



AAST Acute Care Surgery Didactic Curriculum

Trauma in Pregnancy

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Prevalence of Trauma in Pregnant Patients

Highlights:

- Traumatic injuries are the leading cause of death during pregnancy, with studies showing they account for about 20-50% of maternal deaths.
- Seven to eight percent of all pregnancies are complicated by trauma. However, the actual number of injured pregnant women may be underestimated particularly because intimate partner violence (IPV), which affects between 10 to 60% of pregnancies, is often unrecognized.
- Motor vehicle crashes are still the most common mechanism of trauma during pregnancy, accounting for about 70% of traumas in pregnancy.

Initial Assessment and Resuscitation

Highlights:

- Resuscitation should be focused on the pregnant patient, not the fetus.
- Pregnancy is a hypervolemic state and may mask significant blood loss, so the threshold to suspect hypovolemic shock should be lower. Maternal catecholamine surge in response to trauma can lead to vasoconstriction affecting the fetal circulation, thus patients should be given supplemental oxygen even in absence of hypoxia.
- While keeping spinal precautions, compression of the inferior vena cava by a gravid uterus may be offloaded with positioning in left lateral decubitus.
- The uterus becomes an abdominal organ roughly around 13-14 weeks. This is important when triaging risk related to certain injuries. If there is a discrepancy with gestational age and uterine size, or the fundus is not palpable, that can be suggestive of uterine rupture or uterine hemorrhage. Other signs of the pregnancy being threatened include vaginal bleeding, ruptured membranes, a bulging perineum.
- It is reported that, in up to 50% of pregnant women with major trauma, there is placental separation from the uterus from shearing forces, i.e. placental abruption. With more than 50% separation, this is fatal for the fetus.
- A Kleihauer-Betke test can be used to identify fetal blood in the maternal circulation, proving transplacental feto-maternal hemorrhage (FMH). Complications of FMH include Rh sensitization in the mother, and for the fetus: anemia, atrial tachycardia, neurologic damage, and intrauterine death from exsanguination. These patients should

be given Rh immune globulin (e.g. RhoGAM®) immediately. Disseminated intravascular coagulation (DIC) from migration of fetal thromboplastin and amniotic fluid embolus are rare but extremely morbid.

- Fundal height at the umbilicus may be used as a landmark for potential fetal viability. A perimortem Cesarean section may be performed for viable pregnancies within 5 minutes of maternal cardiac arrest for both maternal resuscitation and potential fetal salvage.

Imaging Considerations, Fetal Monitoring

Highlights:

- Sensitivity of FAST for detecting intraabdominal free fluid is poor (~11%) in pregnant patients.
- Current guidelines recommend performing all diagnostic tests including computed tomography (CT) as indicated in pregnant trauma patients. Exposure of the fetus to less than 5 rads (50 MGy) causes no increase in the risk of congenital malformations, intrauterine growth retardation, or miscarriage.
- The use of gadolinium contrast with MRI should be limited, if possible.
- All pregnant trauma patients with a viable pregnancy should undergo fetal monitoring for at least 4 hours, and those with concerning features such as high-risk injury mechanisms, abdominal pain, fibrinogen < 200 mg/dL, vaginal bleeding, ruptured membranes, sustained contractions or abdominal fetal monitoring should be admitted for observation.
- An obstetrical ultrasound should be obtained for pregnant trauma patients with a viable pregnancy prior to discharge.