Preoperative assessment

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INTRODUCTION :

Definition

- The **pre-operative assessment** is an opportunity to identify comorbidities that may lead to **patient complications** due to **anesthesia or surgical procedure, during the operative or postoperative periods.**

INTRODUCTION :

- Patients scheduled for elective procedures will generally attend a pre-operative assessment **2-4 weeks** before the date of their surgery.

Goals of preoperative assessment :

1) Screen for and manage co-morbid disease.
2) To assess and minimize risks of anesthesia.
3) To identify need for specialized techniques.
4) To identify need for advanced post-op care.
5) To educate about anesthesia.
6) Plan of Anesthetic Technique
7) To avoid unnecessary delays/cancellations.
8) Reduce patient anxiety.
9) To obtain informed consent.

Minimum preoperative visit components(according to ASA(:

1) Medical, anesthesia and medication history.
2) Appropriate physical examination.
3) Review of diagnostic data (ECG, labs, x-rays.(
4) Assessment of ASA physical status.
5) Formulation and discussion of anesthesia plan.

Note// ASA = American Society for Anesthesiologists.

The ASA physical classification:

ASA1: normal healthy patient.
ASA2: Mild systemic disease - no impact on daily life.
ASA3: Severe systemic disease - significant impact on daily life.
ASA4: Severe systemic disease that is a constant threat to life. **ASA5**: **Moribund**, not expected to survive without the operation. **ASA6**: **Declared** brain-dead patient - organ donor.
E: Emergency surgery.

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	

History :

1) Medical problems (current & past.(

- DM, HTN, COPD, CAD, thyroid disorder.
- Regular medications
- Previous surgeries

2) Previous anesthesia & related problems.
3) Family anesthesia history.
4) Allergies and drug intolerances.
5) Medications, alcohol & tobacco.
6) Review of systems (include snoring and fatigue.(
7) Exercise tolerance and physical activity level.

Physical examination :

Minimum requirements:

1) Airway.

2) Heart and lungs.

3) Vital signs including O2 saturation.

4) Height and weight (BMI.(

5) Other Specific examinations depending on the individual patient and procedure.

Physical examination :

Airway Assessment

.1Predictors for difficult BMV

- Obesity: BMI > **30**
- Neck circumference > **60** cm
- Beard (difficulty in obtaining a good seal(
- Edentulous (lacking teeth) patients
- Snoring
- Anatomical facial deformity
- Radiation

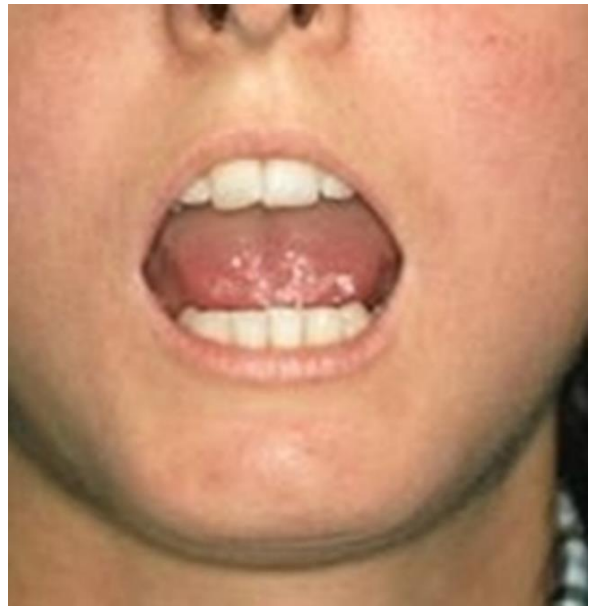
Difficult Ventilation :

Difficult ventilation is defined as the inability of a *trained* anesthetist to maintain an oxygen saturation level *greater* than 90% *using a face mask* for ventilation with 100% inspired oxygen. This definition applies provided that the patient's pre-ventilation oxygen saturation was within the normal range.

