Placental Abruption as a Complication of Preeclampsia that Causes Fetal Distress

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Abstract

Background
Placental abruption is a common complication of preeclampsia. It is an obstetric emergency which occurs when the placenta partially or completely separates from the uterine wall. The diagnosis is usually made clinically or objectively. It is relatively rare but put a serious risk for both the fetus and the mother.

Case presentation
We reported a case of a 32-year-old multigravida patient at 35-36 weeks gestation presented with moderate vaginal bleeding and lower abdominal pain. Her obstetric history included one premature vaginal delivery. Her blood pressure started to rise in the second trimester of pregnancy. The examination revealed that her blood pressure was 190/120 mmHg, she had pitting edema on her extremities and tender uterine fundus. The fetal heart rate was bradycardia at 100 beats per minute. Placental abruption and fetal distress were diagnosed. An emergency cesarean section was performed. Intraoperatively, the uterus showed intramural bleeding and was livid, with the beginning of Couvelaire-uterus. The uterus was left in situ.

Conclusion
As a conclusion, placental abruption interrupts the vital function of the placentae which leads to fetal hypoxia and even fetal death. It is an obstetric emergency that requires immediate intervention to save the fetus and reduce the risk of complications in the mother.

Keywords: fetal distress, preeclampsia, placental abruption

Background
The placenta is the fetus’ source of oxygen and nutrients, this is a life-sustaining function of the placenta. Therefore, diffusion to and from the maternal circulatory system is essential.¹ An ischemic placental disease is a group of pathologies that consist of preeclampsia, placental abruption, and intrauterine growth restriction. The underlying mechanism involves poor placentation in early pregnancy leading to uteroplacental under perfusion or ischemia.² Placental abruption occurs when the placenta partially or completely separates from the uterine wall. The initial event is bleeding into the decidua basalis. Then, the hematoma separates the placenta from the maternal vascular system. It interrupts placental blood flow; thus, it carries significant risk to the fetus and the risk of fetal death is increased.³,⁴ Preeclampsia carries a significant risk of developing placental abruption.⁴ Preeclampsia is defined as the presence of hypertension and severe features with or without proteinuria which occurs after 20 weeks of gestation.⁵ Diagnosis of placental abruption is usually made clinically based on patient’s signs and symptoms such as painful vaginal bleeding, uterine tenderness, and even deceleration of fetal heart rate. Thus, when frequent fetal heart rate monitoring is performed, placental abruption can usually be detected very early because it leads to fetal distress and intra-uterine fetal death (IUFD).⁶,⁷,⁸ Placental abruption can also be diagnosed by ultrasonography or objectively by evidence of retroplacental bleeding or the presence of a blood clot adhering to the placental surface.⁹ One of the rare, yet important findings of placental abruption is Couvelaire uterus (uteroplacental apoplexy) in which the uterus appears bluish or...
or purplish. We report a case of placental abruption caused by preeclampsia with complications of fetal distress.

**Case presentation**

A 32-year-old multigravida patient at 35-36 weeks gestation presented with moderate vaginal bleeding and lower abdominal pain came to the emergency department of Unggul Karsa Medika hospital. Her obstetric history included one premature spontaneous vaginal delivery at around 32 weeks gestation. She had no significant medical history. Her routine antenatal medical checkup findings were normal. However, her blood pressure started to rise in the second trimester of pregnancy. The physical examination revealed that her blood pressure was 190/120 mmHg. She had pitting edema on her extremities and tender uterine fundus. Laboratory examination revealed Hemoglobin of 10.3 g/dL, leukocyte of 14,500/mm3 and proteinuria (positive +++). Her obstetric examination findings were normal, but the fetal heart rate was bradycardia at 100 beats per minute. Placental abruption and fetal distress were diagnosed. Therefore, an emergency cesarean section was performed. Intraoperatively, approximately 500 cc of blood and coagula were found. The uterus showed intramural bleeding and was livid, with the beginning of Couvelaire-uterus (figure 1). The uterus was left in situ as the lividity improved intraoperatively. Placenta was evacuated surgically and found to be complete (figure 2). She delivered a 2,460 grams female baby with an Appearance, Pulse, Grimace, Activity, and Respiration (APGAR) score 7 and 9 in first and fifth minutes of life, respectively. Both the mother and the baby were safely discharged from hospital after inpatient care.

**Figure 1.** Couvelaire Uterus of the patient  
**Figure 2.** Placental Abruption of the patient

In preeclampsia, hypertension is a maternal compensatory mechanism for the fetus' blood flow inadequacy. This compensatory mechanism which usually occurs at the end of the second or third trimester of pregnancy increases blood flow towards the fetus. Placental abruption is a common complication of preeclampsia. The mechanism of how preeclampsia causes placental abruption is not fully understood. Placental dysfunction is caused by immune factors, Natural Killer (NK) cell action, and oxidative stress. This condition triggers the release of anti-angiogenic factors, such as soluble Fms-like tyrosine kinase 1 (sFlt1) and soluble Endoglin (sEng), which produce preeclamptic and hemorrhagic problems. In our case, preeclampsia had present from second trimester. Thus, preeclampsia was the risk factor of placental abruption in our case.

The clinical pictures of placental abruption may vary from asymptomatic to severe condition that leads to fetal distress and even fetal death. Thus, placental abruption is an obstetric emergency that usually requires immediate intervention, such as emergency cesarean section, to save the fetus and reduce the risk of complications in the mother. In rare condition, 5 - 20% of cases with placental abruption leads to extravasation of blood into the uterine wall, also known as Couvelaire uterus. In this condition the uterus appears bluish or purplish. It usually resolves spontaneously, therefore it is managed conservatively and hysterectomy should be discouraged unless indicated.

A similar case was reported by Mikuscheva, et. al. They reported 3 cases where the first symptom of preeclampsia was placental abruption. In their first case, the placental abruption causes IUFD
and Couvelaire uterus. The second and third cases demonstrate placental abruption causes fetal distress which is characterized by fetal bradycardia on examination and low APGAR score after birth. In our case, Couvelaire uterus was found intraoperatively (Figure 1). Fetal distress was also found with fetal bradycardia. Emergency caesarean section was done in our case and it was a success since she delivered a 2,460 grams female baby with good APGAR score (7 and 9 in first and fifth minutes of life, respectively).

**Conclusion**
Placental abruption interrupts the vital function of the placenta which leads to fetal hypoxia and even fetal death. It is an obstetric emergency that usually requires immediate intervention, such as an emergency cesarean section, to save the fetus and reduce the risk of complications in the mother. In our case, emergency caesarean section was done in our case and it was a success. Both the mother and the baby were safely discharged from hospital.

**List of abbreviations**
- IUFD - Intra-uterine Fetal Death
- APGAR - Appearance, Pulse, Grimace, Activity, and Respiration
- NK - Natural Killer
- sFlt1 - soluble Fms-like tyrosine kinase 1
- sEng - soluble Endoglin

**Declarations**

**Ethics approval and consent to participate**
Informed consent from the patient has been obtained before the study.

**Consent for publication**
Consent for publication regarding patient data has been obtained before the study.
All the patient identity has been kept secret.

**Availability of data and materials**
Not Applicable.

**Competing interests**
The authors declare that they have no competing interests.

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**References**
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