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Antepartum Haemorrhage (in 3rd Trimester)

Objectives:

A. List the **causes** of third trimester bleeding .
B. Describe the **initial evaluation** of a patient with third trimester bleeding .
C. Differentiate the **signs and symptoms** of third trimester bleeding.
D. List the maternal and fetal **complications** of placenta previa and abruption of placenta
E. Describe the initial **evaluation and management plan for acute blood loss**.
F. List the **indications and potential complications of blood product transfusion** .

References*:* team 433 - kaplan lecture note 2018

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Antepartum Haemorrhage

❖ Introduction:

- Vaginal bleeding occurring after 20 weeks of gestation
- Third trimester bleeding ranges from spotting to life-threatening hemorrhage.
- At term (38th -- 41th week) two important changes occur:
    1. Blood volume ↑ **40%.**
    2. Cardiac output ↑ **30%**, 20% of the total cardiac output goes to gravid uterus (thus bleeding of the gravid uterus could lead to a catastrophe).

A) Causes of third trimester bleeding:

8 causes, 5 that can lead to serious neonatal and maternal morbidity and mortality + 3 benign.

1. Abruptio placenta
2. Placenta previa
3. Vasa previa
4. Uterine rupture
5. Preterm labor
6. Vaginal or Cervical tear.
7. Cervical polyp.
8. Severe Cervicitis
9. Cervical carcinoma
10. Cervical erosion
11. Vaginal varicosities
12. Congenital bleeding disorder

B) Initial evaluation of a patient with third trimester bleeding:

a. When performing cardiopulmonary resuscitation assessment (ABC) on a pregnant woman in third trimester ⟶ ABB(baby)C
b. Fetal Heart Rate (FHR).
c. After confirming stability of mother and FHR, go for Hx (PPQRST):
    i. Pain with bleeding.
    ii. Placental location (previous U/S that assessed the location?).
    iii. Quantity of bleeding.
    iv. Recreational drugs.
    v. Sex recently?
    vi. Timing of bleeding.
d. Physical Exam:
    i. Maternal vital signs.
    ii. FHR?
    iii. Concerns about heavy bleeding? IV access.
    iv. Inspection of skin for petechiae.
    v. Palpation of uterus: soft or hard? Tender or not?
    vi. Placental location? if Confirmed ⟶ Cervical exam.
        1. Speculum exam for visual assessment.
e. Investigation:
    i. CBC
    ii. DIC workup
    iii. Blood type and cross-match
    iv. U/S for placental location
f. Initial management:
    i. IV line with large bore needle + Urinary cath to monitor urine output
    ii. If fetal jeopardy + EGA of ≥36 weeks ⟶ deliver

C) Signs and symptoms of third trimester bleeding: (اجتهاد شخصي، مالقيتها في المصادر)

- Per vaginal bleeding (spotting ↔ frank hemorrhage)
- Abdominal, pelvic or back pain
- Fatigue and feeling dizzy (if chronic or severe loss)
- Increased heart rate
- Increased uterine tone

D) Placenta previa and Abruption of placenta

1- Placenta previa:

- It could be complete previa (complete coverage of internal os), Partial previa or marginal previa.
- 428 " in more than 90% placenta previa diagnosed in 2nd trimester will correct itself by the end of pregnancy"
  Kaplan " lower implanted placenta atrophies and upper implanted placenta hypertrophies resulting in migration of the placenta, at term only 0.5% found in pregnancies"
- Classic Presentation: **Painless** vaginal bleeding.
- Dx: U/S.
- **NO DIGITAL CERVICAL EXAM** due to potential bleeding
- Management should balance between **prematurity risk** and **heavy bleeding risk**
- Rx in heavy bleeding: 1) volume resuscitation. 2) Betamethasone (for fetal lung maturity)
- Complications:
  i. Bleeding from lower uterine segment
  ii. Abnormal extension of placenta tissue (associated with severe bleeding and morbidity → Rx: could require **cesarean hysterectomy**
    1. Placenta accreta: extension to deciduas basalis but not myometrium
    2. Placenta Increta: extension to myometrium
    3. Placenta percreta: beyond myometrium to serosa (sometimes to adjacent viscera)

