

Outcome of First Trimester Threatened Miscarriage with or without Subchorionic Hematoma

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Abstract:

Background: Subchorionic hematoma in the first trimester of the pregnancy increases the risk of spontaneous miscarriage. The risk increases with increasing maternal age, BMI, earlier gestational age (less than 9 weeks) and hematoma size. Parity and placental site do not significantly increase the risk of miscarriage.

Objective: To study the significance of subchorionic hematoma finding on outcomes of the first trimester threatened miscarriage.

Patients and Methods: This prospective cohort study was conducted on 144 pregnant ladies, 75 women had Subchorionic hematoma (study group) matching with 69 women without Subchorionic hematoma (control group). The demographic feature, placental site, size of hematoma and pregnancy outcomes were analyzed.

Results: The results showed that there was a significant association between the average age of pregnant ladies who presented with subchorionic hematoma (were the ladies presented with subchorionic hematoma is significantly older (31.17 ± 2.785) than those without a hematoma (23.50 ± 3.241), $p < 0.05$), between the body mass index and subchorionic hematoma (the body mass index of first group is significantly more than those of the second group, (31.50 ± 1.738) vs. (28.75 ± 1.710), p value < 0.05), between the gestational age of presentation and subchorionic hematoma (in the first group (8.07 ± 1.07 weeks) versus (11.09 ± 0.8 weeks) in with no hematoma group, p value < 0.05), and between the hematoma size and miscarriage. 5.3% of cases with small subchorionic hematoma underwent miscarriage versus 76.8% continued beyond the 24 weeks while 26.3% of cases with medium sized subchorionic hematoma underwent miscarriage versus 14.3, and 68.4% of large subchorionic hematoma cases underwent miscarriage versus 8.9%, with a $p < 0.05$. The results showed that there was no statistically significant difference in parity between the two groups. Para 1 to 2 was 62.7% in the subchorionic hematoma group versus 50.7% in the no hematoma group, and Para 3 to 4 was 37.3% in the subchorionic hematoma group versus 49.3% in the no hematoma group, with a p value > 0.05 , and no statistically significant difference in the placental site between the two groups, the placenta was anterior in 52% of the subchorionic hematoma group versus 63.8% in the no hematoma group, and it was posterior in 48% in the subchorionic hematoma group versus 36.2% in the no hematoma group with a $p = 0.153$.

Conclusion: Subchorionic hematoma in the first trimester of the pregnancy increases the risk of spontaneous miscarriage.

Keywords: threatened miscarriage, subchorionic hematoma, abdominal ultrasound

Introduction

Miscarriage is the spontaneous or induced termination of pregnancy before fetal viability⁽¹⁾. Because popular use of the word abortion implies a deliberate pregnancy termination some prefer the word miscarriage to refer to spontaneous fetal loss before viability⁽²⁾. The most common symptom of a miscarriage is vaginal bleeding⁽³⁾. This can vary from light spotting or brownish discharge to heavy bleeding and bright red blood. The bleeding may come and go over several days. However, light vaginal bleeding is relatively common during the first trimester of pregnancy (the first 12 weeks) and does not necessarily indicate a miscarriage. Women who seek clinical treatment for bleeding during pregnancy, about half of them will have miscarry⁽⁴⁾. Subchorionic Hematoma (SCH) is described as the collections with circular or crescent-shaped echogenicity localized between the chorionic membrane and the uterine wall⁽⁵⁾. The etiology of SCH is doubtful. Most widely accredited mechanism is minimal placental abruption⁽⁶⁾. SCH has been reported to occur with a varying incidence of 4- 48% in pregnancies, which experienced vaginal bleeding

in early stage. In women with subchorionic hematoma, the outcome depends on the size of the hematoma, the mother's age, and the fetus's age. If it is small or moderate in size, the subchorionic hematoma often regresses⁽⁷⁾. The clot either bleeds itself out or the body absorbs it. However, if the hematoma is large in size, it strips away at least 30% to 40% of the placenta away from the endometrium. If it goes undetected and continues to grow, it may lead to a premature labor and low birth weight infant. It can also release completely from the uterus and cause the fetus and placenta to miscarry⁽⁸⁾. It has been said that it may likely represent an incidental finding, therefore, and when small and a symptomatic, may be of no clinical significance. However, larger hematomas are more likely to be detected later in pregnancy, and may be associated with a poor outcome, such as late miscarriages or preterm delivery⁽⁹⁾.

