Title: Obstetric Rapid Sequence Induction

Target Audience: Post Primary Anaesthetic Trainees, experienced ODPs

Learning objectives:

1. Plan A,C,D of unanticipated failed intubation during rapid sequence induction
2. Applicability of DAS guidelines in the pregnant patient
3. Situational awareness, decision making, task management, calmness under pressure

Storyboard:

The anaesthetist is covering the delivery suite and they are crash bleeped to theatre for a Category 1 Caesarean section for placental abruption. There is no time for a regional block. After induction the scenario becomes “can’t intubate, can’t ventilate”. Intubation will be impossible despite use of Macintosh, McCoy, polio blades and bougie. All Plan C ventilation techniques including the use of supraglottic airways will fail. Oxygen saturations fall steadily despite all of the manoeuvres performed by the anaesthetist. Eventually the situation will require Plan D (i.e. cannula or surgical cricothyroidotomy).

Resources:

Equipment

- Simulated pregnant patient (SimMan) set up to simulate impossible intubation (tongue inflation and stiff neck, not rigid jaw which can lead students down the MH route). Patient is in appropriate left lateral tilt position. ECG, NIBP and SaO2 attached. ETCO2 monitoring set up. Polio blade and bougie immediately to hand. All DAS guidelines Plan A, B, C and D equipment available outside theatre (difficult intubation trolley, fibreoptic bronchoscope with screen). IVI running via 16g cannula. Resuscitation trolley in corner of theatre.

- Anaesthetic chart

- Induction drugs in tray on anaesthetic machine: Thiopentone 500 mg in 20 mls, suxamethonium 200mg in 4 mls, ephedrine 30 mg in 10 mls, phenylephrine 2 mg in 20 mls.

Students

- Anaesthetists: 2, ODPs: 2

Faculty

1. Facilitator
2. Computer operator
3. Skilled ODP
4. Obstetrician
5. Theatre nurse
Progression of scenario:

• The patient is on the operating table being pre-oxygenated by the ODP. The obstetrician reiterates the urgency of the situation and that a GA is required. Anaesthetist should pre-oxygenate the patient then perform RSI with cricoid pressure. Laryngoscopy – Cormack and Lehane Grade 3/4 view. Large breasts make the use of a standard Macintosh blade difficult. The polio blade is immediately available, the McCoy blade is in its box on the difficult airway trolley (outside theatre unless requested).

• Polio blade offered early, then McCoy. Both fail, even with bougie. Bag mask ventilation and LMA both fail to establish ventilation. Saturations continue to fall. If anaesthetist asks for senior help, they are told the consultant has been called and is on the way in from home. The second-on call anaesthetist is unavailable. Cricoid pressure can be adjusted / removed during LMA insertion. If the anaesthetist fails to commence cricothyroidotomy in reasonable time (5 minutes), patient desaturates into 40s and becomes bradycardic (HR 40 bpm). When anaesthetist begins to attempt cricothyroidotomy, ODP and theatre nurse will be helpful and competent. Once airway is established, patient condition improves and scenario brought to a close.

• If needle cricothyroidotomy chosen, ventilation will only be possible with:
  o Correct use of the Manujet (on the difficult airway trolley)
  o Use of oxygen tubing connected to wall oxygen or cylinder oxygen (not the common gas outlet of the anaesthetic machine)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Airway</th>
<th>Breathing</th>
<th>ETCO2 (if used)</th>
<th>Sats</th>
<th>HR</th>
<th>BP</th>
<th>CNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>Awake, talking</td>
<td>Spont RR 18</td>
<td>None</td>
<td>99%</td>
<td>110</td>
<td>110/60</td>
<td>Alert, anxious</td>
</tr>
<tr>
<td></td>
<td>Induction</td>
<td>Obstructed</td>
<td>Can’t ventilate</td>
<td>Minimal</td>
<td>After 1 minute: ↓ by 10%/min to 60%</td>
<td>↑ to 150 (intubation attempts) then ↓ to 100</td>
<td>90/60</td>
</tr>
<tr>
<td>5 minutes</td>
<td>Obstructed</td>
<td>Can’t ventilate</td>
<td>None</td>
<td>60%, falls to 40%</td>
<td>Falls to 40</td>
<td>60/40</td>
<td>Anaes</td>
</tr>
<tr>
<td>Rescue:</td>
<td>Open</td>
<td>Normal</td>
<td>Surgical/Melker: 80mmHg ↓ to 35mmHg</td>
<td>↑ slowly to 95%</td>
<td>Stable</td>
<td>Breathes and wakes up unless plan to continue with LSCS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• cannula + Manujet/O2 tubing</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• surgical/Melker + Ambu/Anaes circuit</td>
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Scenario Briefing:

Information for the students

You are the anaesthetic registrar on-call for the delivery suite. It is 3 am. Your senior, the consultant on-call, is at home. The second on-call anaesthetist is busy with a sick patient. You are crash bleeped to theatre, where a full-term pregnant mother is on the table. She has placental abruption and the CTG reveals severe bradycardia. The woman is otherwise fit and well with no allergies and, on your assessment, has a normal airway. The obstetrician is present and the patient is being prepared for a Category 1 Caesarean section under general anaesthesia. Your induction drugs, which you drew up at the start of your shift, are on the anaesthetic machine.

Information for Faculty

- Obstetrician is pushing to commence surgery and will not entertain idea of a regional technique
- ODP and theatre nurse are competent and helpful
- Anaesthetist should be coaxed through to Plan D if not making decisions quickly enough
- Severe bradycardia followed by PEA cardiac arrest will ensue if cricothyroidotomy unduly delayed or incorrect ventilation strategy employed.

Escape routes

- If anaesthetist waits too long, there is severe bradycardia and hypotension and the ODP pushes for cricothyroidotomy

Debriefing:

Goals: (What was going on? What was the diagnosis?)

1. Can’t intubate can’t ventilate scenario during RSI requiring Plans A, C and D

Realism: (Was the scenario realistic? If not, did this impact on decision making?)

Outcome/Options: (What went well? What could be done differently? What were the management options? What human factors issues were highlighted?)

1. Plan C – classic vs. Proseal LMA
2. Plan D – needle vs. surgical techniques
3. Relevance of DAS guidelines in the obstetric patient
4. What if airway assessed as difficult – rapid awake FOI, asleep FOI, rapid sequence spinal?
5. Situational awareness, decision making and communication skills as raised by the scenario

Ways Forward (What were the main learning points? What will you take home from the scenario?)

1. Having the confidence to go abandon Plan C and carry out Plan D.