2- Placental abruption (separation of placenta and bleeding):

- The most common cause of late trimester bleeding
- The most common cause of coagulopathy in pregnancy
- Classical presentation: vaginal bleeding + abdominal **pain** ± DIC
- In some cases, the blood is trapped behind the abrupted placenta and can't exit → extravasation of blood into uterine musculature → **couvelaire uterus** (blue/purple discoloration)
- Risk factors:
  a. Trauma B. Cocaine C. HTN D. Multiple Gestations E. Previous Hx of abruption
- Dx: Clinical Examination
- Rx:
  a. Monitoring vitals + FHR patterns
  b. Fluid administration
  c. Maternal/fetal jeopardy? → stabilize and c-sec
  d. Heavy bleeding but controlled/ pregnancy > 36 wks → Amniotomy and vaginal delivery

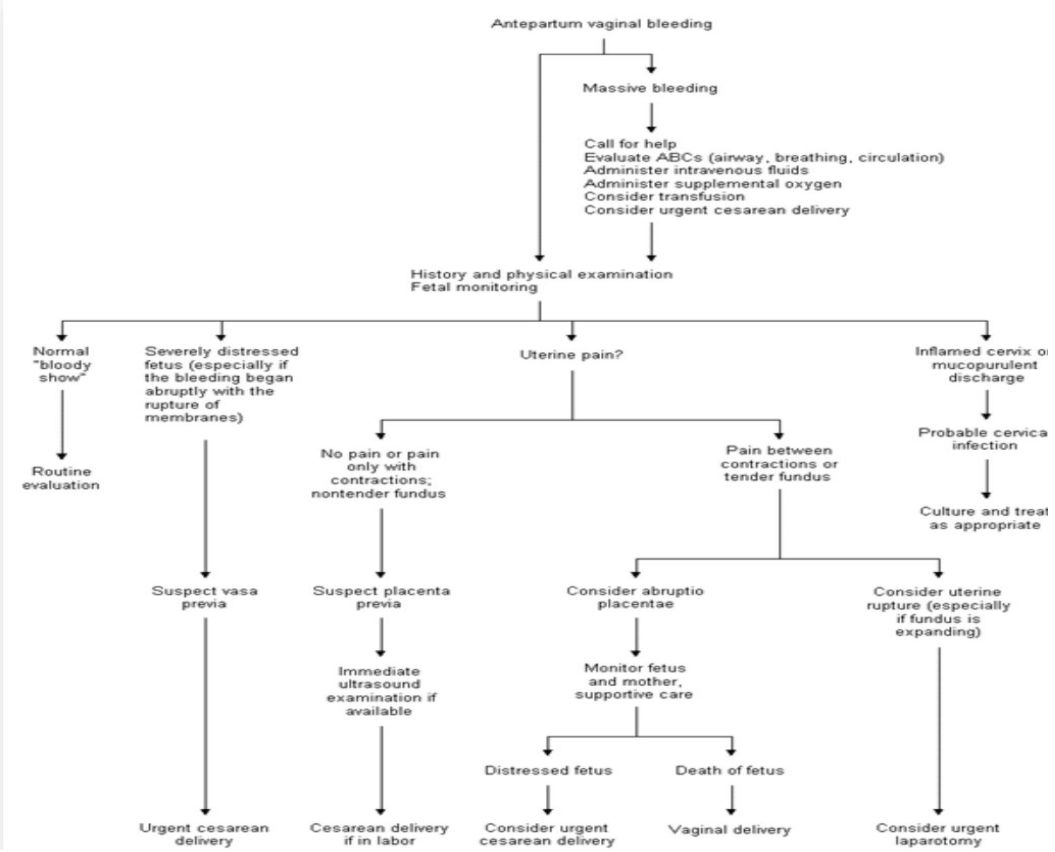
E) Initial evaluation and management for acute blood loss.

