

1. Management of Ante-Partum Haemorrhage

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Management of Ante-Partum Haemorrhage	
Contents	Page
1.1 Scope of the guideline	3
1.1.1. Definition	4
1.2 Aetiology	4
1.2.1 Major causes	4
1.2.2 Minor causes	4
1.2.3 Associated factors	5
1.3 Incidence	5
1.4 Clinical considerations	6
1.4.1 Placenta praevia	6
1.4.2 Placental abruption	8
1.5 Diagnosis and assessment	9
1.5.1 Diagnosis	9
1.5.2 Assessment	9
1.6 Management	11
1.6.1 Decision	11
1.6.2 Clinical management	12
1.6.3 Delivery	23
1.7 Special Circumstances	24
1.7.1 Disseminated Intravascular Coagulation (DIC)	24
1.8 Summary	28
1.9 References	29
1.10 Annexure	30

Introduction

This guideline is to provide recommendations to aid General Practitioners and Obstetricians in the management of **Ante-Partum Haemorrhage**. This treatment could be initiated in a primary care setting or in centres with advanced facilities. The objective of management is to prevent, early identification, treat, prevent complications, and consequently to improve quality of life.

1.1 Scope of the guideline

Ante-Partum Haemorrhage (APH) affects 4%² of all pregnancies and is associated with increased danger to mother and baby.

The Review of Maternal Deaths in Sri Lanka¹ – 1996, revealed six maternal deaths due to antepartum haemorrhage, a case fatality rate of 2.59%. Two of these ultimately died of post partum haemorrhage. Among the other deaths, a major placenta praevia was missed on ultrasound scan, found only at Caesarean Section. There was also a case of twins with ante-partum haemorrhage (APH) who was transferred from a District Hospital to two Base Hospitals in succession before finally ending in a Teaching Hospital where she died 24 hours after her initial bleed. It is evident from the above review, that substandard care was responsible for some fatalities. The aim of this guideline is to standardize the approach to management of ante-partum haemorrhage (APH) in pre and post-delivery period, in order to prevent avoidable damages to mother and baby. In the guidelines clinical/ theoretical background is briefly discussed to enable better understanding of the Bedside Management

1.1.1 Definition

Ante-partum haemorrhage (APH) is defined as bleeding from the genital tract from 24 weeks of pregnancy onwards up to delivery of baby.

Some tend to use 20 weeks (because it is the cut off point for Perinatal Mortality in other parts of the world)

Others prefer 24 weeks (or baby's weight 500g) considering viability of baby, which seem more appropriate for Sri Lanka depending upon availability of neonatal care facilities.

However, legal definition of fetal viability in Sri Lanka still remains at 28 completed weeks of gestation.

1.2 Aetiology

These could be considered as **Major** and **Minor**.

1.2.1 Major

- Placenta praevia,
- Placental abruption.

1.2.2 Minor

- Exaggerated show,
- Marginal placental bleeding,
- Trauma to cervix / vagina,
- Cervical ectropion,
- Local inflammation of cervix or vagina,
- Cervical or vaginal growths, e.g. carcinoma of cervix or polyps,
- Varicosities of lower genital tract,
- Vasa praevia,
- Placental abnormalities leading to unexplained APH.

1.2.3 Associated factors

Though aetiology is unclear number of associated factors are identified.

- High maternal age,
- Mother with a previous abruption is six times more likely to have another abruption,
- Rapid uterine decompression e.g. artificial rupture of membranes (ARM) performed in a mother with Polyhydramnios,
- Trauma,
- Chronic chorio-amnionitis,
- Abnormal or disordered placentation,
E.g. pre-eclampsia, intra-uterine growth restriction (IUGR), fetal abnormality, oligohydramnios, abnormal umbilical artery Doppler velocities,
- Underlying thrombophilia e.g. Factor 5 Leiden, protein S&C deficiency, anti-phospholipid syndrome, homocysteinaemia¹¹.

1.3 Incidence.

Major causes constitute 50% to 70% of bleeding in pregnancy and pose a greater danger to mother & fetus.

Other causes though may appear minor, carry an increased perinatal mortality accounting up to 3%.

1.4 Clinical Considerations.

1.4.1 Placenta praevia

This is defined as a placenta located partially or wholly in the lower segment of the uterus. It occurs in 0.4% to 0.8% of pregnancies. The incidence increases with previous Caesarean Section, uterine surgery and advancing maternal age.

