

Threatened abortions – importance of ultrasound, management and outcome

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SUMMARY

Introduction. First trimester abortion is the pregnancy loss in first trimester of pregnancy, before 12 weeks of gestation. Past history of the mother and her proper clinical evaluation and use of ultrasound will help us to understand many factors related to spontaneous abortion. The aim is to study the role of ultrasound, management and outcome of threatened abortions.

Materials and methods. The study is mixed design study which includes study of records of patients with threatened abortions and new patients with threatened abortions followed up to end of first trimester over a period of 2 years.

Results. Presence of sc bleed does not significantly affect the outcome of pregnancy in threatened abortion (p:0.25). Patients of threatened abortion with subchorionic bleed >20cc had 100% risk of abortion. 60% patients of threatened abortion, who had bleeding for 5-10 days continued their pregnancy. 50% patients of threatened abortion with bleeding for >10 days continued their pregnancy. Patients who received 3-7 days treatment 29(51%) patients continued their pregnancy and 28(49%) patients aborted.

Conclusions. Ultrasound is the most important diagnostic and prognostic tool in early pregnancy bleeding. Ultrasound is a very useful modality for the proper management of incomplete, complete, missed and threatened abortions. More than 50% pregnancy with threatened abortion continue with proper hospital care and treatment, bed rest and reassurance. Small asymptomatic subchorionic bleed do not worsen pregnancy outcome. However large subchorionic collection may be associated with adverse pregnancy outcome. Ultrasound saves patient's anxiety, financial loss and valuable time for women. However ultrasound may not be easily available for all cases.

Key words: threatened abortion; subchorionic bleed; ultrasound; volume of subchorionic bleed; outcome

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INTRODUCTION

Pregnancy loss is such a painful and emotional experience. But when she comes to know that her pregnancy is not salvageable, it is a huge psychological trauma for her and her family. The word abortion derives from the latin “*aboriri*” – to miscarry. Now used synonymously, the terms spontaneous abortion & miscarriage imply the natural loss of pregnancy before viability.

First trimester abortion is the pregnancy loss in first trimester of pregnancy, before 12 weeks of gestation. Chemical pregnancy is defined as a pregnancy where serum β HCG is raised but there is no sac seen on USG. About 80% of miscarriages occur within the first trimester and the frequency of miscarriage decreases with increasing gestational age. Past history of the mother and her proper clinical evaluation and use of ultrasound will help us to understand many factors related to spontaneous abortion. It will help to prevent recurrent abortions & improve pregnancy outcome, and reduce the associated repeated physical & psychological trauma to the patients and their families. This study is conducted to identify those risk factors



Fig. 1. This endovaginal ultrasonographic image demonstrates a subchorionic hemorrhage (SH) less than half the gestational sac size



Fig. 2. USG plate showing 11 week fetus with hypoechoic area suggestive of subchorionic hematoma

& study the use of ultrasound as imaging technique for management of first trimester abortions. Approximately 5% of couples trying to conceive have 2 consecutive miscarriages, and approximately 1% of couples have 3 or more consecutive losses.

AIM

This study is analysis of 95 cases of first trimester threatened abortions carried out in a tertiary care centre at metropolis city with following aims and objectives: to study the role of ultrasound in management of first trimester abortions and to study outcome in threatened abortion in first trimester abortion till the end of first trimester.

MATERIAL AND METHODS

This is a analytical study of 95 cases of first trimester abortions carried out at a tertiary care Centre in a metropolis in India. H.N. Hospital and Research Centre, Mumbai.

Study design

- Mixed study design
- Includes analysis of pre existing data of patients coming with first trimester abortions and new patients admitted in view of first trimester abortions.

Selection criteria: All pregnant women with clinical pregnancy with first trimester bleeding PV or spotting PV in the study period.

Exclusion criteria: Women conceived with IVF- ET.

Data collection technique, tools and analysis

- Patients presenting with bleeding or spotting PV to OPD or emergency department were enrolled in this study.
- Patients were admitted and were analysed on the basis of detailed history, examination, investigations with ultrasound and management.
- Patients followed up till end of the first trimester in regard to continuation of pregnancy or abortion.
- Past records in medical record department were studied and analysed.
- After data collection, it was entered in Excel sheet and analysed.

Parameters to be studied

- Etiology and presentation of first trimester abortion.
- Ultrasound findings in first trimester abortions.
- Management of first trimester abortion.
- Outcome in case of threatened abortion.

