Anesthesia

Table of Content

1 Chapter

INTRODUCTION TO ANESTHESIA

NEED FOR ANESTHESIA

1. Pain Relief
2. Patient Co operation
3. Immobile patient during surgery
4. Unconsciousness (not mandatory though)
5. Muscle relaxation
6. Controlled blood pressure to reduce bleeding during surgery
7. Amnesia → Selective memory loss
8. Post operative pain relief through → intravenous medication, Regional technique, Patient controlled analgesia

TYPES OF ANESTHESIA

GENERAL ANESTHESIA

- Patient is completely unconscious throughout the surgery.
- STEPS OF GENERAL ANESTHESIA :
  1. PRE MEDICATION → given outside OT
  2. Attach monitors
- ECG
- sPO2
- Temperature
- Non invasive Blood pressure (NIBP)
- Temperature monitoring
- Capnography / eTCO2

  3. Secure intravenous access
  4. Induction of Anesthesia (IV route or Inhalational route)
  5. IV route is preferred as compared to inhalational induction as there is FASTER induction of anesthesia
  6. Once patient becomes unconscious, Muscle relaxant is given to paralyze patient
  7. Laryngoscopy and intubation done to insert endotracheal tube and connect to ventilator
  8. Maintainence of anesthesia by inhalational agent

9. Top up of muscle relaxant given till end of surgery
10. At the end of surgery → REVERSE ACTION OF MUSCLE RELAXANT by giving: NEOSTIGMINE AND GLYCOPYRROLATE: UNPARALYSE PATIENT
11. Switch off anesthetic agent
12. Wake up patient and Extubate

NOTE : INHALATIONAL INDUCTION OF ANESTHESIA: Commonly done in CHILDREN

Q. Which of these is a component of general anesthesia?

A. Loss of reflex response
B. Amnesia
C. Muscle relaxation
D. All of the above

Q. Which of the following has no contraindication?

A. General anesthesia
B. Regional anesthesia
C. TIVA
D. None of the above

PRE MEDICATION : (Classes of drugs)

1. ANXIOLYTICS : Benzodiazepines (Short acting)
2. ANALGESICS : Pain relief - Opioids, Paracetamol, NSAIDS
3. ANTI EMETICS : Inj. Emset (ondansetron) / prokinetics / steroids
4. ANTISIALAGOGUES: Anti secretory agents: Gycopyrrolate and Atropine
5. COUNTER GASTRIC ACIDITY: PPI (Proton Pump Inhibitors) and H2 Antagonists

CANNULA SIZES

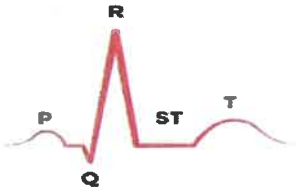
14 G : ORANGE → 270 mL/min
16 G : GREY - 236 mL/min
18 G : GREEN - 103 mL/min
20 G : PINK - 67 mL/min
22 G : BLUE - 31 mL/min
24 G : YELLOW -13 mL/min
26 G : PURPLE

NOTE : 14 G: BIGGEST CANNULA, 26 G: SMALLEST CANNULA

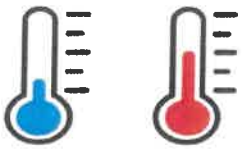
1. 24 G AND 26 G → Used in pediatric age group
2. 16 G, 18 G → Preferred for blood transfusion

BASIC MONITORING

Non invasive blood pressure (NIBP)

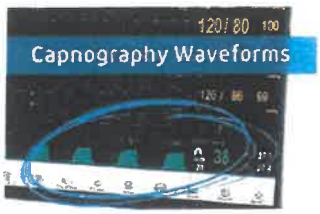


ECG

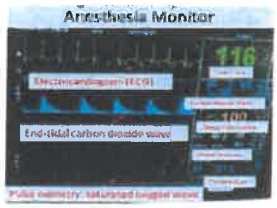


Temperature

SPO2



Capnography



REGIONAL ANESTHESIA

- Blocking the sensation / motor movement from one part of the body
- No Amnesia / unconsciousness but patient will have no pain in the part being operated upon

Regional Anesthesia can be broadly classified into

1. CENTRAL NEURAXIAL BLOCKADE

- SPINAL ANESTHESIA
- EPIDURAL ANESTHESIA
- CAUDAL ANESTHESIA

A. SPINAL ANESTHESIA

- Local anesthetic given in Subarachnoid space, which spreads through the CSF and blocks the spinal nerves leading to loss of sensation and motor function

