Assessment of patients before anaesthesia

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Purpose of preoperative evaluation ?

- Doctor-patient relationship
- Surgical procedure
- Coexisting medical conditions
- Develop a management plan for perioperative anesthetic care
- Reduce peri-operative morbidity and mortality
- Reduce patient anxiety
- Obtain informed consent

The anesthetic plan :

Type of anesthesia :

General	Sedation	Neuroaxial or regional or local anesthesia
Airway management	Supplemental oxygen	Technique
Induction	Drugs	Drugs
Maintenance		
Muscle relaxation		

The anesthetic plan :

1 - Preoperative management

1. History
2. Physical examination
3. Evaluation of coexisting disease
4. Preop lab and diagnostic investigations
5. Preop medication management
6. Anesthetic note
7. Guideline for NPO status

The anesthetic plan :

2 - Intraoperative management

- Monitoring
- Positioning
- Fluid management
- Special techniques

3 - Postoperative

- Pain control
- Intensive care
  - * Postoperative ventilation
  - * Hemodynamic monitoring

1 . History :

- General history
- History of 1- Coexisting medical illnesses
  2- Medications
  3- Allergies and drug reactions
- Anesthetic history
- Family History

1 . History :

Cardiovascular system

Specific enquiries must be made about:

- Angina
  - incidence
  - precipitating factors
  - duration
  - use of anti-anginal medications, e.g. glyceryl trinitrate (GTN) oral or sublingual)
- Previous myocardial infarction and subsequent symptoms
- Symptoms indicating heart failure

1 . History :

Cardiovascular system

- myocardial infarction are at a greater risk of perioperative reinfarction

- Elective surgery postponed until at least 6 months after the event

- Untreated or poorly controlled hypertension (diastolic consistently > 110 mmHg) may lead to exaggerated cardiovascular responses

- Both hypertension and hypotension can be precipitated which increase the risk of myocardial ischemia

1 . History :

Cardiovascular system

- Heart failure will be worsened by the depressant effects impairing the perfusion of vital organs

- Valvular heart disease
    * prosthetic valves may be on anticoagulants need to be stopped or changed prior to surgery
    * Antibiotic prophylaxis

1 . History :

Active Cardiac Conditions

- Unstable coronary syndromes
  - Unstable or severe angina
  - Recent MI
- Decompensated HF
- Significant arrhythmias
- Severe valvular disease

1 . History :

Minor Cardiac Predictors

- Advanced age (>70)
- Abnormal ECG
  - -LV hypertrophy
  - -LBBB
  - -ST-T abnormalities
  - -Rhythm other than sinus
- Uncontrolled systemic hypertension

1 . History :

Surgical Risk Stratification

High Risk

Vascular (aortic and major vascular)

Intermediate Risk

Intraperitoneal and intrathoracic

, carotid, head and neck, orthopedic, prostate

Low Risk

Endoscopic, superficial procedures,

cataract, breast, ambulatory surgery

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1 . History :

Respiratory system

- **Patients with pre-existing lung disease**

- Prone to postoperative chest infections if they are obese or undergoing upper abdominal or thoracic surgery
- Chronic obstructive lung disease production of sputum (volume and color)
- Dyspnea
- Asthma, including precipitating factor
- Upper respiratory tract infection

anaesthesia and surgery should be postponed unless it is for a life-threatening condition

1 . History :

Family history

- **All patients should be asked**
  - inherited conditions in the family
  - history of prolonged apnoea
  - unexplained death
  - malignant hyperpyrexia
  - Surgery postponed

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1 . History :

SOCIAL HISTORY

- **Smoking**
  - number of cigarettes
  - amount of tobacco

  _nicotine stimulates the sympathetic nervous system
    - causing tachycardia
    - hypertension
    - coronary artery narrowing
- **Alcohol**
  - induction of liver enzymes
  - tolerance

1 . History :

SOCIAL HISTORY

- Difficulty with venous access
- Thrombosis of veins
- Withdrawal syndromes
- Look for tattooing also

Pregnancy

- increased risk of regurgitation and aspiration
- Elective surgery is best postponed until after delivery.