Patients and Methods

This prospective cohort study was conducted on a randomly selected 150 pregnant women presented at antenatal care out-patient clinic in Al-Elwiya Maternity Teaching Hospital/ Baghdad during the

period from (1st of December 2014 to 1st of December 2015). The study sample was divided in two groups, 75 patients presented with threatened miscarriage and subchorionic hematoma “representing the cohort exposed group” and 75 patients of threatened miscarriage without any ultra sound evidence of subchorionic hematoma. The inclusion criteria of our study were all multiparous lady (P1 - P4) with a previous normal vaginal deliveries of a known regular last menstrual period (LMP) and they were in their first trimester of pregnancy; presented as threatened miscarriage with subchorionic hematomas categorized as the “cohorts” or were not having subchorionic hematoma “controls” with a viable, singleton, intrauterine gestation between 6 and 12weeks.

Patients with a nonviable or non-visible embryos, primigravida, grandmultiparity, or multiple pregnancies, gross fetal abnormality diagnosed by ultra-sonography, with pathological features (fibroids, uterine polyps, uterine malformations), underwent elective termination of pregnancy, with history of recurrent miscarriage, with history of medical diseases (chronic hypertension, diabetes mellitus, or all causes of anemia), with retro placental and sub amniotic hematoma with threatened miscarriage confirmed by ultra sound, those on anti-coagulant therapy (low molecular weight heparin), and patients with previous caesarean section were excluded. The verbal consent was obtained from patients before their participation in our study. First group was 75 pregnant with subchorionic hematoma (cohort exposed) and second group was 75 pregnant without hematoma (control non-exposed), out of all patients, 6 were excluded (from control group) because they were dropped out from follow up. Baseline data were recorded by designed questionnaire form and the patients were interviewed with review of medical, surgical and drug history, measurement of the patient vital signs, pregnancy was confirmed by pregnancy test (serum Beta hCG) and abdominal ultrasonic examination, the diagnosis of threatened miscarriage was made by history and review of the symptoms of threatened miscarriage who presented with vaginal bleeding or bloody vaginal discharge, with or without abdominal cramps, then the patient send for blood group and Rh ,complete blood picture and oral glucose tolerance test. Gestational age was calculated, on the basis of the last menstrual period according to Neagle`s rule and confirmed by ultrasonographic measurement by evaluation of crown rump length , fetal heart activity was ultrasonically confirmed, the size of the gestational sac was recorded in all cases, the size of the hematoma(which appears on ultrasound as a hypochoic crescent adjacent to gestational sac) was then compared with the size of the gestational sac during the ultrasound examination and classified as,

small (<20% of the gestational sac), medium (20%–49% of the gestational sac), or large (≥50% of the gestational sac). Maternal age, maternal body mass index, parity, gestational age at the diagnosis of the hematoma, location of placenta (marked as ant. or post.), and pregnancy outcome at 24completed weeks (aborted or continued) were noted. The same criteria of the study group were applied for the control group, except for the presence of hematomas. Serial scans (between 2days – 7days interval)were performed, only the first examination and last one at 24 completed week were considered for the analysis.

The ultrasound examination for those patients who participated in the study was done in antenatal care out-patient clinic in Al-Elwiya Maternity Teaching Hospital /Baghdad by the help of specialist sonographer . Ultrasonographic examinations were performed transabdominally (by transverse and longitudinal scanning) with curvi linear probe (3-5MHZ) and an ultrasound device (Siemens acuson x300). All patients with threatend abortion of the both groups (with and without sub chorionic hematoma) received same treatment according to the severity of the bleeding either tablets, suppositories and injections. 8 out of 19 patients with sub chorionic hematoma needed addmition to Al-Elwiya Maternity Teaching Hospital/ Baghdad for surgical evacuation (5 cases ended by fetal demise, 3 ended by incomplete miscarriage, the while 11 patients ended by complete miscarriage not need addmition. In other hand all the 8 cases who miscarried in the control group ended as incomplete miscarriage and need addmition.

Analysis of data was carried out using the available statistical package of SPSS-22 (Statistical Packages for Social Sciences- version 22). The significance of difference of different means (quantitative data) were tested using Students-t-test for difference between two independent. The significance of difference of different percentages (qualitative data) were tested using Pearson Chi-square test (2-test) with application of Yate's correction or Fisher Exact test whenever applicable. Statistical significance was considered whenever the P value was equal or less than 0.05.

Results

The study revealed that there was statistically significant differences between the study groups with subchorionic hematoma and control groups in regard to maternal age, body mass index and gestational age. The parity distribution of patients with subchorionic hematoma versus those without a hematoma is also shown in Table 1. There is no statistically significant difference in parity between the two groups. Para 1 to 2 was 62.7% in the subchorionic hematoma group versus 50.7% in the no hematoma group , and Para 3 to 4 was 37.3 % in the subchorionic hematoma group

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versus 49.3 % in the no hematoma group, with a *p* value >0.05 .

