teenage pregnancy, stress, pollutants, smoking, obesity, vascular diseases (such as lupus), diabetes, other hormonal problems, maternal infections especially TORCH, and abnormalities of the uterus are some of the identified risk factors. **Objective:** Present study was conducted to study the profile of pregnant women admitted with complain suggestive of abortion during first trimester of pregnancy and to identify the risk factors associated with it. **Methodology:** This was a cross sectional study done in a tertiary care hospital of Mumbai, Maharashtra. All pregnant women in first trimester with the complain of one or more of the symptoms of abortion like spotting, bleeding, passage of fleshy mass, abdominal pain and passage of grape like substance were included in the study. Their profile was recorded and possible risk factors were identified. **Results:** Out of total 200 patients, 95 (47.5%) patients were having threatened abortion. Out of these 95 patients, pregnancy was continued in 53 (55.8%) patients. It was observed that more than half of the patients were having presenting symptom of bleeding and spotting. Abdominal pain was also a common complain. Around 46% of patients were from age group of 21 to 25 years. Most of the pregnancies were of Gestational age 8 to 12 weeks and most of the patients were having BMI of from 18.5 to 24.9. Around 73% of patients were having no history of previous pregnancy loss. Most of the patients having mild anaemia having haemoglobin level 8 to 10 grams. Out of total 200 study participant, 50 (25%) were TORCH Ig M positive and 103(52%) were TORCH Ig G positive. Apart from idiopathic etiology most common medical risk factor was active TORCH infection which was found positive in 25% of patients. Fever, UTI and Trauma were also among common associated illnesses. **Conclusion:** Bleeding and spotting were the most common presenting symptoms. Patients of age group of 21 to 25 years were most commonly affected. Most of the pregnancies were of Gestational age 8 to 12 weeks and most of the patients were having BMI of from 18.5 to 24.9. In around 50% of patients any of the TORCH Ig MorIgG was positive. Most common risk factor was active TORCH infection which was found positive in 25% of patients. Fever, UTI and Trauma were also among common associated illnesses

Keywords: First Trimester Abortion; TORCH; Bleeding; Spotting.

Introduction

First trimester abortion is the pregnancy loss in first trimester of pregnancy, before 12 weeks of gestation. Quantifying pregnancy loss through miscarriage is difficult.

Threatened miscarriage is a relatively common complication during pregnancy, occurring in approximately 20% of all pregnancies [1,2]. Vaginal bleeding during the first trimester is associated with an approximate 5.5%–42.7% risk for subsequent complete miscarriage [3-8]. Women who experience such bleeding, but do not experience a subsequent complete miscarriage, still have an increased risk for other adverse outcomes such as antepartum haemorrhage, preterm delivery, low birth weight and the possible need for assisted delivery.

There is a modest decrease in the incidence of spontaneous abortion over last few years. An estimated 42 million abortions took place in 2003—down from 46 million in 1995 [9]. This may be due to improved health facilities and better lifestyle. Researchers all over world are working on identifying the risk factors for spontaneous abortion and a woman at risk of undergoing the same. Many of such risk factors are identified and yet many remain un-understood. Major cause of spontaneous abortion is genetic defect followed by blighted ovum. Previous miscarriage, increasing maternal age, teenage pregnancy, stress, pollutants, smoking, obesity, vascular diseases (such as lupus), diabetes, other hormonal problems, maternal infections especially TORCH, and abnormalities of the uterus are some of the identified risk factors.

When family size was larger, first trimester pregnancy loss was often accorded less importance by society. Now, with most couples having single or two children, the loss of individual pregnancy has assumed greater significance. There is now greater recognition of the psychological and psychiatric sequel of abortion. This consideration should be taken into account during management of pregnancy loss.

About 80% of miscarriages occur within the first trimester and the frequency of miscarriage decreases with increasing gestational age. Thus, first trimester is very important period for both mother and foetus. Past history of mother and her proper evaluation help us to understand many factors related to spontaneous abortion.

In India, where majority of women are illiterate and unaware of the importance of antenatal visits, many a times it is not possible to identify a woman

at risk of miscarriage. A large percentage of such patients are seen for the first time in emergency department. Yet, retrograde analysis of such cases gives valuable data to increase our understanding about spontaneous abortion in our country.

