

Preoperative patient preparation

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General points

- ∞ *Gather & record concisely all relevant **information**.*
- ∞ *Devise a **plan** to minimize risk & maximize benefit for the patient.*
- ∞ ***Consider** possible adverse events & plan how to deal with them.*
- ∞ ***Communicate** to ensure that everyone (including the patient) understands the surgical plan.*

History & Examination

- ∞ *This should be in sufficient details.*
- ∞ *The aim is not only to explore **overt** features, but also to find **covert** features & the **cause** of the illness, so that surgery can safely be done without any risk of recurrence.*

Investigations

∞ Full blood count

- *if significant peroperative blood loss is anticipated.*
- *Older & chronically ill patients who may have undiagnosed anemia.*
- An abnormal white cell or platelet count will need further investigation to discover its cause.

∞ Urea & electrolytes

- *Age > 65 years.*
- *Significant amount of blood loss preoperatively.*
- *History of cardiovascular, pulmonary or renal problems.*
- *Diuretics use.*

∞ *Liver function tests (LFTs)*

- *Jaundice, hepatitis, cirrhosis.*
- *Malignancy.*
- *Portal hypertension.*
- *Poor nutritional reserves.*
- *Clotting problems.*
 - *Patient on anticoagulants, deranged LFTs or evidence of bleeding diathesis.*
- *If the surgery may involve heavy blood loss.*

∞ *Hepatitis & HIV serology*

- *Any patient with a past history of high-risk exposure to infected body fluids, hepatitis or disorders associated with AIDS.*

∞ *Electrocardiography*

- *Age > 40 years.*
- *if significant blood loss is anticipated.*
- *History of cardiovascular, pulmonary or anesthetic problems.*

∞ *Chest radiography*

- *Significant cardiac history (including hypertension) or respiratory problems.*

∞ **Urinalysis**

○ **Dipstick urine test**

- *to detect urinary infection, biliuria, glycosuria & inappropriate osmolality.*
- More detailed urine analysis is indicated if the patient has a history of urinary tract problems or the urinalysis tests are abnormal.

∞ **β -Human chorionic gonadotrophin**

- *To confirm or exclude pregnancy in all female patients of childbearing age*
 - *Presenting with abdominal pain to exclude an ectopic pregnancy*
 - *in any unconscious female patient.*

Management Plan

- ∞ *This should be made in discussion with the patient & their immediate carer.*
- ∞ *First, the specific surgical **diagnosis** or diagnoses should be discussed.*
 - *This includes systematic & logical presentation of any further investigations planned & treatment proposed.*
 - *The possibility of not intervening should always be offered & the patient should be given ample time to voice their own concerns.*
- ∞ *Second, discuss medical **co-morbidities** (if any) that will complicate the management plan.*
- ∞ *Third, discuss the **complications** that can happen with the proposed treatment.*

Consent form

- ∞ Informed consent involves
 - discussing anesthetic management plan, alternatives
 - potential complication

NPO Guideline

- ∞ NPO 6-8 hour before surgery
- ∞ Clear liquid diet: uptill 2 hr before surgery

Children

- ❖ Clear liquid: 2 hour
- ❖ Breast milk: 4 hour
- ❖ Infant formula: 6 hour
- ❖ solid diet: 8 hour

Premedication

- ∞ Psychological support
- ∞ Medications

Antibiotic prophylaxis

- ∞ In clean surgery, **single dose** is given at the time of induction of anesthesia.
 - Additional doses depends on the contamination.
- ∞ Choice depends on the likely organism encountered in any surgery.

Identification of high-risk patient

American Society of Anesthesiologists (ASA) score

1. A normally healthy individual: no organic, physiological, biochemical or psychiatric disturbance.
 2. A patient with mild to moderate systemic disease, may or may not be related to disorder requiring surgery, eg DM, HTN.
 3. A patient with severe systemic disease that is not incapacitating, eg heart disease with limited exercise tolerance, uncontrolled DM or HTN.
 4. A patient with incapacitating systemic disease that is a constant threat to life with or without surgery, eg congestive cardiac failure, severe & persistent angina.
 5. A moribund patient who is not expected to live & where surgery is performed as a last resort, eg ruptured aortic aneurysm.
- E. A patient who requires an emergency operation.

