Pitfalls in the Second Half of Pregnancy

Charlotte Page Wills, MD
Associate Program Director
Alameda Health System-Highland Hospital EM Residency, Oakland, CA
Associate Clinical Professor of Emergency Medicine
University of California, San Francisco School of Medicine

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Disclaimer!

• The following is NOT meant to replace the expertise and guidance of a skilled Obstetrician and Perinatologist!

• Expert consultation should always be sought in the care of any pregnant patient greater than twenty weeks gestation or other high risk obstetric case.

• This lecture recognizes, however, that the resources of an expert consultant may not always be immediately available, and aims to provide basic guidance in the approach to Emergency Department management of these patients.
In the next 30 minutes…

- Highlight changes in physiology important to managing patients in the second half of pregnancy.
- Describe the basic approach to initiate evaluation and management of the gravid patient.
- Describe how to evaluate a fetus as viable or nonviable.
- Illustrate the pitfalls of pre-eclampsia and preterm labor.
- Discuss some of the obstetric emergencies that can arise in the ED precipitous delivery.

maternal well-being

- gestational age
- labor status
- fetal well-being

High Volume, Low Pressure

- HR
- BP
- SVR
- Vol
- CO
- Hct

maternal well-being

- What’s normal? Know the physiologic changes that occur in pregnancy.
- Where do I start? Perform standard maneuvers for resuscitation in all pregnant patients.
- Identify underlying disease and treat aggressively.
Second and Third Trimester Resuscitation

- Dilutional anemia: replace volume loss; in sepsis transfuse!
- Oxygenation: high oxygen content, increased minute ventilation and TV.
- Aortocaval compression: pelvic tilt or manual uterine distraction.
- Progesterone: anticipate a difficult airway and aspiration.

Aortocaval Compression

- IVC may be completely obstructed in the supine position.
- Uterus receives 30% of cardiac output.
- Compression occurs at 20 weeks.
- CPR only produces about 10% normal CO.

Avoiding Compression

- Tilt the backboard
- Blanket roll
- Manual distraction of the uterus

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gestational age

labor status

fetal well-being
gestational age

- Traditional: Last menstrual period, fundal height.
  - Difficult in the obese patient.
  - Is inaccurate with multiple gestations.
- Ultrasound:
  - Can be learned easily.
  - Can be quickly performed.

Rapid Pregnancy Dating by EP’s

- Sonographers had a wide range of experience.
- Exams had a high degree of correlation with gold standard.
- Measurements of BPD and FL took less than one minute.
- Was more accurate than measuring fundal height.
  - 96% ULS versus 80% for FH

Accuracy of emergency physicians using ultrasound to determine gestational age in pregnant women
Sachita Shah, Nathan Teismann, Brita Zaia, Farnaz Vahidnia, Gerin River, Dan Price, Arun Nagdev

BPD Measurement

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labor status

- Labor: contractions with progression of the cervix
  - Requires uterine monitoring.
  - Requires examination of the cervix visually and manually or by ultrasound.
- Bleeding: may be from labor, trauma, or the placenta
  - Requires extreme caution with the vaginal/cervical examination.
- Membranes: may rupture from labor or infection
  - Requires determining presence or absence of amniotic fluid.

Evaluating the Membranes

- Visual inspection: pooling of amniotic fluid on sterile speculum exam. Most sensitive finding.
- Ferning: arborization of salt crystals in amniotic fluid.
- Nitrazine Paper: amniotic fluid has a pH of 6.5 or higher.

Cervical Evaluation

- Exams should be sterile.
- Minimize digital exams - rates of infection go up with numbers of exams in PROM.
- CONTRAINDICATED if you suspect placenta previa.

maternal well-being
\[ \downarrow \]

gestational age
\[ \downarrow \]
labor status
\[ \downarrow \]
fetal well-being
fetal well-being

- Fetal heart rate (FHR) and activity: fetal monitor.
- Can use bedside ultrasound to assess both
  - For greater than 20 weeks, fetal monitoring is standard.

- MUST come with a provider who can interpret fetal strips.
  - Fetal distress or intrauterine infection.
  - Both are indications to deliver a viable fetus.

Supplies for Baby

- Resuscitation surface: infant warmer, surface with plenty of dry linens near an oxygen source.
- Infant mask and anesthesia bag/ambu bag.
- Dedicated person to dry, stimulate, warm the infant.

26 yo woman complaining of headache and abdominal cramping stating she is 6 months pregnant. BP is 158/98 and HR is 118.
Headache

- Hypertensive
- No bleeding
- Mildly tender uterus

CBC
CMP
Uric acid, LDH
DIC Panel

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Damaged Endothelium

- Hemolysis
- Elevated LFTs
- Platelet consumption

- Elevated creatinine
- Proteinuria

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[Diagrams and text related to medical conditions and diagnostics, including blood pressure, symptoms, and laboratory tests.]