Present study was planned to study the profile of pregnant women admitted with complain suggestive of abortion during first trimester of pregnancy and to identify the risk factors associated with it.

Methodology

This was a cross sectional study done in a tertiary care hospital of Mumbai.

Study population: All pregnant women in first trimester with complain of bleeding, spotting pv, abdominal pain admitted to the hospital.

Study duration: This study was done in for the period of 2 year.

Inclusion criteria: All patients fulfilling all of the following criteria were included in the study

- Pregnant women in first trimester with admitted in the gynaecology department of the hospital with complain of one or more of the symptoms of abortion like spotting, bleeding, passage of fleshy mass, abdominal pain and passage of grape like substance provided intrauterine pregnancy confirmed.
- Patients willing to give informed written consent.

Permission was obtained from the hospital and ethical Committee of the institute to conduct the study.

All patients fulfilling the inclusion criteria were included in the study. All patients were explained regarding nature and type of study and after that informed written consent was taken. If patients not agree to give written consent, they were excluded from the study without affecting course of treatment. Confidentiality of data was maintained at all level of the study.

Once patient was stable from their complains and all emergency treatment given, they were interviewed using pre tested semi-structured questionnaire. All necessary treatment and intervention done with full aseptic precautions. Outcome of pregnancy was recorded. Their basic socio-demographic data along with possible risk factors were recorded in questionnaire. TORCH Ig M and Ig G were done in these patients.

All data were verified and entered in Microsoft Excel. Data cleaning was done meticulously. Data were analysed using SPSS version 20.

Results

Total deliveries 4421 were done during the study period in the hospital. Out of these, there were total 250 abortions. Out of these 250 abortions, 200 (80%) were first trimester abortions and 50 (20%) were second trimester abortions. All 200 patients of first trimester abortions were included in the study.

All pregnant women in first trimester with the complain of one or more of the symptoms of abortion like spotting, bleeding, passage of fleshy mass, abdominal pain and passage of grape like substance were included in the study. Table 1 shows frequency of these presenting symptoms. It was observed that more than half of the patients were having presenting symptom of bleeding and spotting. Abdominal pain was also a common complain (Table 1).

Table 2 shows classification of abortion of all 200 patients. Out of total 200 patients, 95 (47.5%) patients were having threatened abortion. Out of these 95 patients, pregnancy was continued in 53 (55.8%) patients. Thus, out of total 200 patients with complain suggestive of abortion in first trimester, pregnancy was continued in 53 (26.5%) patients. Incomplete abortion was observed in 52 (26%) of patients (Table 2).

Table 1: Presenting Symptoms of Abortions (Multiple Responses) (N=200)

Presenting Symptoms	Patients (%)
Bleeding	107 (53.5)
Spotting	93 (46.5)
Abdominal pain	56 (28.0)
Passage of fleshy mass	22 (11.0)
Passage of grape like substance	2 (1.0)

Table 2: Classification of Stages of Abortion (N=200)

Stage of abortion	Patients (%)
Threatened abortion- pregnancy continued	53 (26.5)
Threatened abortion- pregnancy aborted	42 (21.0)
Incomplete	52 (26.0)
Inevitable	22 (11.0)
Missed	21 (10.5)
Complete	8 (4.0)
V. mole	2 (1.0)

Table 3 shows profile of study participants. It was seen that around 46% of the patients were from age group of 21 to 25 years. Most of the pregnancies were of Gestational age 8 to 12 weeks and most of the patients were having BMI of from 18.5 to 24.9. Around 73% of patients were having no history of previous pregnancy loss. Most of the patients having mild anaemia having haemoglobin level 8 to 10 grams (Table 3).

More than 1 type of IgM or IgG antibody is seen in many patients [11].

Out of total 200 study participant, 50(25%) were TORCH Ig M positive and 103 (52%) were TORCH Ig G positive. In around 50% of patients any of the TORCH Ig M or Ig G was positive. For Ig M antibody, most common infection detected was Toxoplasma (10%) and for Ig G antibody, most common infection detected was Cytomegalo virus (23%) infection (Table 4).