B. EPIDURAL ANESTHESIA

- Local anesthetic given in epidural space
- Requires more drug compared to spinal anaesthesia
- Safer

C. CAUDAL ANESTHESIA

- Given in children < 8 years
- Needle inserted through sacral hiatus → Sacrococcygeal membrane is pierced → Local anesthetic is given in epidural space
- After 8 years : Sacral hiatus fuses

3. PERIPHERAL NERVE BLOCKADE

Individual nerves are seen under ultrasound guidance / stimulated using peripheral nerve locator and blocked with local anesthetic

Examples:

A. SCIATIC NERVE BLOCK

B. BRACHIAL PLEXUS BLOCK

CONTRAINDICATIONS FOR REGIONAL ANESTHESIA

- Allergy to local anesthetic
- Patient refusal
- Infection at site of needle insertion
- Coagulopathy
- Uncorrected hypotension/ Sepsis

MONITORED ANESTHESIA CARE :

Q. A patient is to be taken for colonoscopy. He is very anxious. He also gives history of recent myocardial infarction and is on anti coagulants. The surgeon wants mid anxiolysis to carry out procedure uneventfully. What is the anesthesia of choice in this procedure?

A. General anesthesia

B. Regional anesthesia

C. Monitored anesthesia care

D. Any of the above

Monitored Anesthesia Care involves only monitoring the patient (without giving anesthesia). It is done in :

- High Risk patients
- Low risk short procedure
- Sometimes mild sedation / anxiolysis can be given to the patient

SCIENTISTS IN ANESTHESIA

- Father of modern anesthesia ether anesthesia - WTG MORTON
- Father of anesthesia - JOHN SNOW
- Word anesthesia coined by - OLIVER WENDELL HOLMES
- Used curare products for the first time for muscle relaxation - HAROLD GRIFFITH
- Used cocaine for the first time for anesthesia - AUGUST BIER
- First intubation done by - WILLIAM McEWAN
- Oxygen and nitrous oxide synthesised by - PRIESTLY
- First demonstration of nitrous oxide - HORACE WELLS
- Introduced chloroform to obsteric anesthesia - JAMES SIMPSON
- First anesthesia machine used by - EDMUND BOYLE

- First prize in anesthesia – BOVET
- WORLD ANESTHESIA DAY – 16th OCTOBER 1846
- Balanced anesthesia definition given by – LUNDY

GUEDELS STAGES OF ANESTHESIA

I : STAGE OF ANALGESIA (Pain Relief)

II : STAGE OF EXCITEMENT

III : STAGE OF SURGICAL ANESTHESIA

IV : STAGE OF MEDULLARY PARALYSIS

Extra Edge

Differences between General Anesthesia, Regional Anesthesia And MAC

Criteria	General Anesthesia	Regional Anesthesia	Monitored Anesthesia Care (MAC)
Consciousness	Patient is unconscious and unresponsive.	Patient is awake or sedated, but conscious.	Patient is awake, may be sedated but responsive.
Airway Management	Airway is often secured with a device (e.g., endotracheal tube or laryngeal mask airway).	patient maintains their own airway.	patient maintains their own airway.
Pain Management	Pain is managed through inhaled and IV agents that affect the entire body.	Pain is managed locally by blocking nerves in a specific region of the body.	Pain and comfort management is typically achieved with sedatives and analgesics without deep anesthesia.
Level of Monitoring	Extensive monitoring required due to the depth of anesthesia and potential for physiological changes.	Monitoring is required but is less extensive compared to general anesthesia.	Continuous monitoring is required, but the focus is on comfort and safety rather than deep anesthesia.
Recovery	Requires a recovery period for the return of consciousness and airway reflexes.	Recovery is generally faster as consciousness is not affected, but motor and sensory functions may be temporarily impaired.	Recovery is often quicker as the depth of sedation is usually lighter and airway reflexes are maintained.
			

