Vaginal Bleeding in Late Trimester

19

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19.1 Introduction

Vaginal bleeding in late pregnancy or antepartum hemorrhage (APH) poses life-threatening morbidity to mother and compromises fetus either due to uteroplacental insufficiency or preterm birth. Antepartum hemorrhage is defined as bleeding from or in the genital tract after 24 weeks of pregnancy and before birth of baby. It accounts for 3–5% of pregnancy-related complications [1]. Placenta previa, placental abruption, and vas previa are most important causes for vaginal bleeding in late trimester. Optimal management of these complications depends on timely detection and well-planned intervention with the multidisciplinary approach. Table 19.1 enumerates the causes of vaginal bleeding in late trimester, and this chapter will discuss the major three causes of vaginal bleeding.

There are no consistent definitions of the severity of APH. It is recognized that the amount of blood lost is often underestimated and that the amount of blood coming from the introitus may not represent the total blood lost (e.g., in a concealed placental abruption). It is important, therefore, when estimating the blood loss, to assess for signs of clinical shock. The presence of fetal compromise or fetal demise is an important indicator of volume depletion.

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According to RCOG guidelines 2011, the hemorrhage is considered to be:

Minor hemorrhage—blood loss less than 50 mL that has settled.

Major hemorrhage—blood loss of 50–1000 mL, with no signs of clinical shock.

Massive hemorrhage—blood loss greater than 1000 mL and/or signs of clinical shock.

Regardless of the site of bleeding, women presenting with an APH may be broadly divided into two groups:

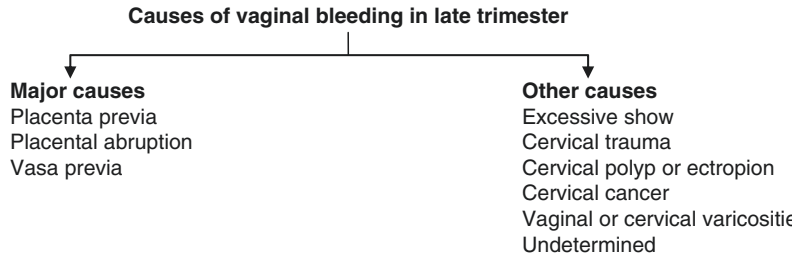
- Those with a major hemorrhage.
- Those with an APH where immediate resuscitative measures are not required.

19.2 Major APH: Emergency Management

- **Observation—**General maternal condition, pulse, BP, respiration, and oxygen saturation.
- **History—**LMP, pregnancy history, recent trauma, amount of blood loss, and pain.
- **Call for help**—Additional staff.
- **Basic life support**—Airway, breathing, and circulation.
- **IV access and fluid replacement**—Via large bore cannula. Crystalloid (up to 2 L of ringer lactate/Hartmann's solution) or colloid (up to 1 L) depending upon the severity of bleeding.
- **Blood and blood products**—RCC to be transfused according to the patient's condition.

A. Sharma (ed.), *Labour Room Emergencies*, https://doi.org/10.1007/978-981-10-4953-8_19

Table 19.1 Causes of vaginal bleeding in late trimester



Four units of FFP and ten units of cryoprecipitate (two packs) can be transfused if coagulopathy is suspected even before blood investigations arrive.

- **Investigations**—CBC, coagulation profile, KFT, electrolytes, Kleihauer-Betke test, ABG in severe cases.
- **Obstetric examination**—Uterine size, fetal presentation, and lie. Assess uterine activity, pain, and tenderness.
- **CTG and USG**—To assess fetal Well-being and placental localization.
- **Speculum examination**—To observe for amount and source of bleeding.
- **Consider delivery**—To improve maternal hemodynamics.
- **Medication**—If time permits corticosteroids for fetal lung maturation, consider $MgSO_4$ for fetal neuroprotection if <30 weeks of gestation and imminent delivery is likely. Anti-D if she is Rh−ve.
- **Documentation.**
- **Communication—**With the woman and her family should be clear and unambiguous.

