



ALARM



Antepartum Hemorrhage



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Objectives

Participants will:

- Recognize different clinical presentations, placental abruption, placenta previa, placenta accreta, vasa previa
- Apply CABs of resuscitation
- Assess both the mother and fetus, stabilize, resuscitate and deliver, if necessary
- Emphasize no digital exam unless placenta site known and is not a placenta previa



A 36 year old woman presents to your local Emergency Department following a motor vehicle collision (MVC). She is 29 weeks pregnant with her fourth baby. She complains of abdominal pain.

Since the mother has normal vital signs, no apparent injuries and the fetal heart rate is normal, the mother is moved to the obstetrical unit.

What are your initial management steps?

- CABs
- Maternal vital signs
 - BP: 110/65, HR 100, RR 14, Temp 37°C, Sat 98%
- Fetal status (external monitor – continuous EFM)



Continuous EFM shows:

- Some uterine activity
- Contractions every 12–15 minutes
- FHR baseline is 160 bpm
- Moderate variability
- No accelerations seen
- No decelerations



What other information would you want at this point?

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Presenting Complaint

- **Pain** (localization, intensity, chronology, etc.)
 - constant
 - across her lower abdomen
 - mild (2-3/10 on pain scale)
 - started immediately after impact, stable since then
 - not affected by movement or position change
- **Fetal movement:**
 - present since the accident
- **History of MVC** (speed, type of impact, seatbelt, injuries to other passengers)
 - front seat passenger
 - wearing a seatbelt
 - was rear ended by another car
 - at a stop light

- at an estimated speed of 50 km/h;
 - driver has neck pain;
 - no deployment of air bag
- **Contractions, fluid loss, blood loss**
 - feels mild, irregular contractions
 - mild, irregular contractions periodically since 24 weeks
 - No fluid loss
 - some very light bleeding on her underwear when she changed into gown

Current Pregnancy

- Uncomplicated, find antenatal records
- Prior ultrasound? (Placental location): 18-week ultrasound not available but does not recall there being any concerns with it
- Rh negative
- Confirm gestational age
 - How this is done: known LMP, U/S, IVF, etc.

Obstetrical History

- G5P3A1
- Past: uncomplicated, C section for abnormal fetal heart for 2nd child

Medical History

- Nil relevant

Medication / Allergies

- Vitamins only

Social History / Exposures

- Smoker
- No alcohol or substance use



Describe the physical examination.

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- Assess vaginal discharge/bleeding

Before doing a speculum exam, try to obtain ultrasound report or obtain an emergency ultrasound: neither are available at this time

- Even without confirmation of placental localization, a careful, sterile speculum exam is appropriate at this time. Swab for GBS
- If placenta previa ruled out by prior U/S, consider vaginal examination

Vital Signs/Examination

- **OE:** Alert and responsive, seems a little pale but says she feels well.
- **Vital signs:** BP 100/60, HR 105, RR 18, Temp 36.4°C, Sat 97%
- **Head & neck, chest and heart, musculoskeletal and neurological exam:** Normal
- **Abdominal exam:** Fundal height: 28 cm
- **Fetal presentation/Leopold:** cephalic
- **Palpation:** irregular, mild contractions, tenderness that is maximal across the lower uterus; no guarding nor rebound, no increase in tone, no irritability
- **Assess vaginal discharge/bleeding**

- No evidence of PPROM, no ferning
- Confirm presence and quantity of blood:
 - Small amount of blood in posterior fornix, bright red, no active bleeding
- Check for cervical dilation
 - Cervix seems to be slightly open and shortened



**What is your differential diagnosis at this point?
Justify your answer.**

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- Placental abruption (Motor Vehicle Collision, multiparity, age, smoking, pain, bleeding, contractions)
- Placenta previa (with or without PTL) (multiparity, previous CS, age, bleeding, opened cervix, contractions)
- PTL (contractions, multiparity, opened cervix, MVC, bleeding)
- Vasa previa (less likely)
- Internal injuries (intra-abdominal bleeding) (MVC, contractions)
- Uterine rupture (MVC, previous CS, pain, bleeding)



What investigations would you order at this time?

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- CBC, Kleihauer: Hb 108, KB pending
- Group and cross-match (Rh status)
- Coagulation studies: INR 1.1
- Consider IV
- U/S for: placental location, placental abruption, free fluid
- Ensure patient stability if transferring for testing



The 18 week ultrasound report is not available but you are able to get an urgent U/S that identifies a normal fundal placenta.

Placental abruption is not visualized. You reassess her when she returns from U/S. She says she feels more pain and doesn't feel well. It has been 2 hours since she arrived.

What would be your further assessment?

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- Stress that a normal U/S doesn't rule out an abruption
- Pain and contractions: Pain is still present all across her lower abdomen at 3-4/10, the pain increases with contractions which seem to come in every 10 minutes and with greater intensity
- Bleeding: She has soiled ½ a pad in the last 2 hours
- Fetal movement: She saw the baby move during the ultrasound but does not feel it move at the moment, maybe because the pain is distracting her, she says ...
- Fluid loss: None
- She is still alert and responsive but pale and mildly diaphoretic. Her vital signs are: BP 100/56, HR 105, RR 20, Temp 37°C, Sat 96%
- Maintain EFM- normal



What is the likely diagnosis? What would be your management?