Premedication and their examples :

Class of Drug	Examples	Purpose
ANXIOLYTICS	Benzodiazepines (Short acting): - Midazolam - Diazepam - Lorazepam - Alprazolam	For reducing anxiety and inducing sedation
ANALGESICS	- Opioids: - Paracetamol - NSAIDs (Nonsteroidal Anti-inflammatory Drugs)	For alleviating pain
ANTIEMETICS	- Inj. Ondansetron (Emset) - Prokinetics: - Metoclopramide - Steroids: - Dexamethasone	For preventing nausea and vomiting
ANTISIAL-AGOGUES	Anti-secretory agents: - Glycopyrrolate - Atropine	For reducing oral and respiratory secretions
COUNTER GAS-TRIC ACIDITY	- PPI (Proton Pump Inhibitors): - H2 Antagonists:	For reducing gastric acid production

Differences Between Spinal, Epidural and Caudal Anesthesia

Criteria	Spinal Anesthesia	Epidural Anesthesia	Caudal Anesthesia
Site of Administration	Subarachnoid space	Epidural space	Epidural space at the sacral hiatus
Onset of Action	Rapid onset, usually within 5 minutes.	Slower onset, can take 10-20 minutes to take effect.	Slower onset similar to epidural; depends on the drug diffusion.
Technique	Single injection.	Catheter placement allows for continuous infusion or repeated doses.	Single injection or catheter placement for continuous infusion in pediatric patients.
Motor and Sensory Block	Usually profound motor and sensory block.	less motor block compared to spinal, sensory block is good	Primarily affects sensory nerves; motor block is less common than spinal.
Duration of action	Limited to the duration of the single injected dose.	Duration can be extended with catheter for continuous infusion.	Duration is similar to epidural and can be extended with catheter if placed.
Common Use	Typically used for lower abdominal, pelvic, and lower extremity surgeries.	Used for surgeries of the thoracic, abdominal, pelvic, and lower extremity regions; also for labor analgesia.	Mainly used in pediatric anesthesia for lower body procedures, less common in adults.

2 Chapter

DAY CARE ANESTHESIA

Definition-

- ***Day care surgery is defined as a patient being admitted to hospital for a planned procedure and discharged home on the same calendar day.***
- Day care surgery is also called as – **Ambulatory surgery**
- Founder of Day care surgery –**James Henderson Nicoll** (1863-1921) pioneered a surgical cure for Pyloric stenosis and outpatient care of children with Spina bifida, and was known as the Father of Day Care Surgery.

Benefits of Day Care Surgery

Patient	*Hospital*
Early mobilization	Faster turnover time so more profit
Less pain	
Faster discharge	
Faster recovery to normal routine life	
Lesser nosocomial infections	

Disadvantages of Day Care Surgery

- Surgical and anesthetic complications resulting in unplanned readmissions to the hospital
- Need for higher expertise level
- Possible chances of negligence in preoperative anesthetic assessment
- Lesser compliance to preoperative fasting instructions and preoperative medications

Procedures Done as Ambulatory Surgery

- **General Surgery** - Hernia, hydrocele repair
- **Ophthalmology** - Cataract
- **Gynecology** - Dilatation and curettage, hysteroscopy
- **Dental** - All procedures
- **ENT - Tympanoplasty**
- **Pain Clinic - Chronic pain interventional procedures**
- **Urology** - Cystoscopy
- **Orthopedic - Arthroscopy**

Patient Selection Criteria - Ask These Three Questions

- Is the operation an appropriate day-case procedure?
- Is there anything we would do for this patient by admitting them overnight which could not be done at home?
- Are the patient's home circumstances adequate for day surgery discharge?

Eligibility Criteria for Day Care Surgery

- Patient must be sound to understand the **delicate intricacies** of day-care procedures
- During discharge from hospital, an **adult person should accompany the patient** with written instructions
- The **domestic environment** should be conducive enough for smooth postoperative period
- Besides evaluating **basic minimum laboratory investigations, clinical acumen is very important in deciding the fitness for day-care surgery and anesthesia**
- **Comorbid diseases should be optimized satisfactorily before** declaring patient fit for surgery
- Decision of day-care surgical procedures also depends on the **duration, severity, and potential chances of hemodynamic instability** and others
- Patient should be able to **initiate oral intake within few hours** of the surgical procedure
- Anesthetic **drugs and techniques should be chosen in manner not to disturb the postoperative ambulation**
- Patient should be able to **take care of himself/herself for routine personal chores**
- A good means of **transport and communication** should be available to the patient at home
- Availability of **physician/surgeon for 24 h is an essential prerequisite** in case of any emergency readmission.

