Placental abruption: Management and long-term prognosis

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INTRODUCTION

This topic will discuss the management of pregnancies complicated by placental abruption. The clinical features, diagnosis, and potential consequences of abruption are reviewed separately. (See "Placental abruption: Pathophysiology, clinical features, diagnosis, and consequences".)

INITIAL APPROACH FOR ALL PATIENTS

Pregnant women with symptoms of abruption should be evaluated promptly on a labor and delivery unit to establish the diagnosis, assess maternal and fetal status, and initiate appropriate management. Even those with an apparently small abruption who are initially stable may deteriorate rapidly if placental separation progresses or they develop sequelae of potential comorbidities, such as preeclampsia, cocaine use, or trauma.

The following actions are reasonable initial interventions:

- Initiate continuous fetal heart rate monitoring, since the fetus is at risk of becoming hypoxemic and developing acidosis.
- Secure intravenous access. Place one wide-bore intravenous line; two if the patient presents with signs of moderate or severe abruption, such as moderate to heavy bleeding, hypotension, tachysystole, uterine hypertonicity and tenderness, coagulopathy, or an abnormal fetal heart rate.
- Administer crystalloid, preferably Lactated Ringer's, to maintain urine output above 30 mL/hour.
- Closely monitor maternal hemodynamic status (heart rate, blood pressure, urine output, blood loss). Assessment of multiple parameters is important because normal blood pressure may mask hypovolemia if the mother has chronic hypertension or pregnancy-associated hypertension, which are risk factors for abruption.

  In patients who may have a severe abruption, urine output should be monitored closely, but a bladder catheter is not necessary unless the patient is hemodynamically unstable or having a cesarean delivery.
- Quantify blood loss. Moderate and heavy bleeding can be measured in a variety of ways, including:
  - Collecting blood in graduated measurement containers, including drapes with calibrated pockets.

- Using visual aids (eg, posters, pocket cards [1]) that correlate the size and appearance of blood on specific surfaces (eg, maternity pad, bed sheet, lap sponge) with the volume of blood absorbed by that surface (picture 1).

- Measuring the total weight of bloody materials and subtracting the known weight of the same materials when dry. The difference in weight between wet and dry in grams approximates the volume of blood in milliliters.

Actual blood loss may be far in excess of what is observed due to retained retroplacental, retrochorionic, or intraamniotic bleeding, or clot formation.

- Draw blood for:

  - Complete blood count including platelet count
  - Blood type and screen (crossmatch if transfusion is likely)
  - Coagulation studies (fibrinogen concentration, prothrombin time, activated partial thromboplastin time)

  Liver chemistries should be checked in women with preeclampsia or HELLP syndrome (ie, Hemolysis, Elevated Liver enzymes, Low Platelet count).

  Urine toxicology is appropriate if substance abuse is suspected.

  A baseline complete metabolic panel, including creatinine, is prudent since women with severe abruption often develop renal dysfunction.

- A quick and crude clotting test (Lee White test) can be performed at the bedside by placing 5 mL of the patient's blood in a tube with no anticoagulant for 10 minutes [2-4]. Failure to clot within this time or dissolution of an initial clot implies impairment of coagulation and is suggestive of a low fibrinogen level. Prolonged oozing from needle puncture sites also suggests coagulopathy.

- Patients with initially normal coagulation results may develop coagulopathy over time. In women who continue to have (or develop) signs of moderate or severe abruption, notify the blood bank so blood replacement products (red cells, fresh frozen plasma, cryoprecipitate, platelets) will be readily available, if needed, and repeat the blood count and coagulation studies.

- Replace blood and blood products, as required. If bleeding continues and the estimated blood loss has exceeded 500 to 1000 mL, we transfuse blood and initiate a massive transfusion protocol when ≥4 units of blood are transfused (sample protocol: 6 units packed red blood cells, 6 units of fresh frozen plasma, 1 or 2 cryoprecipitate pools [each pool is composed of 5 individual units], and 1 dose of platelets [either a pool of 4 to 6 whole blood-derived platelet concentrates or a single apheresis platelet unit]). (See "Massive blood transfusion".)