19.3 APH Where Immediate Resuscitative Measures Are Not Required

- **History**
  - Timing and amount of blood loss.
  - Associated features—e.g., trauma or sexual intercourse.
  - Fetal movements since the bleeding has started.
  - Previous episodes of bleeding in current pregnancy.
  - Review of any USG performed earlier in the pregnancy, particularly for placental site.
  - Past obstetric, gynecological, medical, and surgical history.
- **Examination**
  - General condition—PR, BP, RR, temp, pallor, edema.
  - Obstetric examination—Fundal height, fetal size and presentation, uterine tenderness.
  - Vaginal examination—With speculum only, to assess the site of bleeding.
- **Blood investigations**
  - CBC.
  - Blood group and cross match (at least two units).
  - Coagulation profile.
  - Kleihauer-Betke test.
  - KFT, electrolytes.
- **Fetal well-being assessment**
  - CTG.
  - USG.
- **Ultrasound scan**
  - For placental location.
  - An ultrasound scan is not the investigation of choice to diagnose a placental abruption.
- **Medication**
  - Corticosteroids if <34 weeks.
  - Anti-D if Rh-ve.
  - If birth is imminent at a gestation less than 30 weeks, consider $MgSO_4$ infusion for fetal neuroprotection.
  - Analgesia if required.
- **Documentation and communication**

While it has been a common clinical practice to routinely admit women who have experienced an APH, there is no high level evidence to support this practice.

19.4 Placenta Previa

19.4.1 Definition

Placenta previa is defined as implantation of placenta in lower segment of uterus (LUS) overlying or within 2 cm of internal os [2]. It is classified ultrasonographically as *major* when the placenta either partly or completely covers the internal os and *minor* degree when the leading edge of the placenta is within 2 cm of internal os but not covering it [3].

19.4.2 Incidence and Epidemiology

Placenta previa occurs in approximately 0.5% of pregnancies reaching third trimester. The diagnosis of low-lying placenta is often identified at 16–20 week ultrasound; however, 90% will not have abnormal placentation after 30 weeks of gestation. Therefore, a transvaginal scan (TVS) at 20 weeks can reclassify 26–60% of cases where transabdominal scan (TAS) showed a diagnosis of low-lying placenta.

19.4.3 Risk Factors

- Multiple pregnancy.
- Advanced age > 35 years.
- High parity >6 pregnancies.
- Smoking.
- Deficient endometrium as in scarred uterus due to previous cesarean section or myomectomy or any uterine surgery.
- Manual removal of placenta.
- Endometritis.
- Uterine curettage.

19.4.4 Pathophysiology

The pathophysiology of placenta previa is not fully understood. Preferentially placenta grows in fundal region of the uterus as it has more blood supply than LUS. Abnormal placentation can be due to the above mentioned risk factors or failed placental apparent migration that occurs due to differential growth of LUS.

Table 19.2 Relationship between previous cesarean section (CS) and risk of placenta previa and accreta

No. of CS	Placenta previa incidence (%)	Placenta accrete incidence (%)
0	0.26	3
1	0.65	11
2	1.5	40
3	2.2	61
4	10	67
5	10	67

A previous cesarean section can influence this apparent migration of placenta and chances of persistent placenta previa, and further progression to abnormal invasion (placenta increta and percreta) may occur (Table 19.2) [4].

19.4.5 Clinical Presentation

- Painless vaginal bleeding, recurrent episode.
- Uterine tenderness and irritability is unusual, but sometimes may be there if associated with abruption placentae.
- Fatal malpresentation or unusually high and mobile presenting part.
- Asymptomatic, incidental USG finding.
- Excessive vaginal bleeding in labor.

19.4.6 Complications of Placenta Previa

19.4.6.1 Maternal

- Hemorrhagic shock.
- Preterm labor and prelabor rupture of membranes.
- Increased operative interference, cesarean section.
- Placenta accreta, increta, percreta.
- PPH.
- Amniotic fluid embolism.
- Maternal morbidity and mortality.

19.4.6.2 Fetal

- Prematurity.
- Fetal growth restriction.

- Malpresentation.
- Hypoxia.
- Perinatal morbidity and mortality.