2 - Physical examination :

- General History
- Physical examination
- Evaluation of coexisting disease
- Preop lab and diagnostic investigations
- Preop medication management

2 - Physical examination :

* Vital signs, (CNS, heart, lung,)
* Airway,
* If regional anaesthesia is proposed
  - Assessment of the site of block
  - Back

2 - Physical examination :

vital signs

- Blood pressure
- Resting pulse
- - rate, rhythm
- Respiration
- - rate, depth, and pattern at rest
- Body temperature
- Pain score

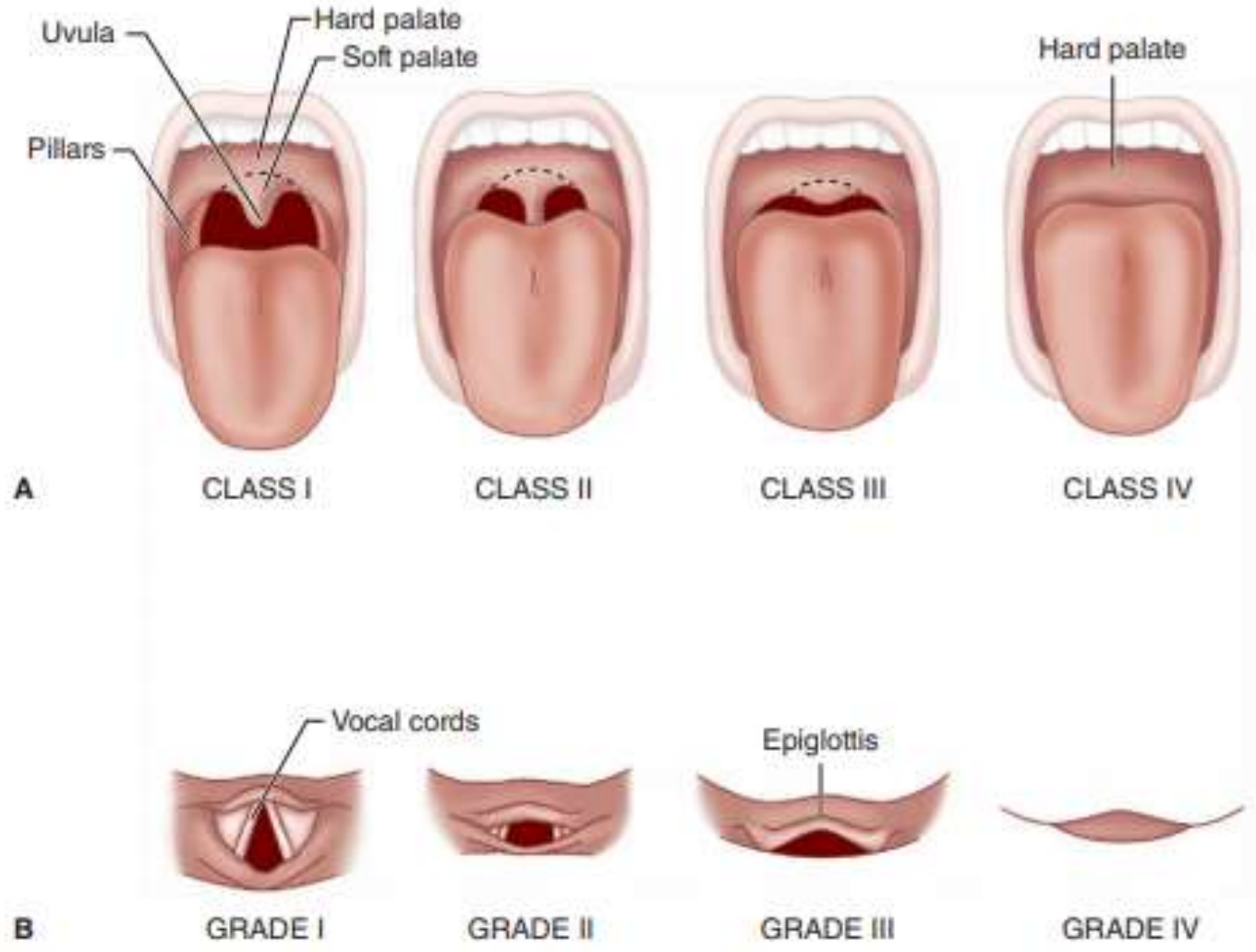
2 - Physical examination :

Airway Examination

- Mallampati classification
- Interincisors gap
- Thyromental distance
- Forward movement of mandible
- Range of cervical spine motion : flexion and extension
- Document loose or chipped teeth
- Tracheal deviation

2 - Physical examination :

Airway Examination



A: Mallampati classification of oral opening.

