

O₂ → 5 ml reserve

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* Physical Examination :- 1] General examination - Pulse, BP

2] Systemic examination of Cardiovascular, Respiratory, Hepatic, renal, abdomen, spine

3] Airway Assessment for difficulty in Intubation by :-

a] Thyromental Distance

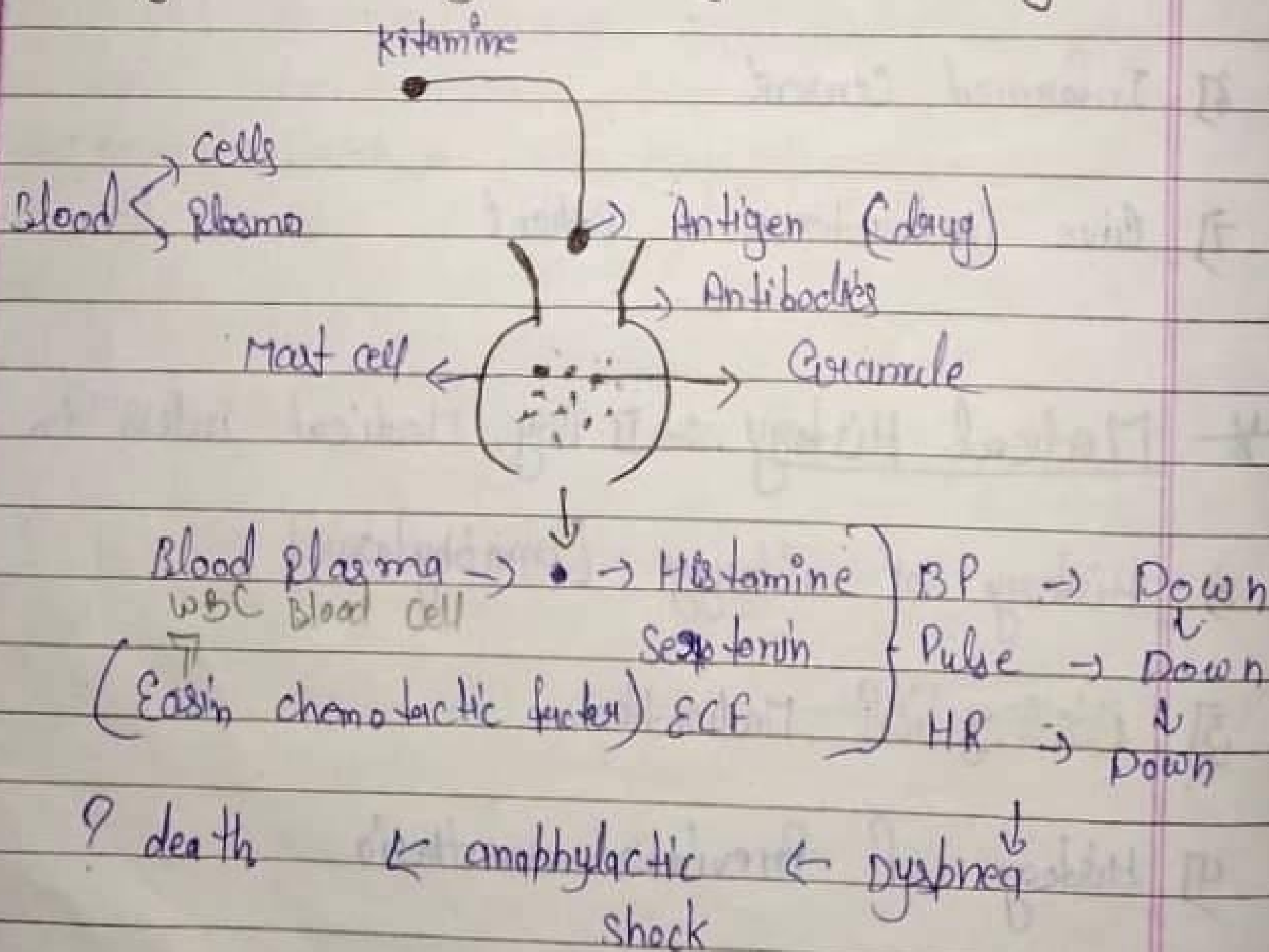
b] Breath holding test

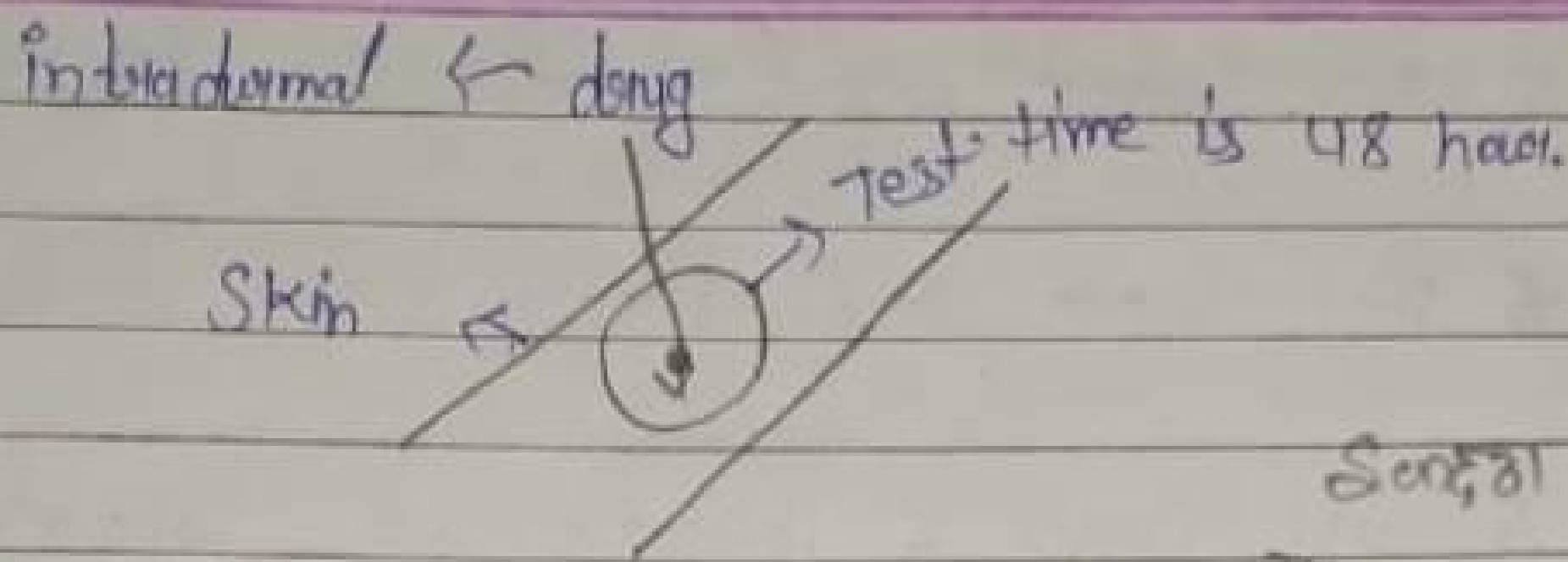
c] Match stick Test

d] Vital Capacity tests

1] Match stick Test :- If the Patient has normal respiration reserve he is should be able to blow of a match stick from a distance of 15 cm.

* Anaphylaxis, Type I Hypersensitivity





Quinoleax

Sen, 31 2/11

allergy → Erythema → (accumulation of RBC)
induration → Swelling
Muscle → SPASM → Hypertension
Pain

Lungs to touch

3] Airway Assessment and difficulty Intubation :-

Airway → Mouth → Oropharynx → Tongue → Epiglottis
Glottis

Trachea → Bronchus → Larynx → Tracheal rings
↓
alveoli

structure
Larynx and
To view

(Tracheal rings are seen in Larynx and To view)

Difficult Intubation is seen in patients in whom Laryngoscopy is difficult and where the patient can present with respiratory problem & distress during surgery. The American Society of Anesthesia has divided patients into six grades on the basis of airway assessment.