19.4.7 Diagnosis of Placenta Previa

The diagnosis is confirmed by USG localization of placenta. Anterior placental edge is easily visualized with partially full bladder and then empty bladder. Posterior placenta poses problem with shadowing by the presenting part which is overcome by oblique visualization with transducer placement lateral to midline.

19.4.8 Management

19.4.8.1 Principles

- All women should report to their antenatal care provider.
- Clinical assessment for expectant versus urgent intervention to manage maternal and fetal compromise.
- If no maternal compromise full history and examination. No PV examination should be done.
- Corticosteroids for fetal lung maturity between 24 and 34 weeks.
- No role of tocolytics (RCOG 2011).
- A speculum examination should be done 72 h after bleeding has stopped.

19.4.8.2 Expectant Management

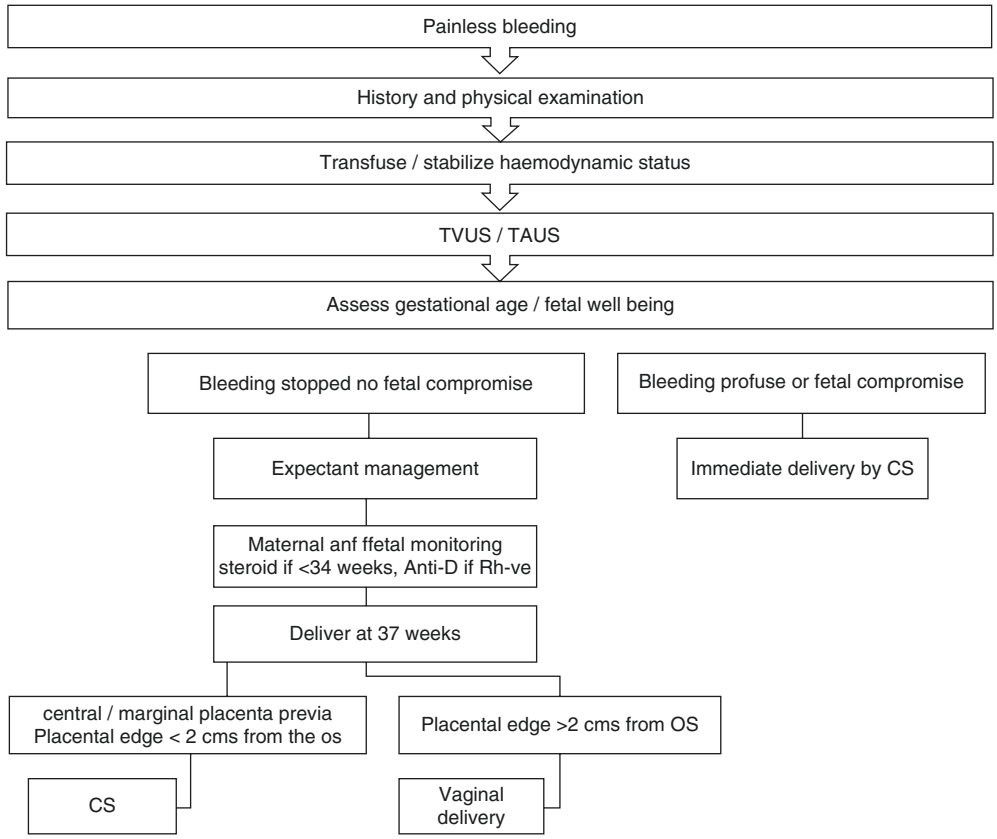
It aims to prolong pregnancy and achieve fetal maturity while minimizing maternal and fetal risks. It targets those patients who had sentinel bleed, and maternal health is not impaired. A policy of expectant management, pioneered by MacAfee, continues to be the standard [5]. The focus on bed rest and restricted physical activity has been shown to reduce preterm birth and perinatal mortality. Corticosteroid coverage is given according to gestational age. Any antenatal bleeding should be treated with full dose of Anti- D in Rh-negative mothers [6, 7]. Hospital admission with bed rest is an option, but carefully selected women with readily available access to intervention can be managed as outpatients especially in minor anterior placenta previa. Blood should be arranged and anemia should be corrected. Elective CS/pregnancy termination should be planned at 37 weeks if patient remains stable.

