Postoperative Airway Concerns

Dec 12, 2016 | 0 | anaesthetics,general surgery,intensive care,onthepods

James talks to Dr Tim Suharto about postoperative airway concerns.

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Tim is a specialist anaesthetist and one of the supervisors of training at Nepean Hospital. He is involved in the anaesthetic education program and leads the Group for Anaesthetic Simulation (GAS), which delivers in-situ crisis scenarios involving critical care doctors and nurses. Tim is an instructor for the Nepean Difficult Airway course as well as the Nepean Can't Intubate Can't Oxygenate (CICO) workshop. He is a strong advocate for innovation in medical education and developing links between sub-specialties in medicine to enhance understanding and collaboration.

Tim's clinical work encompasses both public and private practice with regular sessions in acute pain medicine, anaesthesia for orthopaedics, ENT, neurosurgery and interventional radiological procedures.

Postoperative Airway Concerns

With Dr Tim Suharto, Staff Specialist Anaesthetist at Nepean Hospital, New South Wales, Australia

Introduction

Tracheal intubation receives much attention, especially with regard to the difficult airway, however tracheal extubation and postoperative airway emergencies receive relatively little emphasis. A postoperative airway emergency is defined as derangement in physiological signs or symptoms attributed to the airway resulting in obstruction or impending obstruction. Events such as laryngospasm, aspiration, inadequate airway patency, or inadequate ventilatory drive can occur and frequently result in hypoxemia.
Any form of airway dysfunction, such as obstruction after tracheal extubation, is an immediate threat to patient safety. Significant airway compromise leads to a reduced minute ventilatory volumes and hypoxia. A differential diagnosis of acute postoperative obstruction of the upper airway after extubation is wide and includes: laryngospasm, relaxed airway muscles, soft tissue edema, cervical hematoma, vocal-cord paralysis, and vocal cord dysfunction.

Case

You are on night shift and are called by nursing staff that are concerned about a 66-year-old female who is day 1 post thyroidectomy who is complaining of worsening pain at the surgical site. The nurses are concerned about the increased swelling of the neck.

1. What questions should you ask over the phone

- An airway concern on the ward mandates a prompt review, particularly in this case as high risk features are present such as post neck surgery and a history of cancer which could be contributing to upper airway obstruction
- Things you want to know over the phone are:
    - What are the vitals and the trend in the vitals?
    - Particularly the respiratory rate and high risk features such as any stridor or noisy breathing

2. When you arrive the patient is in moderate respiratory distress: respiration rate is 30 and they are in discomfort. Swallowing and talking makes the pain worse and there is a small fluctuant mass inferior to the incision site which the nurse says was not previously present – what is your approach now?

- There needs to be a simultaneous approach of assessing, treating the patient and recognising you may need to call for help early
    - Examination can include: looking for increased work of breathing, use of accessory muscles and if the patient is speaking to you in words or short/full sentences
    - Signs and symptoms can be categorised into early, late and very late
        - Early: Dysphagia, dysphonia
        - Late: Increased work of breathing, intercostal muscle use, tripod breathing, positional dyspnoea (worse on small movements), stridor
        - Very late: exhaustion, quiet breathing/stridor has stopped, cyanosis, drooling
    - Treatment can include: supporting the patient with oxygen and looking at if their hypoxia responds to oxygen, obtaining IV access, simple airway maneuvers (head tilt, chin lift and jaw thrust), and having simple airway adjuncts ready (bag valve mask, guedels, LMA)
        - Note: treatment should not delay calling for help early!

3. What are the potential causes of this patient's airway compromise

- Head/neck surgery – bleeding?

- Internal: airway oedema (long surgery/tracheal cuff pressure was high)
- Stretching/injury to recurrent laryngeal nerve causing vocal dysfunction
- Patients with a history of a retrosternal thyroid can result in tracheomalacia (malleable trachea which can cause issues when lying supine causing obstruction)

Other differentials

- Laryngospasm
- Airway muscle relaxation
    - Residual muscle relaxation
    - Residual anaesthetics
- Soft tissue oedema (allergic reaction / mechanical trauma
    - Uvular
    - Paryngolaryngeal
- Cervical haematoma
- Vocal cord paralysis /dysfunction
- Foreign body aspiration

4. Should you do investigations? Such as blood tests or x-ray?

- No! This is an impending airway obstruction
- Crisis management needs to be implemented – It is important to recognise this is an emergency and to get help early with appropriate escalation. Support the airway until help arrives

5. Should you treat this patients worsening neck pain?

- Be very careful about giving opioids to this patient as this could make the situation worse with respiratory depression

6. Who do you want at the bedside now?

- Intensive care
- Anaesthetics
- Surgical registrar or operating team registrar – sometimes these patients have a scalpel at the bedside or special sutures that can be pulled the help evacuate a haematoma

7. Are these patients going to be managed on the ward?

- Ultimately they will be managed in the operating theatre to fix any surgical problems and may have to go to ICU for a short term of ventilator support. Steroids can be given for airway oedema. However, securing the airway or buying time by emergency evacuation of the haematoma may occur on the ward. This is an evolving situation and a failure to recognise impending obstruction and/or a delay in securing the airway may result in fatal obstruction.

8. Are there any goals of management in the longer term?

- When they are out of ICU, some hospitals have Acute Pain Service that also reviews patients with airway problems.
- Management of other comorbidities that may make the patient susceptible to ongoing airway problems such as respiratory disease, cardiac disease.

9. What are the other common types of surgeries that can result in postoperative airway problems?

- Major head and neck
- Anterior cervical decompressions/fusions
- Tonsillectomies/Tracheal surgeries (laser/stenting)

Take home messages

- Have a low threshold for escalating airway problems
- If you are uncomfortable about anything with these patients seek help early
- Recognising your knowledge and skill barriers so you can calling for help early
- Anticipate and provide as much airway support as you can until help arrives with simple maneuvers such as: chin lift, jaw thrust, positioning

Reference

- Miller K, Harkin C, Bailey P. Postoperative Tracheal Extubation. Anesthesia & Analgesia 1995. Jan 1;80:149-172.

Related Podcasts

- Post-operative neck swelling
- Tracheostomies

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