

Conduct of Anesthesia

Preparation:

- *Premedication is rarely indicated except antisialagogue (Glycopyrronium bromide 0.2mg) to reduce airway secretions may be of value in awake intubation.*
- *Sedative premedication is contraindicated in patient with significant airway obstruction.*
- *A trained briefed assistant is essential.*
- *Available experienced anesthetist.*
- *Special difficult airway trolley is necessary.*

Conduct of Anesthesia

General anesthesia:

- *If tracheal intubation is not necessary for airway protection or surgical access, SAD based technique is a safe option.*
- *Spontaneous or controlled ventilation may be indicated.*
- *Importantly controlled ventilation does not require neuromuscular blockade provided an appropriate SAD is well placed and depth of anesthesia is adequate.*

Conduct of Anesthesia

General anesthesia:

- *If tracheal intubation is indicated:*
- *Appropriate anesthetic technique depends on:*
 1. *the degree of anticipated difficulty.*
 2. *Presence of airway obstruction.*
 3. *Risk of regurgitation and aspiration.*

Conduct of Anesthesia

General anesthesia:

- *If tracheal intubation is indicated:*
- *Preoxygenation is routinely performed by:*
 1. *Minimum 3 min. of tidal ventilation (or until the EtO_2 is 85%).*
 2. *Via the anesthetic circuit;*
 3. *FiO_2 100%; and*
 4. *Via a patent airway.*
- *Attempt to deliver oxygen is neglected.*

Conduct of Anesthesia

General anesthesia:

- ***If the patient is at risk of hypoxia or difficult airway management may occur ,the following techniques are rational:***
 1. ***Nasal oxygen (5-15L/min) via nasal cannulae.***
 2. ***Buccal oxygen via RAE tube.***
 3. ***High-flow humidified nasal oxygen(50-70L/min) via specially designed bulky nasal cannulae :***
 - a) ***Provides a degree of PEEP and CO₂ clearance.***
 - b) ***Prolongs safe apnea time in most of patients except obese or critically ill patients.***
 - c) ***The bulky nasal cannulae may need to be removed when face-mask is applied.***

Conduct of Anesthesia

General anesthesia:

Before attempting any airway manoeuvres:

- 1. Care should be taken to position the airway correctly (flexion).***
- 2. Ensure adequate depth of anesthesia for the planned technique of airway management.***
- 3. Give adequate time for relaxation, if NMBA is used.***

The Safest Anesthetic Technique for Difficult Airway Management

***May usually be chosen from the following
clinical examples:***

1. Patients with little anticipated difficulty and no airway obstruction. General anaesthesia, with choice of airway and neuromuscular blockade according to anaesthetic and surgical indications. If difficulty is encountered, the patient is woken up and the procedure replanned.
2. Patients with an increased risk of regurgitation and aspiration (e.g. full stomach, intra-abdominal pathological condition, pregnancy). Regional anaesthesia may be preferable. An RSI (see later) is appropriate. If there is also a high degree of anticipated difficulty, an awake technique is recommended (see later).
3. Patients with significant risk of difficulty and no airway obstruction. The choice of technique is controversial and the best technique unproven. A senior anaesthetist is required. Optimal techniques include regional anaesthesia to avoid general anaesthesia or securing the airway awake. If general anaesthesia is chosen, this may be i.v. or gaseous induction.
4. Patients with airway obstruction (e.g. burns, infection, trauma). These patients usually require general anaesthesia to secure and maintain the airway. Securing the airway awake is often preferable but in severe cases may be impractical. Advanced techniques are often needed.
5. Extreme clinical situations of severe difficulty and airway obstruction. Tracheostomy performed under local anaesthesia may be the safest technique, but this also is fraught with difficulty.

When there is an intention to provide neuromuscular blockade (whether for tracheal intubation or surgical reasons), traditional teaching is that this should not be done until the ability to perform face-mask ventilation has been confirmed. There is now clear evidence that, in the vast majority of patients, neuromuscular blockade either improves the ease of face-mask ventilation or has no impact. The one caveat is that this has not been confirmed in patients with pre-existing airway pathological conditions or airway obstruction (see difficult airway management section).