Physical examination :

Airway Assessment

.2Predictors for difficult laryngoscopy



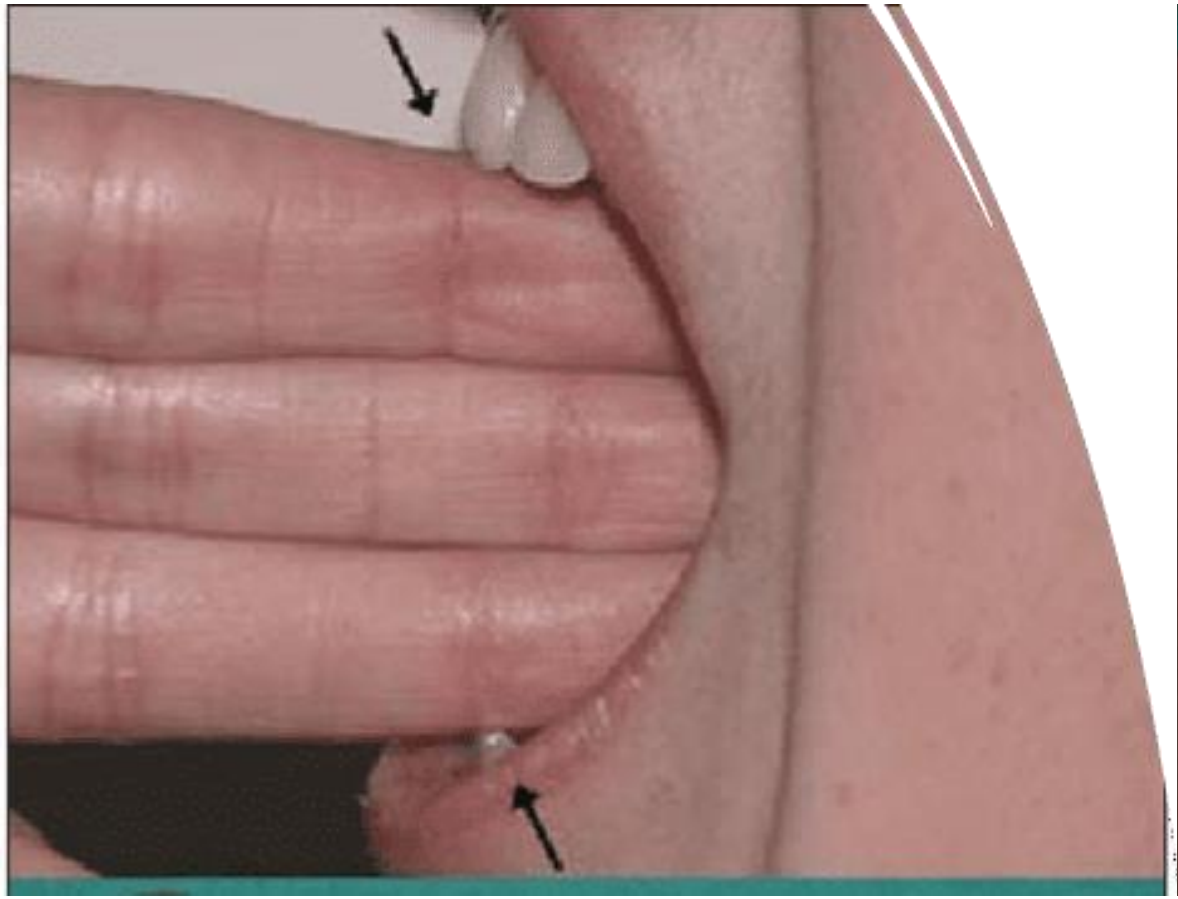
1. Mouth opening:

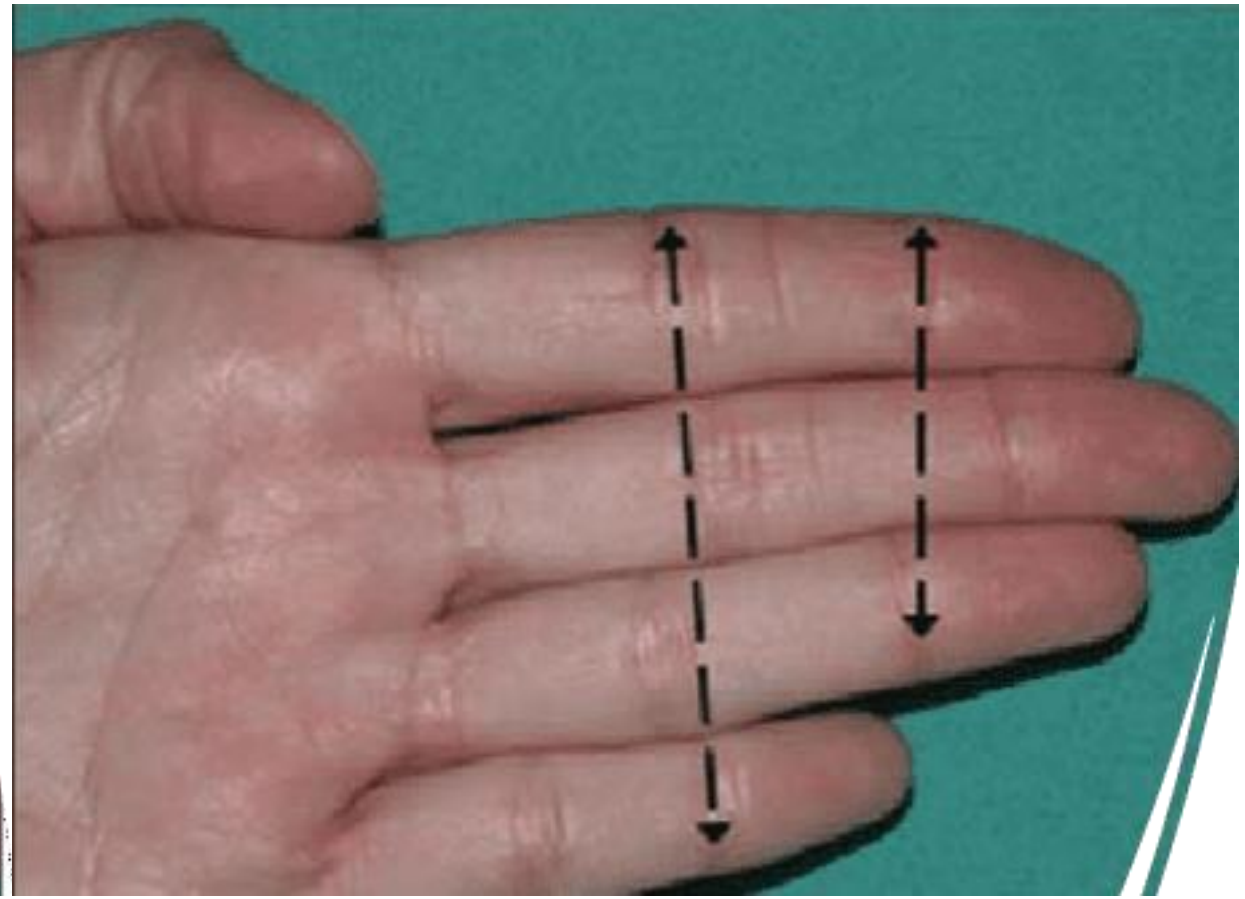
- 6-4cm of inter-incisor gap
- Vertical fitting of patient's index, middle and ring fingers
- Ability to open mouth less than 3 cm is regarded a sign of potential difficulty

- There are medical conditions associated with limited mouth opening:

  Arthritis of jaw bones, Scleroderma, SLE, Inflammation, TMJ abnormalities

Normal mouth opening



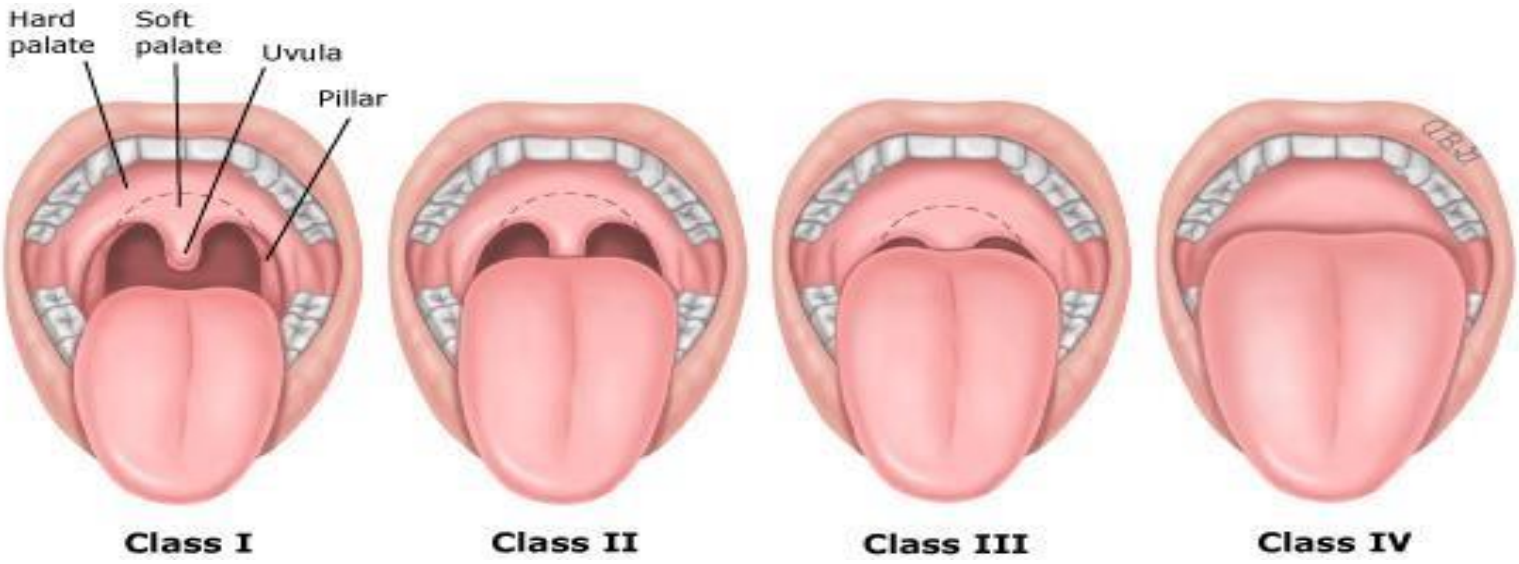


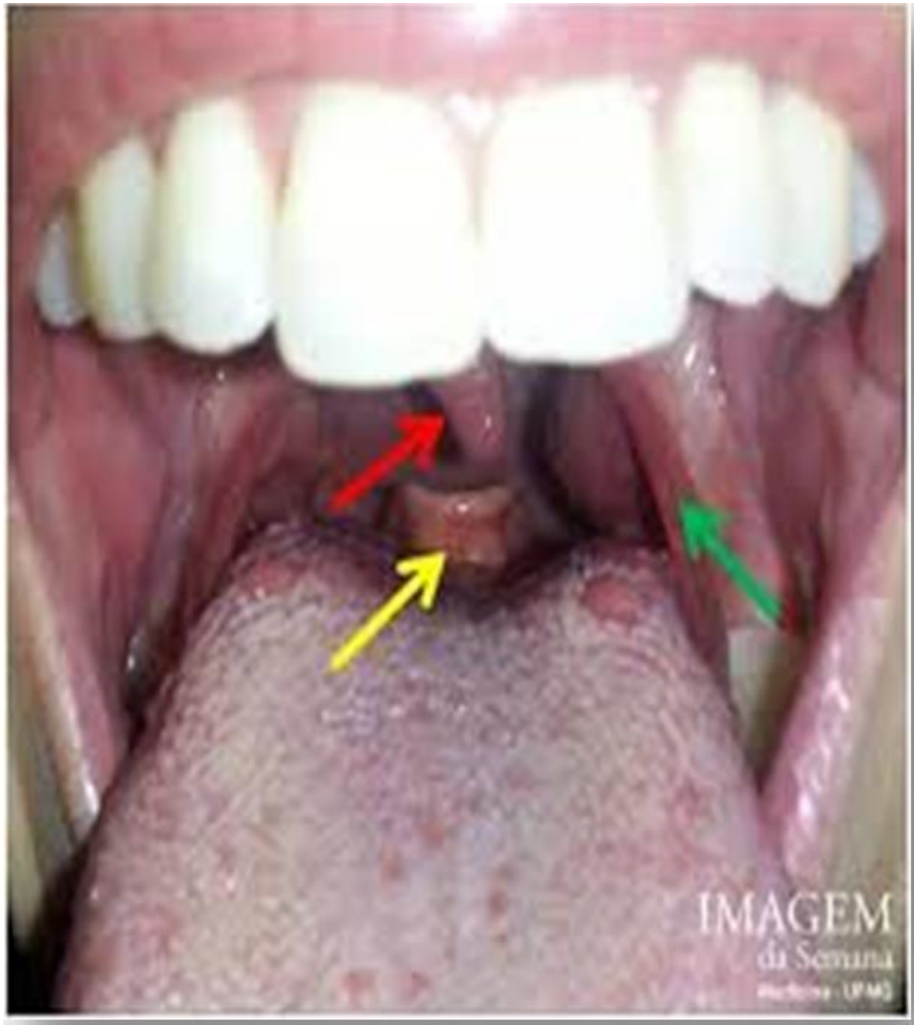
Predictors for difficult laryngoscopy :

