

## Intrauterine Hematoma in Pregnancies Complicated by Vaginal Bleeding in First Half: Clinical Significance

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### Summary

Fifty patients of threatened abortion with live fetus demonstrated on ultrasound were studied to evaluate the significance of intrauterine hematoma. Intrauterine hematomas were detected ultrasonographically in 10 (20%) patients whereas 40 patients without hematoma served as controls. In 4 patients with hematoma, the outcome was favorable (full term delivery of normal baby) and in the rest 6 patients, the outcome was unfavourable (four abortions, two preterm births). Though the abortion rate was only marginally higher in the study group (40% versus 35%), the preterm births were found to be much higher (33.3% versus 19.2%). A significant correlation was observed between volume of hematoma and pregnancy outcome. There was a higher abortion rate among patients with hematoma volume of  $\geq 50$ cc than in those with smaller hematoma (75% versus 20%). Similarly all the patients (100%) with retroplacental hematoma aborted as compared to only 2 (25%) with subchorionic hematoma. It was therefore concluded that the presence of intrauterine hematoma was a risk factor in threatened abortion and the major factors related to pregnancy outcome were volume and the site of hematoma.

### Introduction

Patients with vaginal bleeding in first half of pregnancy in whom a live fetus has been demonstrated on ultrasound still carry a risk of abortion of 10-15% (Mantoni & Pederson 1988, Rasmussen & Freund 1993, Mondruzzato et al, 1989). Various authors have therefore attempted to determine the possible cause in such patients. Intrauterine hematoma is an important ultrasonographic finding in patients of threatened abortion.

The incidence of intrauterine hematoma has been found to vary between 5.4% to 22% (Stabile et al 1989, Borlum et al, 1989). Since the first description of echopoor area between the myometrium and chorion (Mantoni, 1981), several authors have tried to find its clinical significance (Sauerbrei and Pham 1986, Burrows et al 1982). Goldstein et al (1983) in a sonographic study of patients with threatened abortion observed that the patients with subchorionic bleeding were at greater risk

of eventual fetal death even if signs of fetal life were present initially on sonography thereby recommending serial scanning of these patients to determine fetal outcome. However, there still remains a controversy regarding risk to the pregnancy in the presence of intrauterine hematoma. A prospective study was therefore designed to evaluate the significance of intrauterine hematoma in patients of threatened abortion.

### Materials and Methods

Fifty patients with vaginal bleeding in first half of pregnancy (upto 20 weeks) reporting to the department of Obstetrics & Gynecology, Pt. B.D. Sharma PGIMS Rohtak during one and a half year period (Nov. 1997 to April 1998) were taken up for the study. The patients with history of habitual abortions and those in whom bleeding seemed to originate from cervical polyp or erosion or any local pathology were excluded from the study. All the patients with clinical diagnosis of threatened abortion were subjected to ultrasound

scanning by GERT 3600 with sector probe 3.5mHz within 24 hours of presentation. The patients with live pregnancy only were studied for the presence of intrauterine hematoma. The location of hemorrhage was defined by its predominant location as subchorionic (located predominantly between the myometrium and placental membranes and/or at the margin of placenta), retroplacental (located between the placenta and myometrium or preplacental (between placenta and placental membranes). The volume of hematoma was calculated by prolate ellipsoid formula used by Saubrei and Pham (1986):  $0.52 \times D1, D2, D3$  (D being the three perpendicular diameters). Hematoma with a volume of  $\geq 50$ cc was considered to be a larger hematoma as defined by Mantoni and Pederson (1982). The only treatment given to the patients was bed rest in hospital for at least 48 hours after the last episode of bleeding and the sedation was given to allay anxiety whenever required. Thereafter patients were seen on an ambulatory basis until abortion or birth. Ultrasound was repeated only at repeat episode of bleeding or whenever there was clinical suspicion of fetal growth retardation. At 18-20 weeks USG was done in all patients routinely to exclude congenital malformations.

**Results**

Majority of the patients were in the age group of 20-29 years with a mean  $\pm$  SD of  $24.12 \pm 5.13$  years. Most of the patients were primigravidae or second gravidae with almost equal distribution as shown in Table I. Intrauterine hematoma was detected in 10(20%) patients.

Forty patients without hematoma served as controls.

Four (40%) out of ten patients with hematoma aborted which was comparable to the incidence (35%) of abortion in patients without hematoma. However, preterm births, among patients continuing beyond 28 weeks, were much higher in patients with hematoma (33.3% versus 19.2%) as shown in table II.

Eight (80%) patients had subchorionic hematoma (Photograph I) and 2 (20%) patients revealed retroplacental hematoma. No preplacental hematoma was observed in the present study. Pregnancy outcome was correlated with site of hematoma as depicted in Table III. Retroplacental hematoma was 100% lethal and resulted in abortion in both the patients whereas in patients with subchorionic hematoma only 2 (25%) out of 8 patients aborted.