  Transfusion targets vary among authorities. We aim to maintain the following targets because of the risk for continued bleeding and coagulopathy:

  - Hematocrit ≥25 to 30 percent

  - Platelet count ≥75,000/microL

  - Fibrinogen ≥300 mg/dL

  - Prothrombin and partial thromboplastin time <1.5 times control

A detailed description of the management of pregnant women with disseminated intravascular coagulation can be found separately. (See "Disseminated intravascular coagulation (DIC) during pregnancy: Clinical findings, etiology, and diagnosis".)

- Notify the anesthesia team. Anesthesia-related issues in patients with moderate or severe abruption include management of hemodynamic instability, technical issues related to bleeding diathesis, and the potential need for emergency cesarean delivery. (See "Anesthesia for the patient with peripartum hemorrhage".)
- Administer standard medications to women likely to deliver:
  - Magnesium sulfate for neuroprotection for pregnancies <32 weeks of gestation. (See "Neuroprotective effects of in utero exposure to magnesium sulfate".)
  - Group B streptococcus prophylaxis according to local guidelines. (See "Neonatal group B streptococcal disease: Prevention".)
  - Antenatal corticosteroids for pregnancies <34 weeks of gestation (and possibly at 34 to 36 weeks of gestation), unless delivery is imminent. (See "Antenatal corticosteroid therapy for reduction of neonatal respiratory morbidity and mortality from preterm delivery".)
- Keep the patient warm and provide supplemental oxygen, as needed.

SUBSEQUENT MANAGEMENT

Overview — Our general approach to managing the most common clinical scenarios in patients with abruption is described below. In individual patients, some modification may be needed for patient-specific factors. No randomized trials and few observational studies have examined the management of pregnancies complicated by this disorder [5]. Therefore, our recommendations are based on case series and reports, personal experience, and good clinical sense.

The most important factors impacting the decision to deliver a patient with placental abruption versus expectant management are gestational age, which affects the type and frequency of neonatal morbidity, and maternal and fetal status, which reflect the severity of the abruption.

Term pregnancies and pregnancies complicated by a severe abruption generally need to be delivered. Severe abruption is characterized by one or more of the following: disseminated intravascular coagulation, hypovolemic shock, need for blood transfusion, renal failure, nonreassuring fetal status, growth restriction, and fetal death [6].

Clinical setting

Unstable mother — Cesarean delivery is the best option when vaginal delivery is not imminent and rapid control of bleeding is required because of maternal hemodynamic instability or significant coagulopathy, or the mother is unwilling to accept adequate blood replacement therapy and is therefore likely to develop hemodynamic instability during labor. Blood and blood products for correction of hypovolemia and coagulopathy should be replaced prior to and during the cesarean delivery. (See "Disseminated intravascular coagulation (DIC) during pregnancy: Management and prognosis", section on 'Hemodynamically unstable mother or fetal distress or contraindication to vaginal birth'.)

Unstable mother with dead fetus — The optimal route of delivery in these cases minimizes the risk of maternal morbidity or mortality since fetal well-being is no longer a factor. Blood and blood product replacement are often necessary and expeditious delivery is desirable because the frequency of coagulopathy and continuous heavy bleeding is much higher in abruptions in which fetal death has occurred. Placental separation is often greater than 50 percent.

Stable mother and nonreassuring fetal status or demise

- **Category III tracing** – Expeditious delivery, usually by urgent cesarean, is indicated if the fetal heart rate pattern suggests an increased risk of fetal acidemia (ie, category III tracing). A biophysical profile score of 0 to 4 also suggests an increased risk of fetal acidemia and the need for expeditious delivery. While tocolytics have been suggested for intrapartum resuscitation in response to intrapartum category III fetal heart rate tracings, we suggest not using tocolytics for this purpose in cases of suspected placental abruption as it may worsen any maternal hemodynamic instability and increase the volume of postpartum bleeding [7]. (See "Intrapartum fetal heart rate monitoring: Overview", section on 'Physiologic significance of selected FHR characteristics'.)

