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A Rare Intervention: Perimortem Hysterotomy in an Obstetric Emergency in a 32-year-old Female

Alex Mirchandani
Jefferson Health NJ

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Alec Mirchandani MD

Department of Emergency Medicine, Jefferson Health New Jersey

Abstract:

In the realm of obstetric emergencies, perimortem hysterotomy stands as a rare but crucial intervention, employed in dire circumstances to salvage both maternal and fetal lives. This procedure, involving the surgical delivery of a fetus from a mother in cardiac arrest, presents a unique set of challenges and ethical considerations for healthcare providers. This case report delves into the intricate details surrounding a perimortem hysterotomy performed under emergent conditions, exploring the clinical decision-making process, procedural intricacies, and outcomes. Through this narrative, we aim to shed light on the complexities of managing obstetric emergencies, emphasizing the critical role of timely intervention and interdisciplinary collaboration in optimizing patient outcomes.

Case Presentation:

The patient was a 32-year-old female G4P2012, 28w3d gestation by 8 week ultrasound performed 2 days prior to presentation, with a past medical history significant for stimulant and opioid abuse, bipolar disorder, anxiety, and depression. She presented to the ED via EMS actively in cardiac arrest and intubated in the field prior to arrival with chest compressions in progress. EMS reported that she was found down by family members who called 911 and administered intranasal naloxone. EMS started cardiopulmonary resuscitation (CPR) and advanced cardiac life support (ACLS) protocols, administering additional naloxone and epinephrine en route.

Upon arrival at the emergency department, she was found to be pulseless with appreciable breath sounds bilaterally; CPR and ACLS protocols were continued. Emergent vascular access was achieved via right-sided subclavian central venous catheter. On initial examination the patient was noted to have a gravid uterus palpable 4 cm above the level of the umbilicus. There was no report from EMS that the patient was known to be pregnant as per brief interview with family. After an expeditious bedside ultrasound performed by ED physicians, it was confirmed that there was an intrauterine gestation. At that point an overhead page was called for an obstetric emergency, alerting both OBGYN and NICU personnel.

OBGYN physicians were able to perform a peri-arrest cesarean section while CPR was in progress. Once delivered, the fetus was passed from the OBGYN team to NICU and placed under the warmer. The fetus did not have a heartbeat or spontaneous breathing. Unfortunately the fetus was declared to be stillborn. OBGYN placed a lap sponge as CPR was still in progress. The patient was treated with multiple rounds of epinephrine, calcium x2, bicarbonate x2. ROSC was never achieved and bedside ultrasound showed cardiac standstill on multiple evaluations. Arrival 0021. TOD 0037.

References:

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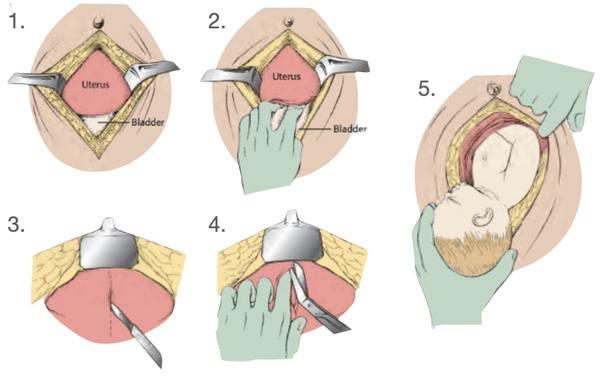

Figure 1: example of ideal midline incisional approach to a peri-arrest hysterotomy [6]

Discussion:

In the context of perimortem hysterotomy, the choice between a midline incision and a Pfannenstiel incision warrants careful consideration. A midline incision offers rapid access to the uterine cavity, facilitating expedited fetal delivery during emergent situations. This approach requires minimal dissection and provides direct visualization of the uterus, thus reducing the time required for the procedure. Conversely, a Pfannenstiel incision may offer improved cosmesis and potentially lower risk of wound complications in the postoperative period. However, it may necessitate more time for dissection and access to the uterine cavity, which could be critical in time-sensitive scenarios such as perimortem hysterotomy. Ultimately, the choice between these incisions depends on the clinical scenario, surgeon's preference, and the urgency of fetal delivery required to maximize maternal and fetal outcomes.

In this case a 10-blade scalpel was used to make a pfannenstiel incision about 2 cm above the pubic symphysis. The incision was then continued down to the underlying fascia with a scalpel and fascia was incised. The fascial incision was then extended bluntly and dissected off of the underlying muscles. The rectus muscles were then separated in the midline and peritoneum identified and entered bluntly. The uterus was noted to be greater than 20 weeks in size with a poorly developed lower uterine segment. A classical incision was then made to create the hysterotomy with a scalpel. Upon entry the incision was bluntly extended and the fetus delivered through the hysterotomy atraumatically. The cord was doubly clamped and the fetus handed to the neonatologist. Placenta was then removed manually. Incision was then packed with an LAP sponge until TOD called and CPR was stopped. Closed with 3-0 vicryl.

Discussion continued:

Perimortem hysterotomy is a rare and necessary intervention performed in cases of maternal cardiac arrest with a viable fetus, aiming to salvage both maternal and fetal lives. The procedure itself is indicated for the effective resuscitation of pregnant patients in cardiopulmonary arrest [1]. According to guidelines from the American College of Obstetricians and Gynecologists (ACOG), perimortem hysterotomy should be initiated within four minutes of maternal cardiac arrest to maximize the likelihood of successful fetal salvage [2]. Timeliness is paramount; rapid initiation of CPR and simultaneous preparation for the hysterotomy are vital.

A crucial consideration in performing a perimortem hysterotomy is the gestational age of the fetus, as viability significantly influences the potential benefit of the intervention. Fetal survival rates decrease significantly after 23 weeks of gestation, highlighting the importance of swift action in cases where maternal cardiac arrest occurs beyond this threshold [3].

This emphasizes the critical importance of preparedness and efficient coordination among healthcare providers involved in the resuscitation efforts. Additionally, concurrent maternal resuscitative measures, including continuous CPR and advanced life support interventions, should be maintained throughout the procedure to support maternal circulation and minimize the risk of complications.

Immediate risks include hemorrhage, injury to surrounding structures, and exacerbation of maternal coagulopathy, particularly in the setting of disseminated intravascular coagulation (DIC). Furthermore, there is a risk of infection at the surgical site, uterine atony, and subsequent postpartum hemorrhage due to impaired uterine contractility. Long-term complications such as uterine rupture, pelvic adhesions, and psychological sequelae for the patient and their family also warrant consideration. Among women who underwent perimortem hysterotomy, the most commonly reported complications were hemorrhage requiring blood product transfusion and wound complications, underscoring the importance of meticulous surgical technique and postoperative management [4].

Furthermore, debriefing sessions involving all members of the multidisciplinary team are valuable for reflection, shared learning, and protocol refinement to enhance future management of similar obstetric emergencies [5].

Conclusions:

In conclusion, perimortem hysterotomy represents a remarkable intervention in the realm of obstetric emergencies, necessitating rapid decision-making and precise execution in the face of maternal cardiac arrest. Further research and collective experience are imperative to refine protocols, enhance preparedness, and ultimately improve the management of similar obstetric emergencies in the future. Through continuous dialogue and shared learning, we strive towards better outcomes for both mothers and their unborn children in the most challenging of circumstances.