RESULTS

Among threatened abortion, 18 (51%) patients with gestational age of 10-12 weeks aborted and 15(48%) patients of 6-8 weeks gestation aborted. Maximum patients among threatened abortion who had least incidence of abortion were 3(30%) with 4-6 weeks of gestation and 6 patients(32%) were of 8-10 weeks of gestation. In our study, no significant correlation has been found between gestational age and outcome of pregnancy.

Among patients of threatened abortion who continued their pregnancy (53), 35(66%) patients' USG were not having subchorionic bleed. Among patients of threatened abortion who aborted, 33(79%) patients' USG were not having subchorionic bleed. Presence of sc bleed does not significantly affect the outcome of pregnancy in threatened abortion ($p:0.25$).

Size of the subchorionic bleed on USG can be a predictor of the pregnancy outcome. 22 (81%) patients of threatened abortion had <20 cc subchorionic bleed on sonography, 19 (86%) of them continued their pregnancy. Patients of threatened abortion with subchorionic bleed >20cc had 100% risk of abortion. Correlation

between quantity of subchorionic bleed and pregnancy outcome is highly significant. The chances of pregnancy continuation significantly increases if SC bleed is less than 20 cc.

Number of patients divided according to days of stay: 69% patients of threatened abortion, who required treatment for <3 days continued their pregnancy. 67% patients of threatened abortion, who received treatment for >7

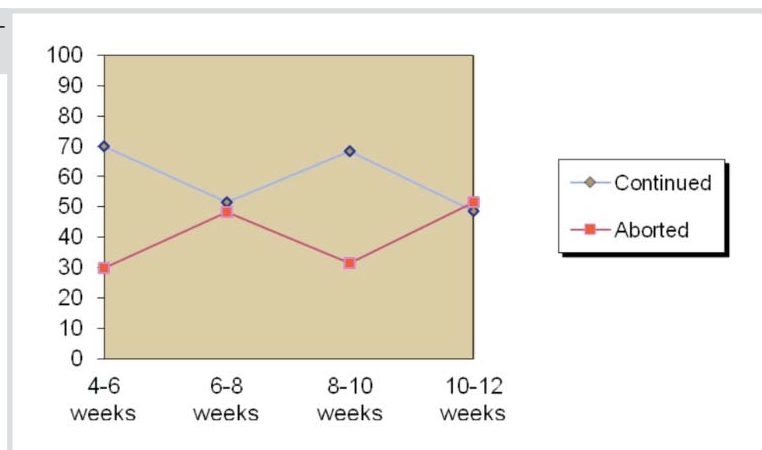
days could continue their pregnancy. But out of 57 patients who received 3-7 days treatment 29(51%) patients continued their pregnancy and 28(49%) patients aborted. The duration of stay and outcome of pregnancy are not significantly associated (p: 0.42). Thus, duration of stay does not influence the outcome.

Out of 67(70%) patients of threatened abortion with bleeding for <5 days, 37(55%) pa-

Tab. 1. Gestational age and outcome of threatened abortion

Gest age	Patients	Pregnancy Continued		Pregnancy Aborted	
		patients	percentage	patients	percentage
4-6	10	6	60	4	40
6-8	31	16	52	15	48
8-10	19	13	68	6	32
10-12	35	17	49	18	51
TOTAL	95	53	56	42	44

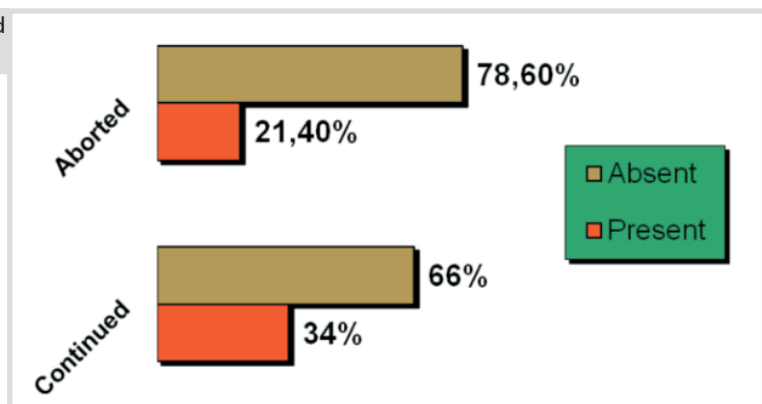
Graph. 1. Gestational age and outcome of threatened abortion