  If vaginal delivery is imminent, then a spontaneous or instrument-assisted vaginal birth is likely the least morbid route of delivery for the mother, whether or not she is hemodynamically stable. Otherwise, cesarean delivery is indicated. Blood and blood products should be replaced prior to and during delivery, when indicated because of hemodynamic instability and coagulopathy.

  In one of the only studies that evaluated cesarean delivery for severe abruption with fetal bradycardia, a decision-to-delivery interval of less than 20 minutes was associated with better outcomes than a 30-minute interval [8]. Although this was a small case-control study of 31 cases, it underscores the principle that minimizing the duration of prolonged bradycardia before birth impacts outcome when the abruption is severe.

- **Category II tracing** – Although a category II tracing may be managed expectantly in patients without abruption, it is ominous in the setting of a probable abruption because of the high risk for sudden fetal deterioration to a category III tracing and fetal death. Delivery management depends on gestational age, cervical dilation, and whether there is progressive deterioration in either the tracing or maternal condition. Close monitoring is essential and preparations for urgent delivery should be made in expectantly managed cases. (See "Intrapartum category I, II, and III fetal heart rate tracings: Management".)

- **Fetal demise** – A previous classical hysterotomy is a relative contraindication to vaginal birth. Although these patients are at increased risk of uterine rupture during labor, a 4 to 9 percent risk of rupture may be acceptable in the setting of fetal demise since cesarean delivery has no fetal benefit. This decision should be individualized, taking into account factors such as gestational age and cervical status. (See "Uterine rupture: After previous cesarean delivery".)

Stable mother and reassuring fetal status — If the fetal heart rate pattern or biophysical profile score is reassuring, then the decision to deliver versus expectant management depends on gestational age and whether abruption has led to onset of spontaneous labor.

Less than 34 weeks of gestation — When the fetus and mother are both stable and there is no evidence of ongoing major blood loss or coagulopathy, conservative management with the aim of delivering a more mature fetus is the main goal before 34 weeks of gestation [9-12].

- **For women in preterm labor**, we administer a 48-hour course of nifedipine to enable administration of a full course of corticosteroids (discussed below). Contractions may be caused by the direct or indirect effect

of thrombin and may lead to further placental separation, which may, in turn, cause further bleeding, creating a cycle of bleeding and contractions [13,14]. Administration of tocolytics may prevent further contractions, in theory breaking this cycle. However, tocolytics, especially beta-sympathomimetic agents such as terbutaline, may cause cardiovascular symptoms (tachycardia, hypotension), which may worsen any hemodynamic instability resulting from abruption, and also may make it difficult to recognize signs of worsening hypovolemia. For these reasons, several authorities have argued against their use in this setting. A few small, retrospective, uncontrolled studies have examined tocolytic use in management of abruption in hemodynamically stable pregnant women with reassuring fetal heart rate tracings [12,15,16]. These studies have not demonstrated harm and have suggested a potential benefit; however, given the limitations of these data, the results of these studies need to be interpreted with caution. Indomethacin is probably best avoided in the setting of abruption as it has been associated with increased risks for oligohydramnios, severe intraventricular hemorrhage, necrotizing enterocolitis, and periventricular leukomalacia in the neonate. (See "Inhibition of acute preterm labor", section on 'Fetal side effects'.)

- **For women who are not in labor**, we take the following approach:

  - **Administer corticosteroids** – Corticosteroids to promote fetal lung maturation and reduce complications of prematurity are administered to pregnancies at 23 to 34 weeks of gestation, and sometimes later in gestation, given the increased risk of need for preterm delivery. (See "Antenatal corticosteroid therapy for reduction of neonatal respiratory morbidity and mortality from preterm delivery".)