Preoperative Evaluation

- Doses of antihypertensive drugs are taken as routine on the morning of surgery except the angiotensin-converting enzyme inhibitors and angiotensin II receptor antagonists as these agents can cause severe intraoperative hypotension.
- Diabetes management includes stoppage of oral hypoglycemics a night before the surgery and no insulin injection on the morning of surgery. Morning report of fasting blood glucose are extremely helpful.
- It is generally recommended to avoid administration of general anesthesia (GA) in patients with active respiratory infections, hyperreactive airway, and sleep apnea syndrome. **Bronchospasm during induction and intubation as well as during perioperative period can be severe, especially in patients with chronic obstructive airway disease.**
- Currently, day-care anesthesia can be administered to all age groups ranging from **1-month child to geriatric population.**
- Children can be treated best on a day-care basis as the **anxiety levels due to separation from parents and unfamiliar surroundings of the hospital are minimal** with this technique.
- **A history of venous thromboembolism during the past 3 months, prosthetic cardiac valves, higher doses of anticoagulant drugs, critical or decreased platelet count,** and others are not suitable for ambulatory anesthesia.
- Patients with neurological disorders and peripheral and autonomic neuropathies are vulnerable to develop postoperative respiratory complications.
- **Patients with neuromuscular disorders, myasthenia gravis, and muscular dystrophies should not be discharged on the same day.** Such cases are ideal for local or regional anesthesia if feasible.
- **Renal and hepatic diseases are not considered as contraindications for day-care surgery. As such**

American Statistical Association III-IV patient can also be taken up for elective surgery provided, they meet fitness criteria laid down for the day-care anesthesia

Preoperative preparation

Written and verbal instructions:

GENERAL	ANESTHESIA
Time and conduction of anesthesia and surgery	• Fasting guidelines • Medications on morning of surgery

Preferred Anesthesia Techniques

- **General anesthesia**

  GA is the most common method and can be administered either by inhalation or intravenous methods as well as a combination of both can be considered.

Inhalational Anesthesia

Sevoflurane and desflurane are short acting and can be used as the sole anesthesia technique

- **Total intravenous anesthesia (IMP)**

  TIVA is suitable for any kind of surgery but is highly useful in pediatric, geriatric, ophthalmology, and ENT surgeries. **The combination of propofol, fentanyl, or remifentanil is associated with rapid recovery characteristics.**

Regional Anesthesia

Regional anesthesia has gained a widespread popularity in day-care surgical procedures recently. However, prolonged recovery time for complete regression of the block lengthens the period of postoperative period care.

Neuraxial Anesthesia

Modifications of existing spinal anesthetic techniques and advent of newer drugs which are used as an adjuvant to local anesthetics have made regional anesthesia a suitable choice for day-care surgeries.

MONITORING FOR DAY CARE ANESTHESIA

All ASA monitors:

- ECG
- Pulse oximetry
- Noninvasive blood pressure
- Capnography
- Temperature monitoring

GENERAL ANESTHESIA (IMP)

- Induction agent of choice- Propofol
- Opioid of choice- Remifentanil
- Muscle relaxant of choice- Succinylcholine, rocuronium-sugammadex
- Airway management – Supraglottic airway device

- **Inhalational agent of choice – Sevoflurane**
- **Preferred agent for TIVA-Propofol**

REGIONAL ANESTHESIA

- Local anesthetic of choice- **Chloroprocaine**
- Spinal needle of choice- **27G Quincke**

Aldrete Score for Recovery. (Extra Edge).

Parameter	*Description of patient*	*Score*
Activity level	Move all extremities voluntarily/on command	2
	Moves 2 extremities	1
	Cannot move extremities	0
Respirations	Breathes deeply and coughs freely	2
	Is dyspneic, with shallow, limited breathing	1
	Is apneic	0
Circulation (Blood pressure)	Is 20 to mmHg >preanesthetic level	2
	Is 20 to 50 mmHg >preanesthetic level	1
	Is 50 mmHg >preanesthetic level	0
Consciousness	Is fully awake	2
	Is arousable on calling	1
	Is not responding	0
Oxygen saturation as determined by pulse oximetry	Has level > 90 % when breathing room air	2
	Requires supplemental oxygen to maintain level > 90 %	1
	Has level < 90% with oxygen supplement	0
Maximum total score is 10; a score of > 9 is required for discharge		

Hospital Based

A separate ambulatory surgical facility within a hospital handles only outpatients.

