Lec 3

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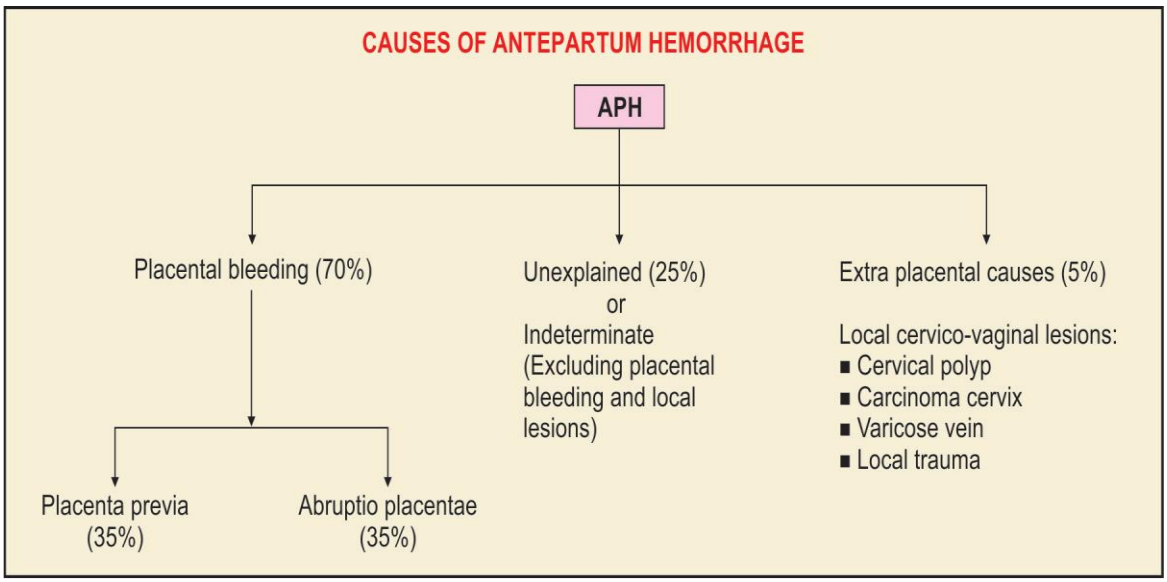
Antepartum haemorrhage

This is defined as vaginal bleeding from 24 weeks to delivery of the baby. The causes are placental or local. Or is any bleeding occurring in the antenatal period after 20 weeks gestation. It complicates 2–5 per cent of pregnancies. Most cases involve relatively small quantities of blood loss, but they often signify that the pregnancy is at increased risk of subsequent complications, including postpartum haemorrhage. At term, APH can be diffi cult to distinguish from a 'show' which is the release of the cervical mucus in the early stages of labour.

CAUSES: The causes of antepartum hemorrhage fall into the following categories.



Placenta previa

placenta is implanted partially or completely over the lower uterine segment (over and adjacent to the internal os) it is called placenta previa. The term previa (L, in front of) denotes the position of the placenta in relation to the presenting part. The incidence in the UK is approximately 5 per 1000.

Risk factors for placenta praevia

- Multiple gestation
- Previous Caesarean section
- Uterine structural anomaly
- Assisted conception
- The incidence is increased beyond the age of 35 years
- Smoking — causes placental hypertrophy to compensate carbon monoxide induced hypoxemia

- Prior curettage

Classification of placenta previa

older I–IV classification system includes the following.

There are four types of placenta previa depending upon the degree of extension of placenta to the lower segment.

***Type—I (Low-lying)*:** The major part of the placenta is attached to the upper segment and only the lower margin encroaches onto the lower segment but not up to the os.

***Type—II (Marginal)*:** The placenta reaches the margin of the internal os but does not cover it.

***Type—III (Incomplete or partial central)*:** The placenta covers the internal os partially (covers the internal os when closed but does not entirely do so when fully dilated).

***Type—IV (Central or total)*:** The placenta completely covers the internal os even after it is fully dilated.

It is now classified as either major which includes **(Type-II posterior**, **III and IV)**., in which the placenta is covering the internal cervical os, or minor that includes **(Type-I and II anterior)** , when the placenta is sited within the lower segment of the uterus, but does not cover the cervical os.

Dangerous placenta previa is the name given to the type- II posterior placenta previa . (1) Because of the curved birth canal major thickness of the placenta (about 2.5 cm) overlies the sacral promontory, thereby diminishing the anteroposterior diameter of the inlet and prevents engagement of the presenting part. This hinders effective compression of the separated placenta to stop bleeding. (2) Placenta is more likely to be compressed, if vaginal delivery is allowed. (3) More chance of cord compression or cord prolapse. The last two may produce fetal anoxia or even death.

CAUSE OF BLEEDING: As the placental growth slows down in later months and the lower segment progressively dilates, the inelastic placenta is sheared off the wall of the lower segment. This leads to opening up of uteroplacental vessels and leads to an episode of bleeding.

Placental migration: Ultrasonography at 17 weeks of gestation reveals placenta covering the internal os in about 10% of cases. Repeat ultrasonography at 37 weeks showed no placenta in the lower uterine segment in more than 90% of cases. Lower uterine segment expands from 0.5 cm at 20 weeks to more than 5 cm (10 fold) at term.

So why placental migration occur ?

could be explained in two ways :

(i) with the progressive increase in the length of lower uterine segment, the lower placental edge relocates away from the cervical os

(ii) (ii) due to **trophotropism** (growth of trophoblastic tissue towards the fundus), there is resolution of placenta previa.