  - **Antenatal fetal assessment** – Fetal assessment with a nonstress test or biophysical profile is performed at least weekly. We also perform serial sonographic estimation of fetal weight to assess growth since these fetuses are at risk of developing growth restriction over time [17].

  - **Hospitalization** – There are no compelling data to guide the length of a hospital stay for these women. A reasonable approach is to monitor the patient in the hospital until the bleeding has subsided for at least 48 hours, fetal heart rate tracings and ultrasound examinations are reassuring, and the patient is asymptomatic. At that point, discharge may be considered. Importantly, the patient should be counseled to return immediately if she has further bleeding, contractions, decreased fetal movement, or abdominal pain. In patients with sonographic evidence of a large hematoma, we believe it is prudent to keep the patient in the hospital for a longer period for close monitoring.

  - **Delivery** – For patients managed conservatively and without any further symptoms, we schedule delivery at 37 to 38 weeks because of the increased risk of stillbirth [9]. We do not perform amniocentesis to document fetal lung maturity prior to delivery. For each patient, the potential risk of neonatal respiratory problems, which is low at this gestational age, should be balanced against the potential risk that a serious abruption will occur while awaiting development of fetal pulmonary maturity.

    Delivery before 37 weeks is indicated if additional complications arise (eg, fetal growth restriction, preeclampsia, premature rupture of membranes, nonreassuring fetal assessment, recurrent abruption with maternal instability). Placental abruption occurring in the second trimester carries an especially poor prognosis when accompanied by oligohydramnios.

    We routinely send placentas of patients with abruption for examination by a pathologist. While an acute abruption is a clinical diagnosis, pathology will often show evidence of long-standing placental changes.

    We also routinely send umbilical cord gases for analysis of acid-base status.

34 to 36 weeks of gestation — We deliver most patients with acute abruption at 34 to 36 weeks of gestation, since these patients remain at risk of maternal or fetal compromise from progressive or recurrent placental separation and neonatal morbidity is relatively low at this gestational age. Partial abruption can progress to total abruption suddenly and without warning. Thus, the fetus should be continuously monitored and preparations must be made in case urgent operative delivery is required.

For the subgroup of patients at 34 to 36 weeks who present with minimal signs and symptoms of abruption (light bleeding, normal vital signs and laboratory results, uterine quiescence or mild irritability without tenderness, normal fetal heart rate pattern/biophysical profile score), and then stop bleeding, expectant management is a reasonable approach as long as they remain asymptomatic. Decision-making in these cases is based on patient-specific factors, balancing the estimated risk of progression/recurrence against the relatively small risk of prematurity in the late preterm infant. (See "Late preterm infants".)

Use of antenatal corticosteroids at this gestational is reviewed separately. (See "Antenatal corticosteroid therapy for reduction of neonatal respiratory morbidity and mortality from preterm delivery", section on '34+0 or more weeks'.)

36 weeks to term gestation — We deliver all pregnancies with suspected acute abruption at ≥36 weeks of gestation [9]. This approach balances the relatively low neonatal morbidity of the near-term newborn in pregnancies with the risk of serious maternal-fetal morbidity or mortality from progressive or recurrent abruption during expectant management.

Vaginal delivery is preferable, if there are no obstetric indications for cesarean delivery (eg, malpresentation, prior cesarean). With a clinically significant abruption, the patient is often contracting vigorously, but if she is not in active labor, then amniotomy and administration of oxytocin frequently result in rapid delivery.

COUVELAIRE UTERUS

In severe abruptions, blood may extravasate into the myometrium (called a Couvelaire uterus), and this can be seen at cesarean. The Couvelaire uterus is atonic and prone to postpartum hemorrhage. Aggressive management of atony is needed to prevent disseminated intravascular coagulation and exsanguination; however, atony in this setting is less likely to respond to standard therapies for postpartum hemorrhage than atony from other causes; thus, these women are at high risk for requiring hysterectomy. (See "Postpartum hemorrhage: Management approaches requiring laparotomy" and "Postpartum hemorrhage: Medical and minimally invasive management".)

