

## Trauma

- The leading cause of non-obstetrical maternal death
- 1 in 12 pregnant women sustain a significant traumatic injury
- Incidence of trauma in the pregnant patient is 5–10%
- 50% of fetal deaths are due to trauma
- 25%–30% of pregnant women are abused (physically or sexually)
- 10–15% occur in 1<sup>st</sup> trimester
- 32–40% occur in 2<sup>nd</sup> trimester
- 50–54% occur in 3<sup>rd</sup> trimester
- Sources of trauma: MVAs (55%), falls (22%), assault (22%), and burns (1%)

The primary goal of care for the obstetric trauma patient is to be evaluated for injuries and stabilized (same as the non-obstetric patient).

Additional things to consider when completing the [Primary Survey](#) of the obstetric patient:

### **Airway**

- The larynx in the pregnant patient is more anterior, edematous, and friable
- High risk of aspiration (delayed gastric emptying, consider early placement of OG or NG tube to decompress the stomach)
- Cricoid pressure may be needed
- Consider early advanced airway (may need smaller ET tube) with pre-oxygenation.

### **Breathing**

- Respiratory support may be needed if respirations are  $\leq 12$  or  $\geq 25$  bpm.
- Expect increase resistance to BVM
- Altered location of lung sounds
- Diaphragm is displaced 4 cm above the normal location
- If chest tube is needed, the insertion point is usually between the 3<sup>rd</sup> & 4<sup>th</sup> intercostals space.
- Oxygen at 10L/min by non-rebreather if indicated. Pregnant patients have a low oxygen reserve and will become hypoxic faster than the non-pregnant patient
- Pregnant patients are in a state of chronic compensated respiratory alkalemia

<b>Circulation</b>	<ul style="list-style-type: none"> <li>• The total circulating blood volume flows through the uteroplacental bed every 8–11 min.</li> <li>• If the patient is <math>\geq 20</math> weeks gestation, the gravid uterus is large enough to cause venocaval compression and can cause supine hypotension.</li> <li>• Use manual left uterine displacement or a left lateral tilt of 30°.</li> <li>• If CPR is indicated, hand placement may need to be slightly higher on the chest. Check femoral pulse for efficacy of compressions.</li> <li>• IV access should be in the upper limbs (above diaphragm).</li> <li>• For hypovolemia use volume resuscitation first (normal saline or lactated ringers). Consider transfusion if needed. Vasopressors are used as a last resort for the hypovolemic pregnant patient.</li> </ul>
<b>Visual Head-to-Toe Assessment</b>	<ul style="list-style-type: none"> <li>• Approximate gestation age</li> </ul>

Additional things to consider when completing the Secondary Survey of the obstetric patient:

<ul style="list-style-type: none"> <li>• <b>Abdominal Assessment</b></li> </ul>	<ul style="list-style-type: none"> <li>• Pain and tenderness <ul style="list-style-type: none"> <li>◦ Due to physiologic changes in pregnancy, the patient may have altered pain perception. Pain/tenderness may be absent even if they have sustained significant injuries.</li> </ul> </li> <li>• Distention</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Uterine Assessment</b></li> </ul>	<ul style="list-style-type: none"> <li>• Uterine activity (frequency, intensity, duration of contractions, resting tone)</li> <li>• Fundal Height</li> <li>• Perineum (bleeding, amniotic fluid, direct injury)</li> <li>• Sterile Speculum Exam (done by provider) <ul style="list-style-type: none"> <li>◦ Bleeding, ROM, dilation, effacement, lacerations or other injury, etc.</li> </ul> </li> <li>• Cervical exam (<i>do not do if vaginal bleeding is noted or if gestational age &lt;36 completed weeks</i>)</li> </ul>

- dilation, effacement, position, consistency, ruptured amniotic membrane, fetal station/lie/presentation
- *\*Amniotic fluid that is yellow/green may indicate meconium; cloudy/yellow-tinged/foul odor may indicate infection; bloody may indicate placental separation.*
- Signs & symptoms of placental abruption
  - Frequent uterine contractions, vaginal bleeding, increasing fundal height, EFM changes indicating fetal hypoxia, maternal hemodynamic instability, abdominal tenderness, increase in resting tone
- Pelvic bone (fractures)
- Genitourinary evaluation (indwelling catheter if needed)
- Laboratory evaluation
  - CBC, electrolytes, glucose, clotting analysis, Kleihauer Betke, blood type & Rh, lactic acid, serum alcohol level, urine drug screen, etc.

- **Fetal Assessment (maternal assessment and resuscitation takes precedence over fetal assessment)**

- FAST (focused assessment with sonography for trauma) scan for intraperitoneal hemorrhage
- OB ultrasound (gestational age, fetal heart movement, location of placenta, amniotic fluid volume)
- Ultrasound is not reliable for ruling out abruption!
- *\*Mom will shunt blood away from the uterus in order to perfuse the maternal heart, lungs, brain, and kidney.*
- Fetal heart rate assessment: changes may be seen in the FHR pattern with fetal or placental injury
- Interventions for intrauterine resuscitation:
  - Displacement of uterus laterally
  - Consider hydration
  - Consider oxygenation
  - Consider tocolytics if indicated

- Documentation
  - Maternal vital signs
  - FHR and contraction pattern
  - Physical assessment
  - Abnormal findings and interventions
  - Patients response to interventions
  - Resuscitation measures
  - Any tests and their findings
  - Communication with other care providers

**References:**

1. Clark, A., Bloch, R., and Gibbs, M. (2011). *Trauma in pregnancy*. Trauma Reports. 12(3), 1-11.
2. Gilbert, E. (2011). *Manual of High Risk Pregnancy & Delivery*. St. Louis: Mosby/Elsevier
3. Troiano, N., Harvey, C., & Chez, B. (2013). *High Risk & Critical Care Obstetrics*. Philadelphia: Lippincott, Williams, & Wilkins.