Table 3: Profile of patients (N=200)

Variables	Patients (%)
Maternal Age (in Years)	
<21	35 (17.5)
21 to 25	92 (46.0)
25 to 30	47 (23.5)
30 to 35	18 (9.0)
>35	8 (4.0)
Gestational Age (weeks)	
4-6	15 (7.5)
6- 8	52 (26.0)
8- 10	41 (40.5)
10-12	92 (46.0)
BMI category	
Underweight (16.5 - 18.4)	7 (3.5)
Normal (18.5 - 24.9)	167 (83.5)
Overweight (25.0 - 29.9)	14 (7.5)
Obese (≥ 30)	12 (6.0)
Gravida	
G1	78 (39.0)
G2	52 (26.0)
G3	45 (22.5)
≥G4	25 (12.5)
Previous Pregnancy Loss* (A/MTP)	
NIL	147 (73.5)
MTP1	6 (3.0)
A1	37 (18.5)
A2	9 (4.5)
≥A3	3 (1.5)
Anemia (HB in gm)	
Mild (8-10)	184 (92.0)
Moderate (6-8)	16 (8.0)

Table 4: TORCH infection among study participants (N=200)

Infection	Ig M Positive (%)	Ig G Positive (%)
Toxoplasma	20 (10.0)	16 (8.0)
Rubella	15 (7.5)	20 (10.0)
Cytomegalo virus	10 (5)	46 (23.0)
Herpes Simplex	5 (2.5)	28 (14)

Table 5: Risk Factors associated with study participants (N=200) (Multiple responses)

Risk Factors	No. (%)
Medical illness	127 (63.5)
TORCH IgM	50(25)
Fever	17 (16.5)
UTI without fever	20 (10.0)
H/O Trauma, travel, coitus	15 (7.5)
Vaginitis	10 (5.0)
Cardiac diseases	05 (2.5)
TB	05 (2.5)
HIV	04 (2.0)
VDRL	03 (1.5)
Jaundice	01 (0.5)
Fibroid	02 (1.0)
Ovarian cyst	01 (0.5)
Bicornuate uterus	02 (1.0)
Hormonal	19 (9.5)
Thyroid disorder	09 (4.5)
DM	05 (2.5)
H/O PCOD	04 (2.0)
Hyperprolactinemia	01 (0.5)
Idiopathic	96 (48.0)

Table 5 shows identified associated risk factor of all 200 patients of first trimester abortions. For 96 (48%) patients, no risk factor was identified. Around 127 (63.5%) patients were identified with medical illnesses. Most common risk factor was TORCH infection which was found positive in 25% of patients. Fever, UTI and Trauma were also among common associated illnesses. Total 19 (9.5%) patients were associated with hormonal disorder. Thyroid disorder was most common among hormonal disorder (Table 5).

Discussion

During the study period, total deliveries were 4421 and Out of this, there were total 250 abortions occur. Out of these 250 abortions, 200 (80%) were first trimester abortions and 50 (20%) were second trimester abortions. The prevalence rate of first trimester abortion was found to be 4.5%.

Elizabeth E Puscheck et al. has found that 15-20% of recognized pregnancies result in miscarriage. About 80% of miscarriages occur within the first trimester. The frequency of miscarriage decreases with increasing gestational age [10]. It is corresponding with our study.

Abortion presents clinically as vaginal bleeding with or without cramping abdominal pain. Vaginal bleeding varies from minimal spotting to heavy bleeding to passage of clots. Most common clinical feature of 1st trimester abortion in present study was bleeding per vagina in 107 (54%) patients. Spotting was seen in 93 (47%) patients. Other symptoms were abdominal pain in 56 (28%) and passage of fleshy mass in 22 (11%) patients. 2 (1%) patients presented as passage of grape like structure in cases of vesicular mole. Overlapping symptoms were also seen in many patients. Patient with spontaneous abortion come with complaint of bleeding without pain, bleeding with pain, with or without signs of blood loss or absence of bleeding with decreased symptoms of pregnancy [11].

