MANAGEMENT OF CRISIS DURING ANESTHESIA AND SURGERY. PART X: AIRWAY OBSTRUCTION DURING ANESTHESIA

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Management of the airway is one of the essential abilities of anesthetic practice. It would appear, however, that this management may occasionally be deficient in direction or be badly controlled, and this may lead to morbidity and potential mortality. Speed in resolving airway problems is essential. The obstructed airway describes any obstruction within the airway in the nasopharynx, pharynx and larynx through to the trachea and lower airways, it can occur at any time during the course of anesthesia.

CAUSES

1. Obstruction by: lips, blood, secretions, foreign body, or tumor mass
2. Laryngospasm & bronchospasm
3. Unintentional administration of a sedative drug or a muscle relaxant
4. Facial injuries
5. Tracheal tube plug, twisted or kinked tube, tube malposition
6. Remnant anesthetic effect in the recovery

RISK FACTORS include

1. Edentulous patients are at increased risk of the obstruction and difficult mask ventilation comparing to patients with teeth
2. Thick neck circumference, limited thyromental distance & Mallmapati class III and IV
3. Long beard or mustache
4. Supine position; tongue falls back against the posterior pharyngeal wall
5. A history of snoring, sleep apnoea or previous airway difficulties with anesthesia
6. Obesity; body mass index ≥31 kg/m²
7. Maxillary hypoplasia, mandibular retrusion, bulbar muscle weakness, cervicothoracic kyphosis
8. Specific obstructive lesions such as infected or edematous structures or adenotonsillar and lingual hypertrophy.
9. High cuff pressure: may cause tracheal edema.

SIGNS

1. Noisy, poor or absent ventilation: stertor at a nasopharyngeal level, gurgling at an oropharyngeal level, inspiratory stridor at a supraglottic level, inspiratory or biphasic stridor at a glottic or subglottic level, and expiratory wheeze at a tracheobronchial level.
2. Increased inspiratory efforts/tracheal tug
3. Paradoxical chest/abdominal movements
4. Hypoxia
5. Dysrhythmias & cardiac arrest
MANAGEMENT\textsuperscript{10-12}
- Cease stimulation/surgery
- 100% oxygen
- Try head tilt, chin lift, jaw thrust
- Clearance of the upper airway
- Request immediate assistance
- Consider allowing the patient to wake up, or ensure adequate depth of anesthesia and visualize and clear the pharynx/airway
- Treat If the problem is laryngospasm
- Treat If the problem is regurgitation
- Insert oral and/or nasal airways
- Reposition head, apply chin lift/jaw thrust
- Try mask with CPAP/IPPV

IF YOU CANNOT VENTILATE:
- Have someone feel the pulse and call out the SpO2
- If not already paralyzed, Consider suxamethonium and atropine
- Make one attempt at intubation under direct vision

IF YOU CANNOT INTUBATE:
- Consider a laryngeal mask
- If this fails, do an immediate cricothyrotomy
- Ventilate with 100% oxygen

IF YOU CANNOT VENTILATE VIA AN ETT Consider:
- Misplaced/kinked/blocked ETT
- Bronchospasm
- Pneumothorax
- Consider possible obstruction distal to ETT: Try pushing a small tube past it or push the obstruction down one bronchus and ventilate the other lung with a clean tube.

FURTHER CARE
- confirm a clear airway
- exclude pulmonary aspiration
- exclude post obstructive pulmonary edema
- explain what happened
- There is a risk of awareness
- go and see the patient in the ward later on
- explain again and reassure them
- advise them to warn future anesthesiologists.

COMPLICATIONS:
Most of the major morbidity and mortality associated with airway obstruction is due to hypoxemia, cardiac arrest, cerebral edema high positive airway pressures led to pulmonary barotrauma and a pneumothorax on the contralateral side to the obstructed lung, post-obstructive pulmonary edema following relief of obstruction of the non-intubated airway. Also, the difficulty of maintaining a patent airway may expose patients to excessive force from airway instrumentation which leads to an increased risk of direct trauma to all parts of the airway, from lips to tracheobronchial tree.
References
11. T Visvanathan, M T Kluger, R K Webb, R N Westhorpe. Crisis management during anaesthesia: obstruction of the natural airway. Downloaded from qshc.bmj.com on May 17, 2010 - Published by group.bmj.com