Freestanding

These surgical and diagnostic facilities may be associated with a hospital or medical center but are housed in separate buildings that share no space or patient care functions. Preoperative evaluation, surgical care, and recovery occur within these autonomic units. In developing nations, the majority of nursing homes and smaller hospitals function in this manner.

Office Based

These operating or diagnostic units are managed in conjunction with physician's offices for the convenience of patients and health-care providers.

Extra Edge

The most common causes for readmission to the hospital after day care surgery are :

- Postoperative pain,
- nausea and vomiting,
- surgical complications

Drugs / Equipment used in Day Care Surgery

Category	Preferred Drug/Equipment	Notes/Reasons for Preference
IV Induction Agent	Propofol	Rapid onset, short duration, and smooth recovery
Opioid	Remifentanil	Short-acting, easily titrated
Muscle Relaxant	Rocuronium with Sugamma-dex	Rapid onset and reversal possible with sugammadex
Airway Management	Supraglottic Airway Device	Less invasive, quick placement, reduced sore throat risk
Inhalational Agent	Sevoflurane	Low pungency, rapid induction and recovery
TIVA (Total Intravenous Anesthesia)	Propofol	Allows for rapid recovery, avoids inhalational agent exposure
REGIONAL ANESTHESIA		
Local Anesthetic	Chloroprocaine	Short-acting, suitable for quick procedures
Spinal Needle	27G Quincke	Small gauge, reduced risk of headache

RECOVERY SCORES :

Recovery scores are used to assess a patient's readiness for discharge following day care anesthesia. Here are some of the commonly used recovery scores:

1.	Aldrete Score: Assesses patient mobility, respiration, circulation, consciousness, and color for determining recovery from anesthesia.
2.	Modified Aldrete Score: An updated version of the Aldrete Score that includes oxygen saturation as a parameter.
3.	Post Anesthetic Discharge Scoring System (PADSS): Evaluates vital signs, ambulation, nausea/vomiting, pain, and surgical bleeding.
4.	Discharge Criteria Rating Scale (DCRS): Rates alertness, physical activity, vital signs, pain, nausea/vomiting, and surgical bleeding.
5.	Steward Score: A simplified scoring system focusing on consciousness, physical activity, blood pressure, and complications like nausea/vomiting.

3 Chapter

PRE-ANESTHETIC EVALUATION

Goals of PAE

1. To assess the risk factors
2. To diagnose and optimize comorbidities prior to surgery
3. ASA classification
4. To give pre-operative instructions

AMERICAN SOCIETY OF ANESTHESIOLOGISTS PHYSICAL STATUS CLASSIFICATION (IMP)

I. No comorbidities
II. Mild systemic disease **(controlled)**
III. Moderate systemic disease **(uncontrolled)**
IV. Severe systemic disease **(end organ damage)**
V. Moribund patient who will not survive without surgery
VI. Brain dead - organ transplant

E - emergency surgery.

Fasting Guidelines (IMP)

- **Solid fatty food - 8 hours**
- **Light meal - 6 hours**
- **Breast milk - 4 hours**
- **Clear liquids - 2 hours**

Pre-Anesthesia Evaluation

- History of present illness with treatment.
- Comorbidities with treatment.
- History of past illness.
- Past surgical history / Anaesthesia exposure.
- Social history.

Examination

- Temperature
- Pulse
- Respiratory rate

- Blood pressure
- PICCLE- Pallor, icterus, cyanosis, clubbing, lymphadenopathy, edema
- Systemic Examination
- Airway Examination

Examine

- Mouth opening - **>3FB (Finger breadth).**
- Dentition - loose teeth, artificial teeth.
- Facial masses - tumor, beard.
- Cheeks.
- Heavy jaw.
- Tongue Size.
- **Inter-incisor distance** - distance between the upper incisor and lower incisor **> 3FB.**

Mallampati Classification - (IMP)

