Post-Operative Mucus Plug Following Anesthetic Sedation

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Introduction

Some common patient complications experienced in the post anesthesia care unit (PACU) include pain, nausea and vomiting, urinary retention, pruritis, delirium, and hypothermia. More concerning events in the PACU include respiratory distress and hemodynamic instability, which can arise from numerous different reasons. For example, a pulmonary embolism, hemothorax, pneumothorax, or mucus plug can lead to oxygen desaturation. Although many of these events usually occur after general anesthesia, it is evident that complications can occur following sedation cases as well. It is the responsibility of the anesthesia team to ensure hemodynamic and respiratory stability in the recovery room. Efforts must be made to diagnose and treat any life-threatening conditions that arise. Accurate diagnoses can be made through physical examination, lab testing, and radiologic imaging to further guide proper treatment. The main post-operative goal is to establish a safe hand-off between the anesthesia and PACU teams and to troubleshoot any issues that are apparent.

Significance/Objectives of Case

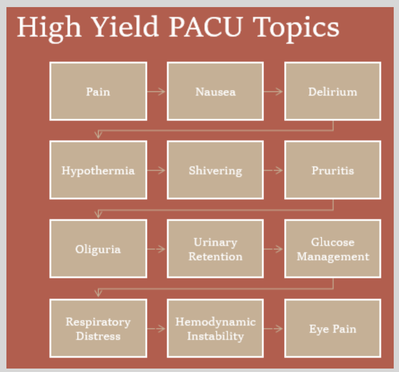


Figure 1: High-yield PACU topics

1. Increase awareness, knowledge, and expectations regarding PACU complications.
2. Review anesthetic considerations for patients in the recovery room experiencing abnormalities.
3. Provide post-operative care insight specifically for managing a mucus plug following a sedation.

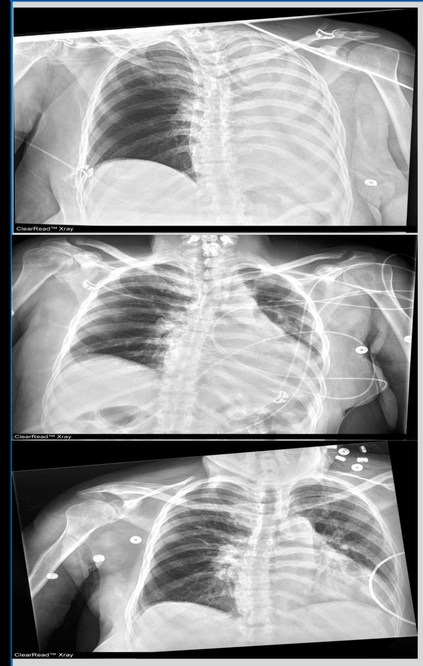
Patient Description

A 65 y.o. F with malfunction of an arteriovenous shunt presented for revision and aneurysm resection. A BMI of 23.33kg/m^2 and height of approximately 165cm (5'5") were recorded. Relevant medical history included hypertension with previous deep vein thrombosis, gastroesophageal reflux disease, anemia, chronic kidney disease, and obstructive sleep apnea. Her starting hemoglobin was 7.5g/dL. The patient's only known allergy was atorvastatin and was taking carvedilol and amlodipine daily for blood pressure control. The patient reported regular recreational inhaled marijuana and nicotine use with minimal alcohol consumption. The patient had an albuterol inhaler due to her consistent smoking history. Past surgical history included dialysis fistula creation, endoscopy, colonoscopy, and parathyroidectomy. All her surgeries had been uneventful. The anesthetic plan for this case was to conduct monitored anesthesia care with sedation and a supraclavicular nerve block.

Intervention/Anesthetic Method

- Patient underwent placement of a supraclavicular nerve block pre-operatively with 10mL of 0.5% bupivacaine and 10mL of 2% lidocaine.
- Patient was instructed to take puffs of her albuterol inhaler before OR transport.
- Non-rebreather mask was placed for increased oxygenation requirements with EtCO2 monitoring as the patient used 2L of oxygen at baseline.
- Sedation was initiated with a propofol infusion at 100mcg/kg/min and intermittent boluses.
- Patient coughed only a few times while sedation was setting in, and suction was utilized to rid of any secretions.
- Coughing was no longer an issue once the patient was under deeper sedation, and oxygen saturation levels never dropped below 92%.
- Once in the PACU while still on oxygen, the patient was suddenly saturating in the mid 70s and was hypotensive, but she was verbal and conscious.

Images



Left: Chest x-ray taken as soon as possible in PACU

Left: Chest x-ray taken 15hrs after ICU transport

Left: Chest x-ray taken 60hrs after ICU transport

Discussion

Once it was determined that the oxygen saturation probe was working correctly, a duo nebulizer treatment was ordered. Unfortunately, there was no improvement. Not much was appreciated during auscultation. Respiratory therapy was then called to place the patient on BiPAP, which slowly began to improve oxygen saturation. ABG values came back without irregularities, so the patient was given one unit of blood in the PACU since the 600mL of estimated blood loss was likely contributing to the patient's low blood pressure. A chest x-ray was ordered, and upon conversation with radiology, it was concluded that the patient had likely experienced a mucus plug in her left mainstem bronchus causing the lung to completely collapse.

Conclusion

Once agreed upon, the patient was transported to the intensive care unit (ICU) while still on BiPAP to be monitored. The patient was gradually weaned onto a high flow nasal cannula after further refusal of BiPAP. Repeat chest x-ray images demonstrated improved aeration of the left lung and a decreased mucus plug almost three days after the initial incident. Bronchoscopy was thus deemed unnecessary. Although certain complications during a sedation case are rare, they must not be dismissed. A mucus plug occurring under general anesthesia is a well-known possibility since the presence of an invasive airway causes the lungs to produce more mucus. However, a mucus plug should be also considered for a desaturation event even in the setting of sedation despite the patient still spontaneously breathing.

References

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