Preoperative preparation

Many patients requiring elective procedures arrive in hospital on the day of surgery. Therefore a 'preoperative assessment' must be done to get all information, comorbidities, and then organize anesthetic, surgical and postoperative care before surgery actually takes place. First, a history should be taken, examination performed and the relevant investigation ordered.

History taking: -Fixed questions are needed to determine 'fitness' for surgery. For each system a relevant history should be taken, noting what problems have occurred and when.

1-Cardiovascular: ischemic heart disease: angina, myocardial infarction, hypertension, heart failure, dysrhythmia, Peripheral vascular disease, deep vein thrombosis and pulmonary embolism.
2- Respiratory: chronic obstructive pulmonary disease, asthma, respiratory infections.
3- Gastrointestinal: peptic ulcer disease and gastroesophageal reflux.
4- Liver disease.
5- Genitourinary tract: urinary tract infection, renal dysfunction.
6- Neurological: epilepsy, cerebrovascular accidents and transient ischemic attacks, psychiatric disorder's cognitive function.
7- Endocrine/metabolic: diabetes, thyroid dysfunction, phaeochromocytoma, porphyria.
8-Locomotor system: osteoarthritis, inflammatory arthropathy, such as rheumatoid arthritis.
9-Other: human immunodeficiency virus, hepatitis, tuberculosis, malignancy, allergy.
10-Previous surgery: problems encountered, family history of problems with anesthesia.

Examination

■ General: Positive findings even if not related to the proposed procedure should be explored.
■ Surgery related: Type and site of surgery, complications which have occurred due to underlying pathology.
■ Systemic: Comorbidities and their severity.
■ Specific: For example, suitability for positioning during surgery.

Investigations Minor and intermediate surgery generally requires no routine investigations unless the patient has comorbidities, Investigations includes: -

•**Full blood count** (FBC) is needed for major operations, elderly and in those with anemia or pathology with ongoing blood loss.
•**Urea and electrolytes** (U&E) are needed before all major operations, in most patients over 60 years of age especially with cardiovascular, renal and endocrine disease or if significant blood loss is anticipated. It is also needed in those on medications which affect electrolyte levels, e.g., steroids, diuretics, digoxin, NSAIDs (non-steroidal anti-inflammatory drugs), intravenous fluid or nutrition therapy.
•**Electrocardiography** is required for those patients aged over 60 years, cardiovascular, renal and cerebrovascular involvement, diabetes and in those with severe respiratory problems.
•**Clotting screen** If a patient has a history of bleeding diathesis, liver disease, eclampsia, cholestasis or has a family history of bleeding disorder, or is on antithrombotic or anticoagulant agents.

•**Chest radiography** A chest x-ray is not required unless the patient has a significant cardiac history, cardiac failure, severe chronic obstructive pulmonary disease (COPD), acute respiratory symptoms, pulmonary cancer, metastasis or effusions, or is at risk of tuberculosis.
•**Urinalysis** should be performed on all patients to detect urinary infection, biliuria, glycosuria and osmolality.
•**b-Human chorionic gonadotrophin** Pregnancy needs to be ruled out in all women of childbearing age.
•**Blood glucose and HbA1c** should be performed in patients with diabetes mellitus and endocrine problems.
•**Arterial blood gases** it allows detailed assessment of severe respiratory conditions and acid–base disturbances.
•**Liver function tests** are indicated in patients with jaundice, known or suspected hepatitis, cirrhosis, malignancy or patients with poor nutritional reserves.
•**Other investigations** Further investigations to assess capacity of specific organ system and risks associated.

Preoperative management of patients with systemic disease

Cardiovascular disease;
Hypertension, ischemic heart disease
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Dysrhythmias:
- In patients with atrial fibrillation, beta-blockers, digoxin or calcium channel blockers should be started preoperatively (or continued if the patient is already on the treatment) in order to control the rate and possibly rhythm. Warfarin in patients with atrial fibrillation should be stopped 5 days preoperatively to achieve an INR (international normalized ratio) of 1.5 or less, which is safe for most surgery; an alternative anticoagulation is not required in the perioperative period.

- Implanted pacemaker and cardiac defibrillator checks and appropriate reprogramming should be done preoperatively. -Bipolar diathermy activity during surgery may be sensed by the pacemaker as ventricular fibrillation. Therefore, cardioversion and over pace modes may be turned off (switch on after surgery).

Anemia and blood transfusion.

Respiratory disease:

Right heart failure is present: dyspnea, fatigue, tricuspid regurgitation, hepatomegaly and oedema of the feet.

The patient is young with COPD (indicates a rare and life-threatening condition).