ASA Status

- Grade 1 :- Normal Patient's
- Grade 2 :- Mild systemic disease (2nd or 3rd or 4th)
- Grade 3 :- Severe disease affecting airway (5th or 6th or 7th or 8th)
- Grade 4 :- Patient severely ill. (9th or 10th or 11th or 12th)

* Part of Intubation :-

- i) Laryngoscopy
- ii) Tracheostomy
- iii) ET tube in instillation
- iv) Connect ET tube to O_2 cylinder

(आवाज की ध्वनि)
(आवाज की ध्वनि)

(Voice Box)

* Laryngoscopy :- To view the larynx in to [Tracheal Ring and Epiglottis]. The doctor uses a Laryngoscope for this.

* Tracheostomy :- To make an artificial opening in Trachia

* ET tube in instillation :- To fix the ET tube in Trachia one end in Trachia and other end is O_2 cylinder. In this

In this stage the patient is induced with IV (inter vein)

* Anesthesia :- Anesthesia drugs like :- Propofol or Ketamine or Thiopentone. Intubation is done after Anesthesia. Opioids, Benzodiazepine

[TIVA] :- Total intra Venous Anesthesia

* Stage 2 :- stage of delirium and stable RR, HR, BP, Pales, Normal ECG and No Hypoxia

RR :- Respiratory Rate (Number of breath per minute)

HR :- Heart Rate

BP :- Blood Pressure

(Normal range is 18/20)

* Hypoxia :- Low O_2 tension and periphery blood & tissue.

- 5] ET tube intubation
- 6] Monitoring
- 7] Pre - intra - Post operative Care
- 8] Anesthesia drugs and Anesthesia gases along with O_2

* 2] CPR :-

Cardio pulmonary resuscitation
(To review)

~~Intavenous~~ Intravenous induction $\rightarrow$ Anesthesia drugs $\rightarrow$
IV $\rightarrow$ Cannula

* Anesthesia gas :- * N_2O - Nitrous Oxide

* Sevoflurane.

[Discovered by Sir Edmund Boyle in 1917]

- vi] Anesthesia drugs / Induction agent
- vii] Anesthesia gases (Volatile agent or Inhalation agent)
(Nitrous oxide) N_2O , Entonox, Halothane, Sevoflurane, Desflurane.
- viii] PAC [Pre Anesthesia care and Monitoring of Anesthesia]
- ix] Anesthesia Machine [Anesthesia work station, Boyle's apparatus]
- x] Complication of general Anesthesia (Standard ^{SOP} operating procedure)
- xi] Procedure or SOP of general anesthesia include intubation.

* Anesthesia :- (Sweet Sleep)

Temporary Condition which is reversible where the patient is in a state of.

