
DEPARTMENT OF
ANAESTHESIA, ANALGESIA AND INTENSIVE CARE

Welcome
To
Today's seminar on
EMERGENCY ANESTHESIA

EMERGENCY ANAESTHESIA

Section – I

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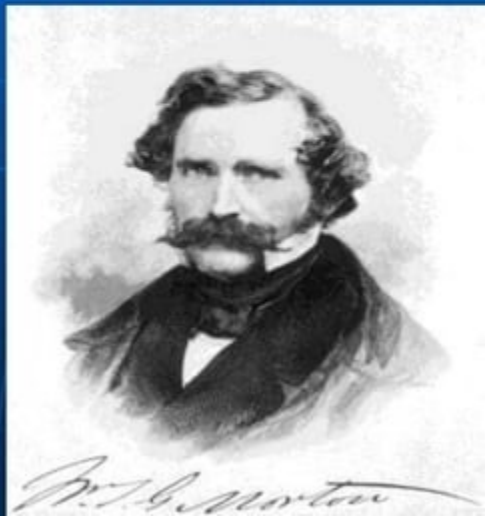
Brief history:

- The term Anesthesia, suggested by Oliver Wendell in 1846.
- Diethyl ether was first described by Paracelsus in 1540.
- N2O suggested for analgesia in 1799 by Humphray Davy and 1st use in 1844 by Horace Wells.

Basics of Anesthesia, contd..

- First public demonstration of ether anesthesia in Massachusetts General Hospitals in Boston by W.T.G.Morton, an US dentist in 16th October 1846.

- Hence , this day is celebrated as **WORLD ANESTHESIA DAY**



Happy 173rd anesthesia day



Objectives

- To know about the patient selection, triage.
- To assess the patient's condition
- To resuscitate the patient accordingly
- To know about the outcome of the operation and counsel

Classifications of Operations

- **Emergency operation** :

  Immediate operation within 1 hour of surgical consultation and considered as life saving.

  Example: Ruptured aortic aneurysm repair.
  Laparotomy or thoracotomy in case of major abdominal or thoracic trauma.

Classifications of Operations

- **Urgent operation:**

  Operation as soon as possible after resuscitation usually within 24 hours of surgical consultation.

  Example: Laparotomy for intestinal obstruction and perforation.

  Fixation in case of compound fracture.

Classifications of Operations

- **Scheduled operation** :

Early operation between 1-3 weeks of surgical consultation which is not immediately life saving.

Example : Cancer surgery
Cardiac surgery

Classifications of Operations

- **Elective operation**:

  Operation at the time to suit with both the patient and surgeon.

  Example :Laparoscopic cholecystectomy.

Problems with Emergency Anaesthesia

Emergency patient may have-

- Uncertain diagnosis.
- Uncontrolled coexisting medical disease.
- Physiological derangements.

The major principle

- To identify the condition as emergency.
- To correct the physiological abnormalities preoperatively.

Contd…

An anaesthetist must be prepared for potential complications arising from anaesthetising the patient in sub-optimal condition.

These include :

- -Vomiting & regurgitation
- -Hypovolaemia & haemorrhage
- -Abnormal drug reactions
- -Electrolyte disturbances

Preoperative assessment

Section-II

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Preoperative assesment

- **Assessment of cardiorespiratory status:**

  History

  History of past medical illness:

  -Angina

  -Productive cough

  -Orthopnoea

  -Paroxysmal nocturnal dyspnoea

  Drug history:

  -Anti platelet

  -Anti anginal

  -Antihypertensive.

Contd.

- **Assessment of functional capacity: Metabolic equivalent task(METs):**

MET Score	Approximate level of activity
1	Dress, walk indoors
2	Light housework, slow walk
4	Climb one flight of stairs
6	Moderate sports.eg- Golf or dancing
10	Strenuous sports and exercise

Contd.

- **Assessment of airway:**
  1. General appearance of neck,face,maxilla and mandible
  2. Jaw movement
  3. Head extension and neck movement
  4. Teeth and oropharynx
  5. Soft tissue of neck
  6. Recent chest and cervical spine X-rays
  7. Previous anaesthetic record.

Contd…

Different scoring and grading systems for airway assessment :

-Mallampati scoring

-Modified Mallampati scoring

-EL Ganzouri scoring

-Wilson scoring

-LEMON airway assessment.