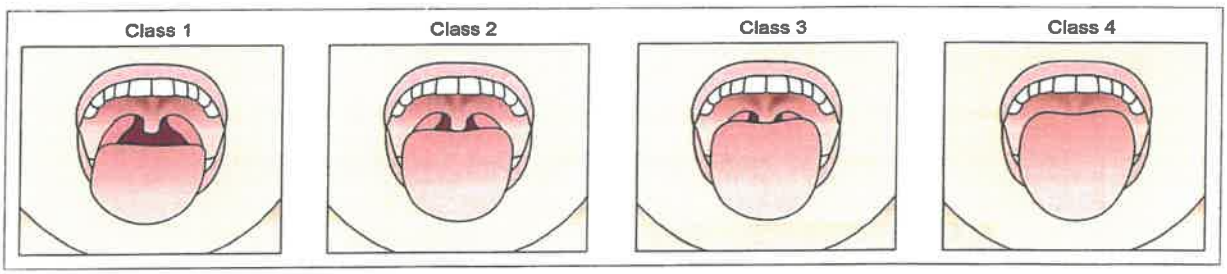


Fig. 1

- **Class I** - all structures seen - Uvula, tonsillar pillar, soft palate, hard palate
- **Class II** - base of uvula, soft palate, hard palate
- **Class III** - only soft palate and hard palate
- **Class IV** - only hard palate.

Cormack And Lehane Grading

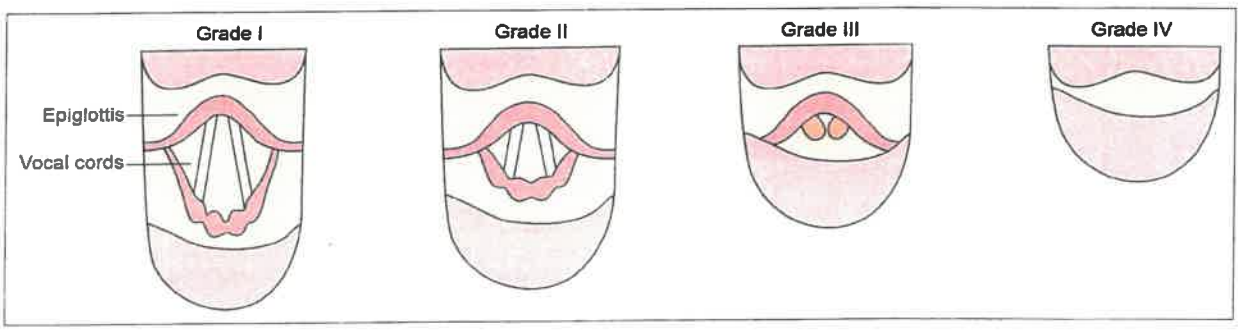


Fig. 2: Cormack & Lehane Classification

- ***Grade I - Complete glottic opening seen***
- ***Grade II - Only posterior part of glottis seen***
- ***Grade III - Only epiglottis seen, no part of vocal cords seen***
- ***Grade IV - No part of airway is seen***

Thyromental distance (Patil's test) → 6.5 cm

Sternomental Distance → 12cm

Airway Examination

- Temporomandibular joint mobility:
  - Upper lip bite test
  - Slux (subluxation).
- Neck Mobility:
  - Neck Extension
  - Neck range of motion
  - Neck Circumference

Difficult Airway Algorithm

Q. What is a Difficult Airway?

- Difficult bag and mask ventilation.
- Difficult intubation
- Difficult SGA/LMA insertion
- Difficult front of neck access (FONA)

