The bat phone rings, and through the static of the EMS patch, you hear that they are 2 minutes out with a 36-year-old woman in PEA, but you couldn't hear that last bit. After 3 more attempts (maybe you were in denial) you finally hear the word "pregnant" and now they are rolling through your doors...

MY APPROACH

Call for help. Obstetrics and pediatrics need to be involved ASAP.

Announce to the team that four minutes from arrival, you will be performing a peri-mortem c-section. One team member gathers the required equipment. At a minimum:

Although the pregnant patient in cardiac arrest is almost certainly the most stressful presentation to your department this week, that won't last. You are about to deliver a premature infant, with no known antenatal records, via a crash c-section, probably performed by a non-surgeon. A second team needs to be preparing the warmer and equipment for the imminent neonatal resuscitation.

Follow the standard ACLS algorithms. Manage this PEA arrest following the simplified approach to PEA with an emphasis on rapidly finding and treating reversible causes. If there is a shockable rhythm: shock.

Make the following minor adjustments to ACLS in the pregnant patient:
Assign one team member to grab the uterus and manually displace it to the left
Chest compressions should be done slightly higher on the sternum
Aim for IV access above the diaphragm
Amiodarone is pregnancy class D - but I don't think you should be using that anyway
Be prepared for a difficult airway. Airway edema may necessitate use of a smaller ETT.
Regurgitation is more common. Desaturation will occur more quickly because of decreased FRC and increased oxygen demands
Estimate gestational age by palpating the uterus. If the fundus is above the umbilicus, assume 24 weeks gestation, and therefore viability. At the same time, prep the abdomen with chlorhexidine.

If fundus above the umbilicus and more than 4 minutes have passed, proceed to:

**The peri-mortem c-section**

- Start! Start now, start early. Your biggest mistake is going to be waiting too long because this is scary and you probably have never even seen this done before
- CPR is continued. If another emergency doctor is present, they are in charge of managing the code during the procedure. If you are alone as a doctor, a senior nurse is put in charge of continuing standard ACLS
- Make a midline vertical incision from the xyphoid to the symphysis pubis. It is not supposed to be pretty
- Bluntly separate the rectus muscles down the midline with a finger
- Open the peritoneum - either bluntly by pulling with your hands or with scissors
- Carefully make a small incision at the lower end of the uterus, above the reflection of the bladder. Insert two fingers, and lift the wall of the uterus away from the fetus. Using scissors, cut the uterus to the fundus
- If the placenta is in the way, cut through it
- Remove the infant, clamp and cut the cord and proceed to neonatal resuscitation
- Remove the placenta manually
- If there is ROSC, careful closure of the uterus is essential, and probably best left to obstetrics. Temporarily pack, and apply clamps to active bleeders
- Be prepared for significant post partum hemorrhage from an atonic uterus

Now that the abdomen is open, internal cardiac massage can be attempted through the intact diaphragm, compressing the heart against the anterior chest wall.

**NOTES**

Between 20-24 weeks, peri-mortem c-section should be considered despite the lack of fetal viability, as it might save the mother.

For pregnant patients that arrest in hospital, consider iatrogenic magnesium toxicity after treatment of eclampsia/preeclampsia → treatment is IV calcium

Some people use the mnemonic BEAUCHOPS in place of the Hs and Ts in pregnancy. (As discussed in the simplified approach to PEA, I think both are silly)

- B - bleeding
- E - embolism (PE or amniotic fluid)
- A - anaphylaxis/ anesthetic complications
- U - uterine atony
- C - cardiac
- H - hypertension/ HELLP
- O - others (see how mnemonics are silly)
- P - placental abruption
- S - sepsis
OTHER FOAMED RESOURCES

Peri-mortem c-section at EMCrit

Emergency Obstetrics: Vertical C-section on YouTube

Resuscitation in Pregnancy from EM in 5

Resuscitation of the pregnant patient: Pearls and Pitfalls on emDocs

http://www.tamingthesru.com/blog/grand-rounds/recap1152014

REFERENCES