Contd.

Assessment of circulatory volume:

This is very essential.

The anaesthtetist should quantify deficit of--

-Intravascular volume

-Extracellular volume

Contd…

Clinical indices of extent of blood loss

	1 Minimal	2 Mild	3 Moderate	4 Severe
% blood lost	10	20	30	>40
Heart rate (bpm)	Normal	100-120	120-140	>140
Blood pressure (mm Hg)	Normal	Orthostatic hypotension	Systolic <100	Systolic <80
Urine output	Normal 1ml/kg/h	20-30ml	10-20ml	Nil
Sensorium	Normal	Normal	Restless	Impaired consciousness

Contd…

Indices of extent of Extracellular fluid loss :

% Body weight lost as water	Sign and symptoms
>4% Mild	Thirst, reduced skin elasticity, decreased IOP, dry tongue, reduced sweating.
>6% Mild	As above + orthostatic hypotension, oliguria, low CVP, apathy, haemoconcentration.
>8% Moderate	As above + hypotension, thready pulse with cool peripheries.
10-15% Severe	Coma, shock followed by death.

Contd…

Vomiting or regurgitation may occur:

Full stomach:

-Peritonitis

-Intestinal obstruction

-Pyloric stenosis

-Late pregnancy

-Head injury

Other causes:

-Hiatal hernia

Anaesthetic techniques

Section-III

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Techniques of anaesthesia

There are 5 phases of management:

Phase I	:	Preparation
Phase II	:	Induction
Phase III	:	Maintenance
Phase IV	:	Reversal and emergence
Phase V	:	Postoperative management

Preparation

Preparation of anaesthetic equipments:

*Oropharyngeal tube
*Nasopharyngeal tube
*Endotracheal tube
*Laryngeal mask airway
*Video laryngoscope
*Suction apparatus

Contd…

Preparation of patient :

a)Resuscitation:

*Opening of 2 wide bore I/V channel(16G or below)

*Opening of CV line

*Choice of fluid may be crystalloid, colloid or blood.

Contd…

b)Gastric decompression:

-Insertion of a nasogastric tube

c)Aspiration prophylaxis:

-Inj. Ranitidine

-Inj. Metochlorpramide

-Non-particulate antacid

(30ml 0.3M sodium citrate)

Induction..

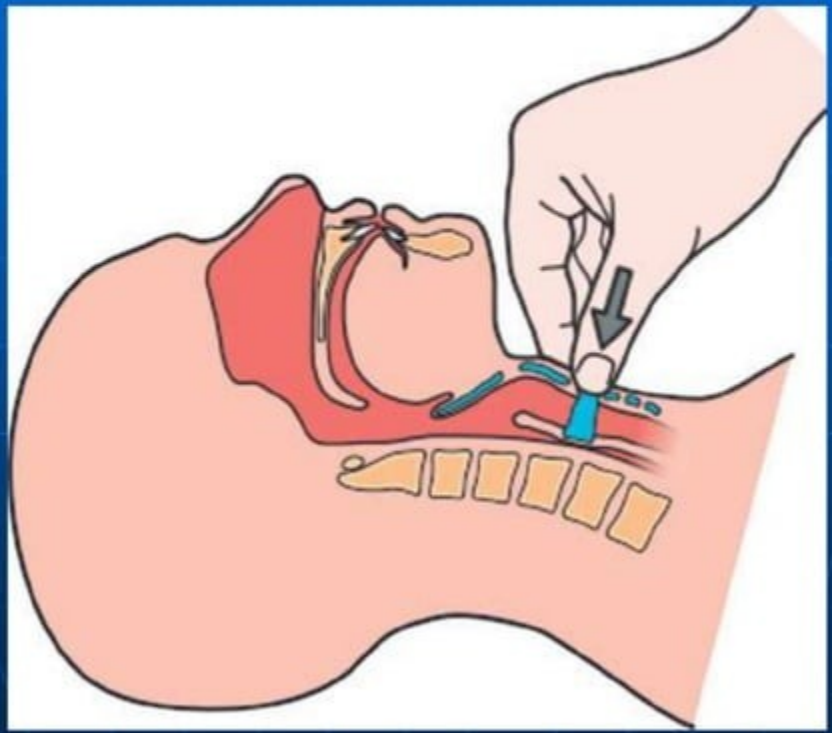
a)Rapid sequence induction:

*To prevent aspiration and regurgitation of gastric contents.