POSTPARTUM CARE

Postpartum, we administer an intravenous oxytocin infusion as the first-line uterotonic agent. Maternal vital signs, blood loss, urine output, uterine size and consistency, and laboratory results (hemoglobin/hematocrit, coagulation studies) are monitored closely to ensure that bleeding has been controlled and that coagulopathy (if present) is resolving, and to guide replacement of fluids and blood products, as needed.

Women who developed shock and disseminated intravascular coagulation are at risk of multiorgan failure, especially acute renal insufficiency. After delivery, organ function usually improves with aggressive supportive care and treatment of complications, as appropriate. (See "Disseminated intravascular coagulation (DIC) in adults: Evaluation and management" and "Treatment of severe hypovolemia or hypovolemic shock in adults" and "Acute kidney injury in pregnancy", section on 'Renal cortical necrosis'.)

MANAGEMENT OF FUTURE PREGNANCIES

Recurrence risk — Women with placental abruption are at severalfold higher risk of abruption in a subsequent pregnancy [18-24]. Three to 15 percent of women have a recurrence, compared with a baseline incidence of 0.4 to 1.3 percent in the general population [19,25-27].

In one longitudinal population-based study, the risk of placental abruption in a subsequent pregnancy was approximately 6 percent in women with an abruption in their first pregnancy versus 0.06 percent in women without an abruption [24]. In this study, women with a placental abruption at term were at higher risk for recurrence than those with preterm abruption.

After two consecutive abruptions, the risk of a third rises to 20 to 25 percent [23,28].

The risk of recurrence is higher after a severe abruption than after a mild abruption. When the abruption is sufficiently severe to kill the fetus, there is a 7 percent incidence of abruption with fetal demise in a future pregnancy [29].

Placental abruption resulting from trauma is not likely to recur in the absence of recurrent trauma, so these women can be reassured.

Other pregnancy-related risks — Placental abruption, preeclampsia, and growth restriction appear to be variable clinical manifestations of uteroplacental underperfusion, chronic hypoxia, and uteroplacental ischemia [22,30-36]. These disorders often coexist in a pregnancy, or one may occur in one pregnancy while another occurs in a subsequent pregnancy. For example, in large retrospective cohort studies, women who delivered a growth-restricted infant in their first pregnancy were at increased risk of experiencing placental abruption in the subsequent pregnancy [30], and women with preeclampsia in the first pregnancy carried an increased risk of developing placental abruption in the subsequent pregnancy [32,37].

Reducing risk of recurrence — No intervention has been proven to lower the risk of abruption. In a meta-analysis of randomized trials, prophylactic low-dose aspirin did not decrease the risk for placental abruption [38]. However, it is reasonable to identify modifiable risk factors for abruption and address these factors.

Women who smoke cigarettes or use cocaine should be encouraged to stop, and poorly controlled hypertension should be controlled. These changes have proven health benefits, even in the absence of pregnancy.

Submucosal myomas may be associated with placental abruption. When a patient with a submucosal myoma has an abruption, we consider hysteroscopic resection/removal of the myoma prior to the next pregnancy; the decision depends on patient-specific factors (eg, severity of abruption, size and location of the myoma with respect to the placenta).

There are no laboratory screening tests that predict a patient's risk for abruption. Testing women with a history of abruption for antiphospholipid antibodies or an inherited thrombophilia is not indicated. (See "Antiphospholipid syndrome: Pregnancy implications and management in pregnant women" and "Inherited thrombophilias in pregnancy".)