Clinical features

SYMPTOMS: **The only symptom of placenta previa is vaginal bleeding** character of bleeding includes:

(i) sudden onset
(ii) painless
(iii) apparently causeless
(iv) recurrent
(v) unrelated to activity and often occurs during sleep
(vi) The bleeding is unassociated with pain unless labor starts simultaneously
(vii)

In about 5% cases, it occurs for the first time during labor, especially in primigravidae. In about one-third of cases, there is a history of ″warning hemorrhage″ which is usually slight. In majority of cases, bleeding occurs before 38 weeks and **earlier bleeding is more likely to occur in major degrees**. However, there may not be any bleeding in central placenta previa until labor starts. Asymptomatic cases may be detected by sonography or at the time of cesarean section.

SIGNS: General condition and anemia are proportionate to the visible blood loss

Abdominal examination:

1) **The size of the uterus** is proportionate to the period of gestation.
2) **The uterus feels** relaxed, soft and elastic without any localized area of tenderness.
3) **Persistence of malpresentation** like breech or transverse or unstable lie is more frequent. There is also increased frequency of twin pregnancy.
4) **The head is floating** in contrast to the period of gestation. Persistent displacement of the fetal head is very suggestive. The head cannot be pushed down into the pelvis.
5) **Fetal heart sound** is usually present, unless there is major separation of the placenta with the patient in exsanguinated condition

Vulval inspection: only inspection is to be done to note whether the bleeding is still occurring or has ceased, character of the blood—bright red or dark colored and the amount of blood loss—to be assessed from the blood-stained clothing. **In placenta previa, the blood is bright red**

Vaginal examination must not be done outside the operation theater in the hospital

Conformation of diagnosis

I. Localization of Placenta (Placentography)		II. Clinical
▪ Sonography • Transabdominal ultrasound (TAS) • Transvaginal ultrasound (TVS) • Transperineal ultrasound • Color Doppler flow study • 3D Power Doppler study	▪ Magnetic resonance imaging (MRI) For better diagnosis of • placenta previa and • placenta previa accreta	♦ By internal examination (double set up examination) ♦ Direct visualization during cesarean section ♦ Examination of the placenta following vaginal delivery

Differential diagnosis

1. abruptio placentae
2. The local cervical lesions (polyps, carcinoma)
3. In circumvallate placenta, the bleeding is slight and the diagnosis is only made after examining the placenta following delivery.

Table 19.1: Distinguishing Features of Placenta Previa and Abruptio Placentae

Parameters	Placenta Previa	Abruptio Placentae
▪ Clinical features:		
• Nature of bleeding	(a) Painless, apparently causeless and recurrent (b) Bleeding is always revealed	(a) Painful, often attributed to preeclampsia or trauma and continuous (b) Revealed, concealed or usually mixed
• Character of blood	Bright red	Dark colored
• General condition and anemia	Proportionate to visible blood loss	Out of proportion to the visible blood loss in concealed or mixed variety
• Features of preeclampsia	Not relevant	Present in one-third cases
▪ Abdominal examination:		
• Height of uterus	Proportionate height to gestational age	May be disproportionately enlarged in concealed type
• Feel of uterus	Soft and relaxed	May be tense, tender and rigid
• Malpresentation	Malpresentation is common. The head is high floating	Unrelated, the head may be engaged
• FHS	Usually present	Usually absent especially in concealed type
▪ Placentography (USG)	Placenta in lower segment	Placenta in upper segment
▪ Vaginal examination	Placenta is felt on the lower segment	Placenta is not felt on lower segment. Blood clots should not be confused with placenta

Complications of placenta previa

MATERNAL: **During pregnancy**—

1. Antepartum hemorrhage with varying degrees of shock
2. Malpresentation
3. Premature labor

4. Death due to massive hemorrhage during the antepartum, intrapartum or postpartum period. Operative hazards, infection or embolism may also cause death.

During labor

1. Early rupture of the membranes
2. Cord prolapse due to abnormal attachment of the cord
3. Intrapartum hemorrhage due to further separation of placenta with dilatation of the cervix.
4. Increased incidence of operative interference
5. **Postpartum hemorrhage is due to:**

- Imperfect retraction of the lower uterine segment upon which the placenta is implanted .
- Large surface area of placenta with atonic uterus due to preexisting anemia.
- Occasional association (15%) of morbidly adherent placenta (placenta accreta, increta، percreta) on the lower segment . Placenta previa accreta is a serious complication that may cause maternal death

Placenta accreta. Placenta is abnormally adherent to the uterine wall.

Placenta increta. Placenta is abnormally invading into the uterine wall.

Placenta percreta. Placenta is invading through the uterine wall.

6. **Retained placenta** and increased incidence of manual removal add further hazard to the postpartum shock. Increased incidence of **retained placenta is due to** : (1) Increased surface area and (2) Morbid adhesion. The risk of placenta previa being accreta in a woman with previous one cesarean section is 10–20% and it rises to about 50% with two or more prior cesarean section.

Puerperium:

1. Sepsis is increased due to: (a) increased operative interference (b) placental site near to the vagina and (c) anemia and devitalized state of the patient.
2. Subinvolution
3. Embolism.

FETAL COMPLICATIONS IN PLACENTA PREVIA

- **Low birth weight** babies are quite common (15%) which may be the eff ect of preterm labor either spontaneous or induced and fetal growth restriction .
- **Asphyxia** is common and it may be the effect of — (a) early separation of placenta (b) compression of the placenta or (c) compression of the cord.
- **Intrauterine death** is more related to severe degree of separation of placenta, with maternal hypovolemia and shock. Deaths are also due to cord accidents .
- **Birth injuries** are more common due to increased operative interference.
- **Congenital malformation** is three times more common in placenta previa.