Tab. 2. Subchorionic bleed and outcome of threatened abortion

SC Bleed On USG	Patients	SC Bleed Present		SC Bleed Absent	
		patients	percentage	patients	percentage
Pregnancy Continued	53	18	34	35	66
Pregnancy Aborted	42	9	21	33	79
TOTAL	95 (100%)	27	28	68	72

Graph. 2. Subchorionic bleed and outcome of threatened abortion



tients continued their pregnancy, whereas 30 (45%) patients aborted. 60% patients of threatened abortion, who had bleeding for 5-10 days continued their pregnancy. 50% patients of threatened abortion with bleeding for >10 days continued their pregnancy. Increased incidence of abortion was seen in patients with prolonged bleeding in our study, but significant correlation could not be proved (p:0.26) as outcome of abortion is associated with duration of bleeding as well as severity of bleeding.

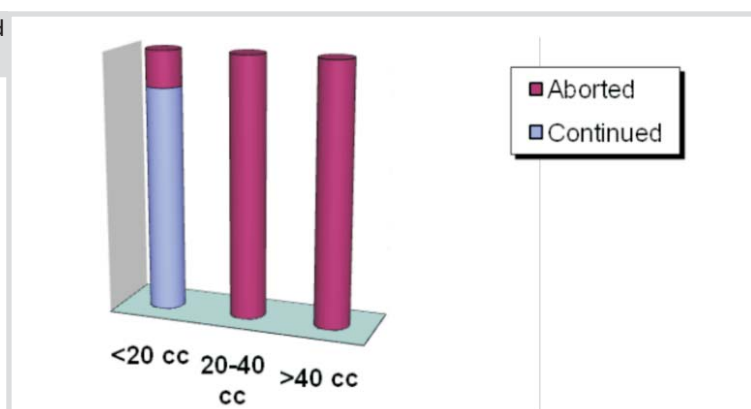
DISCUSSION

First trimester is the crucial period for baby. Hence any complication during this period directly affects the pregnancy outcome. Large number of studies have been done on first trimester complications mainly on abortions. Present study has been conducted to study presenting symptoms of abortion, importance of ultrasound and management of abortion and outcome. When gestational age was studied, it was found that only 15 (7%) of patients were

Tab. 3. Quantity of sc bleed and outcome of pregnancy

SC Bleed On USG (CC)	Patients (27)	Outcome Of Pregnancy	
		Continued	Aborted
<20	22 (81%)	19 (86%)	3 (14%)
20- 40	1 (4%)	0	1 (100%)
> 40	4 (15%)	0	4 (100%)
TOTAL	27	1	9

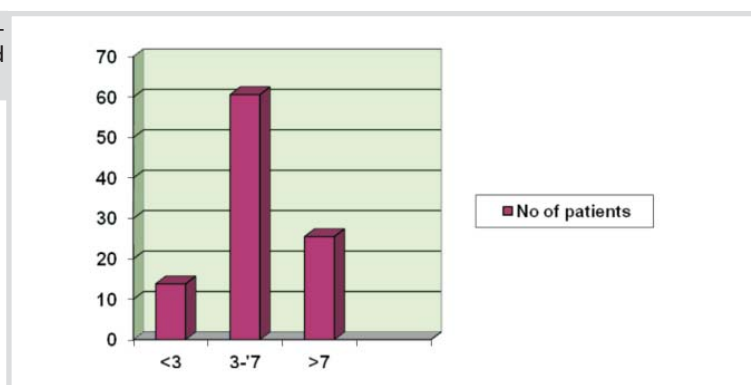
Graph. 3. Quantity of SC bleed and outcome of pregnancy



Tab. 4. Duration of hospitalization and outcome in threatened abortion

Duration of stay (days)	Patients	Pregnancy Continued		Pregnancy Aborted	
		patients	percentage	patients	percentage
<3	13 (13%)	9	69	4	31
3-7	57 (60%)	29	51	28	49
>7	25 (26%)	15	67	10	33
TOTAL	95	53	56	42	44

Graph. 4. Duration of hospitalization and outcome in threatened abortion



of 4-6 weeks of gestation. Unrecognized 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.

When gestational age was correlated with outcome of pregnancy, it was found that incidence of abortion was highest 51% in 10-12 weeks, and minimum 30% in 4-6 weeks. No significant correlation was seen between gestational age & outcome of pregnancy in our study (p:0.28).