It is graded as Minor when the placenta is Grade 1 & 2 anterior. It is Major when the placenta is Grade 2, 3 & 4 posterior or Grade 3 & 4 anterior. This grading depends upon the relationship of lower edge of placenta to internal os of cervix. It co-exists with 10% of placental abruption.

Clinically placenta praevia presents with high presenting fetal part or mal-presentation and one or more episodes of **painless** vaginal bleeding. Ultrasound scan is the investigation of choice in the diagnosis of this condition, and is mandatory in all cases of antepartum haemorrhage.

(Grade X)

Definitive diagnosis of degree of praevia is possible only after 28 weeks of gestation when the lower segment begins to form. (5% of women are diagnosed as low-lying placenta at 16 to 18 weeks but only 0.5% will have placenta praevia at term.²) Trans-abdominal scan is commonly performed though there may be difficulty in defining the lower margin of posterior placenta praevia.

Transvaginal scan is better in this respect and appears not to provoke bleeding⁴.

Morbidly adherent placenta (placenta accreta, increta & percreta) can commonly occur due to scarring from previous uterine surgery. These cause severe post partum haemorrhage (PPH), sometimes requiring hysterectomy. Rare cases of involvement of bladder wall due to morbid adherence is reported with anterior placenta situated over a

previous uterine Caesarean scar. Antenatal diagnosis of such adherence may be possible with ultrasound and when diagnosed helps in planning management and forewarning the patient of possible necessity of a hysterectomy. All patients with previous Caesarean Section should have an ultrasound examination to exclude morbidly adherent placentae. **(Grade X)**

In the management of placenta praevia, the need for prolonged hospitalization has to be discussed by Consultant Obstetrician with patient and next of kin, as it carries significant financial and psychological implications to mother and family⁴. The Royal College of Obstetricians and Gynaecologists recommend inpatient management for these cases though it is not based on good evidence.⁶

Full assessment of localization of placenta should be done at 36 weeks and decision should be made regarding vaginal or abdominal delivery. **(Grade X)**

Timing of surgery as close to term as possible is wise because of increased risk of Respiratory Distress Syndrome (RDS). To minimize the incidence of RDS, therapy with corticosteroids is recommended for mothers delivering before 34 weeks.⁸ **(Grade X)**

There is increasing evidence that blood loss at Caesarean Section for placenta praevia is less when regional anaesthesia (spinal or epidural) is used and does not compromise the mother⁹. The surgery for placenta praevia must be performed or supervised by a Consultant Obstetrician. (Recommendation of Confidential Enquiry into Maternal Deaths in the UK 1994 – 1996)¹⁰ **(Grade X)**

Close observation and use of syntocinon (IV bolus followed by IV infusion) is essential to avoid post partum haemorrhage (PPH), which is common in the postoperative period. **(Grade X)**

1.4.2 Placental abruption

Placental abruption is premature separation of a normally sited placenta causing bleeding from placental site. This can occur in up to 5% of pregnancies² though in majority the bleeding is small and in some it is only visible on examination of placenta after delivery. A perinatal mortality of 4 per 1000 is quoted.

Abruptio with significant maternal symptoms and signs (abdominal pain, uterine tetany, uterine tenderness, “woody” hard uterus and hypovolaemia) often leading to disseminated intravascular coagulation (DIC) (30%), who may end up in death. Also it may lead to severe fetal distress or death.

1.5 Diagnosis and assessment

1.5.1 Diagnosis

Diagnosis is mainly clinical with bleeding per-vaginam associated with abdominal pain. Uterus is tender, irritable, and if abruption is large develop maternal tachycardia, hypotension and evidence of fetal distress.

Ultrasound is not helpful in diagnosis of abruption except excluding placenta praevia and in assessing fetal condition like growth, abnormalities, viability, umbilical artery Doppler velocity¹¹, and liquor volume.

1.5.2 Assessment

1.5.2.1 Severity of condition of mother and baby

Rapid assessment of both mother and baby at presentation is a vital first step. **(Grade X)**

i. Maternal assessment.