19.4.8.3 Emergent Management

It aims at maternal resuscitation with initially with fluid and then blood. Continuous electric fetal monitoring should be assessed to detect any sign of fetal compromise. Complete blood count, PT (prothrombin time), INR (international normalized ratio), APTT (activated prothrombin time), and D-Dimer should be sent. At least four units of blood should be cross matched. Ultrasound should be done to confirm placental localization if not done prior. Women with maternal or fetal compromise are required to be delivered immediately by CS. A double setup examination is occasionally appropriate, when the clinician has suspicion of minor placenta previa. The examination should be done in operation theater beginning with the placental edge, with immediate availability of anesthesia and blood to take up women for immediate caesarian section if required. Cesarean section for placenta previa may be associated with the following difficulties and complications:

- Fetal malpresentation may make extraction of fetus difficult.
- Poorly developed and vascular lower uterine segment may lead to an extension of the incision and hemorrhage.
- Difficulty may be encountered in uterine entry in an anterior placenta. There may be a need to cut through the placenta (not preferred) or preferably separate it partially.
- Placenta accreta/percreta may necessitate peripartum hysterectomy.
- Postpartum hemorrhage may occur due to inability of the lower uterine segment to contract efficiently. Hemostatics compression sutures, uterine or internal iliac artery ligation, or hysterectomy may be required.

19.4.9 Summary of the Management of Placenta Previa



19.5 Abruptio Placentae

19.5.1 Definition

Placental abruption denotes premature separation of normally located placenta either completely or partially. The degree of separation of placenta determines the maternal and fetal compromise.

19.5.2 Incidence and Epidemiology

It affects 1–2% of pregnancies. The incidence increases in proportion to the number of previous pregnancy with abruptio placentae.

19.5.3 Risk Factors

- Idiopathic.
- Maternal hypertension.
- Previous h/o abruption.
- Smoking.
- Substance abuse.
- Short umbilical cord.
- Rapid uterine decompression (premature rupture of membrane, delivery of first twin).
- Thrombophilia.
- Blunt trauma.

19.5.4 Pathophysiology

The pathophysiology is multifactorial. With blunt trauma over the abdomen, placental separation and retro-placental hemorrhage can occur. The risk of prematurity, stillbirth, and growth restriction are more common with abruption placentae. Bleeding from abruption may result in external hemorrhage or bloody liquor amnii or may retain as retroplacental clot or both. Bleeding in the

myometrium may cause couvelaire uterus and can result in postpartum hemorrhage. Separation of placenta releases thromboplastic substances and results in consumption of clotting factors and can progress to disseminated intravascular coagulation.

Grades of abruption [8].

Grade I: mild abruption, often diagnosed at time of birth, when retroplacental clot is identified, explaining undiagnosed bleeding.

Grade II: symptomatic women with live fetus.

Grade III: severe abruption with dead fetus

- III A: Grade III abruption without coagulopathy.
- III B: Grade III abruption with coagulopathy.

19.5.5 Clinical Features

- Fifty percent of women are in established labor.
- Diagnosis by clinical presentation is usually possible.
- Vaginal bleeding (mild/heavy).
- Abdominal pain and uterine tenderness are common features.
- Uterus may be overdistended due to concealed hemorrhage.
- Signs of hemorrhagic shock may be there, like hypotension, tachycardia decreased urine output.
- Signs of fetal compromise or IUFD.

19.5.6 Complications of Abruption

Maternal	Fetal
Hypovolemic shock	Fetal hypoxia
Acute renal failure	Prematurity
DIC	FGR
Preterm labor/preterm rupture of membranes	Fetal death
CS/instrumental delivery	
Sheehan syndrome	
Maternal death	
PPH	
Complication of blood transfusion	

19.5.7 Diagnosis

The diagnosis of abruption is mainly clinical. Ultrasound can also be used for diagnosis for abruption but its sensitivity is low (24%) [9]. Thus, it fails to detect three fourth of cases. Laboratory evaluation includes CBC, PT/INR/APTT, D-dimer, fibrinogen levels, and thrombin time.

