Anaesthetic Plan And The Practical Conduct Of Anaesthesia

Dr. S. Vashisht
Hillingdon Hospital
Anaesthetic Plan

Is based on

- Age / physiological status of the patient (ASA)
- Co-morbid conditions that may be exacerbated by anaesthesia
- Nature & type of surgery
- Facilities available for post operative care
What is the best anaesthetic technique for this particular patient about to undergo this type of surgery?

- Can this be done under local anaesthesia?
- Can this be done under regional anaesthesia?
- Are the risks / complications of either technique equal – in that case give the patient a choice
- Are there any risks in performing regional block on this patient
- Does the planned surgical procedure warrant a general anaesthetic
- Is there a role for RA along with GA e.g for relief of post operative pain
What are you going to decide

- What level of monitoring is appropriate?
  - Standard-
    - ECG
    - NIBP
    - SpO2
    - EtCO2
  - Enhanced (higher level)
    - Direct IABP
    - CVP
    - Cardiac indices
  - Other
    - Temperature, Urine output
What form of post-operative analgesia is most appropriate for this patient?

- Simple analgesics – NSAIDS
- Weak opioids
- Local infiltration

- Patient controlled analgesia - PCA
- Epidural infusion of Local anaesthetic + Opioid
- Specific block of peripheral nerves and plexus

A combination of methods produces superior analgesia with fewer side effects.
How much physiological insult is going to take place?

- Degree and rapidity of blood loss
- Haemodynamic stresses placed on the patient
- Post operative paralytic ileus
- Hypothermia
- Impairment of renal function
- Impairment of haemostasis
What level of post operative nursing care will be required?

- Routine ward nursing

- High dependency unit (HDU)
  - Enhanced level of monitoring
  - Enhanced nursing input

- Intensive care unit (ITU)
  - Post operative mechanical ventilation
  - Post operative inotropic support
Regional Anaesthesia +/- Sedation

Criteria for selection for regional block

- Surgery of limited duration max – 2hrs
- Surface surgery – not too stimulating
- Limited blood loss intra and post op.
- Surgery on a part of the body with can be rendered totally anaesthetic without loss of consciousness
- Respect patient’s wishes

Suitable operations that can be performed under R.A

- Operations on the lower limb
- Operations on the genitalia, perineal area, groin
- Transurethral operations such as TURP, TURBT
General Anaesthesia

A pharmacologically induced state of controlled unconsciousness characterised by

- Hypnosis and amnesia
- Global (total body) analgesia
- Muscle relaxation

A variety of chemically unrelated drugs and vapours can produce general anaesthesia. The exact mechanism of action is unclear. Most act on the reticular activating system or cerebral cortex producing a diffuse damping down of activity.
Minimum Alveolar Concentration (MAC)

It is the alveolar concentration of inhaled anaesthetic (vapour) required to prevent movement in response to a standard surgical stimulus in 50% of patients.

- A MAC of 1.3 is required to prevent movement in response to a surgical stimulus in 95% of patients.
- Serves as a measure of potency and allows comparison between various inhalation agents.
- It reflects the brain partial pressure of the volatile agent. It is not affected by duration of anaesthesia.
- Lowered by concomitant use of opiates, nitrous oxide.
Phases of Anaesthesia

There are three main phases of anaesthesia

- Induction
  - Maintenance
  - Emergence
Induction

The process of producing surgical anaesthesia, of rendering a patient unconscious thereby preventing awareness & response to a surgical stimulus

- Administration of induction agent I.V or by inhalation
- Establishment of appropriate monitoring
- Institute supplemental regional block for post operative analgesia
Maintenance

- Ensure amnesia, muscle relaxation, analgesia is maintained
- Maintain physiological parameters within safe limits while providing surgical conditions
- Monitor fluid balance, blood loss, temperature
Emergence

- Allow to wake up by discontinuing the administration of inhalation agent
- Reverse the neuromuscular blockade effect of muscle relaxant by administration of anticholine-esterase
- Confirm the ability of the patient to maintain adequate spontaneous respiration
- Extubate the patient after suctioning the oropharynx clear
- Administer supplemental oxygen and transfer to recovery unit
Types of Induction

- Intravenous induction

- Inhalation induction

There are advantages and disadvantages of each one and situations where a particular type may be indicated or safer. In general, intravenous induction is widely employed.

Before induction ensure that:
- Bed, trolley can be tilted head down
- Facility for suctioning the airway is available
- Airway equipment such as laryngoscopes, ETT, Guedel airways, magill forceps, bougie are available
Intravenous Induction

**Advantages**
- Rapid, smooth, predictable induction achieved
- Only acceptable technique if a risk of aspiration exists as it permits rapid intubation and protection of the airway
- Minimal pollution of anaesthetic room
- Less expensive on average than inhalation

**Disadvantages**
- Speed of induction and the rapid loss of airway reflexes make the ability to manage the airway crucial.
- Approach with caution if there is upper airway obstruction
- All I.V. agents produce vasodilatation – may cause debilitated patients or those with aortic stenosis, hypovolaemia to decompensate
- Risk of anaphylaxis exists with all intravenous agents
Inhalation induction

**Advantages**
- Relatively slow allowing more haemodynamic stability and gradual loss of airway reflexes thereby permitting stepwise control of the airway. Inherently safer when difficulty with airway control is expected.
- Suitable for neonates & infants when venous access may be difficult.

**Disadvantages**
- Slow, no definite endpoint.
- Initially high concentration of vapour may be required leading to arrhythmias, hypotension.
- Produce cerebral vasodilatation - not desirable if there is raised intracranial pressure.
- All volatile agents are potential triggers for MH.
Rapid Sequence Induction

A technique of induction used when there is risk of aspiration. The trachea is rapidly intubated as soon as consciousness is lost.

- Preoxygenation with 100% O2 for 3mins
- Induction with a predetermined dose of induction agent
- Cricoid pressure applied as consciousness is lost
- Rapid acting muscle relaxant Suxamethonium is used to relax the vocal cords for intubation

Trachea intubated rapidly when Suxamethonium is effective. It breaks the cardinal rule that ability to manually hand ventilate the patient should be ensured before administering a muscle relaxant.
Indications for endotracheal intubation

- Whenever a risk of aspiration exists
  - Inadequate pre-op fasting (emergency)
  - Delayed gastric emptying- pregnancy, intestinal obstruction
  - Hiatus hernia with reflux
- For all abdominal, thoracic, pelvic & neurosurgery
- Whenever access to the airway is restricted
  - Oral surgery, head & neck surgery, ENT surgery
- Surgery in prone position