Assessment should include;

- Signs of shock (pallor, sweating, cold& clammy, restlessness,
- Pulse rate,
- Blood pressure,
- Uterine palpation for size, soft / hard, tender or not, presenting part high or engaged,

Vaginal Examination must **not** be performed till placenta praevia is excluded by ultrasound scan. **(Grade X)**

ii. Fetal assessment.

- Presence or absence of fetal heart (guard against maternal pulse which is high due to tachycardia).

(Grade X)

- If fetal heart is present and gestation over 28 weeks, commence fetal heart monitoring. **(Grade X)**
- (Auscultation with Pinnard, Doppler or Cardiotocography (CTG) when available.)

Depending upon **severity** patients fall into one of two categories.

Minor.- Bleeding is minor or settled and mother and baby are not at risk.

Major.- Bleeding moderate to severe and continuing and mother and/or baby is at risk.

1.5.2.2 Resources available in hospital where patient is admitted.

Depending upon resources available the hospitals are grouped into one of two categories. Criteria being availability of facilities for secondary care e.g. specialized operating theatre facilities, blood bank, pathology and radiology facilities, Specialist Obstetrician and Anaesthetist)

- **Specialized Hospitals** (Secondary care facilities available e.g. Base Hospitals, Provincial Hospitals, Tertiary / Teaching Hospitals, suitably equipped Private Hospitals),
- **Non-specialized Hospitals** (No secondary care facilities e.g. Maternity Homes, Rural Hospitals, Peripheral Units, District Hospitals, other Private Hospitals),

1.6 Management

1.6.1 Decision-Placental abruption

The decision would be whether to deliver, if so when? and how?

- If abruption is small and mother and baby well, manage conservatively, with steroid therapy if gestation is 34 weeks or less. Serial growth assessment and umbilical artery Doppler studies¹² are indicated in 'at-risk' cases. Delivery should be considered after 38 weeks.
- In acute phase, approximately 50% of cases present in labour, where the question is the mode of delivery. At very low gestational age (<26 weeks), vaginal delivery should be the aim, (as the fetal survival rate is low).
- In moderate to severe cases (> 26 to 28 weeks) delivery has to be considered by the **quickest** and the **safest way** to avoid danger to mother and baby. Studies on neonatal outcome when baby is viable suggest Caesarean Section is the better mode of delivery, though even with this there is a perinatal mortality of 15% to 20%.
- It is ideal to wait for cross-matched blood and coagulation screening when Caesarean Section is planned. Whether this is possible or not will depend upon the degree of bleeding and the fetal condition. The surgery needs to be performed or supervised by the Consultant Obstetrician. **(Grade X)**
- If the fetus is dead vaginal delivery should be the preferred mode of delivery. 30% of these cases develop Disseminated Intravascular Coagulation (DIC); therefore delivery should be expedited by ARM and augmentation of labour with IV syntocinon infusion. **(Grade X)**

Fortunately in these cases labour is short and progression of DIC often tends to slow-down after delivery.

- As a precautionary measure the maternal condition needs to be monitored with
 - (a) Baseline coagulation profile and repeated as appropriate. **(Grade Y)**
 - (b) Fluid balance chart. **(Grade X)**
 - (c) Central Venous pressure. **(Grade Z)**

1.6.2 Clinical Management

History

A quick history in acute presentation (detailed history once the clinical status is established, and stabilized)

Initial history should include.

- i. LMP and details of previous scan (placental localization).
- ii. Amount of bleeding & precipitating factors; trauma, coitus.
- iii. Associated features; abdominal pain, leakage of liquor, diminished fetal movements.
- iv. Past history of bleeding; (recurrent?), uterine surgery (Caesarean Section, Hysterotomy, Curettage, Myomectomy).

1.6.2.1 Management of APH in a non-specialized hospital

Since APH (including minor degrees) carries an increased risk to mother & baby, all cases of APH must be taken seriously and investigated to exclude any factors affecting pregnancy adversely. Marginal placenta, abruptio placenta, and recurrent bleeding with placenta praevia are associated with fetal growth restriction. The overall rate is 15%¹

Assess degree of severity of APH and urgent action taken if mother or baby is in danger (Grade X)

Following plan of action is recommended,

- i. Assessment on initial presentation as per protocol above to include both mother & baby. Exercise a degree of urgency if the clinical condition indicates potential or real risk. **(Grade-X)**
- ii. Determine which category patient belongs to, and manage appropriately, and **promptly.** **(Grade-X)**
- iii. **No** vaginal examination before excluding placenta praevia. **(Grade-X)**

I. Minor antepartum haemorrhage (Bleeding minor or settled and mother and baby not at risk) in a non-specialized hospital

This is the most common group.