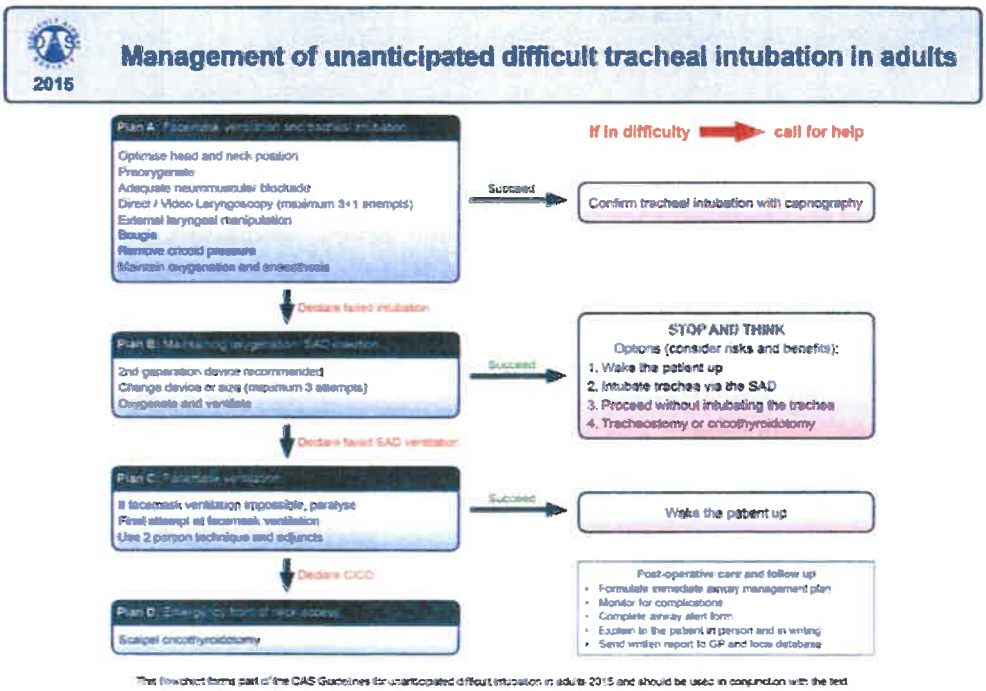


Fig. 1: This flowchart forms part of the DAS Guidelines for unanticipated difficult intubation in adults (2015) and should be used in conjunction with the text.

Pre-Anesthesia Orders Regarding Medications

Hypertensive patients on Antihypertensives

1. ACE Inhibitors - Omitted on day of surgery.
2. Angiotensin receptor blockers - Omitted on day of surgery.

3. Diuretics - Continued on the day of surgery.
4. Beta Blockers - Continue on the day of surgery.
5. Calcium channel blockers - Continue on the day of surgery.
6. Centrally acting alpha-2 agonists - Continue on the day of surgery.

Anesthetic Considerations of HTN

- **INTRA-OP**
  - Increased BP - Excessive bleeding, myocardial infarction
  - Low BP - Organ perfusion - ischemia
- **POST-OP**
  - Increased BP - Reactionary hemorrhage
  - Decreased BP - MI, Acute renal failure, dizziness

Diabetic patients on Anti - Diabetic Treatment

- Oral hypoglycemic agents and Insulin omitted on the day of surgery as patient is starving
- SGLT2 inhibitors - Stopped >48 hours prior to surgery

Anesthetic Considerations of DM

- **INTRA-OP** - hypoglycemia - permanent neurological deficit
- Hyperglycemia - DKA, HHS, poor wound healing, delayed recovery, wound infection

Patients on Anti-psychiatric medications

- Antipsychotics
- Antiepileptics
- Antidepressants
- Anti-anxiety medications

} **All these drugs should be continued on day of surgery**

EXCEPT Lithium - stopped 48 hours prior to surgery

TCA's -stopped 3 weeks prior to surgery - can lead to serotonin syndrome.

Thyroid disorders - continue on day of surgery- make patient euthyroid

Hypothyroidism - levothyroxine

Hyperthyroidism - carbimazole, PTU

ANESTHETIC CONSIDERATIONS

- INTRA-OP
- **Uncontrolled Hypothyroidism- myxedema coma**
- **Uncontrolled hyperthyroidism - thyroid storm**
- ***OC* pills** - continued on day of surgery

Hypercoagulable- omitted 4 weeks prior to surgery

Patients receiving Oral Steroids

- ***Continue & supplement with IV hydrocortisone***

Patients on AKT- continue, monitor LFT

Cardiac Patients-

- Minimum gap between Bare Metal stent insertion and elective Surgery- **6 weeks**
- Minimum gap between Drug eluting stent insertion and elective Surgery- **6 months**

ANTICOAGULANTS

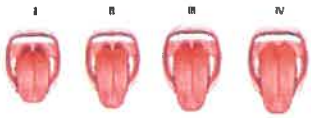
- Aspirin – continued on day of surgery
- Clopidogrel – stopped 7 days prior to surgery
- Warfarin – stopped 5 days prior to surgery
- Heparin – stopped 4 hours prior to surgery
- LMWH – stopped 12 hours prior to surgery
- Ticlopidine – stopped 14 days prior to surgery
- BRIDGING DRUG – heparin.

