

Case Report

Placental Abruption with Subamniotic Hemorrhage: A Case ReportJuseok Yang^{1,2}, Jina Lee^{1,2}, Dong Hyung Lee^{1,2,*}¹Department of Obstetrics and Gynecology, Pusan National University Yangsan Hospital, 50612 Yangsan, Republic of Korea²Research Institute for Convergence of Biomedical Science and Technology, Pusan National University Yangsan Hospital, 50612 Yangsan, Republic of Korea*Correspondence: ldh0707@hanmail.net (Dong Hyung Lee)

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Abstract

Background: Subamniotic hemorrhage is a rare lesion with abnormal ultrasonographic findings that is caused by placental abruption. We report the case of a patient with placental abruption who presented with antepartum bleeding in whom the ultrasound findings of subamniotic hemorrhage were detected. This resulted in early diagnosis, leading to a favorable clinical outcome in this patient. **Case:** A primigravid 35-year-old woman visited the emergency room due to vaginal bleeding at 36 + 4 weeks of gestation. Ultrasound examination revealed a subamniotic hemorrhage that had not been evident on previous antenatal ultrasonography. An emergent cesarean section was performed, and the diagnosis of placental abruption was confirmed. The patient and baby were discharged after an uneventful course in the hospital. **Conclusions:** Detection of subamniotic hemorrhage by ultrasound helped in achieving an early diagnosis that resulted in prompt intervention against acute placental abruption and ensured favorable clinical outcomes. A thorough ultrasound examination of the placenta should be performed when managing patients with antepartum bleeding.

Keywords: placental abruption; subamniotic hemorrhage; ultrasound; vaginal bleeding**1. Background**

Placental abruption (PA) is the leading cause of antepartum bleeding. The classic constellation of an acute PA consists of vaginal bleeding, abdominal pain, and uterine contractions followed by non-reassuring fetal heart rate tracings. PA complicates only 0.4–1% of pregnancies [1,2] but its burden is much greater. The risk factors of a PA have been quite well studied by many different researchers. Regardless of our substantial knowledge regarding the risk factors of a PA, its occurrence remains unpredictable [2].

According to the definition and pathophysiology, an ultrasound in acute PA is typically associated with a hypoechoic mass behind or around the placenta [3]. When the hemorrhage is trapped within the placenta and myometrium, vaginal bleeding does not occur even after the development of a profound placental detachment, and the fetus becomes compromised. The well-known term “concealed hemorrhage” describes the occurrence of hemorrhage in cases of PAs without vaginal bleeding. In contrast, a subamniotic hemorrhage progresses at the surface of the placenta and is covered by a thin amnion. This is generally caused by a tear in the umbilical cord during the third stage of labor but can also occur in patients with acute PA [4,5], although such an occurrence is rare.

Herein, we report the case of a patient with PA who presented with antepartum bleeding. The ultrasound findings of subamniotic hemorrhage resulted in the establishment of an early diagnosis and favorable clinical outcomes.

2. Case Report

A primigravid 35-year-old woman visited the emergency room for vaginal bleeding at 36 + 4 weeks of gestation. Her pregnancy was uncomplicated, and she had not experienced any vaginal bleeding during the first and second trimesters. She denied tobacco use before or during her current pregnancy. There was no evidence of active bleeding on physical examination, and a category 1 fetal heart rate tracing (when classified according to three-tier interpretation system) was observed.

Ultrasound revealed a hemorrhage that measured 5 cm wide and 1.8 cm deep with low echogenicity between the placenta and the fetus (Fig. 1). Although PA was suspected, a trial of labor was attempted after considering the reassuring pattern of the fetal heart rate tracing and the relatively small size of the hemorrhage. However, massive vaginal bleeding was observed two hours later. Although there was no evident increase in the size of the subamniotic hemorrhage, major detachment of the placenta could not be ruled out. Digital examination revealed that the cervix was two-fingers wide, less than 50% effaced, and at station –1. An emergent cesarean section was planned based on the diagnosis of PA.

The surgical findings during the emergent cesarean section were consistent with PA, and a Couvelaire uterus was noted in the right anterior corpus. A retroplacental clot was identified on the maternal surface of the placenta, and a subamniotic hematoma was identified on the fetal surface of the placenta. The histopathological report confirmed the



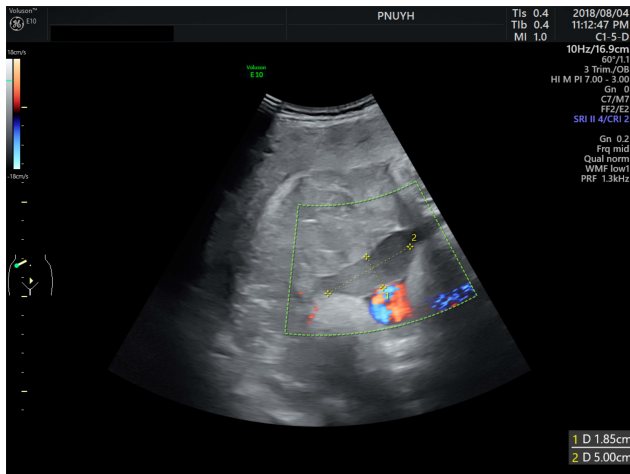


Fig. 1. Ultrasound finding of subamniotic hemorrhage. Hemorrhage is shown as a low echogenic mass in between the placenta and the amnion. Color Doppler revealed negative findings within the hemorrhage.

presence of retroplacental and subamniotic hemorrhages, which were consistent with the ultrasonographic findings (Fig. 2A,B, respectively). These findings were diagnostic of PA. The baby weighed 3330 g, and the 1- and 5-minutes Apgar scores were 6 and 8, respectively. The postoperative course of the patient was uneventful, and the patient and baby were discharged on day 3.