Specific preoperative problems

∞ 14 ∞

Jaundice

- ∞ *If the cause of jaundice is obstruction to the biliary tree it is important to ascertain whether there is associated sepsis (cholangitis).*
 - *Infective causes may represent an increased risk to members of staff potentially exposed to body fluids.*
- ∞ *Impaired clotting occurs because of vitamin K deficiency & this should be corrected.*
- ∞ *There is an increased risk of renal failure (hepatorenal syndrome) & so patients must be kept well hydrated.*
- ∞ *There is also a risk of other infections, so that prophylactic antibiotics will be needed.*

Renal impairment

∞ Prerenal

- *If it is a new finding, suspect a prerenal cause such as volume depletion.*
- *If previous renal function tests are available for comparison, a **disproportionate rise in urea** as compared to creatinine is diagnostic.*
- *Consider other causes of poor perfusion, esp. impairment of cardiac output.*

∞ Renal

- *A low urine output may arise following prolonged **dehydration** or administration of **nephrotoxic drugs** (eg NSAIDs & aminoglycosides).*
- *Patients with **CRF not on dialysis** may develop end-stage failure by an episode of intraoperative hypotension or inadequate fluid management.*
- *Patients **on dialysis** will need to be treated 24 hours before surgery to ensure optimal fluid & electrolyte balance, & to allow the necessary heparinisation to wear off.*
 - *Further dialysis should be delayed for 24 hours after surgery.*
- ***Transplant patients** should continue their immunosuppression & be covered with prophylactic antibiotics.*

∞ **Postrenal**

- *This includes **obstruction** from any cause, eg renal calculi & prostate enlargement, or a blocked catheter.*
- *Urinary tract infection (**UTI**)*
 - *Uncomplicated urine infections are common in female patients.*
 - *Male patient with outflow uropathy will almost invariably have chronically infected urine.*
- ***Treat UTI** before high-risk elective surgery (eg joint replacement surgery) & wait for a negative result before proceeding.*
- ***Urgent procedures** rarely need delaying because of UTI but antibiotics should be started & care taken to ensure that the patient maintains a good urine output.*

Diabetes mellitus

- ∞ *These patients are at **high risk of complications**.*
 - *Increased risk of sepsis – local & general.*
 - *Neuropathic complications – pressure sores.*
 - *Vascular complications – cardiovascular, cerebro-vascular, peripheral.*
 - *Renal complications.*
 - *Fluid & electrolyte disturbances.*
- ∞ *A careful preoperative assessment of cardiovascular, peripheral vascular & neurological status should always be made.*
- ∞ ***Risk-reduction strategies** may include anti-lipidemic drugs, diabetic control & treating significant vascular stenoses.*

- ∞ 12-hour fast is recommended before surgery
 - Undiagnosed gastroparesis may prolong retention of food in the stomach
- ∞ Fasting blood glucose should be measured on the day of operation
- ∞ Intraoperative measurements should be made if the operation is long
- ∞ Post. surgery: FS 2 hrs after, and then Q4H

Type 2 Diabetics Not on Insulin

- ∞ Oral agents given on the day before surgery
- ∞ Withheld on the day of surgery
- ∞ If surgery is minor: need observation only
- ∞ In all other cases use GIK (glucose-insulin-K⁺)
- ∞ Continue GIK until pts are ready to eat
- ∞ Then revert to oral drugs with the 1st meal

Standard GIK

- ∞ 500 ml 10% dextrose solution
- ∞ + 15 Units of short-acting insulin
- ∞ + 10 mmol KCl
- ∞ Infuse at 100 ml/hr

Diabetics on Insulin

- ∞ Long-acting insulin should be stopped several days before operation and be replaced with
 - intermediate-acting insulin
 - or with multiple injections of short-acting insulin through the day with an intermediate-acting preparation at night
 - ***Sliding scale SC insulin can also be given,***
 - ***150 mg dl⁻¹ 6U 200 10U 250 14U 300 18U 350 22U 400 or more.***
- ∞ GIK should be started on the morning of operation and continued until pt is ready to eat
- ∞ Then give 1 dose of SQ insulin before 1st meal and discontinue GIK in 2-3 hours