[Images of test tubes and medical icons related to pregnancy complications and hematology.]
High Pressure, Low Volume
High Volume, Low Pressure

<table>
<thead>
<tr>
<th>BP</th>
<th>HR</th>
<th>SVR</th>
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<tbody>
<tr>
<td>Vol</td>
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<td>CO</td>
<td>Hct</td>
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End-Organ Damage
- PRES
- Renal failure
- Placental abruption
- DIC

Managing Pre-eclampsia
- BP control: labetalol, nifedipine, hydralazine.
- Magnesium infusion for severe pre-eclampsia.
- Avoid Lasix - patients are already volume depleted.
- Avoid excessive fluids - patients third space because of endothelial damage and proteinuria.

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Preterm Labor in the ED

- Tocolytics: Still given but not proven!
  - Calcium channel blockers now popular.
  - Do not use more than one agent.
- Corticosteroids: Proven! Give them!
  - Dexamethasone or betamethasone.
  - Fetal lung maturity.
- Antibiotics: Proven, but only with ruptured membranes.
  - Increase the latency period in PPROM.

24 yo woman complaining of abdominal pain for several hours. She states her last period was last month. You are summoned to the room and a code is called.
maternal well-being

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Pregnancy for Emergency Providers

- Week 13
- Week 20
- Week 27

3 inches
15 grams

12 inches
400-600 grams

15 inches
900 grams

Clinically Determining Viability: Weight

- Less than 400 grams is considered nonviable.
- Requires quick access to an infant scale.

Survival By Weight

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<th>Weight</th>
<th>Survival</th>
<th>Mod-Severe Disability</th>
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<tbody>
<tr>
<td>0-400g</td>
<td>11%</td>
<td>-</td>
</tr>
<tr>
<td>401-600g</td>
<td>27%</td>
<td>29%</td>
</tr>
<tr>
<td>601-700g</td>
<td>63%</td>
<td>30%</td>
</tr>
<tr>
<td>701-800g</td>
<td>74%</td>
<td>28%</td>
</tr>
</tbody>
</table>
Clinically Determining Viability: Ballard Score

Non-initiation of a Code

- Age less than 23 weeks.
- Weight less than 400 grams.
- Anencephaly.
- Lethal malformation: Trisomy 13 or 18.
- Calling a code: asystole greater than 15 minutes.

30 yo woman is brought to the ED by friends with abdominal cramping and rupture of membranes. She states she is about 34 weeks pregnant.
Cord Prolapse

- To the OR if possible.
- Elevate the presenting part.
- Kneeling position or steep Trendelenberg.
- Infusing the bladder with saline - although not as helpful if a presenting part is visible.

Breech Delivery

- To the OR if possible!
- DO NOT PULL until the umbilicus is delivered.
- Infant should deliver face down.
- Preterm infants are more likely to be breech.

Shoulder Dystocia

- “Turtle sign”.
- Difficult to predict.
  - Fetal macrosomia
  - Precipitous delivery
- NO fundal pressure/hold pushing until repositioned.
Reducing Dystocia

- McRobert’s Maneuver
- Suprapubic pressure
- Delivering the posterior shoulder
- Rubin, Woods Corkscrew
- Zavenelli Maneuver

Thermal Care

- The item we are most likely to overlook and under-manage
- Association between hypothermia and mortality: acidosis, respiratory distress, NEC, intraventricular hemorrhage
- The smaller you are, the faster you lose heat. BIG problem less than 30 weeks.
- Warm blankets, portable warming mattresses, warming tables, hats.

Quick Trick

- No blankets?
- “micro-preemie”?
- Use a 5 gallon freezer bag.
- Cut a hole in the top and seal the bottom.

Post-Partum Care

- Do not pull on the umbilical cord.
- Gush of blood prior to placental detachment.
- Keep the mom warm and dry.
- Be vigilant for postpartum hemorrhage.
Postpartum Hemorrhage

• Greater than 500 cc blood.
• Leading cause of death worldwide. In the US, second after VTE.
• Uterine atony and lacerations.
• Risk factors include advanced age, prior hemorrhage, older age, fetal macrosomia.

Resuscitating PPH

• Manual Interventions:
  • Fundal massage, explore for lacerations, manual uterine exploration for retained products.
• Medical Interventions:
  • Oxytocin, methylergonovine (ergot alkaloid), misoprostil.
  • Resuscitation with fluids and blood.
  • TXA now second-line.

What we covered...

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Thanks

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