ANAESTHESIA.

Anaesthesia is a triad of :( Amnesia). Loss of consciousness

Analgesia. (Pain relief)

Muscle relaxation.

Induction of anaesthesia is done by intravenous or inhalation.

Inhalational anaesthesia is faster in children and can be useful if an IV line is missed, also used in upper airway obstruction e.g. epiglottitis and lower airway obstruction I.e. foreign body. Inhalation agents are; diethyl ether, desflurane, enfluane, isoflurane, sevoflurane and halothane. Sevoflurane, enflurane and halothane are good induction agents.

NITROUS OXIDE; Is a gas stored in a compressed liquid form, it is a sweet- smelling nonirritant colourless gas. Good analgesic poor anaesthetic, decrease amount of inhalation anesthetics needed. Can be given up to 70% in oxygen.

MEDICAL AIR; given together with oxygen. USED to drive ventilators, operate power tools e.g. orthopedic drills, together with oxygen and volatile anaesthetics.

# IV induction agents are;

THIOPENTONE it is a sulphur drug, rapid induction, depress RS, CVS, lower ICP, BP. It is also used to treat convulsions and status epilepticus. Complications; regurgitation and vomiting, intra-arterial injection which present with a lot of pain and blanching in hands and fingers, perivenous injection- tissue necrosis. Avoid veins in antecubital fossa risk intra-arterial injection and problems with flexion.

KETAMINE is a phencyclidine derivative is analgesic do not depress BP, RS. May cause emergence delirium then avoid verbal or tactile stimulation give diazepam. Ketamine may be give intermittently as sedation single dose produce unconsciousness for 10-15 min. Some patients may produce a lot of salivation; give atropine, safer when given in theatre.

ENTOMIDATE (steroid derivative) it depresses production of cortisol long term use in ICU is associated with infection and mortality.

PROPOFOL; formulated in soya bean and egg –avoid in patients allergic.

Intravenous induction agents are suitable for most routine. Rapid induction for a patient undergoing emergency surgery.

Monitoring should be commenced before induction of anaesthesia; spo2 ECG, BP.

Pre-oxygenate the patient with 100% oxygen for 3-5min or 3-4 large breaths to give time till intubation of the airway.

**MUSCLE RELAXANTS**

There are;

**Depolarizing-succnycloline chloride (suxamethoneum**)

Rapid onset of action; suitable for emergency operations with a full stomach. Recovery from 3 and complete in 12-15 min.

Side effects; muscle pain, increased intraocular pressure, increased intragastric pressure, hyperkalaemia, cardiovascular effects and anaphylactic reactions.

**Non depolarizing neuromuscular blocking agents.**

They include; tubocurarine, alcuroni, gallamine, atracurium, cisatracurium, doxacurium, mivacirium, pancuronium, vecuronium, pipecironeum, rocuronium and rapacuronium.

They relax muscles for longer. They are reversed by neostigmine (ALWAYS GIVE ATROPINE BEFORE OR WITH NEOSTIGMINE TO AVOID BRADYCARDIA.

PAIN CONTROL; should be given adequate pain relief by a combination of drugs.

**AIRWAY**

**Endotracheal tubes;** cuffed- adults

Uncuffed- paediatric

Pre-formed RAE.

For provision of a clear airway, used in unusual positions, operations of head and neck, protection of airway in full stomach and surgeries of airway, anaesthesia using IPPV and muscle relaxants, facilitate suction of airway and during thoracic surgeries.

CONTRAINDICATION; emergency situation hypoxaemia.

**Tracheostomy tubes.**

**Laryngeal mask airway; Indications;**

To provide clear airway without anaesthetist hands on the patient.

To avoid use of ETT on a spontaneous breathing patient.

In case of a difficult intubation.

CONTRA INDICATIONS;

Patient with full stomach.

Increased risk of regurgitation i.e. hiatus hernia.

Surgeries of pharynx.

**Guedel airway or nasopharyngeal airway.**

**Face masks.**

**LOCAL ANAESTHETIC TECHNIQUES.**

**Local anaesthetic toxicity;**

**Usually result from accidental intravascular injection of a local anaesthetic. Prevented by giving injection slowly as one aspirate repeatedly to avoid production of a high plasma concentration.**

**Test dose is indicated epidural block.**

**Hypotension;**

Sympathetic blockade produced by central blocks’

Total spinal blockade- excessive spread of local anaesthetic.

Vasovagal attack; present with pallor, nausea and hypotension.

Anaphylactic reaction

Local anesthetic toxicity.

Hypotension is prevented by adequate pre-loading with 500ml to1L fluid.

**Pneumothorax-** supraclavicular, brachial plexus, intercostal and paravertebral.

**Urinary retention** -central blocks.

**Neurological complications;** neuritis, anterior spinal artery syndrome, haematoma or abscess.

## CENTRAL NERVE BLOCKS;

THESE ARE SUBARACHNOID, EPIDURAL AND CAUDAL BLOCKS

**SPINAL ANAESTHESIA. (SUBARACHNOID BLOCK)**

Give spinal anaesthesia in an operating theatre with anaesthetic breathing systems, laryngoscopes and tubes, tilting table, suction apparatus, IV cannulas and fluids, thiopenton to control convulsions and drugs to treat hypotension. Spinal needles 26G, ASEPSIS.

INDICATIONS;

Urology; prostatectomy, penile, perineal. Gynaecology; dilatation and curettage, pelvic floor SX ,vaginal hysterectomy, Obstetrics, Any surgery of lower limbs or perineum.

For patient with metabolic disease i.e. diabetes mellitus, respiratory disease and cardiovascular disease spinal anaesthesia is a method of choice.

CONTRAINDICATIONS; bleeding diathesis, hypovolaemia, sepsis systemic or local, lack of consent, pre-eclamptic toxaemia care if platelet less 100\*10L,acute neurologic disease/raised ICP and severe stenotic valvular heart disease, Patient on anticoagulants.

PROCEDURE;

IV access.

Position patient sitting or lateral decubitus position.

Locate iliac crest, identify L3-L4 orL4-L5

A full sterile technique adopted. Selection of spinal needles should be availlable22-27G,

Local anaesthetic infiltrated. Spinal needle inserted to pass interspinous ligament and liamentum flavum in to spinal canal, the stiletto is then removed and hub observed for CSF flow, aspirate CSF to ensure good flow, give anaesthetic, withdraw needle and place patient supine.

COMPLICATIONS; headache may present 2-7 days, urinary retention, meningitis, spinal cord trauma.

PERIPHERAL BLOCKS.

These include;

Upper limb; axillary block, infraclavicular, supraclavicular and interscalene blocks.

Blocks in the trunk; intercostal nerve block, field block for inguinal hernia repair and penile block.

Lower limb blocks; sciatic nerve block, femoral nerve block, lumber plexus block and ankle block.

PENILE BLOCK:

Dorsal nerves from pudendal nerves and are blocked by 5-10mlof local anaesthetic injected inferior to symphysis pubis in the midline at depth of 3-4cm. Care to avoid intra-vascular injection and vasoconstrictors must not be used. The base; genital branch of genitofemoral nerve block by s.c. infiltration around the penis. They are simple and produce limited effect block of choice for circumcision.