Half-Baked: Second Trimester Emergencies Part II

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Half-Baked: Part 2
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Half-Baked: Emergencies in the Second Trimester of Pregnancy

Part 2

Mid-Trimester Pregnancy for Emergency Providers

pre-viable to viable
weeks 23-24

3 inches
15 grams

12 inches
400-600 grams

15 inches
900 grams
Case 3: “I’m bleeding!”

- A 34 year G6P5 woman presents to triage with the complaint of vaginal bleeding for three hours. She states she has some slight lower abdominal discomfort, but otherwise denies chest pain, shortness of breath, or other abdominal or back pain. When asked about her LMP, she replies she does not know—she had been on oral contraceptive pills but ran out. Her bedside urine pregnancy test is positive.

- 100/60 100 16 97.8 98%
- Physical exam: fundal height palpated just above the umbilicus. Other than GU, unremarkable physical exam.
• Dating by ultrasound
• The head is easiest for most practitioner to find.
• Biparietal diameter is measured from the inner to outer tables of the skull at the level of the thalami.
• Femur length may be confused with humerus!
Clinical Question: The pelvic exam is high risk.
Risk worsening bleeding with both the speculum and digital exams.
“Double set-up”: in a viable fetus, exam is done in the operating room ready to perform a stat cesarean section.
ULS is helpful to locate the placenta and the presenting part.

The Placental Catastrophes

- **Placenta Previa:** implantation in the lower uterine segment partially covering the os. Painless bright red bleeding. Ultrasound is sensitive!
- **Abruptio Placenta:** premature separation of the placenta from spiral artery rupture. Range of symptoms from slight pain and bleeding to shock and DIC. Ultrasound is insensitive!
- **Circumvallate Placenta:** the placental edges have rolled under and created a ‘shelf’. Painless bleeding without evidence of previa.
- **Vasa Previa:** one of the fetal vessels crosses the internal os and inserts into the velamentous portion of the placenta. Causes life threatening fetal hemorrhage.
Abruption

maternal well-being → IV, labs, type and screen, keep on left side

gestational age → 25 weeks 4 days by ULS, so viable

labor status → Sterile speculum exam in OR, uterine monitoring, AVOID bimanual exam

fetal well-being → Fetal monitor and supportive care of the mother

Case 4: “One Baby in the Lobby, One on the Way”

- A 24 year old woman presented to triage complaining of “abdominal pain”. She states she is 8 weeks pregnant. Before she is called in by the triage nurse, she goes into the bathroom in the lobby where she delivers a very small infant. She and the neonate are brought into the resuscitation bay where it is discovered a twin is still in utero.

- 90/50 100 16 97.8 98%
- Physical exam: gravid uterus 3cm above the umbilicus, + vaginal bleeding and amniotic fluid.
maternal well-being

IVF-yes!, oxygen, left side, keep dry and warm.

gestational age

IVF-yes!, oxygen, left side, keep dry and warm.

labor status

keep dry and warm.

fetal well-being

Clinical Question: Can you date a fetus from physical findings?

Physical findings of previability: lanugo, translucent skin, fused eyelids, thick vernix, absence of fingernails.

Weight: <400 grams

Ballard Score

Can you date a fetus from physical findings?

Physical findings of previability: lanugo, translucent skin, fused eyelids, thick vernix, absence of fingernails.

Weight: <400 grams

Ballard Score
**Clinical Question:**

- Steroids
- Antibiotics
- +/- Tocolytics

"How do you manage ruptured membranes in the second trimester?"

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**Premature Preterm Rupture of Membranes: Consequences of PPROM for the Fetus**

- Complications of prematurity: RDS, IVH, NEC, ROP.
- Pulmonary hypoplasia: critical lung development occurs at 20-24 weeks.
  - Risk declines after 24 weeks.
- Skeletal compressive deformities: from oligohydramnios.
- Cerebral palsy: fetal inflammatory response syndrome.

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**Premature Preterm Rupture of Membranes: Consequences of PPROM for the Mother**

- Intra-amniotic infection
  - Risk is higher with lower gestational age.
  - Avoid the digital cervical exam!
- Fetal malpresentation necessitating cesarean section.
- Placental abruption
- Post-partum hemorrhage
- Complications of bed rest

- *Delayed-interval delivery in multifetal pregnancy*
Managing PPROM: Conservative Management

- **Steroids:** to accelerate fetal lung maturity.
  - Betamethasone: 12mg IM for two doses Q12 hours.
  - Dexamethasone: 6mg IM for four doses Q12 hours.
- **Antibiotics:** increased the latent period up to 3 weeks.
  - Ampicillin and erythromycin IV for 2 days, then amoxicillin and erythromycin for 5 days.
  - Avoid amoxicillin-clavulanate—increased risk of NEC.

Tocolytics in PPROM?

