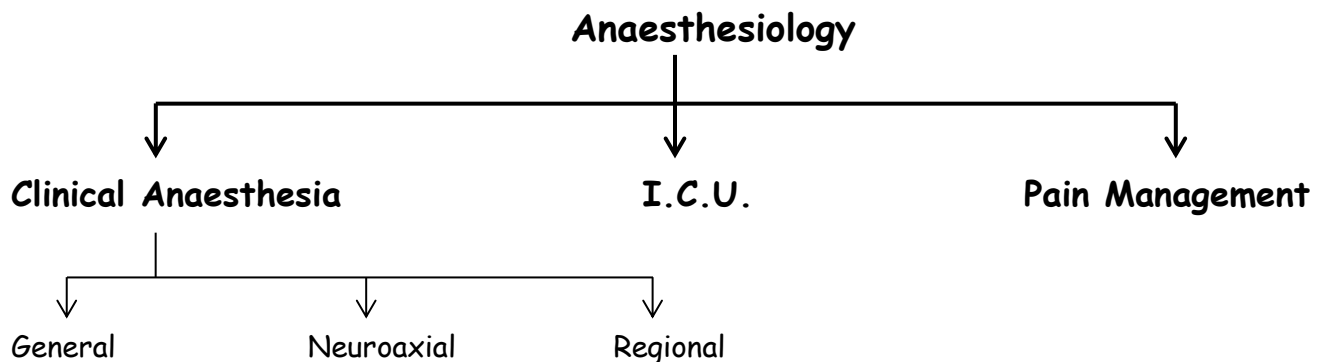


Anaesthesia

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Lec 2



♪ **Anaesthesia:** *Temporary induced loss of sensation or awareness. It may include analgesia, paralysis, amnesia or unconsciousness.*

♪ **Anaesthesiology:** *It's the medical specialty that focuses on perioperative medicine.*

Premedication (6As) refers to drug or group of drugs administered to facilitate induction and maintenance of anaesthesia, generally it's any approach (pharmacological) to optimize the patient status for any medical or surgical (invasive or non-invasive procedure).

- **Anxiolysis** the most commonly prescribed drugs are **benzodiazepine** (diazepam), they produce a degree of sedation and amnesia. Other drugs could be opioids (Morphine).
- **Amnesia** most patients request not to recall events of anaesthesia and surgery, this could be done by **benzodiazepine & opioids**.
- **Anti-emetic** nausea and vomiting may follow administration of opioids either pre- or intra-operatively. Certain types of surgery (Gynaecology) associated with higher incidence of Post-Operative Nausea and Vomiting (PONV). Unfortunately, none of the currently used drugs can be relied on to

prevent or treat PONV. Drugs such as metoclopramide, ondansetron, cyclizine and dexamethasone.

- **Antacids (modifying pH and of gastric volume)** patients are starved adequately to reduce the risk of regurgitation and aspiration of gastric acid at the induction of anaesthesia. Such as oral Sodium citrate 0.3 M (30 ml) especially in pregnancy*, H₂ blocker (Ranitidine), proton pump inhibitor (Omeprazole) and prokinetic (metoclopramide)*.
- **Anti-autonomic**
 1. **Anticholinergic** Antisialagogue reduce salivation (glycopyrrolate) and Vagolytic to reduce bradycardia especially in children (Atropine).
 2. **Antisymphathetic** reduce the sympathetic reflex (tachycardia and HT) like B-Blocker (Esmolol) and IV local anaesthesia (Lidocaine).
- **Analgesia** the most important drugs; opioids (morphine, fentanyl and pethidine), NSAIDs, steroids (dexamethasone)*

➔ *Majority of patients own their regular medications should be taken as normal, unless instructed otherwise by the anaesthetist.*

♪ *Pre-operative starvation; Optimum starvation. Prolonged / or an adequate starvation increases the risk of PONV.*

- Water, breast milk and clear fluids for 2 h.
- Bottle milk and pulp juices for 4 h.
- Solid food for 6 h.
- Heavy (fatty) meals for 8 h.
- Normal medication taken with small amount of water.
- Chewing gum does not increase gastric volume and best treated as clear fluids.

Airway management

Maintenance of patent airway is the essential base for the safe and successful conduct of anaesthesia. It is a skill required for all doctors as during resuscitation. As anaesthesia frequently results in loss of airway patency and this is most easily restored by a combination of the head tilt a jaw thrust. When a holding facemask in position with the index and thumb, jaw thrust is

achieved by lifting the angle of the mandible with the left three fingers of one or both hands (C & E). The overall effect desired is that the patient's mandible is 'lifted' into the mask rather than the mask is being pushed into the face.