19.5.8 Management

Expectant management has limited place.

Only in selected cases of very preterm small abruptions in the absence of fetal compromise, it is practiced. The basic principles of expectant management remain same as that of placenta previa.

- Administer maternal corticosteroids.
- Observe for further bleeding.
- Maintain maternal hemoglobin levels.
- Maternal and fetal observations as indicated (intensive electronic fetal monitoring, regular umbilical artery Doppler).
- Monitor for FGR.
- Short-term tocolytics to allow administration of corticosteroids are only recommended till 34 weeks in mild abruption [9].
- Anti-D if Rh negative.

19.5.8.1 Emergent Management

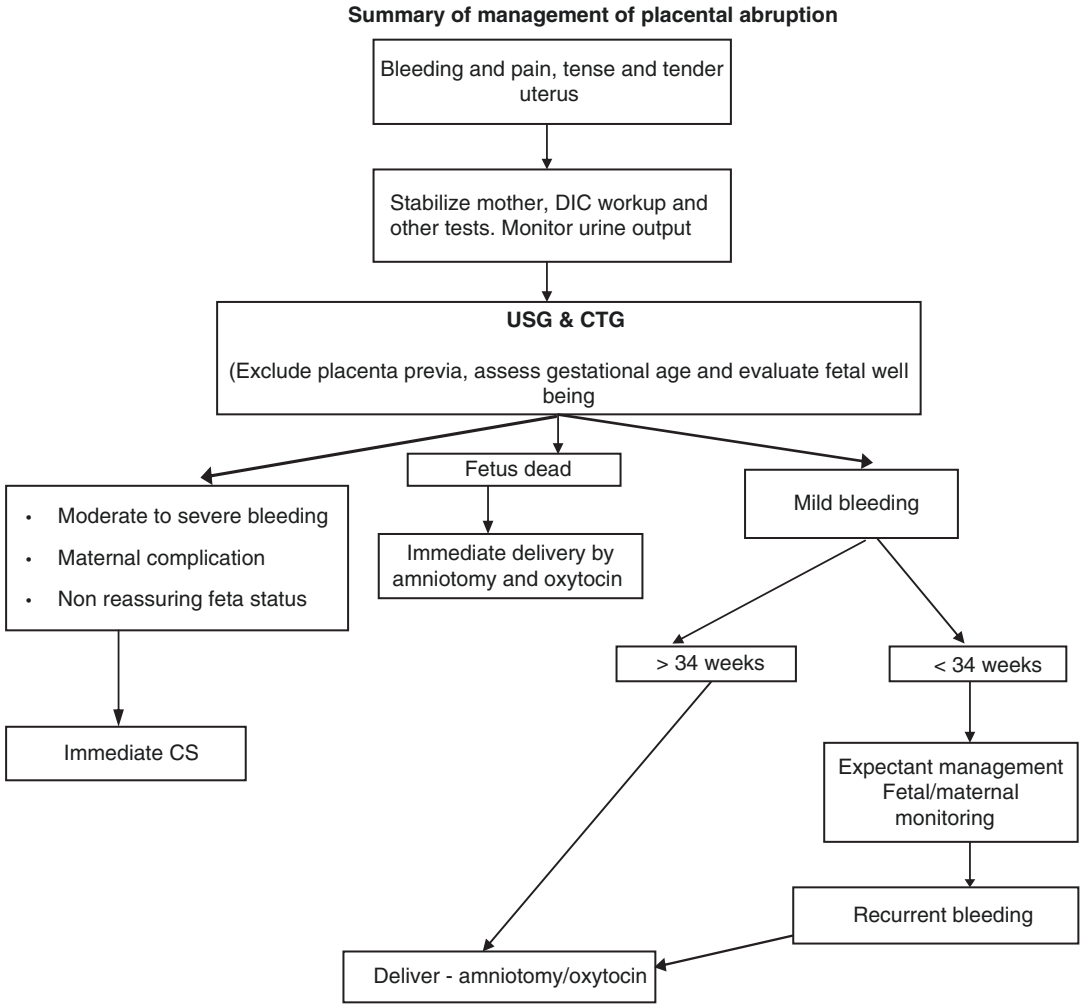
The first step involves the rapid stabilization of maternal cardiopulmonary status and fetal well-being assessment. Adequate fluid and blood resuscitation are warranted. Laboratory investigations are sent. Nonreassuring fetal heart necessitates early CS. When fetal death has occurred secondary to abruption, vaginal delivery should be the goal. In women who have suffered major blood loss or major abruption, the development of DIC should be considered and should be corrected. Up to four units of FFP and ten units of cryoprecipitate may be given while awaiting the results of the coagulation studies [10]. There is a risk of postpartum hemorrhage in women with abruption. Placental