Extra Edge

ASA CLASSIFICATION :

ASA Classification	Definition	Examples
ASA I	A normal healthy patient	Healthy, non-smoking, no or minimal alcohol use
ASA II	A patient with mild systemic disease	Mild diseases only without substantive functional limitations. Current smoker, social alcohol drinker, pregnancy, obesity (30<BMI<40), well-controlled DM/HTN, mild lung disease
ASA III	A patient with severe systemic disease	Substantive functional limitations; One or more moderate to severe diseases. Poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, history (>3 months) of MI, CVA, TIA, or CAD/stents.
ASA IV	A patient with severe systemic disease that is a constant threat to life	Recent (<3 months) MI, CVA, TIA or CAD/stents, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, shock, sepsis, DIC, ARD or ESRD not undergoing regularly scheduled dialysis
ASA V	A moribund patient who is not expected to survive without the operation	Ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction
ASA VI	A declared brain-dead patient whose organs are being removed for donor purposes	

Airway Tests in Anesthesia

Test Name	Description	What It Assesses
Mallampati Classification	Patient sits upright, opens mouth, and protrudes tongue without phonation.	Mallampati Classifications 
Thyromental Distance	Distance between the thyroid notch and the mentum (chin).	
Sternomental Distance	Distance from the sternum to the mentum with the head fully extended and mouth closed.	
Upper Lip Bite Test	Ability of the patient to bite the upper lip with their lower teeth.	
Neck Circumference	Measurement of the neck at the level of the cricothyroid membrane.	
Mouth Opening	The inter-incisal gap when the patient opens their mouth as wide as possible.	
Wilson Risk Score	A cumulative score based on weight, head and neck movement, jaw movement, receding mandible, and buck teeth.	A higher score suggests a more difficult airway.

Intraoperative Anaphylaxis- Causative Factors :

The most common drugs causing anaphylaxis during surgery include:

1.	**Antibiotics:** Penicillins, cephalosporins, and vancomycin are commonly implicated.
2.	**Neuromuscular Blocking Agents (NMBAs):**. Examples include rocuronium, succinylcholine, vecuronium, and atracurium.
3.	**Latex**
4.	**Local Anesthetics:** Both amide and ester types, though true allergies to local anesthetics are rare.
5.	**Opioids:** Morphine and other opioids can cause histamine release, which may mimic anaphylaxis.
6.	**Iodinated Contrast Media:** Used in radiological procedures, they can trigger reactions.
7.	**Colloids:** Used for volume expansion, such as hydroxyethyl starch.

Orders Regarding Pre-Operative Medication :

Condition/Drug	Time to Stop Before Anesthesia	Concerns and Management
Hypertension		Continue all medications except ACE inhibitors & ARBs which are to be stopped on day of surgery
Diabetes Mellitus		- OHAs & insulin: Skip on the day of surgery - Long-acting insulin type 1 diabetics : Reduce to 1/2 - Long-acting insulin type 1 diabetics : Reduce to 1/3
Thyroid Disorders		Continue thyroid supplementation & anti-thyroid drugs.
Psychiatry	MAO inhibitors: Stop 3-4 weeks prior Lithium/Mg2+: Stop 72 hrs prior to surgery	- MAO inhibitors interact with synthetic opioids. - Lithium or Mg2+ interact with muscle relaxants.
Oral Contraceptive Pills	- High risk : Stop 4 weeks prior - Low risk: Can be continued	Estrogen-containing pills: High risk of thrombosis.
Steroid Therapy		Continue steroids.
Drugs for Tuberculosis		Continue AKT, check LFTs
Past H/O MI		- Low dose Aspirin can be continued. - Clopidogrel & warfarin: Stop 5-7 days prior. - LMWH: Stop 12-24 hours prior - Regular heparin: Stop 6 hours prior. - Ticlopidine: Stop 10 days prior.
Smoking	Stop 6-8 weeks prior	Increased risk of bronchospasm and laryngospasm.
Alcohol	Stop 24-48 hours prior; check LFT	Risk of withdrawal and liver function impact.
Herbal Medicine	Cause bleeding	Check LFT; if deranged, wait for 1-2 weeks before surgery

Fasting Guidelines :

Type of Food/Drink	Minimum Fasting Time Before Surgery
Solid Fatty Food	8 hours
Light Meal	6 hours
Breast Milk	4 hours
Clear Liquids	2 hours