Monitoring subsequent pregnancies — Because placental abruption, preeclampsia, and growth restriction appear to be variable clinical manifestations of uteroplacental underperfusion, in our practice, in subsequent pregnancies, we perform an ultrasound examination to screen for growth restriction approximately every 4 weeks starting at 24 to 28 weeks and continuing until delivery. If fetal growth restriction is detected, we manage these pregnancies accordingly. Monitoring for preeclampsia is already a standard focus of routine

antenatal care. (See "Fetal growth restriction: Evaluation and management" and "Preeclampsia: Management and prognosis".)

Routine periodic fetal antepartum surveillance (eg, nonstress test, biophysical profile score) in the absence of a documented abnormality is not helpful, as fetuses at risk of death from a sudden unpredictable insult, such as complete placental abruption, are rarely identified, and thus there is no opportunity for intervention to prevent fetal death or neurologic disability. Antenatal fetal testing is performed for standard obstetric indications. (See "Overview of antepartum fetal surveillance".)

Timing of delivery — For most patients with an abruption in a prior pregnancy who have no bleeding, growth restriction, or preeclampsia, we provide routine prenatal care until spontaneous labor ensues or perform a repeat cesarean delivery at 39 to 40 weeks of gestation. We deliver all patients with a history of abruption by 40+0 weeks.

For patients who have had a prior perinatal death or more than one prior abruption, we offer early term delivery at 37+0 to 37+6 weeks because of the high risk for recurrent abruption, which may not be predictable. We often attempt to document fetal lung maturity in these cases. We perform a lamellar body count and deliver if the count is above 50,000 per microliter; alternatively, a lecithin/sphingomyelin ratio may be performed. If fetal lung maturity tests indicate immaturity, we delay delivery until 39+0 weeks as long as the patient is stable.

There are limited data on which to base timing of delivery in these patients. A cohort study using data from the Medical Birth Registry of Norway estimated that women with a history of a complicated abruption are at highest risk of recurrence during the six weeks prior to the gestational age of the initial abruption [27]. Since most women do not have a recurrence and most recurrences do not result in fetal death, a policy of delivery six weeks prior to the gestational age of the previous abruption would result in substantial morbidity from prematurity, with minimal reduction in abruption-related perinatal death.

LONG-TERM MATERNAL OUTCOME

There is increasing evidence that maternal vascular, metabolic, and inflammatory complications of pregnancy increase the risk of vascular disease in later life [39,40]. In particular, several studies have reported an association between abruption and future maternal cardiovascular and cerebrovascular disease and mortality related to these diseases [41-44].

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Obstetric hemorrhage".)

INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to

12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topic (see "Patient education: Placental abruption (The Basics)")

SUMMARY AND RECOMMENDATIONS

- Pregnant women with abruption should be evaluated promptly on a labor and delivery unit to establish the diagnosis, assess maternal and fetal status, and initiate appropriate management. A patient who is initially stable may deteriorate rapidly if placental separation progresses. (See 'Initial approach for all patients' above.)

- The initial approach includes continuous fetal heart rate monitoring, placement of large bore intravenous lines, assessment of blood loss and maternal hemodynamic status, and evaluation for coagulopathy. Blood and blood products should be replaced aggressively, when indicated. (See 'Initial approach for all patients' above.)

- After initial evaluation and stabilization, the management of pregnancies complicated by clinically significant abruption depends on whether the fetus is alive or dead, maternal hemodynamic stability, and, if the fetus is alive, the fetal heart rate pattern and gestational age. (See 'Subsequent management' above.)

- Blood and blood products should be replaced prior to and during delivery, when indicated, because of hemodynamic instability and coagulopathy. (See 'Initial approach for all patients' above.)

- If the fetus is dead, the mode of delivery should minimize the risk of maternal morbidity or mortality. For most hemodynamically stable patients without coagulopathy, vaginal delivery is preferable. Cesarean delivery is preferable when vaginal delivery is not imminent and rapid control of bleeding is required because of maternal hemodynamic instability or significant coagulopathy, or the mother is unwilling to accept adequate blood replacement therapy and is therefore likely to develop hemodynamic instability or coagulopathy during labor. (See 'Unstable mother with dead fetus' above.)