examination should be done for any area of abruption or calcification.

19.5.9 Mode of Delivery in Abruption

- Cesarean section if
  - Abruption is severe and bleeding persistent.
  - Nonreassuring fetal status.
- Vaginal delivery if
  - Fetus is alive, fetal heart rate pattern normal.
  - Fetus is dead and maternal condition is stable.

19.5.10 Summary of Management of Placental Abruption



19.6 Vasa Previa

Vasa previa is the velamentous insertion of the umbilical cord into the membranes in the lower uterine segment resulting in the presence of fetal vessels between the cervix and presenting part.

19.6.1 Incidence and Epidemiology

It is a rare entity with a reported incidence of 1:2000 to 1:6000 [11, 12]. It is of two types.

Vasa previa type 1: Secondary to a velamentous cord insertion in a single or bilobed placenta.

Vasa previa type 2: Arises from fetal vessels running between lobes of a placenta with one or more accessory lobes (RCOG 2011).

19.6.2 Risk Factors

- Bilobed placenta.
- In vitro fertilization.
- Low-lying placenta.
- Multiple pregnancy.
- Succenturiate lobe.
- Velamentous insertion of the cord.

19.6.3 Pathophysiology

Vasa previa is of no major maternal risk but carries a high risk of fetal mortality from exsanguination (33% to 100%), particularly at the time of membrane rupture (fetal blood volume at term is approximately 250 mL) [13]. Even in the absence of bleeding, vessel compression may result in compromise of the fetal circulation [14].

19.6.4 Clinical Features

Vasa previa typically manifests as onset of bleeding at the time of amniotomy or spontaneous rupture of membrane. Rarely, vessels are palpated in the presenting membranes, prohibiting amniotomy.

19.6.5 Diagnosis

Advances in imaging techniques (color Doppler, transvaginal ultrasound) have improved antenatal detection rates. Vasa previa may occur where a low-lying or even placenta previa "migrates" to be out of the lower segment, but some fetal vessels continue to traverse the cervix or lower segment. The diagnosis is confirmed when umbilical arterial waveforms are documented at the same rate as the fetal heart rate.

There are also two quick biochemical tests that can be done to detect fetal blood, but, delivery should not be deferred for confirmation of fetal blood in women with severe hemorrhage or when fetal heart tones are nonreassuring. The blood sample is taken from the vaginal vault to check for fetal blood cells or fetal hemoglobin. The Apt test is most commonly used; it is based on the resistance of fetal hemoglobin to denaturation by alkaline agents and can be performed in the labor and delivery unit. Second is Wright stain in which collected blood is evaluated for presence of nucleated red blood cells. This test can be performed without delay, assuming a normal fetal heart rate.

19.6.6 Management

If the diagnosis of vasa previa is strongly suspected in the presence of fetal compromise in labor, or if hemorrhage is significant, emergency cesarean section (category I) is required (RCOG 2011), early notification of neonatal team, followed by neonatal resuscitation including volume replacement with O negative blood.

A color Doppler ultrasound late in the third trimester should be repeated, in case vasa previa was identified in the second trimester. In cases of confirmed vasa previa in the third trimester, antenatal admission from 28 to 32 weeks in a unit with appropriate neonatal facilities will facilitate quicker intervention in the event of bleeding or labor.