Facemask

- Commonly used type in adults is the BOC anatomical facemask, designed to the contours of the face with the minimum of pressure.
- Leakage of anaesthetic gases is minimized by air-filled cuff around the edge.
- Masks made of variable sizes, smallest one provide good seal should be used.
- Some masks have transparent body allowing identification of vomits, bleeding, secretion and drooling, making them popular for resuscitation.
- All masks should be disinfected* between each patient use. Alternatively single use (disposable) masks are available.

Oropharyngeal (Guedel's) airway

- Curved plastic tubes flattened in cross-section and flanged at the oral end. Lie over the tongue, preventing it falling back into the pharynx.
- Available in variety of sizes suitable for all patients, from neonates to large adults, respectively.
- Estimating the size required by comparing the airway with the vertical distance between incisors teeth and angle of mandible.

- Initially inserted upside down as far as the hard palate then rotated 180°, and then fully inserted until the flange lie in front the teeth, or gums in an edentulous patients.



Equipment for tracheal intubation

- **Laryngoscope;** with a curved (Macintosh) blade and a functioning light.
- **Tracheal tubes;** either cuffed (adults) or un-cuffed (children), with a variety of sizes. The internal diameter is expressed in millimeters and the length in centimeters.
- **Syringe;** to inflate the cuff.
- **Catheter mount;** elbow connector (90°), connecting the tube to the anaesthetic system or ventilator tubing.
- **Stethoscope;** to check the correct placement of the tube by listen the breath sounds during ventilation.
- **Extras**
 1. Semi-rigid introducer (Stylet) to help mould the tube to a particular shape.
 2. Magill's forceps designed to reach the pharynx to remove debris or direct the tip of the tube.
 3. Bandage or tape to secure and fix the tube.

Tracheal tube

- Manufactured from plastic.
- Single use to eliminate cross-infection.
- Available in 0.5 mm interval, long enough to be used orally and nasally.
- Most tube with radio-opaque line, so the position could be visualized by X-ray.
- In adult sizes enhanced with a cuff to prevent regurgitation and leakage of anaesthetic gases.
- The cuff is inflated by injecting air via a pilot tube, at the distal end there is a one-way valve to prevent deflation and a small 'balloon' to indicate when the cuff is inflated.
- Un-cuffed tubes used in children up to 10 years of age as the narrowing in the subglottic region provides a natural seal.

Steps for oral intubation

1. **Pre-oxygenation** All patients who are to be intubated are asked to breathe 100% oxygen via a close-fitting facemask for 2-3 mins. This provides a reservoir of oxygen in the patient's lungs, reducing the risk of hypoxia if difficulty is encountered with intubation. Once this has been accomplished, the appropriate drugs will be administered to render the patient unconscious and abolish laryngeal reflexes.
2. **Positioning** the patient's head is placed on a small pillow with the neck flexed and the head extended at the atlanto-occipital joint, the sniffing 'the morning air' position. The patient's mouth is fully opened using the index finger and thumb of the right hand in a scissor action.
3. **Laryngoscopy** the laryngoscope is held in the *left* hand and the blade introduced into the mouth along the *right* side of the tongue, displacing it to the left. The blade is advanced until the tip lies between the base of tongue and the epiglottis, the vallecular. Force (by upper limb not by wrist) is applied to the direction of the handle of the laryngoscope is pointing.

4. Intubation the tracheal tube is introduced into the right side of the mouth, advanced and seen to pass through the vocal cords. The tube is then held firmly and the laryngoscope is removed, and the cuff is inflated sufficiently to prevent any leak during ventilation. Finally the position of the tube is confirmed and secured in place.

Complication of tracheal intubation

- **Hypoxia** Unrecognized oesophageal intubation.
- **Trauma** Directly during laryngoscopy; damage to lips, teeth, tongue, pharynx and larynx. Or indirectly to the cervical spines and cord during manipulation especially to traumatized patients or those with pre-existing degenerative diseases.
- **Reflex activity** HT, arrhythmia, vomiting and laryngospasm. Happened in light anaesthetized or poorly prepared patients.

Cricoid pressure (Sellick's Manoeuvre)

Regurgitation and aspiration of gastric contents are life-threatening complications of anaesthesia and every effort must be made to minimize the risk. Preoperatively, patients are starved to reduce gastric volume, drugs given to increase pH. At induction of anaesthesia (especially in emergency cases), cricoid pressure provides physical barrier to regurgitation. As the cricoid cartilage is the only complete ring of cartilage in the larynx, pressure on it, anteroposteriorly, forces the whole ring posteriorly, compressing the oesophagus against the sixth cervical vertebral body, thereby preventing regurgitation. An assistant, using thumb and index finger, applies pressure whilst the other hand is behind the patient's neck to stabilize it. Pressure is applied as the patient loses consciousness and maintained until the tube has been inserted, the cuff inflated and the correct position confirmed.