**SIMULATION SCENARIO**

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| **CASE TITLE:** | Ruptured Ectopic Pregnancy |

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| **TARGET LEARNING GROUP:** | Sen. Emergency Medicine Residents |

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| **LEARNING OBJECTIVES:** |  |  |
| ***Knowledge:***  1. Describe the presentation, diagnostic evaluation, and management of Ectopic Pregnancy  2. Appreciate that Ectopic Pregnancy should remain the DDX of a presumed spontaneous abortion  3. DDX and approach to shock | |  |
| ***Skills:***  1. Use of ED ultrasound | |  |
| ***Attitudes/Behaviours:***  1. Crisis resource management  2. Communication with distressed relative  3. Communication with consulting physician | |  |

**SCENARIO ENVIRONMENT:**

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| ***Location*** | * Emergency department |
| ***Monitors*** | * Cardiac monitor, pulse oximetry, temperature probe, non-invasive blood pressure cuff |
| ***Props/Equipment*** | * Defibrillator * Resuscitative medications at bedside (epinephrine, calcium, amiodarone, lidocaine, atropine, dextrose, sodium bicarbonate) * Airway equipment – BVM, NRB mask, nasal prongs, facemask, oxygen tubing, O2, oral/nasal airways, laryngoscope, ETT, CO2 detector, stylet, syringe, tape. * IV equipment – catheter, tubing, IV fluids * Glucometer * Otoscope, ophthalmoscope |
| ***Make-Up/Moulage*** | * Pale, diaphoretic, ill appearing young woman |
| ***Multi-Media*** | * Copy of previous ED chart- diagnosis of “Spontaneous Abortion” (PPT) * Copy of recent Ultrasound report- states “empty uterus and normal ovaries” (PPT) * Chest xray- normal (PPT) |
| ***Personnel*** | * Bloodwork- HB 82, metabolic acidosis (PPT) * ECG- sinus bradycardia (PPT) * FAST US exam- positive in all areas for free fluid; normal pericardal space (PPT) * Junior Emerg resident, Emerg attending physician, Emerg Charge RN, Emergency RN, OB attending, Patient’s mother |
| ***Potential Distractors*** | * Mother requires reassurance on several occasions during case |

**INITIAL SIMULATOR SETUP:**

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| ***Mannikin Position*** | Lying supine in bed, moaning in pain |
| ***Pupils***  *Size:*  *Reactivity:*  *Blinking:* | 3 mm  reactive  normal |
| ***Breathing***  *Resp Rate:*  *Resp Pattern:*  *Chest Rise:*  *Breath Sounds:*  *Airway Sounds:*  *% Cyanosis:*  *Oxygen Saturation:* | 16  normal  symmetric  symmetric  normal  none  98 |
| ***Cardiovascular***  *Heart Rate:*  *Cardiac Rhythm:*  *Blood Pressure:* | 65  sinus  74/29 |
| ***Other Setup*** | Connected to cardiorespiratory monitor |
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***The Script:*** *(Scenario flow & management outcomes)*

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| **Scenario Transitions**  **& Evolution** | **Effective Management** | **Ineffective Management** | **Notes** |
| 1. Initial Simulator settings as above | -Focused history and physical exam  -Initiates resuscitation while clarifying history and obtaining collateral information (recent ED chart including ultrasound report)  -States most likely diagnosis is a ruptured ectopic pregnancy  -Orders appropriate investigations including bloodwork, ECG, xrays, pregnancy test  -Asks for ED bedside ultrasound  -Ensures adequete vascular access and initiates warmed IV fluid boluses | -Too detailed or unfocused history/physical examination  -Delays resuscitation while obtaining more history  -Does not consider ruptured ectopic pregnancy as the most likely diagnosis  -Does not order appropriate investigations (e.g. bedside ultrasound) | -Bedside US machine has “gone missing” and assessment and treatment initially proceeds without it |
| 2. 5 mins into case. Patient has received 2L of fluid. Simulator Settings:  65/50, HR 140, RR 25, sats 98%, temp 35.4, pupils 3mm and reactive, | -Notes that patient has not responded to fluid resuscitation and initates blood transfusion using the Level 1 transfuser  -ED bedside ultrasound becomes available and is used to identify free fluid in all 3 quadrants of the abdomen  -Results of blood tests, CXR, ECG, old chart (if requested) are available and interpreted correctly  -Identifies need for surgical intervention to control bleeding and contacts OBS-GYNE for emergent consult  -In a professional manner, deals with challenging consultant and requests their presence in the ED | -Continues to infuse IV fluids and delays transfusing blood  -Does not utilize or misinterprets results of bedside ultrasound  -Does not follow up on other requested interventions  -Does not contact OBS-GYNE for emergent consult  -Contacts OBS-GYNE but does not appropriately resolve conflict with challenging consultant | -If does not transfuse blood, vital signs deteriorate rapidly  -If does not contact OBS-GYNE, vital signs deteriorate  -If does appropriately deal with challenging consultant, vital signs deteriorate |
| 3. 8 mins into case. Patient has received 2L of fluid and 2U of blood. Simulator Settings:  90/50, HR 140, RR 25, sats 98%, temp 35.4, pupils 3mm and reactive, | -Consultant agrees to take patient to OR  -Team leader considers providing tranexamic acid before transport  -Considers need for foley catheterization  -Considers need for “Bair Hugger” or warmed blankets  -Updates worried mother about the plan |  |  |

**INSTRUCTIONS FOR PERSONNEL:**

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| ***Personnel A***  *(Patient)* | * You are a previously healthy 26 year old woman. You are in a lot of pain and so are impatient with the doctor who is asking you questions. One week ago, while you were about 7 weeks gestation age, you had a miscarriage that was confirmed by ultrasound. At that time you had come into the ED with vaginal bleeding and were “passing clots and tissue”. After being discharged you had bleeding for 3 days then it stopped. About 2 hours ago you developed severe abdominal pain, pain in your neck and shoulders, severe nausea, and became very light-headed. Even lying down you feel like you “want to go to sleep”. You repetitively ask for “something the pain”. If questioned you do not take any medications and have no allergies. |
| ***Personnel B***  *(ER nurse)* | * You ask the team leader to assess a patient recently brought in by paramedics. She is a 26 year old woman with acute abdominal pain and hypotension. One week ago she suffered a miscarriage. This is all the information you have available. You will stay in the room and follow directions of the team leader. |
| ***Personnel C***  *(Emerg Attending)* | * You will let the team leader run the resuscitaiton but will provide assistance and suggestions if requested. You are able to look up the patient’s ED chart and US report from the last visit if requested to do so. |
| ***Personnel D***  *(OB Attending)* | * You are initially not convinced this is a ruptured Ectopic Pregnancy and question the team leader on their assessement. Reluctantly you agree to assess the patient yourself and decide to take the patient to the operating room for a diagnostic laparoscopy +/- laparotomy for a presumed ectopic pregnancy. |
| ***Personnel E*** (Mother) | * You are very distressed about your daughter’s recent illness. You don’t understand what is happening and need reassurance from the team leader. |

**SUGGESTIONS FOR DEBRIEFING:**

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| ***Knowledge:***  1. Review the DDX of shock  2. Review the DDX of shock + abdominal pain  3. Discuss the management of hemorrhagic shock and surgical bleeding |
| ***Skills:***  1. ED bedside ultrasound- what to do if it is not available |
| ***Attitudes/Behaviours:***  1. Tips for communicating with difficult consultants |