Since the mother & baby are not in danger at the time of admission, time should be taken to conduct a full and thorough history and examination.

- If placenta praevia is not excluded, No PV examination should be attempted. **(Grade-X)**
 - Perform;
 - a) full blood count to exclude anaemia,
 - b) ascertain the Blood Group & Rhesus factor to exclude Rh-negativity.
- If Placenta praevia has been excluded;
 - Vaginal examination including speculum examination undertaken to **(Grade-X)**
 - a) assess degree of bleeding,
 - b) assess cervix to exclude labour,

- c) Look for local causes e.g. trauma, inflammation, polyp etc.
 - Twenty-four hour observation in hospital is desirable to ensure the condition is stable. **(Grade-Y)**
 - No bleeding however small should be dismissed without investigation.
 - Patient should be transferred to a specialized hospital for a detailed investigation, to exclude any adverse factors and arrange care plan for rest of pregnancy. **(Grade-X)**

Before transfer,

- Explain** necessity of further investigations and need to go to specialized hospital to patient and next of kin.
- Advise** to watch for **Warning Signs** (which if present to get readmitted to hospital if and when discharged from specialized hospital).

- Warning Signs**
- * Diminished fetal movements.
 - * Recurrence of bleeding or pain.

II. Major antepartum haemorrhage (Bleeding moderate or severe and mother & or baby in danger)

Mother and baby should be managed in a specialized hospital. **(Grade-X)**

If a mother with this degree of APH presents herself to a non-specialized hospital she should be transferred **as soon as possible** in an ambulance (With accompanying doctor & midwife) to a specialized hospital, after informing the specialized team **by telephone** about the condition of mother & baby.

- Prior to transfer a quick initial assessment of mother & baby is essential to assess severity of the condition in order to;
- (a) Alert the team in specialized hospital.

(b) Institute initial measures to stabilize condition of patient. **(Grade-X)**

Initial measures.

- i. IV cannulation (preferably in two sites) –Gauge 14 or 16 Cannula.
- ii. Commence IV Fluids (crystalloids / colloids if condition warrants it.)
- iii. Obtain blood sample (20 ml.) for haemoglobin, blood group & Rhesus factor, cross match, if colloids are to be given.
- iv. Analgesia (Morphine) if in significant pain.
- v. Commence oxygen 8L / min.
- vi. Continue observations of vital signs (pulse, blood pressure), uterine size & consistency (soft/hard), tenderness.
- vii. Insert urinary catheter. Record fluid intake / urinary output. (aim to keep output > 30ml/hr.)

Emergency Trolley / Tray should be available in Maternity Unit / Labour Ward at all times in a specialized and non-specialized hospital (To be checked by sister at every shift and by doctor daily) See annexure - 1. **(Grade-X)**

1.6.2.2 Management of antepartum haemorrhage in a specialized hospital

I. Management of minor antepartum haemorrhage in a specialized hospital

After the initial assessment further investigations need to be performed to ascertain the,

- Cause, and degree of bleeding.
- Establish other parameters, which will assist in planning on-going care.
- Timing and mode of delivery.

Investigations.

- (a) Full blood count.
- (b) Blood group & Rhesus status, and cross matching if needed.
- (c) Coagulation profile.
- (d) Kleihauer test to assess feto-maternal haemorrhage (FMH)(see comments below), and estimate dose of Anti-D in Rh-negative mothers. If this test is not available 1 to 2 doses of Anti-D should be given depending upon clinical assessment of of the magnitude of bleeding **(Grade X)**
- (e) Ultrasound Examination.
This is useful in;
 - excluding / diagnosing & grading the degree of placenta praevia.
 - assess fetal size.
 - assess liquor volume.
 - establish fetal wellbeing by;
 - o bio-physical profile.
 - o umbilical artery Doppler velocitometry.

Ultrasound examination is not **always** useful in diagnosis of;

- i. Abruptio of placenta (acute abruptio may have the same echogenicity as placenta.)
- ii. The cause of APH (important to explain to mother and relations).