-: Analgesia :- Loss of Pain

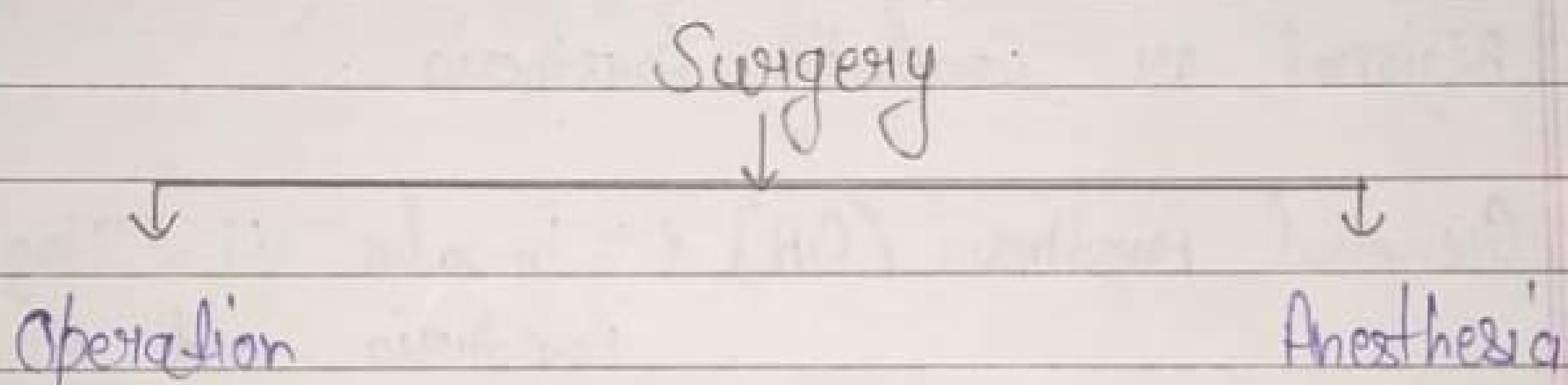
-: Amnesia :- Loss of Memory

-: Muscle Relaxation :- Muscle Relax ^{Suxamethonium}

-: Delirium state :- Balanced $\rightarrow$ ^{Respiration System} Cardiac System

-: No Reflex action :- Patient relax

*



* Part of Anesthesia :- I] Pre Anesthesia

II] Intra Anesthesia

III] Post Anesthesia

* Muscle Relaxation :- Heart muscle $\rightarrow$ Cardiac Muscle

- Thoracic $\rightarrow$ chest $\rightarrow$ Inter Costal

* Aseptic → Maintain → Anti Septic

* Point of Discussion :-

- i) Introduction to Anesthesia and History of Anesthesia
- ii) Types of Anesthesia
- iii) Stages of general Anesthesia
- iv) Golden Rules of Anesthesia



* Types of Anesthesia :- It is broadly divided into two types:-

- i) Systemic or General Anesthesia
- ii) Regional or Conduction Anesthesia

* General Anesthesia [GA] :- Invaluable 4 Stages of Anesthesia and it is a state where the patient and system are in a state of Analgesia, amnesia and relaxed muscle for major Surgeries.

* Its Invaluable use of :-

- 1) Boy Less Abdominal
- 2) CPR
- 3) Laryngoscopy
- 4) Tracheostomy

* Types of Anesthesia :- Is two types

↓
Systemic/general Anesthesia
Complete Body

↓
Regional and
Conduction Anesthesia

* Regional and Conduction :- Is eight types

Local

Surface →

Topical →

→ Lotion, liquid, spray just like anesthesia.

Infiltration → Intra of only skin

Spinal → L-4 to L-5

Caudal or Sacral - L-4 to L-6 of Grey matter

Epidural → L-33 to L-1

CSE [Combined spinal + Epidural Anesthesia]

Central
Neural
blockade

LSCS - Lower Segment Cessation Section

* Stages of General Anesthesia :-

* Stage 1 → Analgesia, ~~Anaesthesia~~, Amnesia, Muscle Relaxation, No Reflexation

* Note :- Intubation :- To provide Saturated or Hundred Percent Pure Oxygen to the patient by a tube called ET tube [Endo Tracheal]

* PAC :- Pre Anesthesia Care

* Pre - Anesthesia & Post - Anesthesia Care Unit & Monitoring in Anesthesia :-

Pre anesthesia care is a method of monitoring & stabilizing the vital system and organ by pre-medication, pre-evaluation of the patient respiratory, Cardio-vascular, neurological & renal system for general anesthesia. This includes basic and advanced monitoring in Anesthesia.

* Basic Clinical Monitoring and evaluation include :-

* Note :-

i] CVBP is the pressure in jugular vein (neck) which is valveless

ii] Blood pressure including Central venous blood pressure (CVBP)

iii] Pulse Examination

iv] chest inflation (expansion breath of thorax cavity in shallow

v] Anaphylaxis. and (increase in respiratory rate).

vi] Cyanosis (Blue discoloration of skin due to hypoxia)

* Note :- Increase Respiratory rate is called Tachypnea.
Low Respiratory rate is called Bradypnea.

* Anaphylaxis :-

This is a type-I Hypersensitivity reaction due to a foreign antigen or medicine or Anesthesia drug which causes symptoms like breathlessness, hypoxia, muscular spasm, and hypotension because of release of histamine.

