

Placenta Previa and Abruption Placentae: Review Questions

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QUESTIONS

Choose the single best answer for each question.

1. A 35-year-old gravida 3, para 2 woman who is 38 weeks pregnant presents to the emergency department (ED) with painless, bright red vaginal bleeding that started 2 hours ago. The bleeding has now stopped. Her vital signs are stable. Past medical history is significant for 2 prior cesarean sections. Which of the following is contraindicated in the acute management of this patient?
 - (A) Cesarean section
 - (B) Digital pelvic examination
 - (C) Fetal cardiocotography
 - (D) Intravenous (IV) access
 - (E) Transvaginal or transabdominal ultrasound
2. A 25-year-old woman who is approximately 35 weeks pregnant based on her last menstrual period presents to the ED with vaginal bleeding. She has had no prenatal care since her first clinic visit at 10 weeks. Vital signs are stable. On examination, her uterus is soft and nontender. A transabdominal ultrasound is performed (Figure). What is this patient's most likely diagnosis based on the ultrasound findings?
 - (A) Abruption placentae
 - (B) Cord prolapse
 - (C) Placenta accreta
 - (D) Placenta previa
 - (E) Uterine rupture
3. Which of the following is a risk factor for placenta previa?
 - (A) Age < 20 years
 - (B) Gestational diabetes mellitus
 - (C) Obesity
 - (D) Prior cesarean section
 - (E) Strenuous exercise

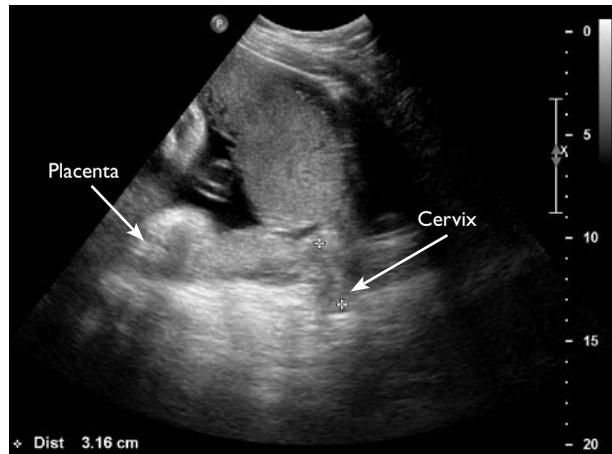


Figure. Transabdominal ultrasound (sagittal view) of the patient described in question 2.

Questions 4 and 5 refer to the following case.

A 39-year-old gravida 4, para 3 woman who is 38 weeks pregnant presents to the ED with painful, bright red vaginal bleeding after falling down 5 stairs. She landed on her buttocks and reports no loss of consciousness. On examination, her uterus is tender and firm. Past medical history is significant for smoking cigarettes. A bedside transvaginal ultrasound is negative for placenta previa. The fetal heart rate is 100 bpm. The patient's vital signs are blood pressure, 95/60 mm Hg; heart rate, 125 bpm; respiratory rate, 20 breaths/min; and temperature, 98.5°F (37°C). Peripheral access is obtained with 2 large-bore IV lines.

4. What is this patient's most likely diagnosis?
 - (A) Cervical polyp
 - (B) Placental abruption
 - (C) Preeclampsia
 - (D) Preterm labor
 - (E) Vasa previa

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5. What is the next step in this patient's management?

- (A) Administer pain medication and continue serial abdominal examinations
- (B) Order a Kleihauer-Betke test
- (C) Outpatient follow-up after blood pressure improves with IV fluids
- (D) Stabilize the patient and arrange immediate obstetric consultation

6. Which of the following increases the risk of placental abruption?

- (A) Age < 35 years
- (B) Gestational diabetes
- (C) Previous placental abruption
- (D) Strenuous exercise

ANSWERS AND EXPLANATIONS

- 1. (B) Digital pelvic examination.** This patient is experiencing vaginal bleeding in the third trimester. Performing a digital pelvic examination for vaginal bleeding in the latter half of pregnancy without first ruling out placenta previa is contraindicated.¹ During digital examination, the finger comes in direct contact with the placenta, which can cause catastrophic hemorrhage.^{1,2} A transvaginal or transabdominal ultrasound should be obtained when a patient presents with vaginal bleeding in the second or third trimester of pregnancy, as in this case. Transvaginal ultrasonography is preferred over transabdominal ultrasonography for diagnosing placenta previa because it is more accurate in identifying the placenta overlying the internal os.¹ During a transvaginal ultrasound, the transvaginal probe is placed in the vagina against the anterior fornix at an angle 2 to 3 cm away from the internal os, which prevents it from slipping into the cervical canal and coming into contact with the placenta. Thus, the placenta can be visualized without inadvertently causing hemorrhage.^{1,2} The image quality of a transabdominal ultrasound is poorer compared with a transvaginal ultrasound because the transabdominal probe is placed farther away from the placenta. Also, the fetal head may obscure the placental edges when transabdominal ultrasound is performed in the second or third trimester, resulting in a higher rate of false-positive diagnoses of placenta previa.^{1,2}
- 2. (D) Placenta previa.** The ultrasound shows a complete placenta previa (Figure), an implantation of the placenta over the lower part of the uterus covering all of the internal cervical os. Placenta previa occurs in 0.3% to 0.5% of all pregnancies,¹ and most cases are