B: Grading of the laryngeal view.

2 - Physical examination :

Airway Examination

Interincisor gap (2- 3) fingerbreadths

Thyromental distance (3-4) fingerbreadths

2 - Physical examination :

Airway Examination

Temporomandibular joint
protrusion of mandible

2 - Physical examination :

Cardiovascular system

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

2 - Physical examination :

Respiratory system

- cyanosis
- pattern of ventilation
- respiratory rate
- Dyspnoea
- Wheeziness
- signs of collapse
- consolidation and effusion

2 - Physical examination :

Nervous system

- Chronic disease of the peripheral and central nervous systems
- evidence of motor or sensory impairment recorded
- dystrophic myotonica

2 - Physical examination :

Musculoskeletal

- restriction of movement and deformities
- reduced muscle mass
- peripheral neuropathies
- pulmonary involvement
- Particular attention to the patient's cervical spine and temporomandibular joints

3-Evaluation of coexisting disease:

Cardiovascular disorders :

- Hypertension
- Ischemic heart disease
- Heart failure
- Valvular heart disease
- Patients with rhythm disturbances
- Patient with coronary stents
- Patients with pacemakers and ICD devices
- Patients with peripheral arterial disease

3-Evaluation of coexisting disease:

Pulmonary disorder

- Upper respiratory tract infection
- Asthma and COPD
- Chronic smokers
- Restrictive lung diseases
- Obstructive sleep apnoea
- Patients scheduled for lung resection

3-Evaluation of coexisting disease:

Endocrine system

- Diabetes Mellitus
- Thyroid disorders
- Hypothalamic- pituitary- adrenal disorders
- Pheochromocytoma

3-Evaluation of coexisting disease:

Endocrine system

Diabetes Mellitus

- Diabetes : control blood sugar
- CVS - HT, myocardial ischemia
- CNS - stroke, weakness, autonomic neuropathy peripheral neuropathy
- GI – gastro paresis
- Stiff joint : cervical spine, TM joint

3-Evaluation of coexisting disease:

GIT system

- Liver disease
- Gastroesophageal reflux symptom increase risk of pulmonary aspiration

3-Evaluation of coexisting disease:

Renal system

* Surgical stress, anaesthetic agents tend to decrease GFR
* Renal impairment - CKD
  - AKI
* Contrast induced nephropathy

* The emphases of the preoperative evaluation of patients with renal insufficiency are on the cardiovascular system, cerebrovascular system, fluid volume, and electrolyte status

4-Preop lab and diagnostic investigations:

Complete blood count	Serum creatinine and electrolytes	Blood glucose	ECG	X-ray chest	Coagulation studies
Major surgery	Kidney disease,	Diabetes	Cardiac disease	Chronic lung	Liver disease
Neonates	Hypertension	Family H/o diabetes	Hypertension	disease	Renal dysfunction
Males > 70 years	Diabetes	Obese	Chronic lung	Heavy smoker	Family H/o Bleeding disorder
Females >45 years	Poor nutritional states	Stroke	disease	Radiation therapy	On anticoagulant drugs
Chronic renal, liver, lung	Stroke	Poor nutritional states	Diabetes	Aortic aneurysm	
disease	Medication	Steroids use	Thyroid disease	Cardiomegaly	
Anemia	- Digoxin	Cushing's, Addison's	Morbid obesity		
Malignancy	- Diuretics		Digoxin therapy		
Poor nutritional states	- Steroids		Males > 45 years		
Vascular aneurysms	- Chemo-therapy		Females >55 years		

-5-
Preop medication management

BOX 38-3 *Preoperative Management of Medications*

Instruct patients to take these medications with a small sip of water, even if fasting.

