

## Severe Preeclampsia Complicated by Placental Abruption Leads to Fetal Distress

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### Abstract

Placental abruption is a common complication of preeclampsia. It is an obstetric emergency that 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. We reported a case of a 32-year-old multigravid patient at 35-36 weeks gestation who 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, and 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 suspected. 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. In 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 requires immediate intervention to save the fetus and reduce the risk of complications in the mother.

**Keywords:** fetal distress, obstetric emergency, placental abruption, preeclampsia

### *Preeklampsia Berat dengan Penyulit Solusio Plasenta yang Menyebabkan Gawat Janin*

#### Abstrak

*Solusio plasenta merupakan komplikasi yang umum dari preeklampsia. Keadaan ini merupakan kegawatdaruratan obstetri yang terjadi ketika plasenta terlepas sebagian atau seluruhnya dari dinding uterus. Diagnosis biasanya ditegakkan secara klinis maupun objektif. Solusio plasenta relatif jarang terjadi namun memiliki risiko yang serius bagi janin dan juga ibu. Seorang pasien multigravida berusia 32 tahun, usia kehamilan 35-36 minggu datang dengan keluhan perdarahan pervaginam dan nyeri abdomen bagian bawah. Pasien memiliki riwayat persalinan prematur per vaginam. Tekanan darahnya mulai meningkat pada trimester kedua kehamilan. Pada pemeriksaan, didapatkan tekanan darah 190/120 mmHg, disertai dengan pitting edema pada ekstremitas dan nyeri tekan pada fundus uteri. Denyut jantung janin 100 denyut per menit (bradikardia). Pasien didiagnosis dengan suspek solusio plasenta dan gawat janin. Kemudian, operasi caesar cito dilakukan. Pada saat operasi dilakukan, ditemukan perdarahan intramural dan dinding rahim pucat, dengan permulaan Couvelaire-uterus. Rahim dibiarkan in situ. Sebagai simpulan, solusio plasenta mengganggu fungsi vital plasenta yang dapat menyebabkan hipoksia janin dan kematian janin. Keadaan ini merupakan kegawatdaruratan obstetri yang membutuhkan intervensi segera untuk menyelamatkan janin dan mengurangi risiko komplikasi pada ibu.*

**Kata Kunci:** gawat janin, kegawatdaruratan obstetri, preeklampsia, solusio plasenta

### Preface

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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.<sup>1</sup> An ischaemic 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.<sup>2</sup> 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 a significant risk to the fetus and the risk of fetal death is increased.<sup>3,4</sup> Preeclampsia carries a significant risk of developing placental abruption.<sup>4</sup> Preeclampsia is defined as the presence of hypertension and severe features with or without proteinuria which occurs after 20 weeks of gestation.<sup>5</sup> Diagnosis of placental abruption is usually made clinically based on the 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 IUFD.<sup>6,7,8</sup> Placental abruption can also be diagnosed objectively with evidence of retroplacental bleeding or the presence of a blood clot embedded on the placental surface.<sup>9</sup> One of the rare, yet important findings of placental abruption is couvelaire uterus (uteroplacental apoplexy) in which the uterus appears bluish or purplish.<sup>10</sup> We report a case of fetal distress caused by preeclampsia complicated with placental abruption.

### Case Report

A 32-year-old multigravid patient at 35-36 weeks gestation presented with moderate vaginal bleeding and lower abdominal pain and came to the emergency department. 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 Hb of 10.3 g/dL, leukocyte of

14.500/mm<sup>3</sup> 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 suspected. 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. The uterus was left in situ as the lividity improved intraoperatively. She delivered a 2460g female baby with an APGAR score of 7/9.