Kleihauer Test¹² [Feto-Maternal Haemorrhage (FMH) test.]

Simple test performed to,

- Diagnose feto– maternal haemorrhage (FMH).
- Assess degree of FMH in Rhesus –negative mothers.

Though not performed in most Sri Lankan hospitals it is a useful test. This test has limitations in the diagnosis of FMH.

- Not useful in differentiation of small abruptions from bleeding due to other causes,^{11,13}
- Fetal cells appear in 15% of pregnancies at some stage without APH,
- Lack of fetal cells in maternal blood does not preclude an absent abruptio,

Kleihauer Test is recommended in Rh-negative mothers to determine the degree of FMH and dose of anti-D required to prevent Iso-immunization (unless already sensitized).

(Grade-Z)

Care plan.

Episode of bleeding though minor and settled, places the pregnancy at a higher level of risk compared to normal. Therefore, a plan to monitor fetal growth & wellbeing is needed. Mother advised to look for **Warning Signs;** (namely, decreased fetal movements, further bleeding or abdominal pain) and to get readmitted if present.

If all remain well, induction of labour is not indicated, but needs closer watch if pregnancy goes beyond expected dates.

II. Management of major antepartum haemorrhage (APH) in a specialized hospital

All major ante-partum haemorrhages should be managed in a specialized hospital. **(Grade-X)**

If not treated promptly and adequately the mother may go into hypovolaemic shock, which may result in:

- Coagulation disturbance (chiefly DIC) due to loss or consumption of platelets/coagulation factors.
- Renal failure,
- Hepatic failure,
- Adult Respiratory Distress Syndrome (due to pulmonary oedema),
- Fetal and/or maternal death.

Aims of management are;

- A quick initial assessment to assess degree and possible cause of bleeding and stoppage of blood loss as soon as possible.
- Prompt resuscitative measures to stabilize the condition of the mother by restoration of blood volume and oxygen carrying capacity.
- Restoration and maintenance of normal coagulation.
- Decision on timing and mode of delivery.

Ultrasound examination to locate placental location and assess health of the fetus is a vital initial step in planning treatment, and should be performed in all cases of APH. **(Grade X)**

Obstetric blood loss is difficult to assess accurately, because it may be:

- concealed (Placental abruptio),
- diluted by amniotic fluid.

Hence look for one or more of the following, which indicate **Major** blood loss;

- i. Signs of decreased peripheral perfusion (pallor, sweating, cold clammy skin).
- ii. Disturbed consciousness of patient (restlessness, confusion).
- iii. Systolic blood pressure less than 100 mmHg.
- iv. Pulse over 120 beats per minute.
- v. Blood loss over 1500 mls.

A. Resuscitation

Should aim to maintain;

- Haemoglobin level >10g/dl
- Pulse < 100 bpm.
- Systolic BP > 100mm. Hg.

Four units of cross-matched blood available at all times

Emergency Trolley with everything needed for initial resuscitation is Vital (Annexure-1). (Grade X)

B. Bedside management of a major haemorrhage

(Grade X)

i. Call for help.

- -Inform Consultant Obstetrician **immediately**, and seek his advice.
- -Summon Emergency Team;
 - Obstetric Registrar,
 - Obstetric Senior House Officer,
 - Anaesthetic Registrar,
 - Nursing and Midwifery team.

One House Officer assigned to collect blood, and maintain sequential and chronological record of events.

- ii. Start nasal oxygen 8L/min,
- iii. Morphine injection if there is significant abdominal pain,
- iv. Insert two intravenous cannulae, one in each arm,
- v. Take 30ml. of blood for;
 - Full blood count,
 - Cross-match 4 to 6 units of blood,
 - Coagulation screening including fibrinogen, fibrin degradation products (FDP) and if Disseminated Intravascular Coagulopathy (DIC) suspected D-dimers,
 - Urea and electrolytes.
- vi. Commence following infusions:
 - Up to 2 litres Normal Saline/ Hartman's solution,
 - Colloids (eg. Hetastarch) up to 1.5L, if needed, (take blood for group & cross-match before colloids are given and remember also the risk of anaphylaxis),
 - Uncross-matched O-Rh negative or group specific blood, **if clinical condition is critical** (as last resort),
 - Cross-matched blood should be given as soon as available,