The volume of hematoma ranged between 15cc to 56cc. Four (40%) patients had hematoma volume  $\geq 50$ cc where as 6 (60%) patients had hematoma volume less than 50cc. Three (75%) out of 4 patients with hematoma volume of  $\geq 50$ cc aborted as compared to one (16.7%) out of 6 patients with hematoma volume of  $< 50$ cc (Table IV Fig. I).

Most (70%) of the patients with hematoma presented before 13 weeks of gestation. All the three patients presenting in second trimester aborted as compared to only one (14.2%) abortion in those presenting between 9-12 weeks (Table V). In patients of

**Table I**  
**Distribution of Patients According to Pregnancy Order**

Sr. No.	Pregnancy order	n=50	
		Number of patients	Percentage (%)
1	1	17	34
2	2	17	34
3	3	9	18
4	4 or more	7	14
5	Mean $\pm$ SD	$2.2 \pm .98$	

**Table II**  
**Pregnancy Outcome in Patients in Relation to Intrauterine Hematoma**

Sr. No.	Hematoma	Number of patients	Abortions n (%)	Birth n (%)	Total Born	Preterm n (%)	PNM n (%)
1	Observed	10	4 (40)	6 (60)	6	2 (33.3)	1 (16.6)
2	Not observed	40	14 (35)	26 (65)	26	5 (19.2)	3 (11.5)

**Table III**  
Pregnancy Outcome in Relation to Site of Hematoma

Sr. No.	Site of Hematoma	Number of patients (n=10)	Abortions n (%)	Birth n (%)	Total Born	Preterm n (%)
1.	Subchorionic	8	2 (25)	6 (75)	6	2 (33.33)
2.	Retroplacental	2	2 (100)	-	-	-

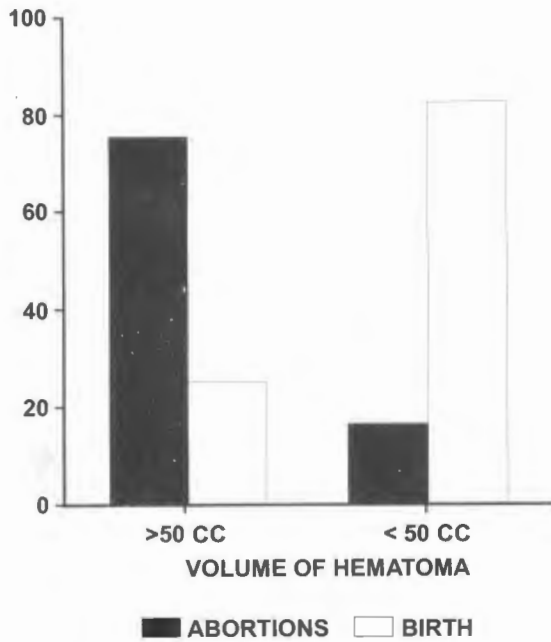
**Table IV**  
Pregnancy Outcome Depending on Volume of Hematoma

Sr. No.	Volume of Hematoma	Number of patients (n=10)	Abortions n (%)	Birth n (%)	Total Born	Preterm n (%)	PNM n (%)
1.	≥50cc	4	3 (75)	1 (25)	1	1 (100)	1 (100)
2.	< 50cc	6	1 (16.7)	5 (83.3)	5	1 (20)	-

**Table V**  
Pregnancy Outcome in Patients with Hematoma in Relation to Gestation of Presentation

Sr. No.	Period of gestation in weeks	Number of patients (n=10)	Abortions n (%)	Birth n (%)	Total Born	Preterm n (%)	PNM n (%)
1.	9-12	7	1 (14.2)	6 (85.8)	6	2 (33.33)	1 (16.66)
2.	13-20	3	3 (100)	-	-	-	-

**Fig. I: Pregnancy Outcome in Relation to Volume of Hematoma**



Photograph 1: Ultrasonogram Showing Subchorionic Hematoma

hematoma, the time interval between initial symptom and abortion ranged between 7-28 days with a mean of 19.2 days as compared to a mean interval of 45.3 days in the controls. In six patients of hematoma continuing

beyond 28 weeks of gestation, the hematoma was found to resolve by 24 weeks. Two (33.3%) of six patients with hematoma underwent cesarean section for fetal distress as compared to only one (3.8%) among 26 patients without hematoma.

## Discussion

There are variable reports regarding the significance of intrauterine hematoma and its impact on perinatal outcome (Mantoni, 1981; Mantoni & Pederson 1982; Smith et al 1978; Mantoni 1985). However not many studies are available in the literature about this group of patients. A thorough search for this abnormality was done in the present study and patients were followed up, to study its significance in terms of abortion and perinatal outcome.