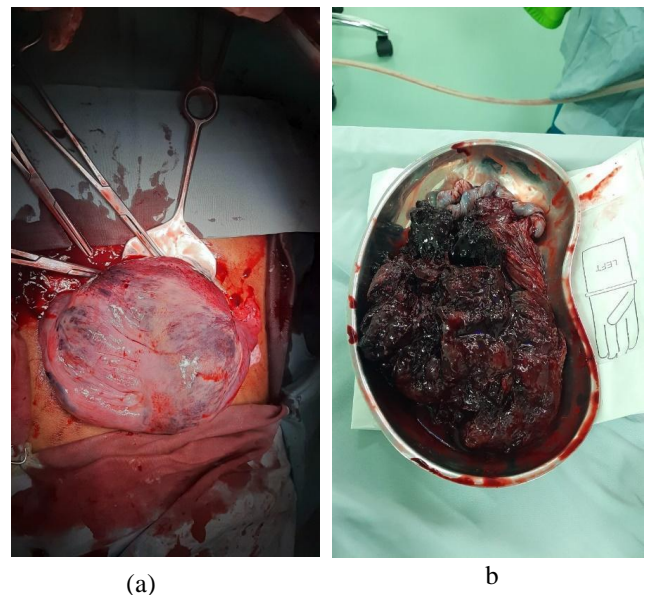


Figure 1. A. Couvelaire Uterus B. Placental Abruption

### Discussion

Placental abruption results from hemorrhage at the decidua-placental layer. The process begins with a rupture of a decidual spiral artery that causes hemorrhage into the decidua basalis. As the blood accumulates, a retroplacental hematoma is formed. It then splits the decidua and leaves a thin layer adherent to the myometrium, resulting in the separation of the uterine wall and placenta. The bleeding insinuates between the uterine wall and the membrane, ultimately infiltrating through the cervix ostium and causing external hemorrhage.<sup>1,16</sup> Not all cases of preeclampsia lead to placental abruption. Yet, studies showed that there is a significant association between placental abruption and preeclampsia. Hypertension is a maternal compensatory mechanism for the fetus' blood flow inadequacy.<sup>11</sup> This compensatory mechanism which usually occurs at the end of the second or

third trimester of pregnancy increases blood flow towards the fetus.<sup>12</sup> The mechanism of how preeclampsia causes placental abruption is not fully understood. Placental dysfunction is caused by immune factors, NK cell action, and oxidative

stress. This condition triggers the release of anti-angiogenic factors (sFlt1 and sEng) which produce preeclamptic and hemorrhagic problems.<sup>7</sup> These processes are summarized in figure 2.

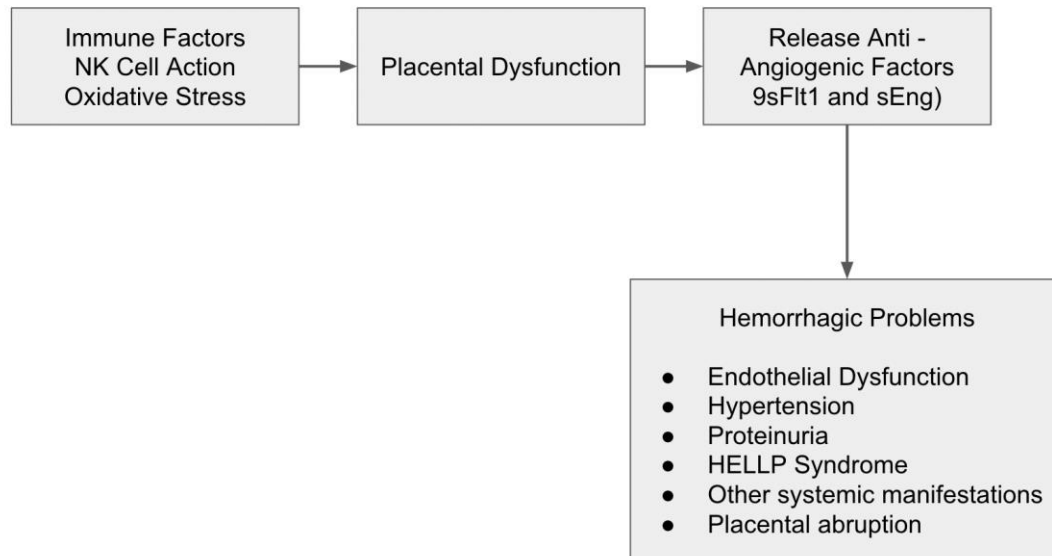


Figure 2. Summary of The Pathogenesis of Preeclampsia and High Risk of Hemorrhage<sup>7</sup>

The clinical pictures of placental abruption may vary from asymptomatic to severe condition that leads to fetal distress and even fetal death.<sup>7,8</sup> Thus, placental abruption 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.<sup>13</sup> 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.<sup>10,14</sup> It usually resolves spontaneously, therefore it is managed conservatively and hysterectomy should be discouraged unless indicated.<sup>15</sup>

A similar case was reported by Mikuscheva, Anastasia 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.<sup>11</sup>

## Conclusion

Placental abruption interrupts the vital function of the placenta which leads to fetal hypoxia and even fetal death. It is an obstetric emergency. Therefore, we recommend for patients with suspected placental abruption need immediate intervention both in the emergency unit and operating room, to save the fetus and reduce the risk of complications in the mother.

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