MALLAMPATI

Upright, maximal jaw opening, tongue protrusion without phonation

Mallampati scoring system:





Class I = visualize the soft palate, uvula, anterior and posterior pillars.

Class II = visualize the soft palate and uvula.

Class III = visualize the soft palate and the base of the uvula.

Class IV = soft palate is not visible at all.

A high Mallampati score (class 3 or 4) is associated with more difficult intubation as well as a higher incidence of sleep apnea.

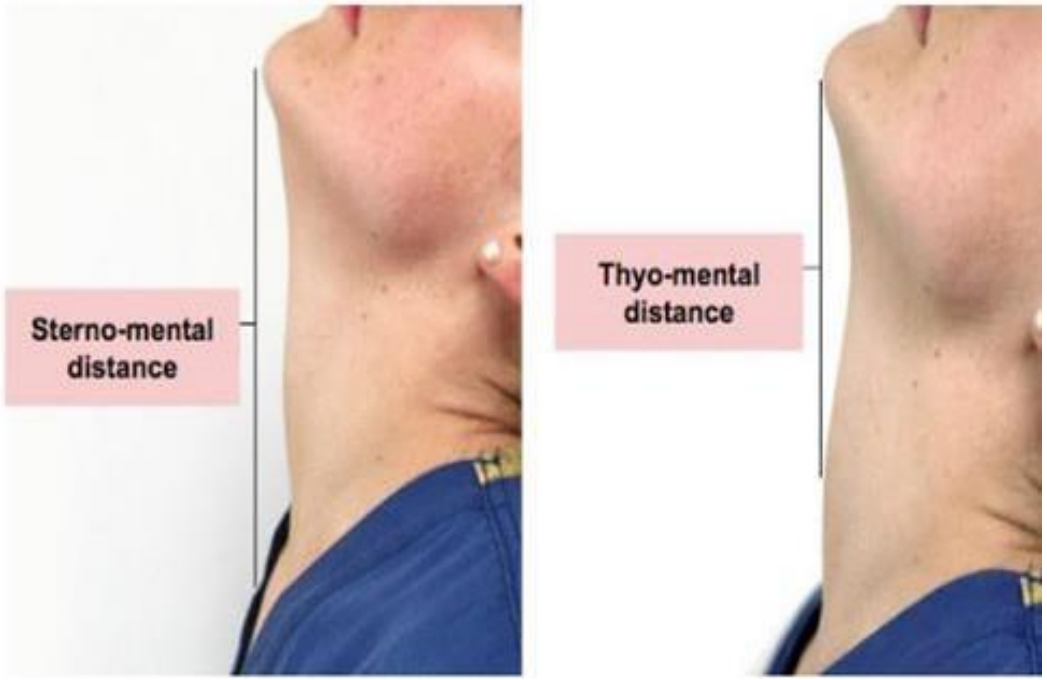
Thyromental distance (TMD) :