Stopping smoking reduces carbon monoxide levels and the patient is better able to clear sputum.

- Asthma, severity of the asthma, precipitating causes, frequency of bronchodilator and steroid use

Patients should continue to use their regular inhalers until the start of anesthesia.

- Infection, chest infection should be treated with antibiotics, physiotherapy, operation rescheduled after 4–6 weeks.

Gastrointestinal disease:

Nil by mouth and regular medications, Patients are advised not to take solids within 6 hours and clear fluids, (isotonic drinks and water) within 2 hours before anesthetic to avoid the risk of acid aspiration syndrome. Infants are allowed a clear drink up to 2 hours, mother's milk up to 3 hours and cow or formula milk up to 6 hours before anesthetic. If the surgery is delayed, oral (until 2 hours of surgery) or intravenous fluids should be started especially in groups of patients, e.g. children, elderly and diabetics. Patients can continue to take their specified routine medications with sips of water in the nil by mouth period.

- Regurgitation risk patients with hiatus hernia, obesity, pregnancy and diabetes are at high risk of pulmonary aspiration even if they have been NBM.

Liver disease: any evidence of clotting problems, renal involvement, and encephalopathy The blood tests which need to be performed are liver function tests, coagulation, blood glucose, urea and electrolyte levels.

Genitourinary disease: Underlying conditions leading to chronic renal failure, treat acidosis, hypocalcemia and hyperkalemia of greater than 6 mmol/L., continue peritoneal or hemodialysis until a few hours before surgery.

-Urinary tract infection should be treated before elective surgery
-Malnutrition: Body mass index (BMI) is weight in kilograms divided by height in meters squared. A BMI of less than 18.5 indicates nutritional impairment and a BMI of less than 15 is associated with significant hospital mortality. Nutritional support for a minimum of 2 weeks before surgery is required.
-Obesity Morbid obesity is defined as BMI of more than 35 and is associated with increased risk of postoperative complications.
-Associated sleep apnea Patients should be asked to continue to use a CPAP device for obstructive sleep apnea and cholesterol-reducing agents in the perioperative phase. If possible, delay surgery until the patients are more active and have lost weight.
-Diabetes mellitus Diabetes and associated cardiovascular and renal complications should be controlled to as near normal level as possible before elective surgery. Any history of hyper- and hypoglycemic episodes, and hospital admissions, should be noted. HbA1c levels should be checked ,Patients with diabetes should be first on the operating list and if they are operated on in the morning advised to omit the morning dose of medication and breakfast. Though tight control of blood sugar is not needed, the patient's blood sugar levels should be checked every 2 hours. For those on the afternoon list, breakfast can be given with half their regular dose of insulin (or full-dose oral anti-diabetic agents) and then managed with regular blood sugar checks as above

Neurological and psychiatric disorders:
patients with a history of stroke, pre-existing neurological deficit should be recorded. These patients may be on antiplatelet agents or anticoagulants. If it is felt that the neurological and cardiovascular thrombotic risks are low, antiplatelet agents should be withdrawn (7 days for aspirin, 10 days for clopidogrel). If the thrombotic risks are perceived to be high and the patient is undergoing surgery with a high risk of bleeding, aspirin alone should be continued.
Anticonvulsant and antiparkinsonian medication is continued perioperatively to help early mobilization of the patient. Lithium should be stopped 24 hours prior to surgery; blood levels should be measured to exclude toxicity. The anesthetist should be informed if patients are on psychiatric medications such as tricyclic antidepressants or monoamine oxidase inhibitors, as these may interact with anesthetic drugs.
Risk factors for thrombosis: -
1.Age >60 years Obesity:2. body mass index (BMI) >30 kg/m2 3. Trauma or surgery (especially of the abdomen, pelvis and lower limbs),4. anesthesia >90 minutes 5. Reduced mobility for more than 3 days 6. Pregnancy/puerperium7. Varicose veins with phlebitis 8. Drugs, e.g. estrogen contraceptive, hormone replacement therapy (HRT),9. smoking 10. Known active cancer or on treatment, significant medical comorbidities, critical care admission,11. Family/personal history of thrombosis

Musculoskeletal

Rheumatoid arthritis can lead to unstable cervical spine with the possibility of spinal cord injury during intubation. Therefore, flexion and extension lateral cervical spine x-rays should be obtained

Airway assessment the ability to intubate the trachea and oxygenate the patient are basic and crucial skills of the anesthetist. The ease or difficulty in performing airway maneuvers can be predicted by simple examination findings of full mouth opening (modified Mallam Pati class), jaw protrusion, neck movement and thyromental distance