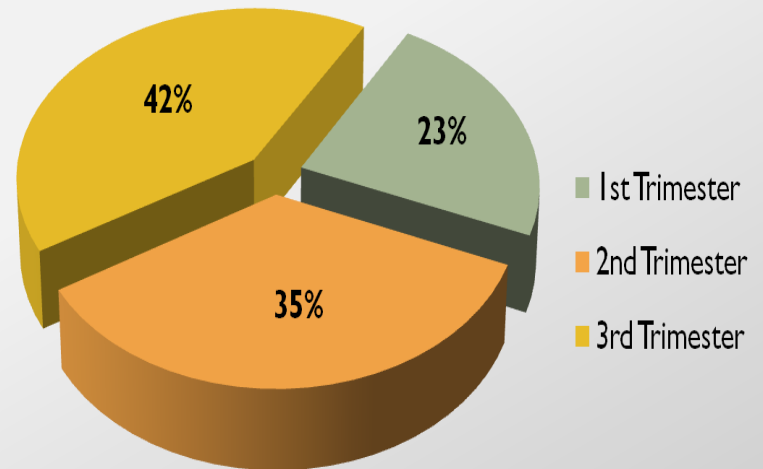
- ∞ *Serum potassium level must be closely monitored.*
- ∞ *Life-threatening **lactic acidosis** can occur in patients taking **metformin** who underwent contrast angiography.*
 - *it should be discontinued 24 hours before the test & restarted 24–48 hours afterwards.*

Pregnancy

Incidence of Surgery

- 0.3% to 2.2% of pregnant women undergo surgeries
- Commonest surgery - Appendicectomy

Distribution of surgery according to trimesters



Surgeries in pregnancy

- **Pregnancy related**
 - Cervical encirclage
 - Fetal surgery
 - Ovarian Cystectomy
- **Not related to pregnancy**
 - Appendicectomy, Cholecystectomy
 - Trauma
 - Malignancies

How these patient are different from other surgical patients?

∞ Two patients - mother
- fetus

∞ Physiological changes in mother

When to do the surgery??

Depends on the balance between maternal and fetal risk and urgency of the surgery