David A Viniker et al. found that the first miscarriage symptom is vaginal bleeding, which can range from spotting to being heavier than a period. A little spotting may be an early sign of miscarriage although fortunately this may amount to no more than a threatened miscarriage and the pregnancy continues. The second miscarriage symptom is pelvic pain [11].

Hasan R et al found in their study that women who reported heavy bleeding (n=97) had nearly three times the risk of miscarriage compared with women without bleeding during the first trimester. Heavy bleeding in the first trimester, particularly when accompanied by pain, is associated with higher risk of miscarriage. Spotting and light episodes are associated with less risk [12].

When the maternal age was studied in cases of abortion, considering the most common reproductive age group, it was found that maximum number of patients 92 (46%) were in age group of 21-25 years. It was followed by 47 (23%) patients having age group of 25-30 years. 8 (4%) of patients had age of >35 years.

Jauniaux E et al. found that advancing maternal age is the leading factor associated with a greater risk of spontaneous abortion [13].

Nybo Anderson A et al. found in their study that High maternal age was a significant risk factor for spontaneous abortion. Fetal loss is high in women in their late 30s or older, irrespective of reproductive history. The risk of a spontaneous abortion was

8.9% in women aged 20-24 years and 74.7% in those aged 45 years or more [14].

During evaluation of the association of an diagnosis of miscarriage with various clinical symptoms and historical factors in a cohort of women presenting with first trimester bleeding, Gracia C R et al. showed that extremes in age i.e. <25 & >35 yrs is associated with miscarriage [15]. This is corresponding with our study.

It was found that only 15(7%) of patients were of 4-6 weeks of gestation. Unrecognised pregnancy loss in early gestation may be responsible for minimum number of patients in 4-6 weeks of gestation. Maximum number of patients i.e. 92(46%) of patients were of 10-12 weeks gestation.

Similar observation was seen in study of Liang RY et al where maximum occurrence of spontaneous abortions was during period of 8-13 gestation weeks. Mean gestational weeks at miscarriage were (10.1±3.1) weeks and the incidence of first-trimester spontaneous abortion was 7.3% (95% CI: 6.8%-7.7%), accounting for 73.7% of all the spontaneous abortion cases. A peak for risk of miscarriage was around 8-13 weeks, accounting for 37.7% of all spontaneous abortion [16].

In present study, out of 200 patients, 167 (83%) were with normal (18.5-24.9) Body Mass Index, so accordingly maximum number of patients who continued pregnancy as well as aborted were with normal BMI.

When maternal Body Mass Index was correlated with outcome of pregnancy, it was found that incidence of abortion was 38% in patients with normal BMI. But it went on increasing to 83% in overweight and 100% in obese patients with increase in BMI. As the BMI increased, incidence of abortion increased. This shows positive correlation of BMI with pregnancy loss. Leptin, a 167-amino acid poly peptide, is secreted mainly by adipocytes. It is involved in signaling the amount of body fat to hypothalamic nuclei, leading to body weight homeostasis. 92% cases were associated with mild anemia and 8% with moderate anemia. Association of mild anemia may be because of poor socioeconomic status of patients in our study. No patient had severe anemia.

Though possible etiologies and associated risk factors for first trimester pregnancy loss have been identified, many of times cause is not found. When all other causes of abortion are ruled out, it is considered as idiopathic in nature. In our study, 96 patients did not have any associated risk factor. Extensive chromosomal karyotyping

and genetic mapping was not possible in our study so we could not make out the incidence of chromosomal abnormalities. However the reported rate of chromosomal abnormality responsible for spontaneous abortion is ~50%.

Among maternal causes, apart from maternal age, weight and previous obstetric history, other causes and risk factors are explained with special emphasis on TORCH.

In our study, thyroid hormone imbalance is the most common cause associated with abortion compared to other hormones seen in 9 (4.5%) cases. Out of them 8 cases were of hypothyroidism and 1 case was of hyperthyroidism. It shows that either increase or decrease in thyroid hormone levels increases risk of pregnancy loss.