Table2:

shows that there is no statistically significant difference in the placental site between the two groups, the placenta was anterior in 52% of the subchorionic hematoma group versus 63.8% in the no hematoma group, and it was posterior in 48% in the subchorionic hematoma group versus 36.2% in the no hematoma group with a *p* = 0.153 .

Table3:

shows that there is a statistically significant association between the hematoma size and miscarriage. 5.3% of cases with small subchorionic hematoma (less than 20% gestational sac size) underwent miscarriage versus 76.8% continued beyond the 24 weeks. 26.3% of cases with medium sized subchorionic hematoma (20 – 49% gestational sac size) underwent miscarriage versus 14.3. And 68.4% of large subchorionic hematoma cases (greater

than or equal to 50% gestational sac size) underwent miscarriage versus 8.9%, with a *p* <0.05.

Table4:

shows that there is a statistically significant difference in the miscarriage outcome between the two groups, the miscarriage rate was significantly higher in the subchorionic hematoma group (25.3%) versus (11.6%) in the no hematoma group with a *p* <0.05. While (74.7%) of the ladies presented with threatened miscarriage and subchorionic hematoma continued the pregnancy without miscarriage versus (88.4%) in the no hematoma group. The total number of cases in the hematoma group was 19 cases, 5 cases ended by fetal demise, 3 ended by incomplete miscarriage and 11 cases ended by complete miscarriage. While all the 8 cases who miscarried in the control group ended as incomplete miscarriage.

Table 1. Age, body mass index and gestational age.

Maternal Characteristics		No Hematoma n=69		Subchorionic Hematoma n=75		p value
		Mean ± SD		Mean ± SD		
Age (years)		23.50 ± 3.241		31.17 ± 2.785		< 0.05*
BMI (kg/m ²)		28.75 ± 1.710		31.50 ± 1.738		< 0.05*
GA (weeks)		11.09 ± 0.8		8.07 ± 1.07		< 0.05*
		n	%	n	%	
Parity	1-2	35	50.7	47	62.7	0.148
	3-4	34	49.3	28	37.3	
Total		69	100%	75	100%	

*Significant difference using Students-t-test for two independent means at 0.05 level.

Table 2. Placental site in cases with subchorionic hematoma versus no hematoma

Placental Site	No Hematoma		Subchorionic Hematoma		p value
	n	%	n	%	
Anterior	44	63.8%	39	52.0%	0.153
Posterior	25	36.2%	36	48.0%	
Total	69	100%	75	100%	

*Significant difference between proportions using Pearson Chi-square test at 0.05 level.

Table 3. The association between the hematoma size and the outcome.

Hematoma Size	Miscarriage		No miscarriage		Total		p value
	n	%	n	%	n	%	
Small	1	5.3%	43	76.8%	44	58.7%	<0.05*
Medium	5	26.3%	8	14.3%	13	17.3%	
Large	13	68.4%	5	8.9%	18	24%	
Total	19	100%	56	100%	75	100%	

*Significant difference between proportions using Pearson Chi-square test at 0.05 level.

Table 4 the outcome of the subchorionic hematoma group versus no hematoma.

Outcome	No Hematoma		Subchorionic Hematoma		p value
	N	%	n	%	
Miscarriage	8	11.6%	19	25.3%	0.035*
No miscarriage	61	88.4%	56	74.7%	
Total	69	100%	75	100%	

*Significant difference between proportions using Pearson Chi-square test at 0.05 level

Discussion

Studies done by ^{(10), (9), (12)} showed that there was no association between the subchorionic hematoma and the demographic features in the study and control group because he reported that there is a strong correlation with chromosomal and structural fetal anomaly and this disagree with our study. Our study agreed with study done by Okan *et al.*, (2008) who found that the incidence of SCH increased with increasing maternal age. In the current study there was a statistically significant difference in the body mass index between the two groups⁽¹³⁾. The BMI in SCH group was significantly more than those of the no hematoma group. Studies done by Leite *et al.*, (2006), Bennett *et al.*, (1996) and, Maso (2005) who reported the overall risk of adverse outcomes, especially for spontaneous abortion, was 2.4 times higher in the pregnancies with a hematoma observed before the 9th week, which is consistent with this study ^{(12), (14), (15)}. But disagree with Ben-Haroush *et al.* (2003) who reported that gestational age at diagnosis did not affect the pregnancy outcome. Saurbrei and Pham (1986) did not find any effect of duration of vaginal bleeding or gestational age at diagnosis of SCH on pregnancy outcome^{(16) (17)}. The current study showed that the parity did not affect the outcome and showed no statistical significance between the hematoma and control group (p> 0.05) ,this is similar to the study done by Yavuz *et al.*, (2014) who reported that parity in both groups showed no statistical significance (p = 0.581) and did