- **Maternal and fetal morbidity and mortality** from placenta previa are significantly high.

MANAGEMENT

ADMISSION TO HOSPITAL: **All cases of APH**, even if the bleeding is slight or absent by the time the patient reaches the hospital, **should be admitted**. **The reasons are:**

(1) All the cases of APH should be regarded as due to placenta previa unless proved otherwise.

(2) The bleeding may recur sooner or later and none can predict when it recurs and how much she will bleed.

TREATMENT ON ADMISSION

· Immediate attention **· Formulation of the line of treatment**

IMMEDIATE ATTENTION: Overall assessment of the case is quickly made as regards:

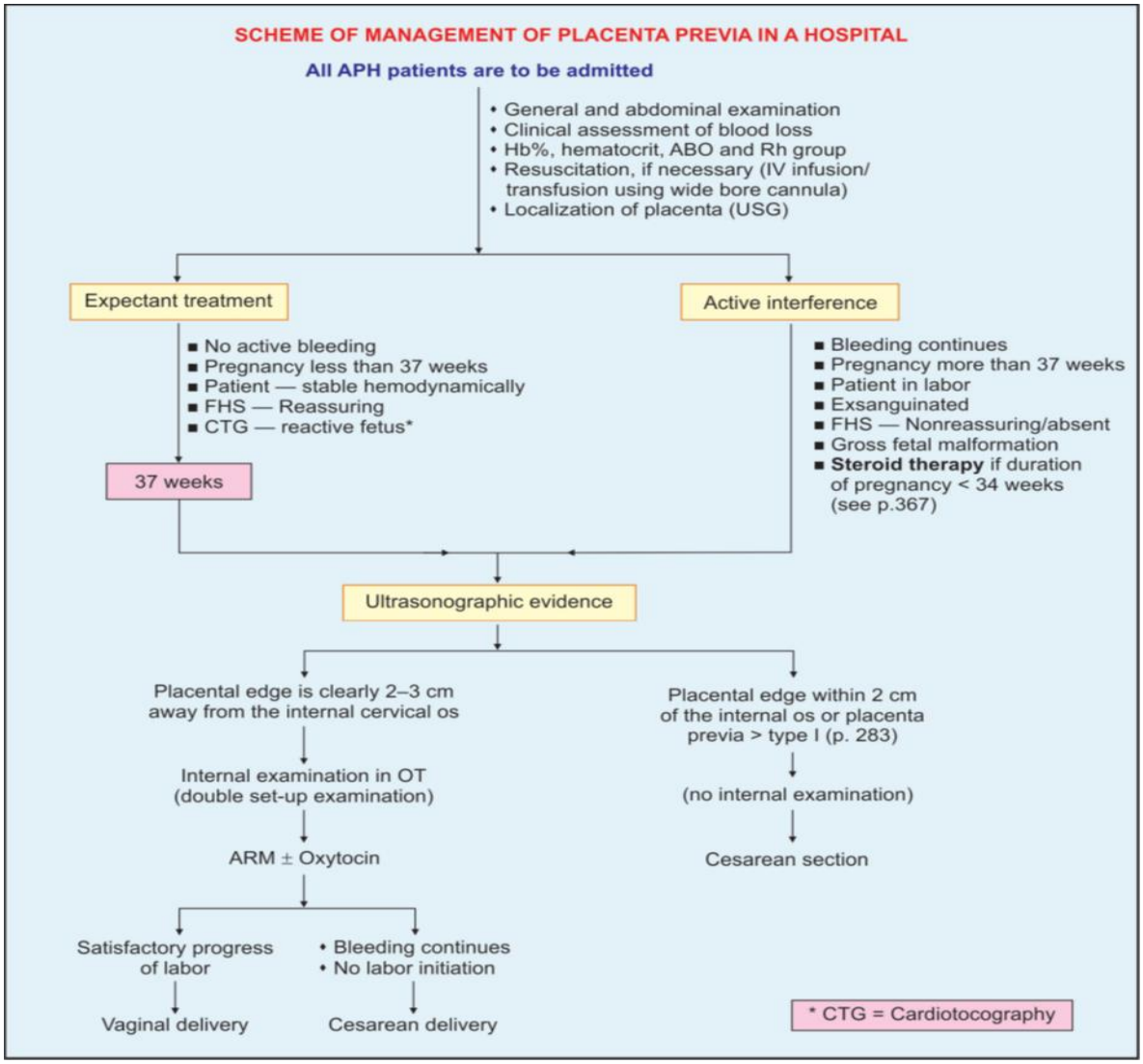
(1) **Amount of the blood loss —** by noting the general condition, pallor, pulse rate and blood pressure. (2) **Blood samples are taken** for group, cross matching and estimation of hemoglobin. (3) **A large-bore IV cannula is sited and an infusion of normal saline** is started and compatible cross matched blood transfusion should be arranged. (4) **Gentle abdominal palpation** to ascertain any uterine tenderness and auscultation to note the fetal heart rate. (5) **Inspection of the vulva** to note the presence of any active bleeding.

Confirmation of diagnosis is made from the history, physical examination and with **sonographic examination**.

FORMULATION OF THE LINE OF TREATMENT

. Expectant management **. Active (Definite) management**

As described in the following scheme



Abruption placentae

DEFINITION: It is one form of antepartum hemorrhage where the bleeding occurs due to premature separation of normally situated placenta after 24 weeks of gestation.