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- Discuss how long should last EFM in the context of trauma – 4 hours minimum, 24 hours if bleeding or more than four contractions per hour)
- Repeat some lab work (Hb, coag): Hb 104, coag stable
- Abdominal exam: Tenderness across the lower uterus, which is firm between contractions; some increase in basal tone, some irritability
- Vaginal exam: 1–2cm, 50% effaced/2 cm long, vertex, station -2
- Start IV
- Consider steroids

What is the likely diagnosis? What would be your management?

- Placental abruption (mother hemodynamically stable, FWB sustained)
- Admit and watch closely (regular vital signs, monitor bleeding and contractions)
- Continue EFM for at least 24 hours in total
- Give or consider steroids
- Discuss and document (in particular, inform patient and family of the possibility of CS in case of unstable mother/compromised FWB)
- Consider transfer to appropriate level of care hospital and/or asking for an OBGYN consult



EFM returned to normal after maternal repositioning. Two hours later, you are called into the room by the nurse. The patient is bleeding more heavily, the contractions are now 2-3 per 10 minutes. The pain has increased and is constant. The patient seems paler than before and remains mildly diaphoretic. Her vital signs are as follows: BP: 90/50, HR 135, RR 24, Temp 36.4°C, Sat 93%.

What is the management at this point?

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- CABs
- Call for help (pediatrician/neonatal care for premature newborn, gynecologist or surgeon, extra nursing staff for patient and newborn, operating room staff)
- 2 large bore IVs, crystalloid infusion (be precise)
- Check Hb and coag (stat) Hb 90, INR 1.2
- O₂ if hypotensive or hypoxic
- Ensure blood available and prepare for massive transfusion* protocol if need be
- Examine her: cervix is 3 cm dilated, effaced 90%, station -1
- Deliver by C section if delivery not imminent and think of possibility of placenta accreta (multiparity, previous CS)
- Neuroprotection protocol (MgSO₄), if time permits
- GBS antibiotics
- Give steroids if not given earlier
- Be prepared for PPH (risk factors: multiparous, abruption, CS, DIC)
- Rh immunoglobulin
- Discuss and document

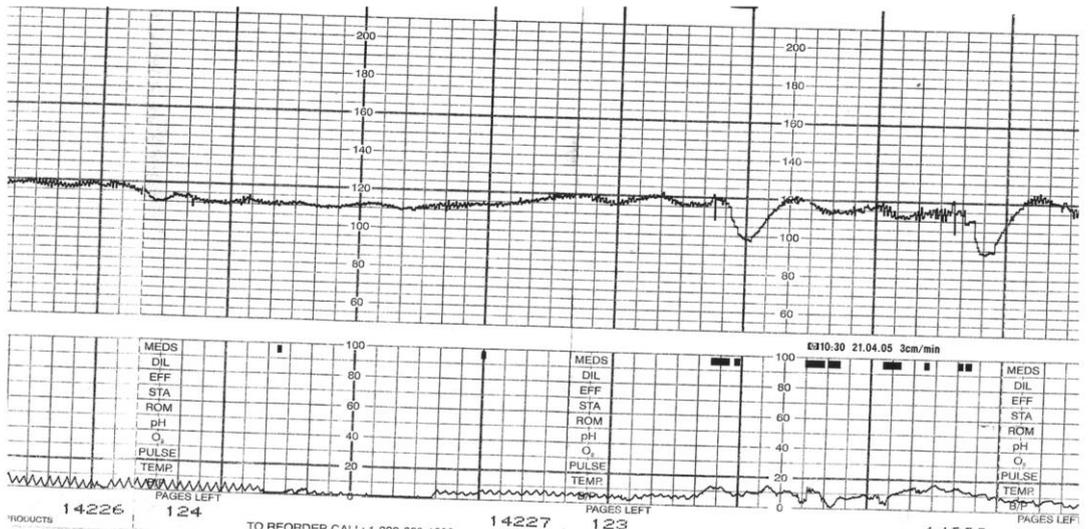
***Massive transfusion protocols (MTP)**

Every hospital will have an approach to massive transfusion when it is required. Take the time to become familiar with the protocol in your center before you need it in an emergency.

The principles of MTP are as follows:

- Massive bleeding is defined as >4500 ml in 30 minutes or >150 ml per minute of ongoing loss
- When activating MTP, clear pathways of communication between the treating physician and transfusion medicine specialists and staff are vital
- Infusions can include PRBCs, plasma and platelets and are customized based on results of blood testing.

Reference: A practical guideline for the hematological management of major hemorrhage Br. J Hemat 2015 170:788.