BP

By ~~Sphygm~~ Sphyngometer

CVP (Central Venous Pressure)

Sphyngometer $\rightarrow$ 120/80 Normal range.

* CVP :- This is the blood pressure in internal jugular vein

* Hypoxia :- Low O_2 tension $\downarrow$ in blood and tissue.
O₂ Pressure

* Dyspnea :- Difficulty in breathing

* Apnea :- Respiratory paralysis or no breathing

* Atelectasis :- When a lobe of lung or portion of lobe is distended or necrotic.

* Stage 3 :- Stage of Surgery or Stage of Surgical Anesthesia

* Stage 4 :- Stage to trauma or irreversible.

and Secondary factors of anaphylaxis like Histamine Serotonin by mast cells and basophils.

In PAC the doctor confirms no anaphylaxis due to pre-medication drug or induction agent like

" Ketamine as propofol by " :-

- i) Medical history of Surgery
- ii) Test intradermal skin test
- iii) Examination of wheal and flare reaction

It is confirmed by presence of erythema (Accumulation of RBC) and induration

- * Review of the medical history of the patient.
- * MLC :- Medical Legal Complication.
- * PACU :- Post Anesthesia Care Unit
- * LIS :- Library Information System
- * Vascular System :- arteries, vein, Capillary, Lymphatics.

- * PAC is important and the guidelines of the American Society of anesthesia say that PAC should include and interview with the guardian, Review Medical History, Perform physical examination, Review Diagnostic Data. Such as Laboratory data, ECG (Electrocardiography) Radio Graph and establish a score

24/12/19

Tough Anesthesia :- Emergency tray

- * Stages of Anesthesia :-

Balance Anesthesia :- Balance anesthesia means that anesthesia stage 1 and stage 2 are by passed to enter stage 3 which has 4 planes followed by stage 4. A Modern Surgery this anesthesia is used frequently.

- * In general Anesthesia the 4 stages are

- * Stage 1 :- Prepare Patient

PAC

Social Needs

Bringing the Patient on Anesthesia

Informed Consent

- * Stage 2 :- Induction with IV anesthesia (ketamine as protocol) and Intubation

- * Stage 3 :- Maintenance of Anesthesia

(Boyle Machine)

(Anesthesia Machine)

↓

(Boyle Machine)

Work station (Gas) N_2O

Sevoflurane

Maintain analgesia, amnesia, Muscle Relax using

keep Monitory :- SpO_2 , Pulse, BP, RR, HCR, Vitals. etc.

(97.5 - 99.2%) in normal range.

Maintain O_2 Supply to the vital organ of the body.
Dissem

* Cralden Rules of Anesthesia :- Including the patient in safety.

✓ Rule 1 :- The OT Staff including the anesthesia doctor, OT Nurse, OT Technician should have knowledge on and understand the basic health status of the patient before giving anesthesia. The medical record including medical history should be well stored and documented.

✓ Rule 2 :- Before operation the patient is starved as empty stomach before giving any anesthesia. If it is not done the patient may develop aspiration or pneumothorax or pulmonary collapse.

✓ Rule 3 :- We should take all necessary steps for providing enough O_2 to the patient by breathing circuit, O_2 flush, Intubation, CPR because O_2 can lead to hypoxia $\rightarrow$ apnea $\rightarrow$ Atelectasis (resonance).

Rule 4 :- The OT Technician should always be prepared for any accident or Hazard whether Physical, Chemical or biological in operation theatre. General anesthesia or Regional Anesthesia is always administered to the patient on trolley table (Anesthesia table).

Rule 5 :- All machine and monitors, drugs and equipments and trays should be prepared before surgery and Anesthesia.

Rule 6 :- Pre Anesthesia Case (PAC) should be performed for all patient's before anesthesia and surgery expecting traumatic and surgery (emergency operation)

Rule 7 :- Keep the air way of the patient clear before Anesthesia

Rule 8 :- Always keep a vein open so that drugs can be given during operation and blood specimens can be withdrawn any time

Rule 9 :- The Patient's blood pressure and pulse are continuously examined before, during and after Anesthesia. also SpO₂ is monitored continuously.