- Obstetric hemorrhage is one of the leading causes of massive blood transfusion (along with trauma, liver transplant and abdominal aortic aneurysm).
- Massive transfusion? >10 units of PRBCs in 24 hrs.
- 1 PRBC unit = 200 cc of RBC → ↑ hematocrit by 3-4%.
- O2 delivery = **4 x** O2 consumption → great reserve of O2.
- In order to maintain O2 delivery during bleeding (**until severe bleeding**):
  - Have a maintained intravascular volume.
  - Cardiovascular status is NOT impaired.
- In massive transfusion, giving only PRBC and crystalloid volume → Dilution of plasma clotting proteins. So we give 1 unit of platelets with every 1 unit of FFP + 1 unit of PRBC (**1:1:1 ratio**).

F) Indications and complications of blood product transfusion

- Severe hemorrhage → transfuse blood
- Less severe cases, check overall health status + blood count
  - Hb levels:
    - 6-7 → transfuse
    - 7-8 → considered
    - 8-10 →transfuse if symptomatic or acute coronary syndrome.
- Risks of blood transfusion:
  - Infection: HIV risk 1: 450k - 650K
  - Allergy or immune reaction (Transfusion-related acute lung injury, hemolytic transfusion reaction, graft vs host disease...)
  - Volume overload

★ **Check mother's Rh, if negative → kleihauer-betke test to determine the quantity to give of RhoGam.**



From 428

Case

A 25-year-old G2P1 woman at 32 weeks gestation is brought to labor and delivery by her husband. About an hour before, she was watching television when she noted a sudden gush of bright red blood vaginally. The bleeding was heavy and soaked through her clothes, and she has continued to bleed since then. She denies any cramps or abdominal pain. She says that her last sexual intercourse was a week ago. A review of her prenatal chart finds nothing remarkable other than a borderline high blood pressure from her first prenatal visit that has not required medication. There is no mention of bleeding prior to this episode. She had an ultrasound to confirm pregnancy at 14 weeks, but none since. Physical examination reveals an extremely pale woman whose blood pressure is 98/60, pulse 130, respirations 30, temperature 99° F. Her abdomen is soft without guarding or rebound to palpation, and the uterus is non tender and firm, but not rigid. Fundal height is 33cm. Fetal heart tones are in the 140s with good variability. The external monitor reveals uterine irritability, but no discrete contractions are seen. There is a steady stream of bright red blood coming from her vagina.

1- What is your differential diagnosis for potential causes of bleeding for this patient?

- Placental abruption
- Placenta Previa
- Vasa Previa
- Genital lacerations/trauma (e.g. labial, vaginal or cervical)
- Foreign body
- Cervical/vaginal cancer
- Cervicitis
- Bloody show

2- What steps would you take to evaluate this patient?

- Identifying the etiology of the bleeding, also evaluation of both the maternal and fetal status.
- Assess maternal hemodynamic status:
    - Serial vital signs
    - Hematologic studies to assess for acute anemia and DIC
    - Confirm placental location
    - Avoid digital cervical exam
    - Sonographic evaluation of placental location
- Assess fetal status:
    - Continuous external heart rate monitor or sonographic biophysical assessment
    - Kleihauer-Betke test for maternal-fetal hemorrhage

3- What signs and symptoms would help you differentiate the potential causes of the bleeding?

- Placental abruption:
    - Epidemiology:
        - Occurs in 1 in 100 births.
        - Accounts for approximately 30% of cases of third trimester bleeding .
        - 25% recurrence risk in a subsequent pregnancy.