The summary of management of vaginal bleeding in late trimester is depicted in (Fig. 19.1).

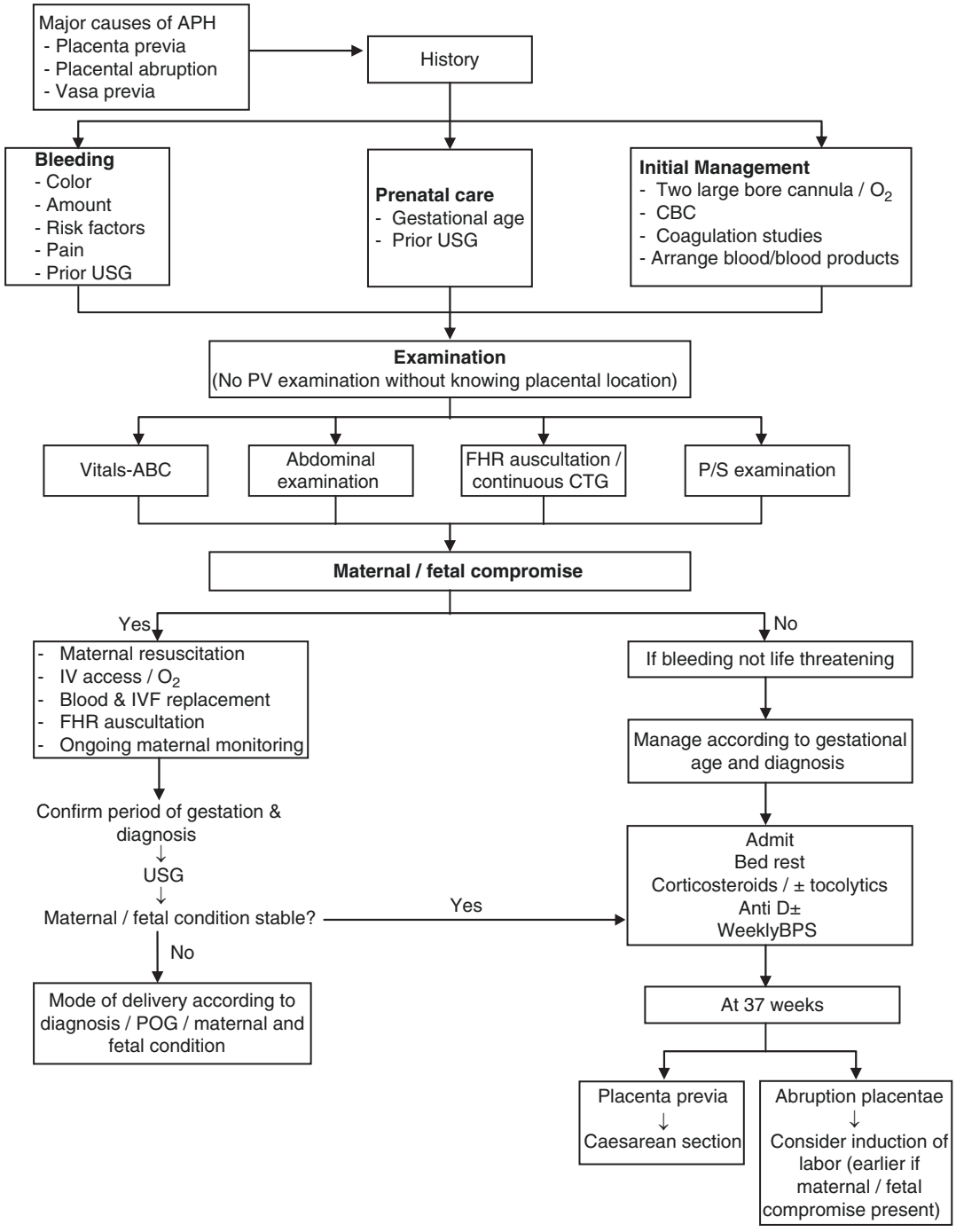


Fig. 19.1 Algorithm of management of vaginal bleeding in late trimester

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