3. Discussion

PA is a serious obstetrical complication that jeopardizes both the mother and the fetus. Chronic and partial PAs may remain concealed until delivery, whereas acute and rapidly progressive PAs are often life threatening. Downes *et al.* [6] published a systemic review indicating that a PA is associated with abnormal maternal and perinatal outcomes, which can have an effect beyond the initial period of birth. Anath *et al.* [7] reported that serious maternal morbidity profiles are distinctively derived from a severe PA as compared to mild or non-PA cases.

Hypertensive disorders and premature rupture of membranes are major pregnancy-associated risk factors of PA. The sociodemographic and behavioral risk factors of PA include cigarette smoking, alcohol use, *in vitro* fertilization, and maternal age >35 years [8,9]. However, the etiopathogenesis of PA is multifactorial and not well understood [10].

The role of ultrasound in the diagnosis of PA is limited owing to its low sensitivity [11,12]. However, it has a high specificity and high positive predictive value [12]. In their study of 162 clinically diagnosed PA cases, Elsasser *et al.* [3] concluded that an ultrasound finding of a retroplacental hemorrhage is the most consistent indicator for a diagnosis of PA upon histologic examination. However, vaginal bleeding, accompanied by a non-reassuring fetal status or

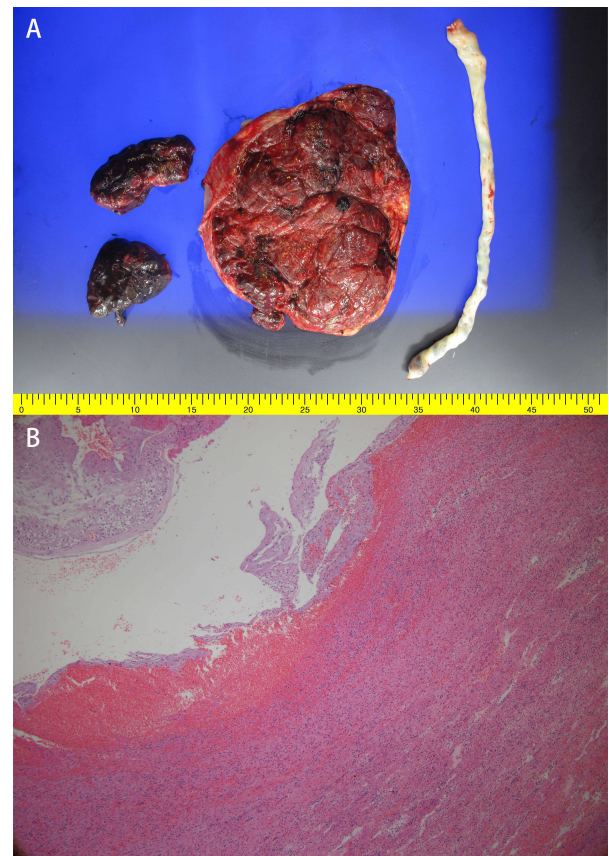


Fig. 2. Macroscopic and microscopic findings. (A) Gross finding of the placental bed. Hematoma was removed from its sub-placental and subamniotic locations. (B) Microscopic finding of placental abruption. Massive subchorionic loculation of RBCs are noted. H&E stain, $\times 40$.

uterine hypertonicity, made up only 16.3% of all PA cases on pathologic confirmation [1,3]. In a study of 100 PA cases, Boisramé *et al.* [13] reported that only 4% presented with the classic clinical triad. A case of fetal demise and severe maternal complications comprising disseminated intravascular coagulation occurring with a normal antenatal ultrasound scan has been described in the literature [14].

In the current case, an ultrasound performed on a patient who visited the emergency room with antepartum bleeding revealed a subamniotic hemorrhage. The relationship between the presence of subamniotic hemorrhage and diagnosis of PA is not always consistent. The interval expansion of subamniotic hemorrhage may help demonstrate the cause of the bleed as PA. Conversely, in this case, the diagnosis of PA was ascertained due to the massive vaginal bleeding that occurred subsequently, and not because of the interval increase in subamniotic hemorrhage. We postulate that the initial bleeding was due to partial abruption and that the development of subamniotic hemorrhage occurred subsequently. Meanwhile, the second event was a sub-placental hemorrhage that induced the bleed, resulting in the need for an emergent cesarean delivery.

The significance of this case report is that the subamniotic hemorrhage that was identified on the antepartum ultrasound in a patient with antepartum bleeding led to an early diagnosis of PA. This enabled minimization of any potential maternal and fetal compromise. The clinical presentation of PA varies, and a delay in the diagnosis increases maternal and perinatal morbidity and mortality. Therefore, it is important to understand that a subamniotic hemorrhage can result from PA, and a thorough ultrasound examination of the placenta should be performed in patients with antepartum bleeding.

Author Contributions

JY, JL, and DHL designed the study. JL performed the research on clinical data and literature review. JY wrote the manuscript, and DHL provided help and advice on writing of manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

The local institutional review board approved the exemption of this study and the requirement of consent to participate was waived owing to its retrospective nature (Reference number: 05-2019-043).

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Conflict of Interest

The authors declare no conflict of interest.

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