The incidence of intrauterine hematoma (20%) found in the present study was comparable to that reported by most of the authors (Mantoni & Pederson 1988; Borlum et al 1989; Goldstein et al 1983). However in contrast to our observation other studies had shown an incidence of 3.3 to 11% (Mondruzzato et al 1989; Mantoni 1985; Stovall et al 1992). The abortion rate among patients with intrauterine hematoma was comparable to that without hematoma (40% versus 35%) which correlated with the findings of Kaufman et al (1985). An overall higher abortion rate (36%) in patients of threatened abortion observed in the present study may be due to the fact that the abortion in our study was considered upto 28 weeks of gestation (Park, 1997) where as in developed countries its limits has been brought down to 20-22 weeks of gestation and or a fetal weight of 500gm (Cunningham et al, 1997).

In the present study preterm births were higher (33%) in the presence of hematoma (Table II), a finding consistent with that observed in a recent study by Weigel et al (1991). Contrary to our findings Borlum et al (1989) observed that overall preterm delivery rate in hematoma group did not differ significantly from that in the control group (8.1 versus 5.6%) but the occurrence of intrauterine hematoma increased the abortion rate in that study ( $P < 0.05$ ). Pederson and Mantoni (1990) however reported that the rate of spontaneous abortion and preterm deliveries was same in patients with or without hematoma.

In the present study, both the patients (100%) with retroplacental hematoma aborted as compared to only 2 (25%) with subchorionic hematoma (Table III). Our findings were in accordance with that reported by different authors (Rasmussen et al, 1993 & Weighel et al, 1991). Stabile et al (1989) detected retroplacental

hematoma in 9% of their patients but in contrast to our results none of these women subsequently aborted.

Four (40%) patients in our study had hematoma volume  $\geq 50$ cc (Table IV), among whom three (75%) aborted and one had preterm baby who also died in early neonatal period. In smaller hematoma, pregnancy outcome was not much different from the patients without hematoma. Our findings were consistent with many of the studies (Mantoni & Pederson 1988; Mantoni 1981; Cunningham et al 1997; Sauerber & Pham 1986) but were in contrast to those by Borlum et al (1989) and Pederson and Mantoni (1990) who observed that the larger hematoma did not seem to represent any serious threat to the pregnancy. In the present study prognosis was poorer in patients with hematoma detected after 13 weeks of gestation as compared to patients in whom hematoma was detected between 9-12 weeks (Table V), a finding also observed by Mantoni (1985).

The mechanism of hematoma formation has been postulated to be a minor placental separation which at this early stage of pregnancy appears to have self limiting tendency (Mantoni, 1981). The blood after dissection between the uterine wall and the membranes usually start disappearing gradually (Mantoni 1981; Goldstein et al, 1983). Various authors (Mantoni & Pederson 1982; Goldstein et al 1983) observed that the development of larger hematoma which did not disappear involved a considerable risk of abortion or preterm delivery, as was also found in our study. In addition to size of hematoma, the degree of placental detachment is also dependent on the location of hematoma. Fetal hypoxia was likely to be more with retroplacental hematoma thereby leading to fetal demise (Nyberg et al, 1987) as was observed in the present study also. On the other hand, subchorionic hematoma which usually detach only the placental margin was associated with low risk of fetal death as reported by Nyberg et al (1987).

In the present study the patients were scanned soon after the acute episode i.e. within 24 hours, but the follow up scans were incomplete, with no formalized scanning interval, it was therefore not possible to relate the pattern of hematoma resolution to the outcome of pregnancy in a reliable way. However in pregnancies continuing beyond 28 weeks, hematoma were found to resolve by 24 weeks as also reported by Mantoni (1985) and Goldstein et al (1983) in their study of 10 patients with subchorionic hematoma reported that eight (80%) showed gradual resolution of the fluid collection over 4-7 weeks and the pregnancies continued to term. Whereas in two patients (20%), the fluid collection persisted and fetal death occurred 21-30 days after initial examination.



The mean interval between initial symptoms and abortion in the present study was much shorter in patients with hematoma than in those without hematoma (19.2 days versus 45.3 days). The results of the present study showed that patients with intrauterine hematomas continued to be high risk even after initial episode.

### Conclusion

The results of the present study indicated that as a large number of patients with ultrasonically detected live fetus still abort, every effort should therefore be made to detect any possible abnormality on ultrasound. Intrauterine hematoma especially the subchorionic hematoma may be identified in many patients with vaginal bleeding between 10-20 weeks of gestation. When these patients were considered as a group the hematoma indicated an unfavorable prognosis in the present study in 60% of the patients. However when these patients were distinguished according to hematoma volume and site of hematoma, those with a smaller whereas larger hematoma and retroplacental hematoma predicted poor outcome. Additional studies with larger sample of patients however need to be carried out to study the effect of intrauterine hematoma on pregnancy outcome more accurately.

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