not affect the outcome ⁽¹⁸⁾. The study done by Donogol *et al.*, (2011) reported that there is no association between the SCH and placental site compared to control group and this agrees with our study ⁽¹⁹⁾. In the current study there was a statistically significant association between the hematoma size and miscarriage. Ball *et al.* (1996) reported increasing pregnancy loss rates with increasing SCH size, similarly Esen Çağsar *et al.*, (2000) found that the presence of the subchorionic hematoma and largeness of its volume significantly increase the miscarriage rate ^{(20), (21)}. Leite *et al.*, (2011) suggests that the presence of a very large first-trimester hematoma is associated with a 46% risk of adverse pregnancy outcome (spontaneous abortion), both are consistent with the current study⁽¹²⁾. On the contrary Uluğ *et al.*, (2006). reported that there is no relationship between the prognosis and presence or size of the SCH ⁽²²⁾. Nagy *et al***Error! Bookmark not defined.**, (2003), and Pedersen and Mantoni, (1990) found no association between the size of the hematoma and adverse outcome ^{(11), (23)}. While Donogol *et al.*, (2011)**Error! Bookmark not defined.** and Giobbe *et al.*, (2001) found that when hematoma is small and asymptomatic it may not be of clinical significance ^{(19), (10)}. However the larger hematomas may be associated with poorer outcomes. In the current study there was a statistically significant difference in the miscarriage outcome between the two groups, the miscarriage rate was significantly higher in the

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subchorionic hematoma group (25.3%) versus (11.6%) in the non-hematoma group with a $p < 0.05$. While (74.7%) of the ladies presented with threatened miscarriage and subchorionic hematoma continued the pregnancy without miscarriage versus (88.4%) in the non-hematoma group, this is consistent with what was observed by Özkaya *et al.*, (2011) they reported that the presence of subchorionic hematoma is associated with increased risk of spontaneous abortion⁽²⁴⁾ and Nagy *et al.*, (2003) **Error! Bookmark not defined.** showed that the rate of spontaneous abortion was (18.7 %) which is two times higher than in those pregnant without hematoma ($p = 0.02$)⁽¹¹⁾. Ketut *et al.*, (2011) and Ökan *et al.*, (2008) showed that the risk of miscarriage in those with threatened miscarriage and had subchorionic hematoma was 3 times higher than those with threatened miscarriage and without subchorionic hematoma, which is consistent with this study^{(25), (24)}. On the contrary Pedersen and Mantoni, (1990) who followed up 342 pregnancies with vaginal bleeding between 9 to 20 gestational weeks, in which 18% had SCH found no association between the presence of SCH and miscarriage⁽²³⁾. Johns *et al.*, (2003) reported that first-trimester vaginal bleedings with the presence of SCH had no effect on the prognosis⁽⁹⁾.

References:

- 1-Gary-Cunningham, F., Kenneth, J., and Leveno, L. (2010). *Obstetrics*. In: Williams OBSTETRIC. 23rd ed. Gary-Cunningham, F. (ed.) McGraw-Hill medical, New Yourk, USA. 215-228.
- 2-Johns, S., Joseph, I., Schaffer, M., Halvorsan, L. (2012). *Gynaecology*. In: Williams OBSTETRIC. 3rd (ed). Johns, S. (ed.) McGraw-Hill companies, USA. 137.
- 3- Greaves, I., Porter, K., Hodgetts, J. (2005). *Emergency Care*. In: A Textbook for Paramedics. 2nd ed. Greaves, I. (ed). Elsevier Health Sciences London, UK. 506.
- 4-Sammel, M.D., Chittams, J., Hummel, A.C. (2005). Risk Factors for Spontaneous Abortion in Early Symptomatic First-Trimester Pregnancies. *Obstet. Gynecol.* 106 (5, Part 1): 993-9.
- 5-Van Den Bosch, T., Van Schoubroeck, D., Cornelis, A. (2000). Prenatal diagnosis of a subamniotic hematoma. *Fetal Diagn Ther.* 15:32.
- 6-Viero, S., Chadda, V., Alkazaleh, F. (2004). Prognostic value of placental ultrasound in pregnancies complicated by absent diastolic flow velocity in the umbilical arteries. *Placenta.* 25:735-41.
- 7-Tower, C.L., Regan, L. (2005). Intrauterine hematomas in a recurrent miscarriage population. *Hum. Reprod.* 7:16.
- 8-Klaritsch, P., Haeusler, M., Karpf, E. (2008). Spontaneous intrauterine umbilical artery thrombosis leading to severe fetal growth restriction. *Placenta.* 29:374
- 9-Johns, J., Hyett, J., Jauniaux, E. (2003). Obstetric outcome after threatened miscarriage with and without a hematoma on ultrasound. *Obstetric Gynecol.* 22(10):466-465.
- 10-Giobbe, M., Fazio, M., Boni, T. (2001). Current role of bed-rest in threatened abortion. *Minerva Gynecol.* 53:337-340.
- 11-Nagy, S., Bush, M., Stone, J. (2003). Clinical significance of subchorionic and retroplacental hematomas detected in the first trimester of pregnancy. *Obstetric Gynecol.* 102:94.
- 12-Leite, J., Ross, P., Rossi, A.C. (2011). Prognosis of very large first trimester hematomas. *J. Ultrasound Med.* 25(11):1441-5.
- 13-Okan, O., Mekin, S., Hakan, K. (2008). Serum malondialdehyde, Erythrocyte Glutathione Peroxidase, and Erythrocyte Superoxide Dismutase Levels in Woman With Early Threatened Abortion Accompanied by Vaginal Hematoma. *Med Sci Monit.* 1:47-51.
- 14-Bennett, G.L., Bromley, B., Lieberman, E., Benacerraf, B.R. (1996). Subchorionic hemorrhage in first-trimester pregnancies: prediction of pregnancy outcome with sonography. *Radiology.* 200: 803-806.
- 15-Maso, G., D'Ottavio, G., De Seta, F. (2005). First trimester intrauterine hematoma and outcome of pregnancy. *Obstet. Gynecol.* 105: 339- 44.
- 16-Ben-Haroush, A., Yogev, Y., Mashiach, R., Meizner, I. (2003). Pregnancy outcome of threatened abortion with subchorionic hematoma: possible benefit of bed-rest? *IMAJ.* 5: 422-424.
- 17-Saubrei, E.E., Pham, D.H. (1986). Placental abruption and subchorionic hemorrhage in the first half of pregnancy: US appearance and clinical outcome. *Radiology.* 160:109- 12.
- 18-Yavuz, Ş., Göksu, G., Osman, K., Gökhan, A. (2014). The effects of subchorionic hematoma on pregnancy outcome in patients with threatened abortion. *J. Turk. Ger. Gynecol. Assoc.* 15(4): 239-42 .
- 19-Donogol, A., Mool, S., Tiwari, P. (2011). Outcome of Pregnancy Complicated by Threatened Abortion. *Kathmandu Univ. Med. J.* 33:41- 44.
- 20-Ball, R.H., Ade, C.M., Schoenborn, J.A., Crane, J.P. (1996). The clinical significance of ultrasonographically detected subchorionic hemorrhages. *Am. J. Obstet. Gynecol.* 174: 996-1002.
- 21-Esen, Ç. (2000). Significance of Subchorionic Hematomas in Patients with Threatened Abortion, *Maternity and Teaching Hospital,*

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- Department of Perinatology, Yenisehir, IZMIR .9:44- 49.
- 22-Uluğ, U., Jozwiak, E.A., Tosun, S., Bahçeci, M. (2006). Preterm delivery risk among pregnancies with history of first trimester vaginal bleeding and intrauterine hematoma. *Zeynep Kamil Tıp Bülteni.* 37: 47-51.
- 23-Pedersen, J.F., Mantoni, M. (1990). Prevalence and significance of subchorionic hemorrhage in threatened abortion: a sonographic study. *154(3):535-7.*
- (24) Özkaya, E., Altay, M., Gelisen, O. (2011). Significance of subchorionic haemorrhage and pregnancy outcome in threatened miscarriage to predict miscarriage, pre-term labour and intrauterine growth restriction. *J Obstet. Gynaecol.* 31: 210 – 12.
- (25) Ketut, R.D. Wijayanti, N.J. (2011). Subchorionic Hematoma on Threatened Abortion as Risk Factors Occurrence of Spontaneous Abortion, Department of Obstetrics and Gynecology Sanglah General Hospital Denpasar, Jln. Pulau Bali no.1 Sanglah .35-4:170-172.