- May delay the latent period—the time from rupture to delivery, but they do not improve neonatal outcome.
- No one agent clearly superior to another.
- Indication is to provide 48 hours for steroids to have effect.
- There is no clear consensus.
- In the ED single dose medications may be reasonable:
  - terbutaline, indomethacin, nifedipine
  - beware the hazards of high dose magnesium infusions!

maternal well-being → IV, oxygen, left lateral position.
gestational age → Determined to be pre-viable from the delivered fetus.
labor status → Antibiotics for PROM/GBS, fluids, +/- tocolytics.
fetal well-being → Steroids for fetal lung maturity.
Case 5: “Baby in the Back of the Rig”

• Paramedics arrive at the back door with a 26 yo woman who has just delivered in the back of the rig. The mother and neonate are both on the gurney with the cord still attached. The mother states she was 24 weeks pregnant. She had recently been treated for a urinary tract infection.

100/60 100 16 97.8 98%

• Well-appearing mother with a newly delivered infant on the gurney
• No active bleeding from the mother
• The infant is small and dusky with agonal respirations

maternal well-being
  ➔ Post-partum care! Deliver the placenta, warmth, oxytocin if bleeding.

gestational age
  ➔ Peri-viable by dates and appearance.

labor status
  ➔ Third stage of labor- be vigilant for bleeding.

fetal well-being
• NALS: warm, dry, stimulate-repeat. Stick to the basics.
• Assemble equipment.
  – Clamp, blankets, neonatal bag/mask.
  – Advanced neonatal supplies.
• Assemble providers and resources.
• Scale to weight the infant.

Warming: 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
Ventilation and Respiratory Support

• Anesthesia bag
• Self-inflating bag
• Use with a manometer
• In-line pressures 30-40 cm/H₂O
• 20-25 cm/H₂O for neonates < 1500g

T-piece Respirator (Neopuff)

• Positive pressure ventilation
• Attaches to a blender
• Can control the PIP
• Can control the PEEP
• Can provide CPAP
• Less risk of barotrauma

7-8-9

• ETT depth = weight of the baby + 6
• 1kg: 7cm < 28 weeks 2.5 ETT
• 2kg: 8cm 28-34 weeks 3.0 ETT
• 3kg: 9cm 34+ weeks 3.5 ETT
• for infants > 750 grams

* Peterson, Accuracy of the 7-8-9 rule for ETT placement in the neonate J Perinatol 2006; 26
Compressions

- You have: warmed, dried, stimulated, given oxygen, provided PPV, suctioned meconium, +/- intubated.
- 60 seconds and 30 seconds/20-30 PPB breaths have gone by.
- If the heart rate is less than 60, start compressions.
- It is crucial that ventilation has been optimized as ventilation is much more likely to make a difference than compressions.

The Threshold of Viability

<table>
<thead>
<tr>
<th>Gestational age</th>
<th>Survival</th>
<th>Mod-Severe Morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>11-30%</td>
<td>56%</td>
</tr>
<tr>
<td>24</td>
<td>26-52%</td>
<td>53%</td>
</tr>
<tr>
<td>25</td>
<td>54-76%</td>
<td>46%</td>
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</tbody>
</table>

Perinatal Care at the Threshold of Viability
H. Macdonald et al, Pediatrics 2002: 110; 1024-1027

Survival By Weight

<table>
<thead>
<tr>
<th>Weight</th>
<th>Survival</th>
<th>Mod-Severe Disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>401-500g</td>
<td>11%</td>
<td>*</td>
</tr>
<tr>
<td>501-600g</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>
“Non-initiation” of a Code

- Gestational age less than 23 weeks.
- Lethal malformation
  - Trisomy 13, 18, Anencephaly
- Weight less than 400 grams.
- Joint decision with the parents.
- Consider “infant suffering”.

Calling a Neonatal Code

- Greater than 15 minutes of asystole.
- Brain death likely occurs at 10 minutes.

After the Code

- Wrap the baby in a clean blanket, put on a hat
- Allow parents to hold the child
- Memory boxes, pictures
- Involving clergy
- Taking care of the family
Goals: what to take home.

- Resuscitation of the pregnant patient.
- Approach to determining gestational age.
- Evaluating preterm labor.
- Initial management of preterm labor.
- Initiating care of the extremely low birthweight infant.

Additional Citations:
4. The Enigma of Spontaneous Preterm Birth L Muglia, M Katz NEJM Feb 11, 2010
Additional Citations:
4. Antenatal Corticosteroids for Accelerating Fetal Lung Maturation for Women at Risk of Preterm Birth (Review) Roberts D, Dabid S Cochrane Database of Systematic Reviews. Issue 3 Art No: CD004454
5. Cervical Assessment by Ultrasound for Preventing Preterm Delivery (Review) Bergella V Baxter K Cochrane Database of Systematic Reviews. Issue 3 Art No: CD007235

Additional Citations:

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