- When the fetal heart rate pattern is nonreassuring (category III), expeditious delivery is indicated. If vaginal delivery is imminent, then a spontaneous or instrument-assisted vaginal birth is preferable, whether or not the mother is hemodynamically stable. Otherwise, cesarean delivery is indicated. (See 'Stable mother and nonreassuring fetal status or demise' above.)

- A category II tracing is ominous in the setting of a probable abruption because of the high risk for sudden fetal deterioration to a category III tracing and fetal death. Close monitoring is essential and preparations for urgent delivery should be made in expectantly managed cases. (See 'Stable mother and nonreassuring fetal status or demise' above.)

- When the fetal heart rate pattern is reassuring (category I), management depends on the maternal status and gestational age. For pregnancies where the mother is unstable at any gestational age, we deliver the patient expeditiously. If vaginal delivery is imminent, then a spontaneous or instrument-assisted vaginal birth is preferable. Otherwise, cesarean delivery is indicated. (See 'Unstable mother' above.)

- When the fetus and mother are both stable, the decision to deliver depends primarily on gestational age, with consideration of ongoing maternal symptoms.
  - For pregnancies less than 34 weeks of gestation with no evidence of ongoing major blood loss or coagulopathy, we suggest conservative management until 37 to 38 weeks. We administer a course of antenatal corticosteroids. (See 'Less than 34 weeks of gestation' above.)
  - For most pregnancies at 34 to 36 weeks of gestation, we suggest delivery because these patients remain at risk of maternal or fetal compromise from progressive or recurrent placental separation. For the subgroup of patients at 34 to 36 weeks who present with minimal signs and symptoms of abruption (light bleeding, normal vital signs and laboratory results, uterine quiescence or mild irritability without tenderness, normal fetal heart rate pattern/biophysical profile score) and then stop bleeding, expectant management is a reasonable approach as long as they remain asymptomatic. (See '34 to 36 weeks of gestation' above.)
  - We deliver all pregnancies with acute abruption at ≥36 weeks of gestation. (See '36 weeks to term gestation' above.)
- The Couvelaire uterus is atonic and prone to postpartum hemorrhage. Aggressive management of atony is needed to prevent disseminated intravascular coagulation and exsanguination; however, atony in this setting is less likely to respond to standard therapies for postpartum hemorrhage than atony from other causes. These women are at high risk for requiring hysterectomy. (See 'Couvelaire uterus' above.)
- The risk of recurrent abruption is 3 to 15 percent, compared with a baseline incidence of 0.4 to 1.3 percent in the general population. No intervention has been proven to lower the risk of recurrent abruption and no tests are available that identify pregnancies at risk of recurrence or fetuses at risk of harm. (See 'Recurrence risk' above.)
- For most patients with a past history of abruption, we provide routine prenatal care until spontaneous labor ensues or perform a repeat cesarean delivery at 39 to 40 weeks of gestation. We deliver all such patients by 40+0 weeks. For patients who have had a prior perinatal death or more than one prior abruption, we offer early term delivery after documentation of fetal lung maturity. (See 'Timing of delivery' above.)
- A past history of placental abruption predicts a greater likelihood of a small for gestational age infant, preeclampsia, and spontaneous preterm birth in future pregnancies, even in the absence of recurrent abruption. We monitor patients for these complications. (See 'Other pregnancy-related risks' above.)

