Failed extubation and reintubation, complicated by tension pneumothorax.

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CASE REPORT

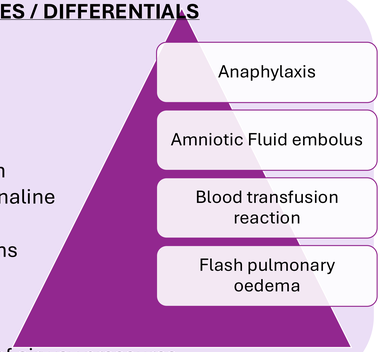
Patient Background:
- 40-year old, G4P3 with three previous, uncomplicated vaginal deliveries.
- History of obstructive sleep apnoea, elevated BMI and pre-eclampsia.
- Progressive antepartum haemorrhage noted during labour.

Delivery:
- Category 1 emergency caesarean section .
- Fetal distress and ongoing blood loss meant we progressed under general anaesthesia.
- No ventilatory concerns during this time.
- Difficult fetal extraction with fundal pressure required .
- Ongoing blood loss with major obstetric haemorrhage of 2.8L.
  - 2 x bolus of 5 units syntocinon alongside 40 unit infusion
  - Carboprost
  - Ergometrine avoided due to history of PET
- Appropriate resuscitation with clinical stability achieved .
  - Two units of blood.
- Analgesia with IV opiates and ultrasound guided TAP blocks.

Post Extubation:
- Extubated awake.
- **Sudden and unexplained clinical deterioration.**
- Reduced oxygen saturation and hypotension.
- Reintubated with Grade 3 views.

ACUTE FEATURES / DIFFERENTIALS

- Acute deterioration
- Obstructed airway
- Profound hypotension
  - Responsive to adrenaline
- Low oxygen saturations
- Tachycardia
- Short term elevation of airway pressures



THE KEY INVESTIGATION

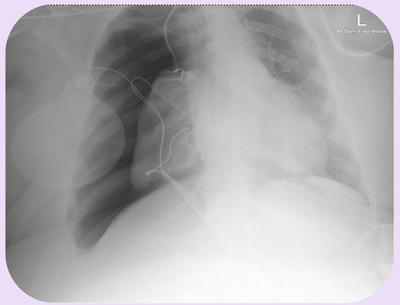


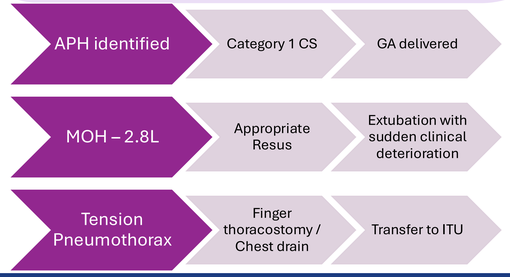
FIGURE 1: CXR showing right sided pneumothorax.

OUTCOME:

- Tension pneumothorax identified.
- Immediate needle decompression and finger thoracostomy with rapid stabilization of patient.
- Chest drain sited with reinflation of lung seen.
- Patient transferred to Intensive care Unit. Remained intubated and ventilated overnight with successful extubation the following morning.
- Patient discharged with no long-term physical health issues but has attended postnatal anaesthetic clinic for follow up.

POTENTIAL CAUSES:

- Actual cause not known.
  - Barotrauma?
  - Undiagnosed Bullae ?
  - Fundal pressure during delivery?
  - Reaction to Carboprost?
  - Spontaneous?



COGNITIVE BIAS:

This case describes an unusual presentation of tension pneumothorax in an obstetric patient.

- It highlights the value in considering broad differentials in the acutely deteriorating obstetric patient including non-obstetric emergencies.
- Cognitive abilities can be divided into system 1 and system 2.
  - System 1 – Fast, intuitive and automatic.
  - System 2 – Slow, deliberate and effortful
- Cognitive bias is implicitly present in every day thinking.
- Emergency management must utilise cognitive debiasing strategies including;
  - Cognitive Forcing → Deliberate interventions to disrupt system 1 thinking .
  - Time-outs → Immediately before task to confirm this is the intended step.
  - Checklists → Formalised checks to avoid missing key steps.
- Methods promoting team-based decisions are likely to be most effective as they encourage the challenging of initial assumptions, to support accurate diagnosis and treatment.

LEARNING OUTCOMES:

Tension Pneumothorax is rare within the obstetric population but is a key differential to consider in the event of acute deterioration post extubation.

Importance of familiarity with emergency / life saving procedures including finger thoracostomy.

Challenging cognitive bias can support early and accurate diagnosis and treatment in unusual cases.

Team based decision making is likely to be the most effecting method to support early and accurate diagnoses.

References

1. Aye CY, McKean D, Dark A, Akinsola SA. Bilateral primary spontaneous pneumothoraces post caesarean section–another reason to avoid general anaesthesia in pregnancy. BMJ Case Rep. 2012;2012:bcr0220125724. doi: 10.1136/bcr.02.2012.5724. 10.1136/bcr. 02.2012.5724.
2. Webster C. S., Taylor S., and Weller J. M., "Cognitive Biases in Diagnosis and Decision Making During Anaesthesia and Intensive Care," BJA Education 21, no. 11 (2021): 420–425, 10.1016/j.bjae.2021.07.004.

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