1. **Antihypertensive medications**
   Continue on the day of surgery.
   - **Possible exception:** For patients undergoing procedures with major fluid shifts, or for patients who have medical conditions in which hypotension is particularly dangerous, it may be prudent to discontinue ACEIs or ARBs before surgery.
2. **Cardiac medications (e.g., β-blockers, digoxin)**
   Continue on the day of surgery.
3. **Antidepressants, anxiolytics, and other psychiatric medications**
   Continue on the day of surgery.
4. **Thyroid medications**
   Continue on the day of surgery.
5. **Birth control pills**
   Continue on the day of surgery.
6. **Eye drops**
   Continue on the day of surgery.
7. **Heartburn or reflux medications**
   Continue on the day of surgery.
8. **Narcotic medications**
   Continue on the day of surgery.
9. **Anticonvulsant medications**
   Continue on the day of surgery.
10. **Asthma medications**
    Continue on the day of surgery.
11. **Steroids (oral and inhaled)**
    Continue on the day of surgery.
12. **Statins**
    Continue on the day of surgery.
13. **Aspirin**
    Consider selectively continuing aspirin in patients where the risks of cardiac events is felt to exceed the risk of major bleeding. Examples would be patients high-grade CAD or CVD. If reversal of platelet inhibition is necessary, aspirin must be stopped at least 3 days before surgery. Do not discontinue aspirin in patients who have drug-eluting coronary stents until they have completed 12 months of dual antiplatelet therapy, unless patients, surgeons, and cardiologists have discussed the risks of discontinuation. The same applies to patients with bare metal stents until they have completed 1 month of dual antiplatelet therapy. In general, aspirin should be continued in any patient with a coronary stent, regardless of the time since stent implantation.
14. **Thienopyridines (e.g., clopidogrel, ticlopidine)**
    Patients having cataract surgery with topical or general anesthesia do not need to stop taking thienopyridines. If reversal of platelet inhibition is necessary, then clopidogrel must be stopped 7 days before surgery (14 days for ticlopidine). Do not discontinue thienopyridines in patients who have drug-eluting stents until they have completed 12 months of dual antiplatelet therapy, unless patients, surgeons, and cardiologists have discussed the risks of discontinuation. The same applies to patients with bare metal stents until they have completed 1 month of dual antiplatelet therapy.
15. **Insulin**
    For all patients, discontinue all short-acting (e.g., regular) insulin on the day of surgery (unless insulin is administered by continuous pump). Patients with type 2 diabetes should take none, or up to one half of their dose of long-acting or combination (e.g., 70/30 preparations) insulin, on the day of surgery. Patients with type 1 diabetes should take a small amount (usually one third) of their usual morning long-acting insulin dose on the day of surgery. Patients with an insulin pump should continue their basal rate only.
16. **Topical medications (e.g., creams and ointments)**
    Discontinue on the day of surgery.
17. **Oral hypoglycemic agents**
    Discontinue on the day of surgery.
18. **Diuretics**
    Discontinue on the day of surgery (exception: thiazide diuretics taken for hypertension, which should be continued on the day of surgery).
19. **Sildenafil (Viagra) or similar drugs**
    Discontinue 24 hours before surgery.
20. **COX-2 inhibitors**
    Continue on the day of surgery unless the surgeon is concerned about bone healing.
21. **Nonsteroidal antiinflammatory drugs**
    Discontinue 48 hours before the day of surgery.
22. **Warfarin (Coumadin)**
    Discontinue 4 days before surgery, except for patients having cataract surgery without a bulbar block.
23. **Monoamine oxidase inhibitors**
    Continue these medications and adjust the anesthesia plan accordingly.

-6- Anesthetic note

ASA :

American
Society of
Anaesthesiologist

ASA Grading and Predictive Mortality

ASA Grade	Definition	Mortality %
I	Normal healthy individual	0.06
II	Mild systemic disease that doesn't limit activity	0.4
III	Severe systemic disease that limits activity	4.5
IV	Severe systemic disease that is constant threat to life	23
V	Moribund, not expected to survive 24hrs with or without surgery	51

7- NPO :

- Adult : solid food →8 hr (after midnight of the day before surgery)
- Infant and children : milk formula
  solid food 6 hr
  breast milk → 4 hr
- Clear liquid : up to 2 hr before the procedure

7- NPO :

Liquid and Food Intake	Minimum Fasting Period (hours)
Clear liquids (for example, water, clear tea, black coffee, carbonated beverages, and fruit juice without pulp)	2
Breast milk	4
Nonhuman milk, including infant formula	6
Light meal (for example, toast and clear liquids)	6
Regular or heavy meal (may include fried or fatty food, meat)	8

Thank You

End of lecture