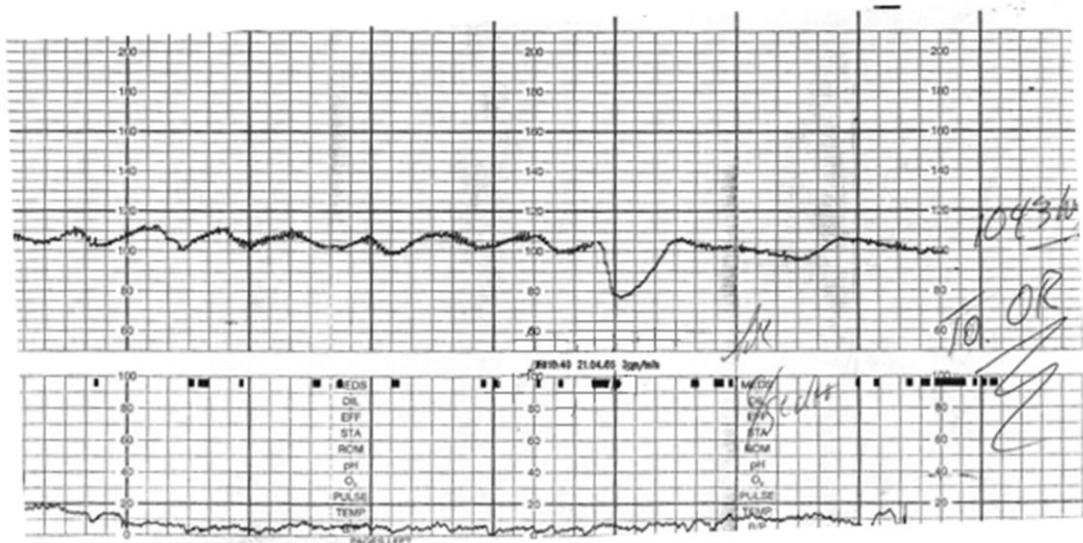
Interpretation of EFM:

Baseline: 115

Minimal variability

No accelerations

Uterine activity not noted



Interpretation of EFM:

Baseline: 115

Minimal variability

No accelerations

Sinusoidal pattern

Uterine activity not noted

Outcome

Baby required resuscitation, was pale and had a hemoglobin of 82 g/L.



Discuss placental abruption vs placenta previa

Clinical Features

Placental Abruption

- May be associated with hypertensive disorders, uterine over distension, abdominal trauma
- Abdominal pain or backache (often unremitting)
- Uterus tenderness
- Increased uterine tone
- Uterine irritability / contractions
- Usually normal presentation
- FHR may be absent or atypical/abnormal
- Shock and anemia out of proportion to apparent blood loss
- May have coagulopathy
- Abruption may be seen on transabdominal ultrasound, but a negative ultrasound does not rule out abruption

Placenta previa

- May be associated with history of previous uterine surgery
- Painless (unless in labour)
- Uterus not tender
- Uterus soft
- No uterine irritability / contractions
- Malpresentation and/or high presenting part
- FHR usually normal
- Shock and anemia correspond to apparent blood loss
- Coagulopathy very uncommon initially
- Transvaginal ultrasound is the definitive diagnostic test for placenta previa



A G4P3 patient has had 3 previous CS and has an anterior placenta in her current pregnancy.

She is at risk for which complication of placentation?

How would this be diagnosed?

Which complication?

Invasive placental disease -placenta accreta, percreta, increta.

How would this be diagnosed?

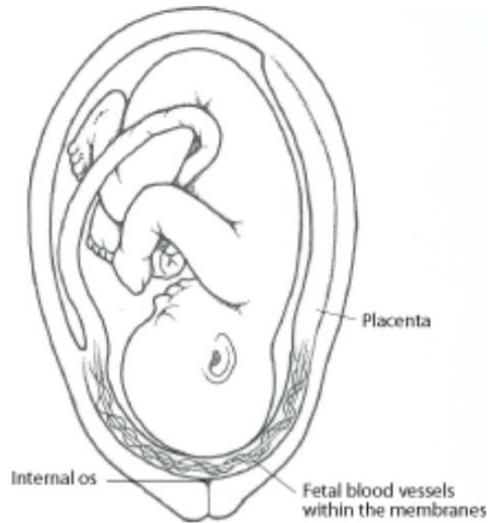
- Second trimester US could identify this especially if the above history is identified on the requisition. Repeat US and or MRI might clarify the diagnosis. Delivery should be planned ideally in a Level 3 facility.
- If not diagnosed prenatally placenta accreta might be suspected at the time of manual removal of a retained placenta when there is no clear cleavage plane.



If the patient had a confirmed PROM and the fluid loss was bloody, what would be your additional differential diagnosis?

Vasa previa

- Increased incidence in IVF
- Fetal mortality estimated to be as high as 60% when undiagnosed
- Usually acute and painless
- Abrupt changes in FHR patterns



This is an image of membranous cord insertion.

**Summary**

- Causes of antepartum hemorrhage include placenta previa, placenta abruptio, vasa previa
- Recognition and early response to these diagnoses can improve outcomes.
- Antenatal history can identify an increased risk of invasive placental disease.
- It is important to avoid digital vaginal exam in the setting of antepartum bleeding until placenta previa can be ruled out.