VARIETIES

- Blood may accumulate behind the placenta when it is totally separated from the uterine wall except at the margin **concealed type**.
- Blood may dissect downwards in between the membranes and the uterine wall and ultimately escapes out through the cervix or may be kept concealed by the pressure of the fetal head on the lower uterine segment **revealed type**.
- Blood may gain access to the amniotic cavity after rupturing the membranes.
- Blood may percolate through the layers of myometrium up to the serous coat – known as **Couvelaire uterus** (The condition can only be diagnosed on laparotomy) The myometrial hematoma rarely interferes with uterine contractions following delivery. **Thus, the presence of Couvelaire uterus as observed during cesarean section is not an indication** per se **for hysterectomy.**

Incidence and significance. The overall incidence is about 1 in 200 deliveries perinatal mortality (15–20%) and maternal mortality (2–5%)

ETIOLOGY:

Risk factors are :

(a) high birth order
(b) advancing age of the mother
(c) poor socio-economic condition
(d) Malnutrition
(e) Smoking (vasospasm).
(f) Hypertension in pregnancy is the most important predisposing factor. Preeclampsia, gestational hypertension and essential hypertension, all are associated with placental abruption. The association of preeclampsia in abruption placentae varies from 10% to 50%. The mechanism of the placental separation in preeclampsia is: Spasm of the vessels in the utero-placental bed (decidual spiral artery) → anoxic endothelial damage → rupture of vessels or extravasation of blood in the decidua basalis (retroplacental hematoma).
(g) Trauma:
(h) Sudden uterine decompression This may occur following— (a) delivery of the first baby of twins (b) sudden escape of liquor amnii in hydramnios and (c) premature rupture of membranes.
(i) Short cord
(j) Sick placenta: Poor placentation, evidenced by abnormal uterine artery Doppler waveforms is associated with placental abruption.
(k) Thrombophilias inherited or acquired.
(l) Prior abruption: Risk of recurrence for a woman with previous abruption varies between 5% and 17%.

CLINICAL CLASSIFICATION: Depending upon the degree of placental abruption and its clinical effects، the cases are graded as follows:

- Grade—0: Clinical features may be absent. The diagnosis is made after inspection of placenta following delivery.
- Grade—1 (40%): (i) vaginal bleeding is slight (ii) uterus: irritable, tenderness may be minimal or absent (iii) maternal BP and fibrinogen levels unaffected (iv) FHS is good
- Grade—2 (45%): (i) vaginal bleeding mild to moderate (ii) uterine tenderness is always present (iii) maternal pulse ↑, BP is maintained (iv) fibrinogen level may be decreased (v) shock is absent (vi) fetal distress or even fetal death occurs.
- Grade—3 (15%): (i) bleeding is moderate to severe or may be concealed (ii) uterine tenderness is marked (iii) shock is pronounced (iv) fetal death is the rule (v) associated coagulation defect or anuria may complicate.

CLINICAL FEATURES OF ABRUPTIO PLACENTAE

Table 19.3: Clinical Features of Revealed and Mixed Variety of Abruptio Placentae

Parameters	Revealed	Mixed (Concealed Features Predominate)
Symptoms	Abdominal discomfort or pain followed by vaginal bleeding (usually slight)	Abdominal acute intenses pain followed by slight vaginal bleeding. The pain becomes continuous
Character of bleeding	Continuous dark color (slight to moderate)	Continuous, dark color (usually slight) or blood stained serous discharge
General condition	Proportionate to the visible blood loss, shock is usually absent.	* Shock may be pronounced which is out of proportion to the visible blood loss.
Pallor	Related with the visible blood loss	Pallor is usually severe and out of proportion to the visible bleeding
Features of preeclampsia	May be absent	Frequent association
Uterine height	Proportionate to the period of gestation.	May be disproportionately enlarged and globular.
Uterine feel	Normal feel with localized tenderness, contractions frequent and local amplitude.	Uterus is tense, tender and rigid
Fetal parts	Can be identified easily	Difficult to make out
FHS	Usually present	Usually absent
Urine output	Normal	Usually diminished
Laboratory Tests:		
Blood: Hb%	Low value proportionate to the blood loss	Markedly lower, out of proportion to the visible blood loss
Coagulation profile	Usually unchanged	Variable changes: • Clotting time increased (> 6 min) • Fibrinogen level-low (< 150 mg/dL) • Platelet count-low • ↑ partial thromboplastin time • ↑ FDP and D-dimer
Urine for protein	May be absent	Usually present
Confusion in diagnosis	With placenta previa. As such vaginal examination is withheld unless certain in the diagnosis	With acute obstetrical-gynecological-surgical complications

* **Shock**: Shock is often due to blood loss and hypovolemia or due to coagulopathy. **Mild hemorrhage** (< 15% of the blood volume loss) is generally not associated with any change of vital signs. **Moderate hemorrhage** (15-30% of the blood volume loss) is associated with tachycardia, hypotension, ↓ pulse pressure and mean arterial pressure whereas **severe hemorrhage** (loss > 30-40%) is associated with features of shock.

DIAGNOSIS: Mainly clinical. Ultrasonography or MRI may be helpful.

DIFFERENTIAL DIAGNOSIS

(a) ***Revealed type***: There may be occasional diagnostic difficulty with placenta previa.
(b) Mixed or concealed type: This variety is often confused with(i) rupture uterus (ii) rectus sheath hematoma (iii) appendicular or intestinal perforation (iv) twisted ovarian tumor (v) volvulus (vi) acute hydramnios (vii) tonic uterine contraction.

COMPLICATIONS OF ABRUPTIO PLACENTAE

MATERNAL: ***In revealed type***—maternal risk is proportionate to the visible blood loss and maternal death is rare.

In concealed variety

(1) Hemorrhage
(2) Shock may be out of proportion to the blood loss.