Similar observation was seen in study of Liang RY et al. [1] where maximum occurrence of spontaneous abortions was during period of 8-13 gestation weeks. the 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. Also, Martin Whittle et al. [2] observed in their study of 232 pregnant women showing „virtually complete pregnancy loss by the end of the embryonic period” (10 weeks LMP) with a pregnancy loss rate of only 2 percent after 8.5 weeks LMP.

Subchorionic bleed is collection of blood between chorion and decidua. It is seen in many cases of threatened abortion on ultrasonography as a hypoechoic area between them. In our study, subchorionic bleed was present in 28%

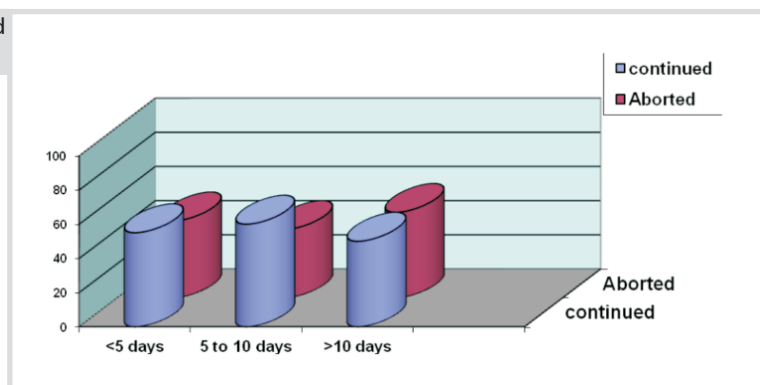
of cases in threatened abortion. Out of the patients who continued pregnancy, 33% cases were having subchorionic bleed in USG, and in 66% cases no bleed was seen. Among patients who aborted, only 21% cases were associated with subchorionic bleed on sonography. So in our study, no significant association was seen (p:0.25). Ben- Haroush et al. [3] found in their study that, Subchorionic Hematoma was present in 9% of patients with clinical signs of threatened abortion; out of them pregnancy terminated in abortion in 8.7% cases. There was no association of pregnancy outcome with duration of vaginal bleeding, gestational age at diagnosis of the hematoma. Nagy S et al. [4] observed in their study that the incidence of intrauterine hematoma in the first trimester in a general obstetric population was 3.1%. A subchorionic hematoma was significantly correlated with an increased risk for adverse pregnancy outcome. Their study suggested that the presence of an intrauterine hematoma during the first trimester may identify a population of patients at increased risk for adverse pregnancy outcome.

Pedersen et al. [5] got 18% incidence of subchorionic hematoma on sonography in cases with threatened abortion. The overall abortion rate was 10% and the same did not increase with presence of subchorionic hematoma. There was no association between hematoma and pregnancy outcome. Wide variations have been seen in many studies from 0 to 44%. It can be explained in part by small number of

Tab. 5. Duration of bleeding and outcome of threatened abortion

Bleeding duration (days)	Patients	Pregnancy Continued		Pregnancy Aborted	
		patients	percentage	patients	percentage
< 5	67	37	55	30	45
5 to 10	20	12	60	8	40
>10	8	4	50	4	50
TOTAL	95	53	56	42	44

Graph. 5. Duration of bleeding and outcome of threatened abortion



patients studied and in part by different patient population.

Goldstein et al. [6] conducted study on fifty-six patients with clinical threatened abortion for evaluation by sonography. In the absence of subchorionic bleeding, 100% of the pregnancies progressed well; in the presence of subchorionic bleeding the positive outcome was reduced to 80%. In addition to signs of fetal life on sonography, subchorionic bleeding is an important factor affecting the outcome of pregnancy in patients with clinical threatened abortion.

Presence of subchorionic hematoma and its size are the prognostic factors for threatened abortion. Amount of hematoma was measured on sonography. Correlation between quantity of subchorionic bleed and pregnancy outcome is highly significant ($p:0.007$). The chances of pregnancy continuation significantly increases if SC bleed is less than 20 cc. Hence size of hematoma on sonography can be a predictor for risk of pregnancy.

In a study conducted by Bennett G L et al. [7] the abortion rate nearly doubled when the separation was large (18.8%) compared with small and moderate hematomas (7.7% and 9.2%, respectively). A large separation was found to be associated with an almost threefold increase in risk of spontaneous abortion. So it was concluded that for women with a subchorionic hematoma that is sonographically identified, fetal outcome is dependent on size of the hematoma. Similar conclusion is drawn from present study.