diagnosed in asymptomatic women during routine ultrasonography in the second trimester. There are 4 types of placenta previa defined according to the relationship of the placenta to the internal os: complete, partial, marginal, and low-lying. A complete or partial placenta previa requires cesarean delivery. Immediate cesarean delivery in these patients is indicated if there is significant bleeding after 34 weeks of gestation; there are nonreassuring fetal heart tracings despite oxygen, IV fluids, and maternal positioning to the left side; and maternal cardiovascular status cannot be stabilized.¹ Women with a complete or partial placenta previa should be admitted for continued maternal and fetal monitoring, even if bleeding has stopped. Asymptomatic patients (no bleeding or spotting) with a complete or partial placenta previa can be managed on an outpatient basis with serial ultrasound, abstaining from sexual intercourse, and avoidance of digital pelvic examinations; delivery is by scheduled cesarean section.¹ Symptomatic patients (currently bleeding or history of bleeding that has stopped) are admitted for fetal and maternal monitoring. Patients with marginal or low-lying placenta are managed similarly to those with complete or partial placenta previa. However, the mode of delivery for these patients is controversial (vaginal versus cesarean delivery) and left to the discretion of the attending obstetrician.¹

- 3. (D) Prior cesarean section.** Prior cesarean section is a significant risk factor for placenta previa.¹ The incidence of placenta previa increases in a linear fashion after each cesarean section, increasing from 1% to 5% after 1 cesarean section to 10% after 4 cesarean sections.³ Other risk factors include cocaine use, age older than 35 years, multiparity, cigarette smoking, multiple pregnancy, intrauterine surgery, and abortion.⁴
- 4. (B) Placental abruption.** This patient has signs and symptoms of a placental abruption, a premature separation of a normally implanted placenta. Placental abruption occurs in approximately 1% to 2% of all pregnancies.^{5,6} The presentation of placental abruption varies depending on the degree and location of the placental separation. Some patients present with minor bleeding and are hemodynamically stable, whereas others have major bleeding, hemorrhagic shock, and fetal demise. Approximately 20% of placental abruptions are "concealed" with little or no visible vaginal bleeding.⁵ In cases of concealed placental abruption, maternal shock may not coincide with the

amount of visible blood loss, and the emergency physician should suspect a concealed placental abruption in a pregnant patient with undifferentiated shock. Placental abruption is categorized using a grading system of 1 through 3 based on clinical presentation and laboratory findings. Grade 1 occurs in 40% of cases; these patients are asymptomatic or have vaginal spotting, are hemodynamically stable, and have no evidence of disseminated intravascular coagulation (DIC), and the fetal heart rate is normal. Grade 2 placental abruption occurs in 45% of cases and is characterized by moderate vaginal bleeding or hematoma, uterine tenderness with contractions, maternal tachycardia, a nonreassuring fetal heart rate, and decreased maternal fibrinogen levels. Grade 3 placental abruption occurs in 15% of cases and is characterized by severe vaginal bleeding, extreme blood loss, uterine tenderness and contractions, maternal hypovolemic shock, fetal distress or fetal death, and a high risk of DIC. Based on the patient's symptoms, she has a grade 3 placental abruption, and the risk of DIC and associated fetal death is 10% to 20%.

5. **(D) Stabilize the patient and arrange immediate obstetric consultation.** This patient's vital signs should be stabilized using IV fluids (crystalloid) and, if necessary, blood products (ie, red blood cells, platelets, fresh frozen plasma). Because the patient is at term, the obstetrician also should be notified of the patient's placental abruption to determine the need for immediate cesarean section. The presentation of placental abruption varies, and management should be individualized based on the gestational age of the fetus, the amount of maternal or fetal

compromise, and maternal presentation.⁶ Continuous fetal and maternal monitoring is necessary for all patients with suspected placental abruption. Laboratory testing should be performed, including hemoglobin/hematocrit, platelet count, fibrin, fibrinogen, fibrin split products, prothrombin time, activated partial thromboplastin time, blood type, and Rh factor. A Foley catheter is placed in patients who are hemodynamically unstable for monitoring urine output to greater than 30 mL/hr. The Kleihauer-Betke test may be positive in patients with severe placental abruption but it is not diagnostic of placental abruption.

6. **(C) Previous placental abruption.** The risk of placental abruption is increased 15- to 20-fold if an earlier pregnancy had been complicated by placental abruption.⁶ Other risk factors include chronic hypertension, cocaine use, preeclampsia, age over 35 years, trauma, thrombophilia, cigarette smoking, preterm premature rupture of membranes, chorioamnionitis, and multiparity.^{4,5}

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