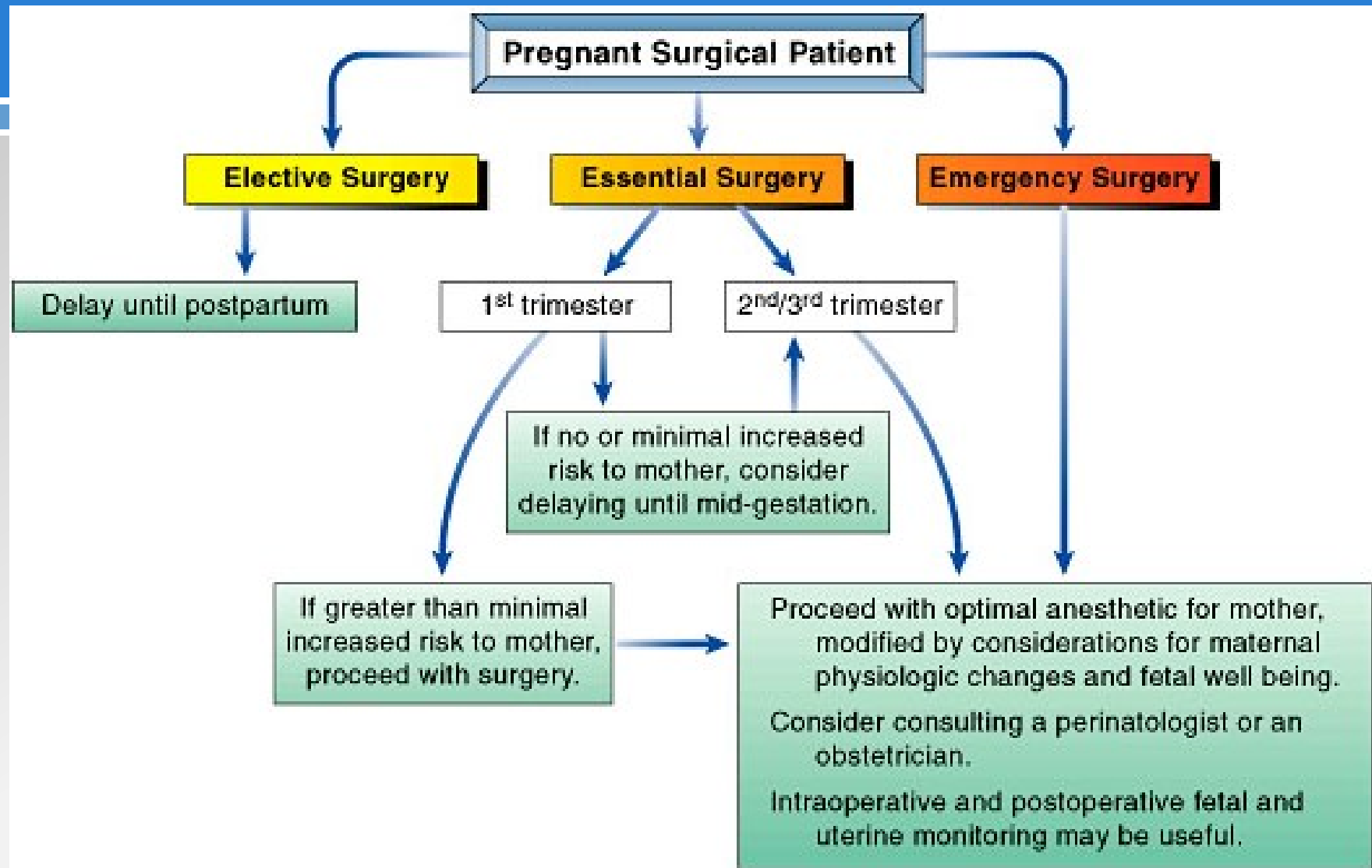
∞ 1st trimester – Organogenesis

- Increased fetal risk for teratogenesis and abortion

∞ 3rd trimester – Peak of physiological changes of pregnancy

- Increased maternal risk
- Increased risk of preterm labour

∞ Thus **2nd trimester** is considered to be a ideal time for non emergency, essential surgeries



Recommendations

- ∞ It is mandatory to obtain an **obstetric consultation** before performing any non obstetric surgery or any invasive procedures
- ∞ A pregnant woman should **never be denied indicated surgery**, regardless of trimester.
- ∞ **Elective surgery should be postponed**
- ∞ If possible, non-urgent surgery should be performed in the **second trimester** when preterm contractions and spontaneous abortion are least likely.

Cardiac disease

- ∞ Look for signs and symptoms of **unstable angina, congestive heart failure, arrhythmia**
 - these should be treated before elective surgery
- ∞ **Less than 6 months interval** between MI and surgery is likely to result in reinfarction
- ∞ Perioperative cardiovascular risk
 - clinical predictors
 - surgical procedure
 - exercise tolerance

∞ Clinical predictors

Majors: unstable angina, decompensated heart failure, significant arrhythmia, severe valvular disease

∞ Surgical procedure

- **High**: Emergency major, vascular surgery, prolong operation with large fluid shift
- **Intermediate**: carotid endarterectomy, head and neck, intraperitoneal, orthopedic, prostate
- **Low**: endoscopy, breast, superficial

Exercise tolerance

- 1 MET = eating / dressing
- 4 METs (metabolic equivalents of task): climbing two flights of stairs
- 6 MET = short run
- >10 MET = able to participate in strenuous sport

∞ Patient risk for MI postop

- DM
- Peripheral vascular disease
- HT
- Tobacco used
- Hypercholesterolemia

- ⌘ Risk associated with surgery influences decision to make further test
- ⌘ Perioperative morbidity may be decreased with beta blocker
- ⌘ Continue medication except anticoagulant or antifibrinolytic: aspirin, warfarin, ticlopidine etc.
- ⌘ Digitalis : discontinue except in severe arrhythmia

Hypertension

- ∞ History of end organ damage: cardiac ischemia, renal, neurological
- ∞ Elective surgery should be delayed if **DBP $\geq$ 110 mmHg** with or without new onset of headache,
 - but if no sign of end organ damage surgery may be proceed
 - In DM keep DBP < 90mmHg
- ∞ Aggressive treatment is associated with reduction in long term risk
- ∞ Continue medication until day of surgery

Pulmonary disease

∞ History of reactive airway Asthma

- Frequency, reversal of symptoms, interval, last attack, history of steroid used
- Optimize good condition before elective surgery

∞ **COPD**: new onset of bronchospasm, dyspnea and reduced exercise tolerance should be indicated to delay elective surgery

∞ Recent **URI** is controversial , elective surgery should be delayed several weeks

- ∞ Continue medication
- ∞ Aerosol medication before surgery
- ∞ Risk reduction of pulmonary complication
 - Smoking cessation
 - Education of lung expansion maneuver and deep breath exercise (incentive spirometry) for postop
 - Antibiotic
 - Hydration

- ∞ Smoking cessation
 - 24 hr: decrease carboxyhemoglobin
 - 2-3 day: increase ciliary function but increase secretion
 - 1-2 wk: decrease secretion
 - **4-8 wks: decrease postop pulmonary complication**

Thyroid disease

- ∞ Clinical manifestation of hyperthyroid or hypothyroid
- ∞ **Hyperthyroid**: palpitation, weight loss, heat intolerance, moist skin → **thyroid storm**
- ∞ **Hypothyroid**: bradycardia, cold intolerance, slow mental function → **hypothermia, hypoventilation**
- ∞ Large **mass** may distort airway: difficult intubation
- ∞ **Medication continue**

The End!