Chhabra et al. [8] found that sonographic visualization of a subchorionic hemorrhage is important in a symptomatic woman because pregnant women with a demonstrable hematoma have a prognosis worse than women without a hematoma. The subchorionic hematoma often regresses, especially if it is small or moderate in size. Large hematomas, with separation of at least 30-40% of chorion away from endometrium, may enlarge further, compressing the gestational sac consequent spontaneous abortion. Contrary to our study, Pedersen and Montene et al's prospective study showed no association between abortion rate and hematoma size. Subchorionic hematomas are common and insignificant sonographic findings in pa-

tients with vaginal bleeding in weeks 9-20 of pregnancy.

When duration of hospital stay was studied regarding outcome of pregnancy. Among threatened abortion 67% patients received treatment for >7 days in hospital and bed rest and continued their pregnancy. In spite of getting treatment out of 57 patients 49% aborted in 3-7 days. Hence significant correlation could not be made between days of hospitalization and pregnancy outcome. But Ben-Haroush et al found in his study that the women who were hospitalized and adhered to bed-rest had fewer spontaneous abortions (6.5% versus 23.3%, $p = 0.006$). In our analysis of duration of bleeding, among threatened abortion patients with <5 days bleeding 37 (55%) continued their pregnancy whereas 30(45%) aborted. When bleeding was more than 10 days, 50% patients i.e. 4 out of 8 patients continued their pregnancy and 50% aborted. Increased incidence of abortion was seen in patients with prolonged bleeding but significant correlation could not be proved ($p:0.26$). Ben-Haroush et al conducted a study where he did not find any correlation between duration of bleeding and outcome of pregnancy.

CONCLUSIONS

Ultrasound is the most important diagnostic and prognostic tool in early pregnancy bleeding. Ultrasound is a very useful modality for the proper management of incomplete, complete, missed and threatened abortions. More than 50% pregnancy with threatened abortion continue with proper hospital care and treatment, bed rest and reassurance. Bleeding is most common presenting symptom of abortion. In threatened abortion, prognosis of pregnancy worsens with increased amount of bleeding p/v as well as prolonged bleeding. Maximum occurrence of spontaneous abortion is seen between 10-12 weeks of gestation and continuation of pregnancy is in 8-10 weeks. Small asymptomatic subchorionic bleed do not worsen pregnancy outcome. However large subchorionic collection may be associated with adverse pregnancy outcome. Ultrasound saves patient's anxiety, financial loss and valuable time for women.

REFERENCES

1. **Liang RY, Ye RW, Li HT et al.** Study on the current status of spontaneous abortion of primigravida women in Jiang of Zhejiang province, China. *Zhonghua Liu Xing Bing Xue Zahi* 2010 Jul;31(7):755-8.
2. **Jauniaux E, P. Kaminopetros H. El-Rafaey.** Early pregnancy loss. In: Martin J. Whittle and C. H. Rodeck. *Fetal medicine: basic science and clinical practice*. Edinburgh: Churchill Livingstone.1999.p. 836-37.
3. **Ben-Haroush A, Yogev Y, Mashiach R, Meizner I.** Pregnancy outcome of threatened abortion with subchorionic hematoma: possible benefit of bed-rest? *Obstet Gynecol* 2003 Jun;5(6):422-4.
4. **Nagy S, Bush M, Stone J et al.** Clinical significance of subchorionic and retroplacental hematomas detected in the first trimester of pregnancy. *Obstet Gynecol* 2003 Jul;102(1):94-100.
5. **Pedersen JF, Mantoni M.** Prevalence and significance of subchorionic hemorrhage in threatened abortion- sonographic study, *AJR Am J Roentgenol* 1990 Mar.154:535-7.
6. **Goldstein SR, Subramanyam BR, Raghavendra BN et al.** Subchorionic bleeding in threatened abortion: sonographic findings and its significance. *AJR Am J Roentgenol* ,1983, November; 141(5):975-8.
7. **Bennett GL, Bromley B, Lieberman E, Benacerraf BR.** Subchorionic hemorrhage in first-trimester pregnancies: prediction of pregnancy outcome with sonography. *Radiology*[Internet]. 1996 Sep;200(3):803-6;1996 Sep; 200(3):803-6. Available from MEDLINE: <http://www.ncbi.nlm.nih.gov/pubmed/8756935>.
8. **Chhabra A, Batra K, Mohsen NA et al.** Medscape reference[Internet]. Subchorionic Haemorrhage. Updated on 2009 Jun 23. Available from: emedicine.medscape.com/article/404971JF.