Pregnant Trauma Patient Management Guideline

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PURPOSE: To define the process for evaluation and care of the pregnant trauma patient.

EQUIPMENT:

Fetal monitor- device to measure fetal heart rate and rhythm.
Tocodynamometer- A pressure-sensitive device to monitor uterine contractions during labor. It is placed on the mother's abdomen over the area of strongest contractions to measure the length, frequency, and strength of uterine contractions.

Fetal monitoring in trauma patient includes both fetal monitor and tocodynamometer.

Guideline

A. The patient will be evaluated by the Trauma Surgery Service according to ATLS principles, and the multi-system injured patient will be admitted to the appropriate service as determined by attending trauma and obstetric faculty

B. Evaluation and management of the pregnant trauma patient takes precedence over concern for the fetus. If she does not respond to life support efforts within four minutes, Obstetric literature recommends delivery of the fetus if the uterine fundus is greater or equal to four fingerbreadths above the umbilicus. This improves the likelihood of success of the maternal resuscitative measures. It also provides the baby the best chance of survival.

C. With few exceptions, the fetal monitor should be placed at the completion of the primary survey.
    - Interpretation of the Fetal Monitor will be performed by the obstetric team
    - The FH Three-tiered Fetal Heart Rate interpretation system will be utilized
        - See Appendix B of the OB Fetal Heart Rate Guideline (Attachment A below)
    - The Category of the FHT's will be conveyed to the Trauma and EM Faculty

D. The radiographic workup of the pregnant patient should follow the same guidelines of a non-pregnant patient. While concern for radiation to the developing fetus is warranted, it should not interfere with the complete work-up of the injured patient. If the patient will have an urgent vaginal delivery or if Obstetric Service plans to place an epidural catheter, obtain axial imaging of the abdomen and pelvis, to evaluate for occult injury.

    - Fetal monitoring can be continued during axial imaging, if appropriate. The monitor may be removed briefly while the abdominal and pelvis images are obtained. Decision for continuation of monitoring during imaging is at the discretion of the Obstetrical team.
    - The following are offered for guidance only:
        - Category I FHT's – the monitor may be removed for axial imaging
        - Category II FHT's the monitor should only be removed for abdominal and pelvic portions of the study
        - Category III FHT's – discussion between Trauma, EM, and OB teams should occur as to appropriate management of the patient (emergency delivery v further imaging)

E. The appropriateness and timing of steroid administration and magnesium sulfate infusion, intended to optimize the fetal condition should delivery become necessary, will be determined after Trauma and OB reach agreement on the best approach in each specific clinical situation.

- Obstetrical care will be managed by the Obstetric Service. ***At a minimum, an Obstetric nurse should remain with any patient undergoing fetal monitoring.***

F. Pregnant patients brought to the Emergency Center after a traumatic event, but not qualifying as a Trauma Alert or Call will be managed by the Emergency Department. If admission for fetal monitoring is necessary, the need will be determined by Emergency Medicine provider, on a case-by-case basis.

Procedure

Notification:

A. Notify Obstetric (OB) Service upon arrival of the patient, or as soon as pregnancy is known for Trauma patients greater or equal to **20** weeks gestation or the uterus is palpable at or above the umbilicus. If the fetus is under 22 weeks gestation, then the fetus is unlikely to survive. Obstetric Service will be available 24 hours a day, 7 days a week with backup coverage. Notify OB by paging GYN (ID 29785).

B. For patients ≥20 weeks gestation (or those with uterus palpable at the level of the umbilicus), ED RN notify the "Labor and Delivery Shift Coordinator" by Vocera (*preferred*) or call Labor and Delivery at 5-3939.

Evaluation:

A. After initial assessment by the trauma team, the pregnant trauma patient is evaluated by Obstetric Service (OB). OB determines need for Labor & Delivery nurse and Neonatology Intensive Care Unit, when indicated.

B. Prior to obtaining axial imaging (CT scanning), a brief pause will occur where the Trauma and OB teams discuss the patient and category of FH tracings.

C. Patients with concerning fetal monitoring (as defined by the obstetric team) are considered complex surgical emergencies. If emergency delivery is warranted, this should be done as a combined procedure with trauma and obstetrics. Trauma imaging can be delayed until after surgical exploration.

   a. This can be performed in the Trauma OR (OB instrumentation is available). Infant warming equipment can be brought from the Emergency Department.

D. The appropriate timing, level of fetal monitoring, and location of fetal monitoring will be determined after the Trauma and Obstetric Services reach agreement on the best approach in each specific clinical situation. In cases where the pregnant woman has experienced serious trauma:

   a. For gestational age at least **20 weeks**, the Obstetrics team should be consulted for fetal assessment.
   b. For gestational age between **22-24 weeks**, fetal monitoring will be at the discretion of the Obstetrics team after discussion with the patient and/or family if possible. If discussion cannot be had with patient or family (due to unconscious patient and no immediate family) then recommendation would be to not undergo fetal monitoring as would not recommend cesarean section at this gestational age without patient consent unless for purpose of maternal resuscitation.
   c. After **24 weeks**, fetal monitoring continuously, without impacting the care of the pregnant trauma patient.
   d. Fetal monitoring arrangements are the responsibility of the Labor and Delivery charge nurse.

E. Order Kleihauer-Betke test to assess for fetal bleeding on initial blood drawn from the mother. This test should be ordered using "routine" status. A "stat" result is unnecessary.

F. Monitor for complications, including placental abruption. The first evidence of a clinically significant placental abruption is usually a non-reassuring fetal heart tracing. Prior to this, the tocodynamometer will often display contractions. Placental abruption can follow early or several hours after a trauma.

G. Consider administration of Rh immunoglobulin G (Rhogam) for any Rh- patient regardless of the severity of trauma.

REFERENCES:

Labor and Delivery Guideline: Evaluation of Pregnancy >22 weeks (internal Froedtert Link)

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Attachment A.

Three-Tiered Fetal Heart Rate Interpretation System

Category I

- Category I FHR tracings include all of the following:
- Baseline rate: 110-160 beats per minute
- Baseline FHR variability: moderate
- Late or variable decelerations: absent
- Early decelerations: present or absent
- Accelerations: present or absent

Category II

Category II FHR tracings includes all FHR tracings not categorized as Category I or III. Category II tracings may represent an appreciable fraction of those encountered in clinical care. Examples of Category II FHR tracings include any of the following:

Baseline rate

- Bradycardia not accompanied by absent baseline variability
- Tachycardia

Baseline FHR Variability

- Minimal baseline variability
- Absent baseline variability with no recurrent decelerations
- Marked baseline variability

Accelerations

- Absence of included accelerations after fetal stimulation

Periodic or episodic decelerations

Recurrent variable decelerations accompanied by minimal or moderate baseline variability

Prolonged deceleration more than 2 minutes but less than 10 minutes

Recurrent late decelerations with moderate baseline variability

Variable decelerations with other characteristics, such as slow return to baseline, overshoots, or "shoulders"

Category III

Category III FHR tracings include either:

- Absent baseline FHR variability and any of the following:
  - Recurrent late decelerations
  - Recurrent variable decelerations
  - Bradycardia
- Sinusoidal pattern

Abbreviation: FHR, fetal heart rate

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