Cross-matched blood is ideal but crystalloids first and colloids second should be used until blood is available. **(Grade X)**

O-Rh negative blood can be life saving but should be used **only as last resort**, must **not be given** if patient is known to **have anti-C antibodies**. **(Grade X)**

- vii. Indwelling urinary catheter to monitor urine output; aim to keep output above 30ml./hour,
- viii. One house officer assigned to record following sequentially:
 - Measure blood loss,
 - Pulse rate,
 - Blood pressure,
 - Central Venous Pressure (CVP) half hourly if CVP line is inserted,
 - Continuous fetal heart monitoring if appropriate,
 - Fundal height (in placental abruption),
 - Fluid intake (type, volume, which IV site etc.),
 - Urine output (aim to keep it over 30ml./hour),
 - Drugs administered (type, dose, time).

Consultant Obstetrician should lead the team, coordinating and managing the clinical situation.

(Grade X)

C. Blood transfusion-

- Packed cells and stored blood lack platelets and clotting factors.
- Fresh blood is ideal but because of the potential hazard of transmission of infections like AIDS etc. exercise extreme caution.
- Fresh frozen plasma (FFP) / Cryoprecipitate usually necessary **after transfusion of six units of whole blood** to compensate. Stored blood is also a source of thromboplastins and can lead to or worsen DIC when excessive amounts of blood transfused.
- Thrombocytopenia can also occur with massive whole blood transfusion, but platelet transfusion is not

- needed till platelet level is below 50 or there is continued blood loss.
- Cold blood could increase the risk of DIC; **therefore blood warmer is essential in massive transfusions.**
- Rapid transfusion is necessary in most cases using compression cuff on blood/fluid bag.

Once bleeding has been arrested the patient should be managed in an Intensive Care Unit (ICU).

D. Central venous pressure (CVP) monitoring

- This is essential in
 - Massive haemorrhage.
 - Concealed haemorrhage.
 - Continuing haemorrhage.
- Pressure of 3 to 7 cm. of water should be maintained (with angle of Louise as reference point), to ensure rate of transfusion is equal to rate of blood loss and replaces blood already lost.
- **Adequate amount of blood** should be transfused **preventing circulatory overload with cell free colloids**, which may result in an anaemic patient.
- Take care not to exceed a CVP of 7 cm. of water so as to **avoid pulmonary oedema.**
- Do not rely on increasing CVP excessively to correct oliguria.
- Fluid Challenge Test helps in distinguishing hypovolaemia, isovolaemia and hypervolaemia.

1.6.3 Delivery

Delivery should be expedited if,

- mother is at significant risk.
- fetus compromised(decision based on fetal maturity).

In most cases delivery is indicated – Timing is the question!

Mode of delivery determined;

- Cause & severity of bleeding,
- Fetal maturity,
- Degree of fetal distress.

If possible delay delivery at least till after 24 weeks when fetal lung maturity could be improved with corticosteroid therapy.

(a)Placenta Praevia—Majority will need Caesarean Section.

(b)Placental Abruption.

If fetus is dead –vaginal birth after stabilizing maternal condition is the safest option.

If bleeding continues & maternal condition cannot be stabilized, deliver by the quickest method; which would be Caesarean Section if vaginal delivery is not imminent.

Note.

- Point to bear in mind is if coagulopathy is present is that it will begin to resolve **only** after delivery of the placenta.
- Epidural or spinal anaesthesia should not be used if clotting studies are not available or abnormal.

1.7 Special Circumstances

1.7.1 Disseminated Intravascular Coagulation (DIC)

Disseminated Intravascular Coagulation (DIC) is defined as widespread coagulation within the vascular tree accompanied by increased fibrinolysis, due to excessive activation of the blood clotting mechanism. This may result in end-organ failure if not arrested in time.