Rule 10 :- Always keep extra O₂ cylinder in operation theatre ready. Be prepared to control ventilation. Never keep the patient alone in operation theatre. keep and assistant to apply Cricoid Pressure if required.

~~assistant~~
Rule 10 A :- All OT staff including OT Technician should obey and execute the legal orders or instructions that are issued by the surgeon. Always get informed consent from the patient or relatives. and also inform the patient on anesthesia.

* Stage 4 :- Place of Recovery in PACU
(Post Anesthesia Care Unit)

* Note :-

* Induction :- This means to administer Intubation usually
(in the vein) a medicine like Ketamine or
Propofol for performing Laryngoscopy
Tracheostomy
ET tube intubation

which requires Naloxone, Relax Muscle and No Reflex
this is necessary for providing O_2 artificially

Gas in O_2 cylinder $\rightarrow$ 2000 psi
pound per square inch.

* Choice of Anesthesia :- The type of Anesthesia,
Medicines of Anesthesia and
Method of Anesthesia depend
on following factors

1. type of surgery and the anatomical site of surgery
2. The Anesthesia should give complete relief from pain
without loss of consciousness
3. It should relax all voluntary muscle excepting muscle of
Respiration and cardiac activity
4. The ventilation in lung should be sufficient
5. There should be no action on blood circulation and
blood pressure and the should be sufficient to

* PAC (Pre Anesthesia Case)

This includes Pre operative assessment, Pre medication and basic and advanced monitoring in anesthesia

* Pre operative Assessment (Anesthesia) :-

* Goals :- 1) Reduce anxiety and educate the patient on anesthesia procedure

2) Obtain medical History

3) Physical Examination

4) Lab tests

5) Plan anesthesia protocol

6) Informed Consent

7) Give instructions to patient

H/O → History of

* Medical History :- 1) Any Medical illness in past or present

2) History of allergy [anaphylaxis]

3) History of Medication

4) History of Previous Anesthesia

5) History of Alcoholism or Smoking

- Grade 5 :- Patient Cannot Survive in 24 hours
(ਜੀ ਹੋਰ 24 ਘੰਟੇ ਦੇ ਪੁਰਾ ਹੋ)
- Grade 6 :- Brain dead Person. (ਡਿਜ਼ਾ ਨਹੀਂ ਹੋਣਾ)

Grade 5 and Grade 6 Patient's are Voluntary organ donors. that is why they under go surgery.

* Lab. Investigations :-

* Blood :- Liver function test

Kidney function test

Complete Blood test → CBC, ESR, TLC, DLC

BT / CT / PTT

Blood Sugar

HIV (Human Immunodeficiency Virus)

Hepatitis B (Australia Antigen)

Malaria

Surgical Histology (Cancer department)

* Urine :- Routine

Microscopy

Culture

BT :- Bleeding time

CT :- Clotting time

PTT :- Prothrombin time

ESR :- Erythrocyte Sedimentation Rate

TLC :- Total Leucocyte Count (Scientific name of WBC)

DLC :- Differential Leukocytes Count

* Radiological Investigation :- ECG (Electro Cardio Graphy)

Chest X-Ray

MRI (Magnetic Resonance Imaging)

3] * Pre Medication :- This means the medicines given to the patient two to three hours before anesthesia. It also includes antibiotic perfusion given five days and continue even after surgery.

* Medicine Name :-

Relieve anxiety :- Benzodiazepine

Hemodynamic Stability :- Clonidine (1 mg / kg body weight)
(Control BP, Pulse)

Sedation (Sweet sleep) :- OPIOIDS

Reduce / Stop oral secretion :- Atropine

Analgesia :- OPIOIDS

Antibiotic perfusion :- To prevent post operative SEPSIS



(3 days before and 1 hour before surgery)

* SEPSIS :- If a pathogenic bacteria enters blood stream and releases toxins which damage organ and systems after bacterial multiplication in blood it is called SEPSIS.