*Patient is kept in trendelenburg position.

*(20-40)N cricoid pressure by an expert assistant(Sellick's maneuvour).

Sellick's maneuver



Contd…

Induction agent:

-Thiopental Na, Propofol, Ketamine, Etomidate.

Muscle relaxant:

-Suxamethonium

-Rocuronium

(If suxamethonium is contraindicated)

Contd…

b) Inhalational induction:

-Elderly frail patients who may not tolerate IV induction agents.

-Position may be left lateral, head down or even supine with cricoid pressure.

-It may be done by Oxygen and Halothane or Sevoflurane.

Contd…

Regional anaesthesia:

-Regional block is acceptable in emergency anaesthesia, if hemodynamically stable.

-General anaesthesia is safer than neuroaxial anaesthesia, especially for the juniors.

Maintenance, reversal and postoperative care

Section-IV

Dr. Susmita Sen Supta
Indoor Medical Officer
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Maintenance of anaesthesia

- **Analgesics:**
  - Opiods
  - Paracetamol IV
  - Ketamine (low dose)
  - NSAIDs
  - Nitrous oxygen: Oxygen ratio 33:66
- **Maintenance of anaesthesia**:

  -Halothane/Sevoflurane

Contd…

- **Maintenance of muscle relaxation**:

  Nondepolarizing muscle relaxant

  -Atracurium

  -Rocuronium

  -Vecuronium.

- **Maintenance of normothermia**:

  Core temperature should be monitored and hypothermia be avoided.

Contd…

- Mandatory monitoring:
  - Capnography
  - Continuous ECG monitoring
  - Temperature monitoring
  - Oxygen saturation
  - Blood pressure monitoring
  - Monitoring of urine output

Contd...

- **Fluid management:**

  Choice : Isotonic crystalloids.

  Maintenance fluid :1.5ml/kg/hour.

  Third space loss, evaporative loss and blood loss should be calculated and corrected meticulously .

Contd...

- **Blood transfusion**:

  -Patient's Hb% 7gm/dL is the trigger point for blood transfusion.

  -If blood is not available, crystalloid(1:3-4)ratio or colloid(1:1)ratio can be administered.

Reversal & Emergence

Beginning of last skin suture

↓

Discontinuation of anaesthetic drug

↓

Phayngeal suction (under direct vision)

↓

Neostigmine(50mcg/kg)+Glycopyrrolate (20mcg/kg)

↓

Tracheal extubation after protective airway reflexes have returned.

Contd…

Monitoring of adequacy of reversal:

Clinically:

-Sustained head lift for 5 seconds.

-Sustained firm hand grip.

Instrumentally:

-A nerve stimulator

(To define reversal of neuromuscular transmission).

Postoperative management

- **Post operative IPPV:**
  - **Indications:**
    - Prolonged shock
    - Severe IHD
    - Massive sepsis
    - Extreme obesity
    - Severe pulmonary disease

Contd...

- **Analgesia :**
  - Opioids
  - Non opioids
  - Regional block

- **Fluid management:**

  Maintenance fluid

  Colloids- blood and blood products , if necessary

Contd…

- **Referral to ICU criteria after emergency surgery:**
  - Patient requiring advance respiratory support
  - Need two or more organ system support
  - Planned admission from OT after prolong or complicated surgery
  - Emergency admission from OT due to delayed recovery or any complication from surgery or anesthesia.

Discharge from post operative room

Modified Aldrete recovery score

Criteria	Point value
Oxygenation	
SpO2 > 92% on room air	2
SpO2 > 90% on oxygen	1
SpO2 < 90% on oxygen	0
Respiration	
Breathes deeply and coughs freely	2
Dyspnoeic, shallow or limited breathing	1
Apnoea	0
Circulation	
Blood pressure ±20 mmHg of normal	2
Blood pressure ±20−50 mmHg of normal	1
Blood pressure more than ±50 mmHg of normal	0
Consciousness	
Fully awake	2
Aousable on calling	1
Not responsive	0
Activity	
Moves all extremities	2
Moves two extremities	1
No movement	0

Thank You