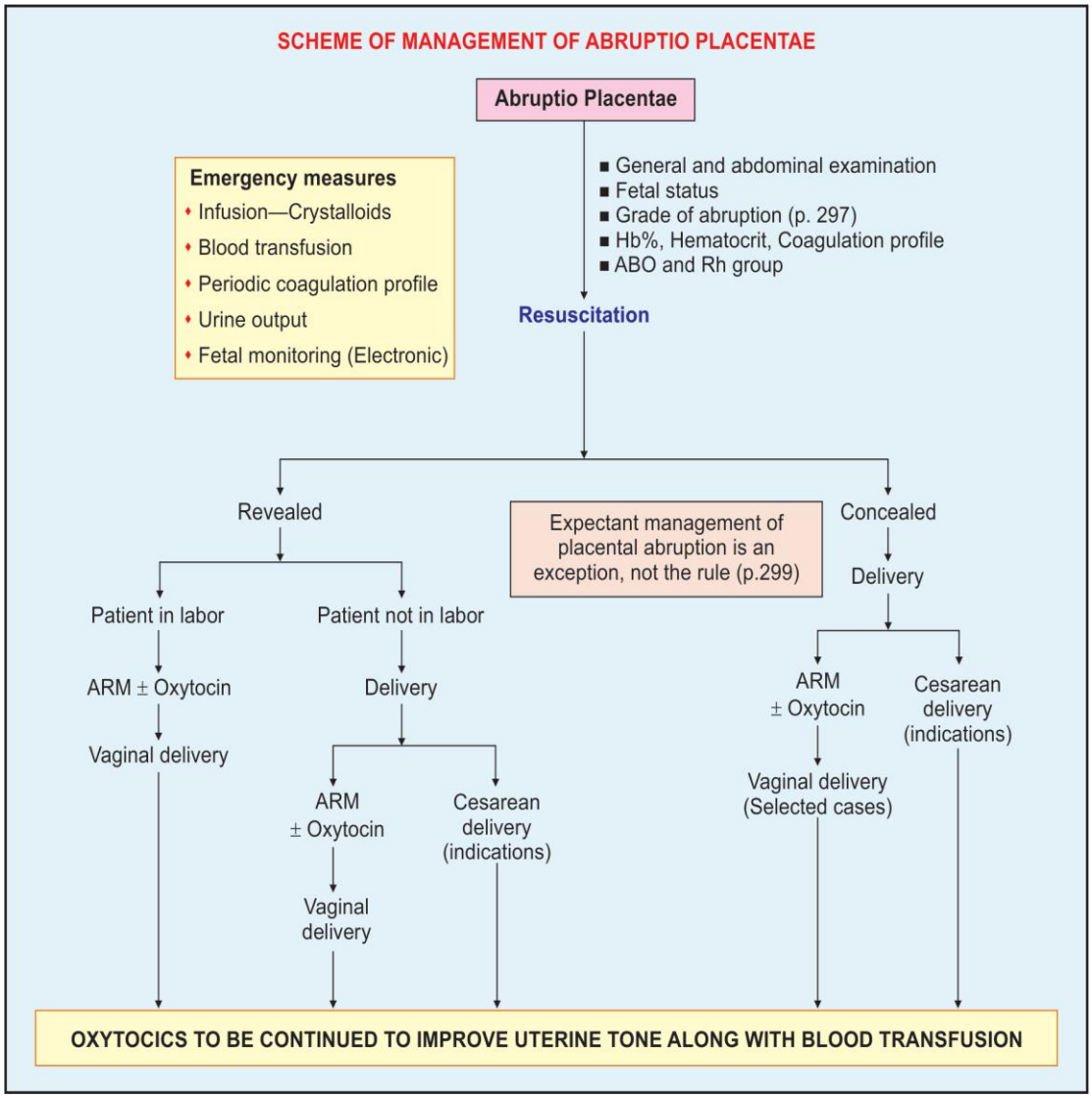
(3) Blood coagulation disorders
(4) Oliguria and anuria due to—(a) hypovolemia (b) serotonin liberated from the damaged uterine muscle producing renal ischemia and (c) acute tubular necrosis. However, a severe case may lead to (d) cortical necrosis and renal failure.
(5) Postpartum hemorrhage due to — (a) atony of the uterus and (b) increase in serum FDP
(6) Puerperal sepsis.

The complicating factors that are responsible for increased maternal death varies from 2% to 8%. Some cases who manage to survive may develop features of ischemic pituitary necrosis.

There is failure of lactation (Sheehan′s syndrome) later on.

FETAL: In revealed type, the fetal death is to the extent of 25–30%. **In concealed type**, however, the fetal death is appreciably high, ranging from 50% to 100%. The deaths are due to prematurity and anoxia due to placental separation

MANAGEMENT OF ABRUPTIO PLACENTAE



Expectant management in a case of placental abruption is an exception and not the rule. Cases where bleeding is slight and has stopped (Grade I abruption), fetus reactive (CTG) and remote from term, may be considered. The goal of expectant management is to prolong the pregnancy with the hope of improving fetal maturity and survival. Continuous electronic fetal monitoring is maintained. Patient should be observed in the labor ward for 24–48 hours to ensure that no further placental separation is occurring. Meanwhile betamethasone is given to accelerate fetal lung maturity.

The major complications of placental abruption are: (a) hemorrhagic shock. (b) DIC. (c) renal failure (see p. 706) and (d) uterine atony and postpartum hemorrhage.

INDETERMINATE BLEEDING

The exact cause of vaginal bleeding in late pregnancy is not clearly understood in few cases. The diagnosis of unclassified bleeding should be made after exclusion of placenta previa, placental abruption and local causes . Rupture of vasa previa, marginal sinus hemorrhage, circumvallate placenta, marked decidual reaction on endocervix or excessive show may be a possible cause of such bleeding.