- Distance from the thyroid cartilage to the mental prominence when the neck is extended fully. **Should be 7 cm or more**

Sternomental distance (SMD(

- Distance from the upper border of the manubrium sterni to the tip of the chin, with the mouth closed and the head fully extended

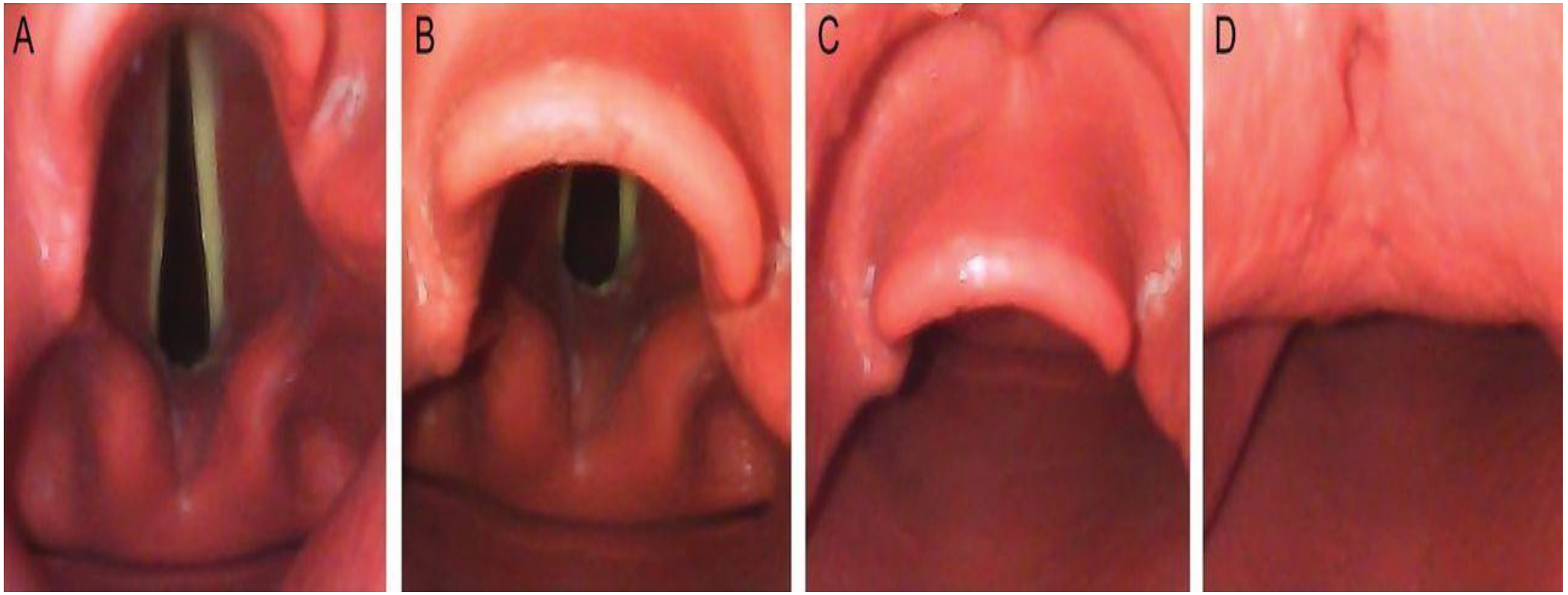
  Should be > 12.5 cm



UPPER LIP BITE TEST

- class I : lower incisors can bite the upper lip above the vermilion line
- class II : lower incisors can bite the upper lip below the vermilion line
- class III : lower incisors cannot bite the upper lip

Laryngoscopy: Cormack and Lehane



Neck movement limitation

CRANIOFACIAL DEFORMITIES

Temporomandibular joint protrusion of mandible

Treacher Collins

Pierre Robin

Goldenhar's

Cardiovascular system:

- Dysrhythmias
- Atrial fibrillation
- Heart failure
- Heart murmur
- Valvular heart disease
- Blood pressure is best measured at the end of the examination

Respiratory system :

- Cyanosis
- Pattern of ventilation
- Respiratory rate RR
- Dyspnea
- Wheeziness
- Signs of collapse
- Consolidation and effusion

Pulmonary disease :

Smoking

- Increased carboxyhemoglobin levels.
- Decrease ciliary function.
- Increase sputum production.
- Nicotine adverse effects on cardiovascular system.