Obstetric causes of Disseminated Intravascular Coagulation (DIC) can be divided into three areas.

i.Injury to vascular endothelium due to:

- Pre-eclampsia,
- Hypovolaemia,
- Septicaemia,
- Cold injury due to large amount of cold fluid,

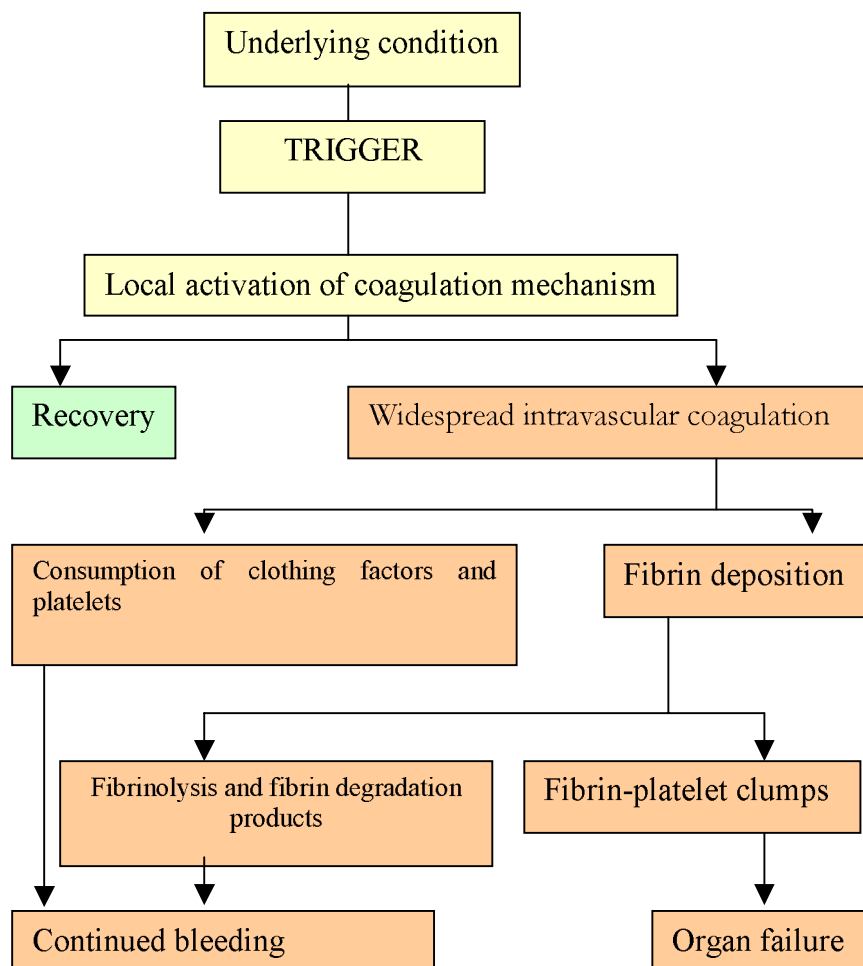
ii.Release of thrombogenic tissue factors (thromboplastins),

- Placental abruption,
- Amniotic fluid embolism,
- Prolonged intrauterine death,

iii.Production of coagulation promoting phospholipids.

- Incompatible blood transfusions,
- Septicaemia,

1.7.1.1 Evolution of Disseminated Intravascular Coagulation (DIC).



Disseminated Intravascular Coagulation (DIC) can vary from compensated state with minor changes in laboratory tests to massive uncontrolled haemorrhage with **very low plasma fibrinogen levels, raised fibrinogen degradation products (FDPs) and thrombocytopenia.**

Unless arrested without delay, **end-organ failure** results due to **hypotension, fibrin-platelet clump deposition** in small blood vessels and persisting **endothelial damage** leading to **increased vascular permeability.**

Following may result,

- (a) Kidney:
 - Acute tubular necrosis,
 - Glomerular damage,
- (b) Lungs:
 - Pulmonary oedema,
 - Adult Respiratory Distress Syndrome,
- (c) Central nervous system:
 - Infarcts,
 - Cerebral oedema,

1.7.1.2 Management of Disseminated Intravascular Coagulation (DIC).

- **Prompt and aggressive fluid replacement** will limit damage to endothelium and allow rapid clearance of fibrin-platelet clumps. **(Grade X)**
- Haematologist's advice should be obtained if Disseminated Intravascular Coagulation (DIC) is suspected. **(Grade Z)**
- Main aim should be to;
 - Arrest blood loss,
 - Resuscitate with appropriate blood products,**(Grade X)**

i. Mild Disseminated Intravascular Coagulation (DIC).

Can be controlled by adequate transfusion of stored blood and Fresh Frozen Plasma (FFP). **(Grade X)**

ii. Severe Disseminated Intravascular Coagulation (DIC)

Management after initial resuscitation will depend upon repeated checks on; **(Grade X)**

- Haemoglobin,
- Platelet count,
- Coagulation profile.