Vasa Previa : The unsupported umbilical vessels in velamentous placenta, lie below the presenting part and run across the cervical os. These vessels are torn either spontaneously or during rupture of membranes. Color-flow Doppler (TVS) is helpful for antenatal diagnosis. Fetal mortality is high (50%) due to fetal exsanguination. Detection of nucleated red blood cells (Singer′s alkali denaturation test) or fetal hemoglobin (Apt test) is diagnostic. Vaginal bleeding is often associated with fetal distress (tachycardia, sinusoidal FHR tracing).

MANAGEMENT: Management depends on fetal gestational age, severity of bleeding, persistence or recurrence of bleeding. Center must be equipped with appropriate neonatal care facilities in view of preterm delivery.

A Considering the risks of bleeding, patient with confirmed vasa previa, needs antenatal admission at 28–32 weeks of gestation. Expectant management can be done in selected cases for fetal lung maturity similar to placenta previa. **Antenatal corticosteroids should be given**

B Any case with bleeding vasa previa, delivery should be done by emergency cesarean section. Intrapartum diagnosis of vasa previa, needs expeditious delivery.

C A case of confirmed vasa previa at term (.37 weeks) should be delivered by elective cesarean section prior to onset of labor.

D Neonatal blood transfusion may be needed.

POSTPARTUM HEMORRHAGE (PPH)

DEFINITION: ″any amount of bleeding from or into the genital tract following birth of the baby up to the end of the puerperium, which adversely affects the general condition of the patient evidenced by rise in pulse rate and falling blood pressure is called postpartum hemorrhage″.

The average blood loss following vaginal delivery, cesarean delivery and cesarean hysterectomy is 500 mL, 1000 mL and 1500 mL respectively.

Depending upon the amount of blood loss, PPH can be . Minor (< 1L), . Major (> 1L) or . Severe (> 2L).

***INCIDENCE**:*

The incidence is about 4–6% of all deliveries

TYPES: . **Primary** .**Secondary**

***Primary*:** Hemorrhage occurs within 24 hours following the birth of the baby. In the majority, hemorrhage occurs within two hours following delivery. **These are of two types:**

・**Third stage hemorrhage—**Bleeding occurs before expulsion of placenta.

・**True postpartum hemorrhage—**Bleeding occurs subsequent to expulsion of placenta (majority).

***Secondary*:** Hemorrhage occurs beyond 24 hours and within puerperium, also called delayed or late puerperal hemorrhage.

PRIMARY POSTPARTUM HEMORRHAGE

Four basic pathologies are expressed as the four Ts′ (RCOG): Tone (atonicity), Tissue (retained bits, blood clots), Trauma (genital tract injury) and Thrombin (coagulopathy).

♦ Atonic ♦ Traumatic ♦ Retained tissues ♦ Blood coagulopathy (Thrombin)

- **Atonic uterus (80%)**: causes includes

(1) Grand multipara
(2) Overdistension of the uterus
(3) Malnutrition and anemia (<9.0 g/dL)
(4) Antepartum hemorrhage (Both placenta previa and abruption)
(5) Prolonged labor (>12 hours):
(6) Initiation or augmentation of delivery by oxytocin
(7) Malformation of the uterus
(8) Uterine fibroid
(9) Mismanaged third stage of labor
(10) Precipitate labor
(11) Other causes of atonic hemorrhage are: . Obesity (BMI > 35) . Previous PPH . Age (>40 yrs) . Drugs: Use of tocolytic drugs (ritodrine), MgSO4, Nifedipine

- **Traumatic (20%)**: Trauma to the genital tract usually occurs following **operative delivery**; even after spontaneous delivery. Blood loss from the **episiotomy** wound is often underestimated. Similarly, blood loss in **cesarean section** amounting to 800–1000 mL is most often ignored. **Trauma** involves usually the cervix, vagina, perineum (episiotomy wound and lacerations), paraurethral region and rarely, rupture of the uterus occurs. The bleeding is usually revealed but can rarely be concealed (vulvovaginal or broad ligament hematoma).
- **Retained tissues**: Bits of placenta, blood clots cause PPH due to imperfect uterine retraction.
- **Combination of atonic and traumatic causes**.
- **Thrombin**: Blood coagulation disorders, acquired or congenital, are less common causes of postpartum hemorrhage. The blood coagulopathy may be due to diminished procoagulants (washout phenomenon) or increased fibrinolytic activity. The firmly retracted uterus can usually prevent bleeding. **The conditions where such disorders may occur** are abruptio placentae, jaundice in pregnancy, thrombocytopenic purpura, severe preeclampsia, HELLP syndrome or in IUD . Specific therapy following coagulation screen including recombinant activated factor VII (rF VIIa) may be given.

Prevention

Postpartum hemorrhage cannot always be prevented. However, the incidence and especially its magnitude can be reduced substantially by assessing the risk factors and following the guidelines as mentioned below:

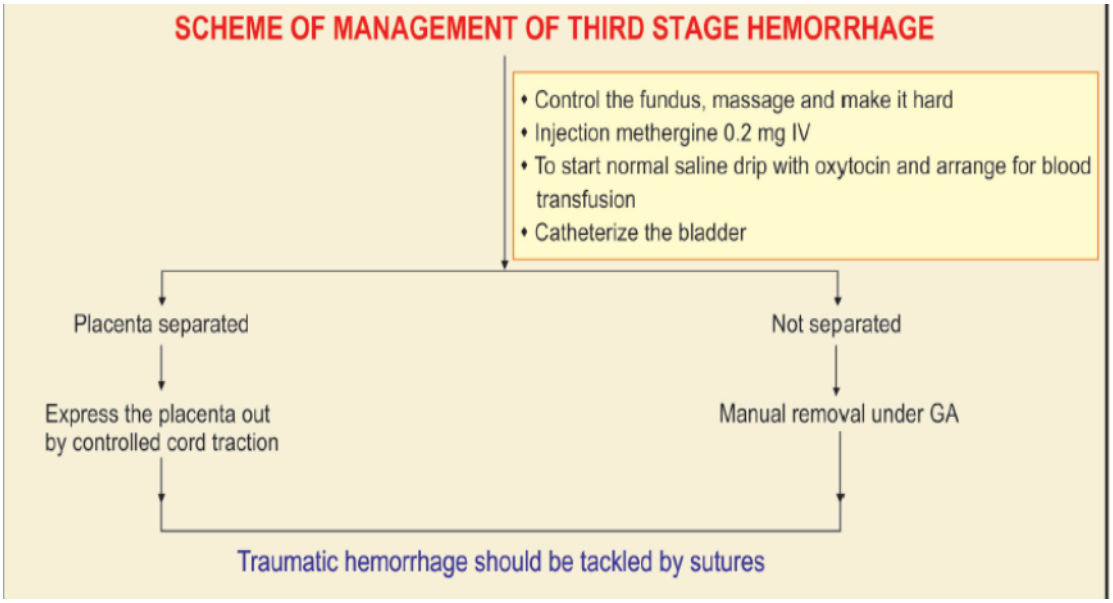
However, most cases of PPH have no identifiable risk factors.

· Antenatal

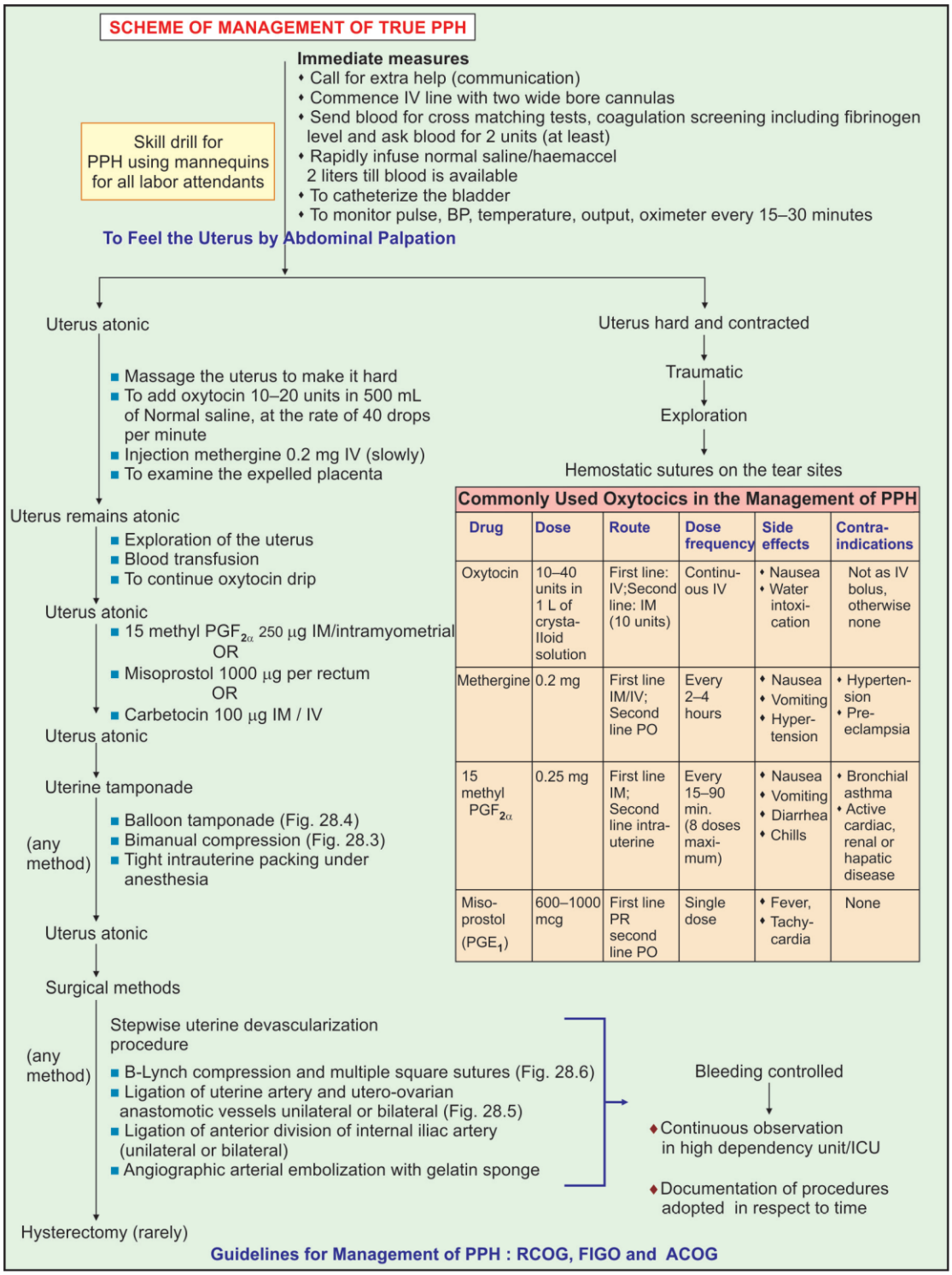
- **Improvement of the health status** of the woman and to keep the hemoglobin level normal (> 10 g/dL) so that the patient can withstand some amount of the blood loss.
- **High-risk patients** who are likely to develop postpartum hemorrhage (such as twins, hydramnios, grand multipara, APH, history of previous PPH, severe anemia) are to be screened and delivered in a well-equipped hospital.
- **Blood grouping** should be done for all women so that no time is wasted during emergency.
- **Placental localization** must be done in all women with previous cesarean delivery by USG or MRI to detect placenta accreta or percreta .
- **All women with prior cesarean delivery** must have their placental site determined by ultrasound/MRI to determine morbid adherent placenta.
- **Women with morbid adherent placenta** (see p. 486) are at high risk of PPH. Such a case should be delivered by a senior obstetrician. Availability of blood and or blood products must be ensured beforehand. Multidisciplinary team approach should be made in such a case.