- Preoperative advices:

❖ 2days cessation can decreases nicotinic effect, improve mucus clearance and decrease carboxyhemoglobin levels

❖ 8-4weeks of cessation are believed to be needed for postoperative complication reduction

Pulmonary disease

Asthma

- Obtain information about irritating factors, severity and current disease status.
- Frequents use of bronchodilators, recurrent hospitalization and requirements for systemic steroids are all indicators of severe disease.
- Those who received more than a (burst and taper) of steroids in the previous **6 months** should be considered for **stress dose** perioperatively.

Pulmonary disease

Respiratory Tract Infection

- Patients presenting on the day of surgery with symptoms and signs of a lower respiratory tract infection should be treated appropriately and postponed to such time that they are symptom free.

- Viral upper respiratory tract infection can cause bronchial reactivity which may persist for 3-4 weeks.

- Unless surgery is urgent, such patients should be postponed for 4 weeks to minimize the risk of postoperative respiratory infection

Fasting

Ingested material	Minimum fasting hours
Clear liquid (water, clear tea, black coffee, fruit juice without pulp)	**2**
Breast milk	**4**
Formula milk, non huma milk, light meal	**6**
Regular or heavy meal	**8**

- Prolonged fasting should be avoided as this is associated with dehydration, increased postoperative nausea and vomiting, electrolyte imbalance and patient distress.
- Optimal fasting hours decreases volume and acidity of stomach contents and reduce aspiration and regurgitation risk.

Common Pre-Operative labratory Tests

1 Complete Blood Count (CBC:(

- Checks for anemia, low platelet count, and signs of infection.

-2Electrolytes:

- Measures levels of sodium, potassium, and other electrolytes crucial for heart and body function.

-3Renal Function Studies:

- Includes tests for blood urea nitrogen (BUN) and creatinine to assess kidney function.

-4Coagulation Studies (PT/PTT:(

- Determine how well the blood clots, which is important to prevent excessive bleeding.

-5Glucose Test:

- Measures blood sugar levels, especially important for patients with diabetes.

Drugs to be continued till the day of operation:

- antihypertensives except ARBs & ACE inhibitors (stop 24-36 hrs. preoperatively(
- cardiac medications(beta blockers. Digoxin, calcium channel blockers(
- Diuretics
- Antidepressants
- Anxiolytics
- Thyroid medications
- Steroids & Statins
- psychiatric medications, birth control pills, eye drops
- heart burn & reflux medications
- asthma medications

Medicines with special attention

- **aspirin** :reversal of platelet inhibition within 3 days of stopping

  do not discontinue in patients with **drug eluting** coronary stents until 12months of **dual antiplatelet therapy** completed

  bare metal stents :continue for 1 month

- **Thienopyridines (clopidogrel (Plavix),ticlopidine)**

  reversal of platelet inhibition in **7 days** for **clopidogrel** ,**14 days** for **Ticlopidine**

  for **cataract** sx: no need to stop

  for **stents**, same as aspirin

- **Oral hypoglycemics**: discontinue on day of sx

Medicines with special attention

- **Diuretics** :discontinue on day of sx except **thiazides** taken as antihypertensive
- **sildenafil** :discontinue 24hrs before sx
- **COX 2 inhibitors** :continue on day of sx unless surgeon is concerned about bone healing
- **NSAIDs** :discontinue 48hrs before day of Sx
- **Warfarin** :discontinue 4days before day of sx
- **Mono amine oxidase inhibitors** :continue medication and adjust anaesthesisa plan accordingly

Chronic drug used by patients

Drugs to be stopped before the operation:

- ✓ **Aspirin and Plavix 7 days**
- ✓ **NSAID 48 hours**
- ✓ **Oral hypoglycemic agents – on the day of operation**
- ✓ **Insulin decrease or stop the dose of the morning**
- ✓ **Warfarin 4 days before the surgery**
- ✓ **Heparin 6 hours before operation**