Complications of airway management

Generally may be:

- ***Early or Late.***
- ***Mechanical ,respiratory or cardiovascular.***
- ***More common with tracheal intubation but also may occur with SAD or FM.***
- ***Multiple instrumentation increases risk of complications.***
- ***Discussed with the complications arising from anesthesia.***

Airway removal at the end of surgery

- 1. Before removing any airway the patient should have recovered full ventilatory capacity which is assessed by:***
 - a) Observation of the respiratory **pattern** and **rate**.***
 - b) Augmented by **capnography** and **spirometry**.***
- 2. NMBA is used full reversal of muscle power should be monitored routinely for residual paralysis by neuromuscular monitoring using (**Nerve stimulator**).***

Supraglottic Airway Device removal

- ***SAD should be left in place until full ventilatory capacity and consciousness are regained.***
- ***At this point airway reflexes are recovered when the patients can protect his airways ,its not necessary to turn them on their side and semi recumbent position is optimal.***
- ***Should not be removed when spontaneous respiration resumes or swallowing starts.***
- ***It is reasonable to be performed by an appropriately trained assistant and with an appropriately monitored recovery environment.***

Supraglottic Airway Device removal

- ***Regaining consciousness is better assessed by:***

- 1. Response to voice.***
- 2. Spontaneous movement towards the SAD.***
- 3. Obeying commands.***

Conduct of SAD removal :

- 1. Suctioning of the oropharynx.***
- 2. Ask the patient to open the mouth.***
- 3. Remove the SAD while deflating cuff containing SADs like LMA ,retaining some air helps in clearing secretions.***
- 4. Administer oxygen by mask or nasal cannula after removal of SAD.***
- 5. Monitor respiration.***

Supraglottic Airway Device removal

Complications of SAD removal:

- 1. Complications are infrequent since SADs are well tolerated during light anesthesia***
- 2. If SAD is removed while the patient is unconscious, airway obstruction is a significant risk.***
- 3. Coughing and laryngospasm may occur although much less than during removal of tracheal tube.***

Tracheal tube removal (Extubation)

- ***Can be done in the following positions:***
 - A. When airways are kept patent and there is no risk of regurgitation and potential aspiration:***
 - 1. Supine.***
 - 2. Sitting up.***
 - B. When regurgitation is expected ,the Preferable position is:***
 - 3. Lateral. (unless the patient is fully awake).***

Tracheal tube removal (Extubation)

- ***Tracheal tube may be removed with the patient in unconscious or awake:***
 - A. Unconscious (Deep tracheal extubation).***
 - ***Is a higher-risk procedure and should be reserved for very low-risk patients.***
 - ***Complications:***
 - 1) Airway obstruction.***
 - 2) Breath holding.***
 - 3) Respiratory inadequacy.***
 - 4) Laryngospasm.***

Tracheal tube removal (Extubation)

- ***Tracheal tube may be removed with the patient in unconscious or awake:***
- ***B. Awake tracheal extubation:***
- ***generally preferable unless the stimulation has a negative impact on the patients physiology.***
- ***The patient should be informed preoperativley.***
- ***A tracheal tube may be exchange for an SAD placed behind the tube before removal.***

Conduct of routine tracheal extubation

- 1. Should take place in the OT and under direct supervision of the anesthetist since complications and difficulty are common at the time of tracheal extubation.***
- 2. Clear secretions from the mouth and pharynx and if indicated from the trachea ,under direct vision ,before lightening of anesthesia .***
- 3. Administer 100% oxygen to avoid post extubation airway problems***
- 4. Insert an oropharyngeal airway.***
- 5. When ready deflate the cuff fully and remove the tube during inspiration while the bag is squeezed to create a positive pressure.***
- 6. Administer 100% oxygen by FM.***
- 7. Assess the patients ability to maintain and protect the airways.***
- 8. Remove monitoring when airways are stable.***

Complications of tracheal extubation

- 1. Laryngeal spasm (laryngospasm) ,bronchospasm or coughing are:***
 - Reduced by clearance of secretionsbefor extubation.***
 - More likely in those with an irritable airway (smokers, asthmatics ,current or recent RTI ,children and when extubation is performed between deep anesthesia and full wakefulness.***
- 2. Airway obstruction occur when extubation is done before return of consciousness.***
- 3. Regurgitation /aspiration: increased in :***
 - a) all patients at high-risk.***
 - b) Airway removal in the light planes of anesthesia before full wakefulness.***