It is important to bear in mind that;

(a) Stored blood contains thromboplastins & can exacerbate Disseminated Intravascular Coagulation (DIC) after 6 units have been given.

(b) Fibrinogen reference range in pregnancy is >4g/dl.

Levels below 1g /dl. require cryoprecipitate if bleeding is continuing.

1.7.1.3 Treatment of the cause

- Disseminated Intravascular Coagulation (DIC) does not resolve till the cause has been treated.
- Following Abruption and Intrauterine Death of fetus, vaginal delivery is aimed at.
- Usually this occurs within 4 to 6 hours.
- If Disseminated Intravascular Coagulation (DIC) is uncontrolled during this time, delivery has to be expedited, by augmenting labour. While delivery is being accomplished, aggressive replacement of clotting factors has to be done, though some consider this 'adding fuel' to the fire of Disseminated Intravascular Coagulation (DIC).

- After delivery care is taken to avoid postpartum haemorrhage.

1.7.1.4 Post-Partum Management.

This consists of;

- i. Prevent further bleeding,
- ii. Ensure adequate blood and clotting factor replacement,
- iii. Monitor renal function and urine output until condition is stable,
- iv. Look for any signs of lung involvement.

1.8 Summary

APH irrespective of cause, increases the perinatal morbidity & mortality, hence the condition demands full investigation and careful management. Abruption carries the largest fetal and maternal risk. Large abruptions carry a high risk of Disseminated Intravascular Coagulation (DIC) and require a multi-disciplinary approach for best care.

Placenta praevia is becoming increasingly prevalent with increasing incidence of uterine surgery, placenta accreta becoming more common as the Caesarean Section rate rises. Maternal deaths due to abruption and placenta praevia continue to occur. Consultant obstetricians' involvement in management of placenta praevia and severe abruptions is essential to reduce maternal mortality.

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1.10 Annexure -1. Antepartum haemorrhage

(A) Specialist hospitals.

Contents of emergency trolley	(No.)
a) I.V.Canulae (14-16 FG)	4
b) I.V. Infusion	
Normal saline	4
5% Dextrose	4
c) Hetastarch or Gelafundin	2
d) Syntocinon Inj. (5 unit vials)	20
e) Ergometrine Inj. (0.5mg. vials)	6
f) Naloxone Inj. (vials)	4
g) Nifedipene Capsules	6
h) Diazepam Inj. (vial)	4
i) Hydrocortisone succinate Inj.	10
j) Promethazine Inj.(vials)	4
k) Adrenaline Inj. (vials)	1
l) Magnesium sulphate Inj.	5
m) Disposable syringes (2cc, 5cc, 10cc)	8
n) Laryngoscope (adult)	1
o) Airway (adult size)	2
p) Foley catheter	2
q) Ambubag (adult)	1

Contents of neonatal resuscitation tray	(No.)
a) Disposable - Nasal catheters /Stomach tubes	4
b) Ambu bag- neonatal	1
c) Endotracheal tubes	2
d) Naloxone Inj. (vials)	4

(B) Non-Specialist hospitals.

Contents of emergency trolley	(No.)
a) I.V.Canulae (14-16 FG)	2
b) I.V.Infusion	
Normal saline	3
5% Dextrose	3
c) Hetastarch or Gelafundin	2
d) Syntocinon inj. (5 unit vials)	10
e) Ergometrine Inj. (0.5mg. vials)	4
f) Naloxone Inj. (vials)	3
g) Nifedipene capsules	4
h) Diazepam Inj. (vials)	3
i) Hydrocortisone succinate Inj.	10
j) Promethazine Inj (vials)	3
k) Adrenaline Inj (vials)	1
l) Magnesium sulphate Inj.	5
m) Disposable syringes (2cc, 5cc, 10cc)	5
n) Laryngoscope (adult)	1
o) Airway (adult size)	1
p) Foley catheter	1
q) Ambubag (adult)	1

Contents of neonatal resuscitation tray	(No.)
a) Disposable-Nasal catheters /Stomach tubes	2
b) Ambu bag - neonatal	1
c) Endotracheal tubes - neonatal	1
d) Naloxone Inj. (vials)	4