· Intranatal

- **Active management of the third stage**, **for all women in labor should be a routine as it reduces PPH by 60%.**
- **Cases with induced or augmented labor by oxytocin**, the infusion should be continued for at least one hour after the delivery.
- **Women delivered by cesarean section**, oxytocin 5 IU slow IV is to be given to reduce blood loss. **Carbetocin** (long-acting oxytocin) 100 μg is very useful to prevent PPH.
- **Exploration of the uterovaginal canal** for evidence of trauma following difficult labor or instrumental delivery.
- **Observation for about two hours** after delivery to make sure that the uterus is hard and well contracted before sending her to ward.
- **Expert obstetric anesthetist** is needed when the delivery is conducted under general anesthesia. **Local or epidural anesthesia** is preferable to general anesthesia, in forceps, ventouse or breech delivery.
- **During cesarean section** spontaneous separation and delivery of the placenta reduces blood loss (30%).
- **Examination of the placenta** and membranes should be a routine to detect at the earliest any missing part. All said and done, it is the **intelligent anticipation, skilled supervision, prompt detection and effective institution of therapy** that can prevent a normal case from undergoing disastrous consequences.


SCHEME OF MANAGEMENT OF THIRD STAGE HEMORRHAGE
• Control the fundus, massage and make it hard
• Injection methergine 0.2 mg IV
• To start normal saline drip with oxytocin and arrange for blood transfusion
• Catheterize the bladder
Placenta separated
Not separated
Express the placenta out by controlled cord traction
Manual removal under GA
Traumatic hemorrhage should be tackled by sutures

Management of True Postpartum Hemorrhage



Commonly Used Oxytocics in the Management of PPH

Drug	Dose	Route	Dose frequency	Side effects	Contra-indications
Oxytocin	10–40 units in 1 L of crysta-lloid solution	First line: IV;Second line: IM (10 units)	Continu-ous IV	• Nausea • Water intoxi-cation	Not as IV bolus, otherwise none
Methergine	0.2 mg	First line IM/IV; Second line PO	Every 2–4 hours	• Nausea • Vomiting • Hyper-tension	• Hyperten-sion • Pre-eclampsia
15 methyl $PGF_{2\alpha}$	0.25 mg	First line IM; Second line intra-uterine	Every 15–90 min. (8 doses maxi-mum)	• Nausea • Vomiting • Diarrhea • Chills	• Bronchial asthma • Active cardiac, renal or hapatic disease
Miso-prostol (PGE_1)	600–1000 mcg	First line PR second line PO	Single dose	• Fever, • Tachy-cardia	None

SECONDARY POSTPARTUM HEMORRHAGE

CAUSES: The bleeding usually occurs between 8th and 14th day of delivery. **The causes of late postpartum hemorrhage are:** (1) Retained bits of cotyledon or membranes (most common), (2) Infection and separation of slough over a deep cervicovaginal laceration, (3) Endometritis and subinvolution of the placental site—due to delayed healing process, (4) Secondary hemorrhage from cesarean section wound usually occur between 10–14 days. **It is probably due to**—(a) separation of slough exposing a bleeding vessel or (b) from granulation tissue, (5) Withdrawal bleeding following estrogen therapy for suppression of lactation, (6) Other rare causes are: chorionepithelioma—occurs usually beyond 4 weeks of delivery; carcinoma cervix; placental polyp; infected fibroid or fibroid polyp and puerperal inversion of uterus.

DIAGNOSIS: The bleeding is bright red and of varying amount. Rarely it may be brisk. Varying degree of anemia and evidences of sepsis are present. Internal examination reveals evidences of sepsis, subinvolution of the uterus and often a patulous cervical os. **Ultrasonography** is useful in detecting the bits of placenta inside the uterine cavity.

MANAGEMENT

Principles:

- To assess the amount of blood loss and to replace it (blood transfusion).
- To find out the cause and to take appropriate steps to rectify it.

***Supportive therapy*:** (1) Blood transfusion, if necessary, (2) To administer methergine 0.2 mg intramuscularly, if the bleeding is uterine in origin, (3) To administer antibiotics (clindamycin and metronidazole) as a routine.

***Conservative*:** If the bleeding is slight and no apparent cause is detected, a careful watch for a period of 24 hours or so is done in the hospital.

***Active treatment*:** As the most common cause is due to retained bits of cotyledon or membranes, **it is preferable to explore the uterus urgently under general anesthesia**. One should not ignore the small amount of bleeding; as unexpected alarming hemorrhage may follow sooner or later. The products are removed by ovum forceps. Gentle curettage is done by using flushing curette. Methergine 0.2 mg is given intramuscularly. **The materials removed are to be sent for histological examination**.

Presence of bleeding from the sloughing wound of cervicovaginal canal should be controlled by hemostatic sutures. Secondary hemorrhage following cesarean section may at times require laparotomy. The bleeding from uterine wound can be controlled by hemostatic sutures; may rarely require ligation of the internal iliac artery or may end in hysterectomy.