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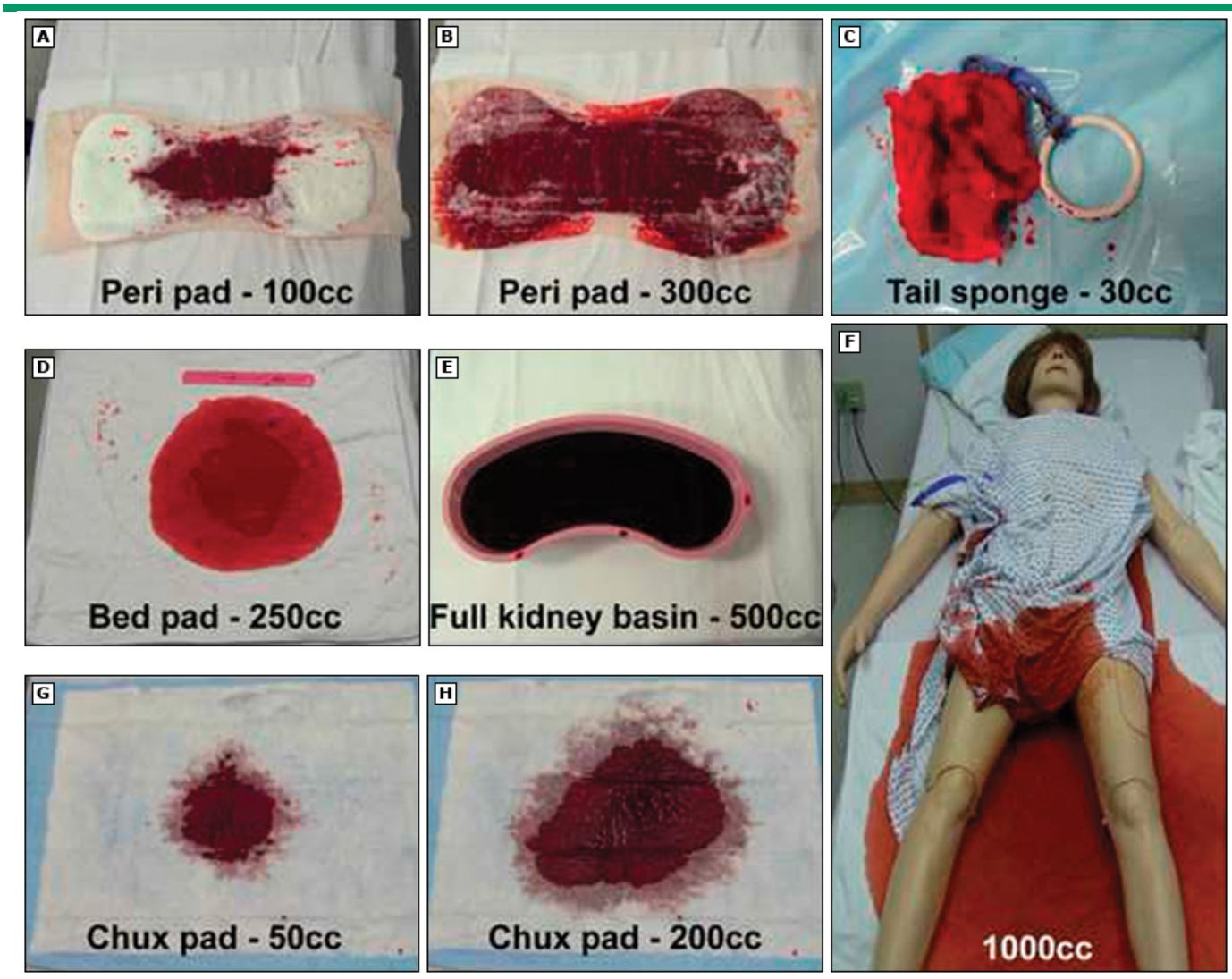
GRAPHICS

Visual aid for estimating intrapartum blood loss



Visual aid. Pocket card with images of measured volumes of artificial blood.

From: Zuckerwise LC, Pettker CM, Illuzzi J, et al. Use of a novel visual aid to improve estimation of obstetric blood loss. Obstet Gynecol 2014; 123:982. DOI: 10.1097/AOG.0000000000000233. Copyright © 2014 American College of Obstetricians and Gynecologists. Reproduced with permission from Wolters Kluwer Health. Unauthorized reproduction of this material is prohibited.

Graphic 103418 Version 2.0

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