    - Risk Factors:
        - Hypertension (chronic or gestational)
        - Cocaine use/smoking § Abdominal trauma
        - Sudden uterine decompression (as with rupture of membranes)
        - Preterm premature rupture of membranes
    - Clinical presentation:
        - Frequent uterine contractions or hypertonicity
        - Vaginal bleeding (sometimes catastrophic)
        - Non-reassuring fetal heart rate tracing
        - Hypofibrinogenemia supports the diagnosis
        - Disseminated intravascular coagulation occurs in 10% to 20% of severe abruption
- Placenta Previa:
    - Epidemiology:
        - Central or total placenta previa– placenta completely covers the os
        - Partial placenta previa– placenta partially covers the os (os must be partially dilated)
        - Marginal previa- the placental edge is adjacent to the os, but does not cover it
        - Low-lying placenta - the placenta approaches the os, but is not at its edge.
        - At 24 weeks, about 1 pregnancy in 20 will demonstrate ultrasound evidence of a placenta previa
        - At 40 weeks, the incidence decreases to 1 in 200
        - Accounts for approximately 20% of cases of third trimester bleeding
    - Risk factors:
        - Prior cesarean delivery
        - History of myomectomy § Increasing number of uterine curettages
        - Increased parity
        - Multiple gestation
        - Advanced maternal age
        - Smoking
    - Clinical presentation:
        - Bleeding is usually painless and may occur after intercourse
        - Patients may also present with contractions, thus ultrasonography is critical to differentiating from abruption
- **Vasa previa**: Fetal vessels of a velamentous cord insertion cover the cervical os (Incidence is less than 1% of all pregnancies)
    - Risk factors: **Multiple gestations**: up to 11% in twins and up to 95% in triplets (which is associated with IVF)
    - Clinical presentation: suggested by painless vaginal bleeding in the absence of evidence of placenta previa or abruption.
    - In vasa previa the bleeding is from the fetus, thus it is associated with **fetal distress.**
- **Other causes:**

- causes of 3rd trimester bleeding such as cervicitis, cervical erosions, trauma, cervical cancer, **foreign body or even bloody show** can usually be differentiated on physical exam once the preceding etiologies are ruled out.

4- What steps would you take to manage the low blood pressure and tachycardia that the patient is displaying?

- Ensure adequate airway and assess vitals
  - Serial blood pressure, heart rate, and respirations
  - Continuous oxygen saturation monitor
- Establish adequate IV access (2 large bore IVs or central venous line)
- Monitor blood and coagulation profiles
  - Serial CBC and platelet counts
  - Serial prothrombin time, partial thromboplastin time, and fibrinogen
- Volume resuscitation: Crystalloid, Packed red blood cells (Platelets, fresh frozen plasma and cryoprecipitate as indicated).
- Monitor vitals and response to therapy:
  - Serial blood pressure, heart rate, and respirations
  - Continuous oxygen saturation monitor
  - Continuous urine output assessment via indwelling Foley catheter
- Management of the patient with significant 3rd trimester hemorrhage, when the fetus is mature, is hemodynamic stabilization and delivery
- Vaginal delivery is generally precluded in the setting of abruption with persistent hemodynamic instability
- Cesarean delivery is required for all cases of previa and vasa previa

5- Under what circumstances would you consider blood product transfusion?

- Acute blood loss of 30-40% blood volume
- Chronic blood loss with hemoglobin < 6 g/dL (or <10g/dL + cardiopulmonary problems)
- Coagulation problems:
  - Fibrinogen < 150 mg/DL
  - Prolongation of PTT
  - Platelets < 20,000
  - Platelets < 50,000 + cesarean delivery
- Complications:
  - Febrile non-hemolytic and chill-rigor reactions
  - Acute hemolytic reaction due to ABO incompatible transfusion
  - Delayed hemolytic transfusion reaction
  - Transfusion-related acute lung injury
  - Allergic reactions to unknown blood components
  - Volume overload
  - Graft vs. Host Disease (GVHD)
  - Infectious complications (HIV, HepB, HepC, etc)

- **Blood Products:**

Product (mL)	Contents	Uses and effects
Whole Blood (1 unit = 500mL)	All components	Rarely used. Only in the setting of massive bleeding
Packed RBC (I unit = 350 mL)	RBC only	One unit increased hematocrit by 3 percentage points
Frozen plasma (1 unit = 200–300 mL)	All clotting factors, no platelets	Use for deficiencies in multiple clotting factors. One unit of FFP increased fibrinogen by 7-10 mg/dL
Cryoprecipitate (1 bag – 10-15 mL)	Fibrinogen, factors VIII, XIII, vWF	Ten bags of cryoprecipitate will raise plasma fibrinogen by 70 mg/dL in a 70 kg recipient
Platelets (1 unit = 50mL)	Platelets	Six units of whole blood-derived or one unit of apheresis-derived platelets will raise the platelet count by approximately 30,000/μL