V Rama Chandra Rao et al. conducted a study to determine the frequency of hypothyroidism in women with recurrent pregnancy loss in first trimester in the Indian population. Hypothyroidism was found in 4.12% women with RPL. The study demonstrates that hypothyroidism has a statistically significant relationship with recurrent pregnancy loss in the first trimester and suggests that diagnosis of hypothyroidism could help couples with recurrent pregnancy loss to have a successful outcome in subsequent pregnancies [17].

Maternal fever is considered as high risk factor for abortion. Various maternal infections are associated with fever. In our study 4 patients were suffering from malaria and 2 patients were having URTI. 4 patients had high grade fever with chills and 7 patients had only fever but cause of fever was not found.

Kline J et al tested the hypothesis that maternal fever during pregnancy is a risk factor for spontaneous abortion in a case-control study by comparing the frequencies and timing of fevers of 100°F (37.78°C) or more among three groups of women: women having euploid abortions, women having aneuploid abortions, and women delivering at 28 weeks gestation or later (controls). It was hypothesized that if fever was an antecedent, rather than a symptom of spontaneous abortion, an association would be detected with euploid but not with aneuploid abortions. Among public patients, reported fevers were significantly more frequent among euploid abortions than among controls (18% vs. 7.1%), whereas reported fevers were not more frequent among aneuploid abortions (3.9% vs. 7.1%). It proves positive correlation of fever and loss of pregnancy which is corresponding with our study [18].

In present study, urinary tract infection was seen in 20 (10%) and reproductive tract infection in form of vaginitis was seen in 10 (5%) patients.

Thot et al has found that implicating infectious agents as the cause of habitual abortions is very important. They have confirmed during the last 10 years that the single best agent to interrupt a chain of spontaneous abortions is a course of broad-spectrum antibiotics in case of reproductive tract infections. Isolated studies in the literature implicate the following bacteria: Chlamydia trachomatis, Mycoplasma hominis, Ureaplasma urealyticum, Listeria monocytogenes, Salmonella typhosa, Vibrio comma, Plasmodium and Brucella. The suspected viruses are herpes, cytomegalovirus, variola and varicella. Candida albicans and Toxoplasma gondii also have been implicated. the pregnancy following a miscarriage without intervening antibiotic therapy has a high chance of becoming a high-risk pregnancy with an unfavorable course, including both maternal and fetal complications [19].

Prevalence of toxoplasmosis was highest followed by Rubella infection among patients with abortion. Even P. Yashodhara et al. in her study of 175 women found toxoplasma specific IgM in 13.1% which is comparable to our study.

This incidence is almost similar to incidence in a study conducted by Turbadkar D et al. to find the prevalence of *Toxoplasma*, Rubella, CMV, HSV-II infection in pregnant women by demonstrating the presence of IgM and IgG antibodies by ELISA test. In their study, IgM antibodies were positive in 40 (10.52%) for *Toxoplasma*, 102 (26.8%) for Rubella, 32 (8.42%) for CMV and 14 (3.6%) for HSV-II. Except high prevalence of Rubella other infections are corresponding to or study. This difference may be due to geographical differences [17].

In our study, among IgG positive cases highest incidence was seen for cytomegalovirus infection in 23% cases followed by Herpes simplex infection in 14% cases. 10% and 8% cases were positive for Rubella and Toxoplasma infection. Presence of IgG antibody indicates old infection and present immunity and less susceptibility for infection. Patients with absent IgG antibody indicates more susceptibility for the infection. In present study, least susceptibility was seen in Cytomegalovirus (70%). Increased susceptibility for Toxoplasma and Rubella infection compared to CMV and HSV infection supports the observation that both of them have adverse effect on pregnancy outcome.

Conclusion

Bleeding and spotting were the most common presenting symptoms. Patients of age group of 21 to 25 years were most commonly affected. Most of the pregnancies were of Gestational age 8 to 12 weeks and most of the patients were having BMI of from 18.5 to 24.9. In around 50% of patients any of the TORCH Ig M or Ig G was positive. Though in 48% cases cause was not seen, Most common risk factor in other cases seems to be active TORCH infection which was found positive in 25% of patients toxoplasmosis being commonest. Hormonal disturbances, fever, UTI and Trauma were also among common associated illnesses.

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