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# SUBCHORIONIC HEMATOMA'S INFLUENCE ON THE OUTCOME OF PREGNANCIES

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## Introduction

Vaginal bleeding is a common complication during the first trimester of pregnancy, with an incidence ranging from 16% to 25% [1]. When there is intrauterine bleeding without cervical dilatation and tenderness in the early stages of pregnancy, it is referred to as a threatened abortion. Typically, this condition does not involve pain or excessive bleeding but can lead to maternal anxiety and potential adverse outcomes for both the mother and the fetus [2,4]. Placental dysfunction is one suggested mechanism for threatened abortion and has also been associated with various later complications, including preeclampsia, preterm labor, preterm birth, placental abruption, placenta previa, intrauterine growth restriction, and perinatal mortality [2, 3]. Inadequate angiogenesis is similarly linked to early pregnancy losses, and maternal serum AFP and β-hCG are proposed markers for angiogenesis in the first trimester [5]. Alongside these markers, chronic inflammation of the decidua may also underlie early pregnancy bleeding.

Ultrasound examinations frequently reveal intrauterine hemorrhages, especially in patients experiencing clinical bleeding in early pregnancy, with an incidence reported between 4% and 22% [6]. Subchorionic hematomas (SCHs) typically appear as hypoechoic or anechoic crescent-shaped areas on ultrasound. Although the exact cause is uncertain, they are believed to result from the partial detachment of the chorionic membranes from the uterine wall [7]. Possible predisposing factors includ2e uterine malformations, a history of recurrent pregnancy loss, and infections [8,10]. The clinical significance of SCH remains a subject of debate [11,14], and it is unclear whether these hemorrhages directly lead to abortion. However, according to recent meta-analysis results, the presence of SCH increases the risk of both early and late pregnancy loss by a factor of two [15]. It is suggested that SCH presence elevates the risk of adverse obstetric outcomes, with fetal outcomes being influenced by factors such as the size of the hematoma, maternal age, and gestational age [16, 17].

The objective of this retrospective cohort study was to evaluate the impact of ultrasonographically identified SCH on pregnancy outcomes in patients experiencing vaginal bleeding during the first half of pregnancy.

## Material and Methods

In this retrospective study, conducted between January 2021 and September 2023 at a university-based maternity hospital, 242 patients diagnosed with threatened abortion due to painless vaginal bleeding were enrolled. The inclusion criteria were as

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follows: hospitalization due to threatened abortion, having a singleton pregnancy, gestational age less than 20 weeks, and continuous follow-up at the clinic until the end of the pregnancy. Exclusion criteria comprised a diagnosis of incipient abortion, absence of fetal cardiac activity, gestational age equal to or greater than 20 weeks, multiple pregnancies, and a history of recurrent pregnancy loss.

The study group encompassed 44 patients in whom subchorionic hematomas (SCHs) were detected through ultrasonography, while the control group included 198 patients without SCHs. All patients, regardless of group, were hospitalized for a minimum of 3 days after the initial episode of vaginal bleeding. Prophylactic progesterone treatment was administered to all patients, either orally. After being discharged from the hospital, patients followed standard antenatal care protocols. The study aimed to compare pregnancy outcomes between the two groups. For patients who experienced miscarriages, data on gestational age at the time of miscarriage and the duration between the initial bleeding episode and the miscarriage were recorded. In cases where pregnancies resulted in live births, comparisons were made regarding gestational age at delivery, birth weight, rates of preterm delivery, and cesarean section rates between the study and control groups.

**Discussion**

The results obtained from the present study revealed that the presence of SCH in patients with threatened abortion is an important factor for the continuation of pregnancy. The presence of SCH in patients with threatened abortion increases the risk of miscarriage. However, it does not affect the gestational age at miscarriage or the duration between the first bleeding and miscarriage. In patients whose pregnancies resulted in delivery, gestational age at labor, birth weight, preterm delivery, and cesarean section rates were not affected by the presence of SCH. Previously, several studies have investigated the effects of SCH on pregnancy outcomes. 238 patients with ultrasonographically detected SCH in a retrospective casecontrol study and reported a significant association between SCH and miscarriage and preterm delivery rates. They also reported increasing pregnancy loss rates with increasing SCH size. However, in the aforementioned studies, SCHs were defined during the routine first- or second-trimester ultrasonography, and not all patients with an SCH had threatened abortion.

Vaginal bleeding occurs in 25% of pregnancies in the first 20 weeks, and half of these result in miscarriage. Hence, it is important to identify the risk factors of threatened abortion and the factors that can affect the outcome. In a retrospective cohort trial, Ben-Haroush et al. assessed 2556 pregnant patients who were admitted with vaginal bleeding during the first 20 gestational weeks. The incidence of SCH was 9%. They reported that gestational age at diagnosis, size of SCH, and duration of bleeding did not affect the pregnancy outcome. They also reported significantly decreased miscarriage rates with bed rest. However, Bennett et al. reported that increasing SCH

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size increases the risk of miscarriage. In a prospective cohort study, Pedersen and Mantoni followed up 342 pregnancies with vaginal bleeding between 9 to 20 gestational weeks, in which 18% had SCH . They found no association between the presence of SCH and miscarriage or preterm delivery risks. In another retrospective case-control study, Johns et al. reported that first-trimester vaginal bleedings were associated with adverse pregnancy outcomes, but the presence of SCH had no effect on the prognosis. According to the results of a recent meta-analysis evaluating 1735 patients with SCH from 7 studies, the presence of SCH increases the risks of early and late pregnancy loss, miscarriage, and preterm premature rupture of membranes.

In a prospective study from Uzbekistan, the size of the SCH was suggested to be the primary risk factor for miscarriage in patients with first-trimester vaginal bleeding . The first-trimester bleedings were associated with preterm delivery and low birth weight. However, we found no relationship between the prognosis and presence or size of the SCH.

The underlying mechanism of how SCH causes adverse pregnancy outcomes is still controversial. One of the possible mechanisms is the premature perfusion of the intervillous space, as occurs with subchorionic hemorrhage, before the development of placental adaptations to cope with oxidative stress [15]. Another possible mechanism might be the underlying cause of the subchorionic bleeding and secondary mechanical effects of the hematoma. Shallow trophoblast invasion and impaired angiogenesis with resultant friable blood vessels may predispose one to subchorionic hemorrhage, as well as adverse outcomes [10]. The presence of a hematoma, especially in a retroplacental location, may create an area of weakness, where further separation of the placenta from the uterine wall may occur, resulting in placental abruption [14]. Our results support the estimated mechanical effect of SCH that can cause miscarriage. The presence of an SCH and detachment of the gestational sac from the endometrium may result in miscarriage. However, if the gestational sac survives, reattachment to the endometrial wall might be enough for further progression of the pregnancy without any other adverse effects.

**In conclusion**, The presence of subchorionic hematoma (SCH) in individuals facing threatened abortion in the early stages of pregnancy elevates the likelihood of miscarriage. Yet, it remains uncertain whether the presence of SCH intensifies the risk of unfavorable pregnancy outcomes in continuing pregnancies, as the majority of past research has been retrospective. Substantial prospective randomized studies are needed to establish the actual impact of SCH on the prognosis of ongoing pregnancies.

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