

Abruptio Placentae

Risk

- Occurs in 0.4-1% of pregnancies, and the incidence is increasing, particularly among African Americans.
- Associated with the following conditions: pre-eclampsia, hypertension, chorioamnionitis, cocaine use, alcohol use, trauma, increased age and parity, smoking, premature rupture of membranes, prior abruptio, and multiple gestation.

Perioperative Risks

- Maternal: Antepartum and postpartum hemorrhage, DIC, and death.
- Fetal: Hypoxia, prematurity, and fetal demise. Placental separation may lead to reduced gas exchange surface area, and maternal hypotension will worsen uteroplacental blood flow.
- Maternal risk lies in severity of abruptio, whereas fetal risk depends on both severity and gestational age at time of abruptio.

Worry About

- Concealed hemorrhage in a retroplacental hematoma may not manifest as vaginal bleeding and can

lead to considerable underestimation of maternal hypovolemia.

- Postpartum hemorrhage refractory to usual oxytocic agents; some believe old blood can infiltrate into and between uterine muscle fibers and decrease the effectiveness of uterine contractions (Couvelaire uterus). May need peripartum hysterectomy as a last resort.
- Maternal coagulopathy occurs in 10% of cases.
- Fetal distress and demise.

Overview

- Along with placenta previa, a major cause of antepartum hemorrhage, maternal mortality, and perinatal mortality.
- Perinatal mortality is 12%, but it varies depending on severity of abruptio and gestational age.
- Classical clinical triad of metrorrhagia, uterine hypertonia, and abdominopelvic pains presents in only 9.7% of cases.
- Placental abruptio is the most common condition (37%) associated with DIC in obstetric pts. DIC is probably because of the release of thromboplastin into the central circulation by placental tissues at abruptio site.
- Postpartum hemorrhage correlates directly with severity of coagulopathy.

- Blood and blood clots in muscle fibers may inhibit ability of uterus to contract, which leads to more blood loss.

Etiology

- Separation of placenta from uterine wall along decidua plane between membranes and uterus

Usual Treatment

- Meticulous attention to maternal volume status and fetal surveillance.
- Timing and route of delivery depend on degree of maternal and fetal compromise and estimated gestational age.
- If fetus is preterm and both maternal/fetal status are reassuring, careful observation to optimize fetal maturation is appropriate.
- If fetus is at or near term and both maternal/fetal status are reassuring, vaginal delivery is reasonable.
- If maternal or fetal status is nonreassuring, cesarean delivery is necessary. Cesarean delivery rates are as high as 90%, with 51% being performed under general anesthesia.
- If fetus demise occurs and mother is stable, then vaginal delivery may be considered, if imminent.

Assessment Points

System	Effect	Assessment by Hx	PE	Test
CV	Hemorrhage	Vaginal bleeding and abdominal pain	Vaginal bleeding and firm, tender uterus; hypotension; tachycardia; low CV and wedge pressures; decreased urine output	Hemoglobin, hematocrit
HEME	Hypovolemia; acute anemia	Bleeding diathesis	Hypotension, tachycardia, bleeding from puncture sites, easy bruisability	Hgb; Hct; clotting evaluation that includes platelets, fibrinogen, and fibrin split products
RENAL	Oliguria and/or acute renal failure	Urine output	Signs of hypovolemia	Urinalysis to include specific gravity and sodium excretion, possibly in addition to invasive hemodynamic monitoring values
UTERUS/ VAGINA	Abruptio; hemorrhage	Painful vaginal bleeding	Tender, firm uterus; vaginal bleeding may be less prominent than CV signs and symptoms, indicating concealed hemorrhage	Hgb, Hct, and hemodynamic monitoring values
FETUS	Fetal distress and/or demise; fetal growth restriction	Presence or absence of fetal movement	Fetal movement, heart rate	Electronic fetal monitoring

Key References: Scavone BM: Antepartum and postpartum hemorrhage. In Chestnut DH editor: *Obstetric anesthesia*, ed 5, Philadelphia, PA, 2014, Saunders, pp 881-914; Oyelese Y, Ananth CV: Placental abruptio, *Obstet Gynecol* 108(4):1005-1016, 2006.

Perioperative Implications—For Labor and Vaginal Delivery

Preinduction/Induction/Maintenance

- Optimize maternal CV status and evaluate coagulation system. Closely monitor for further bleeding and hemodynamic changes.
- Neuraxial analgesia may be offered if intravascular volume status and coagulation profile are adequate. Consider using smallest effective analgesic doses.
- Coagulopathic pts presenting for vaginal deliveries may be offered IV pr-controlled opioid analgesia.
- Electronic fetal monitoring is essential.

Perioperative Implications—For Cesarean Delivery

Preinduction/Induction/Maintenance

- Optimize maternal CV status, usually with intravascular volume replacement.
- Obtain large-bore IV access; draw blood to assess hematocrit, coagulation status, and type and crossmatch.

Monitoring

- Urethral cath to monitor urine output.
- Consider invasive monitoring (arterial cath and/or central venous cath), depending on severity of hemorrhage.

General Anesthesia

- Preferred anesthetic approach for unstable maternal and/or fetal status.

- Aspiration prophylaxis.
- Rapid-sequence induction with cricoid pressure.
- Consider ketamine or etomidate for induction if there is concern for significant hypotension in response to propofol.
- Monitor for persistent hemorrhage after delivery of infant as a result of uterine atony or coagulopathy. Replacement of coagulation factors and red blood cells may be needed. Therapies for uterine atony include
 - Uterotonics, such as oxytocin, methergine, and prostaglandin F_{2α}.
 - Intrauterine balloon tamponade.
 - Uterine compression suture (B-lynch suture).
 - Embolization/ligation of uterine or hypogastric arteries.
 - Peripartum hysterectomy.
 - Recombinant factor VIIa.

Neuraxial Anesthesia

- May be considered if intravascular volume status and coagulation profile are adequate.
- Aspiration prophylaxis.
- Epidural preferred over spinal because the level can be raised slowly, but could do with continuous spinal cath.
- Treat hypotension early and vigorously, usually with ephedrine or phenylephrine.
- Monitor for persistent hemorrhage as noted above.

Postoperative Period

- Majority of mothers recover quickly and completely.
- Recovery should be in a multidisciplinary intensive care unit for pts who had massive transfusion or significant hypotension.
- Aggressive monitoring for persistent hemorrhage and/or development of coagulopathy.
- Need early replacement of coagulation factors, especially fibrinogen.

Anticipated Problems/Concerns

- Amount of bleeding may be considerably greater than what is evident per vagina because a significant amount of blood can be concealed behind the abruptio.
- Possible need for emergency cesarean delivery for fetal distress and/or maternal hemodynamic instability.
- Definitive therapy is delivery of the infant and placenta via vaginal or cesarean method.
- Hemorrhage may continue postpartum from uterine atony that is refractory to the usual uterotonic agents or from coagulopathy.
- Peripartum hysterectomy may be necessary, which may in itself be accompanied by large amount of blood loss.
- If massive blood transfusion is needed, be aware of possible dilutional thrombocytopenia and need for coagulation factor replacement.