

430 SURGERY TEAM



General Complications Of Surgery

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Green: Doctor's notes & explanation during the lecture.

Blue: Further explanation & team's notes.

Red: important notes.

Introduction:

- All surgeons expect speedy, uneventful recovery
- Always recognized the risk of complications
- Affects result of surgery: poor scar, hernia
- Prolongs hospital stay and cost
- Increased morbidity/ mortality
- Medico-legal issues

Methods of reducing post-operative complications:

- Good pre-operative evaluation
- Optimizing the general condition of patients: a surgeon should delay his surgery until patients health status reaches optimality or relative optimality, even if that means delaying surgery, especially when is not a emergency surgery. So Medical problems and Nutritional issues must be corrected before surgery.
- Minimizing preoperative hospital stay: reduces likelihood of complications like hospital associated infections and DVT.
- Good surgical technique
- Early mobilization

Phases of Post-operative care:

- *Recovery room*
- *Surgical ward*
- *On discharge*

Complications developing in the recover room:

- The complications in this stage are mostly due to cardiopulmonary disease. These happens when patients are recovering from anaesthesia, so Anaesthesiologists are people in charge of these problems.
- Airway obstruction
- Acute pulmonary complications
- Cardio-vascular complications
- Fluid derangements
- **Reactive haemorrhage is the most important post-operative complication in the recovery room**
 - Slipped ligature**
 - Dislodgement of clot**

General “General” complications:

- Nausea/ vomiting: this maybe due to effects of drugs given to the patients. This usually isn't a significant problem, antiemetics can be given to stop vomiting in sever cases.
- Persistent hiccups: -gastric distension: gastrointestinal peristalsis can be greatly reduced and as a result gas can build up in the stomach causing gastric distension and irritation of the diaphragm (diaphragmic irritation causes hiccups). This can be corrected by decompressing the stomach with a nasogastric tube. Otherwise, renal failure must be exculded.
- Headache - spinal anaesthesia
- IV site- bruising, haematoma, phlebitis, vein thrombosis, air embolism, infection

Pulmonary Complications:

- Largest single cause of post-op. morbidity
- 2nd most common cause of death in over 60 age
- Higher risk to patients with chronic pulmonary disease (COPD)

1-Atelactasis:

- Inability to breath deeply/ cough up secretions: happens in cases when patient breath shallowly and don't cough. Secretions build up and collapse airways. This is complicated by process like Paralysis of cilia (due to anesthetics), impaired diaphragmatic movement, abdominal distension, pain
- Bronchus/bronchiole obstructed by secretions
- Distal alveolar space close (atelectasis), solidify
- Usually occurs within 24 hours
- Tachypnoea, tachycardia, mild fever (most common cause of increased temperature after operation), ↓ breath sound on affected side, ↓PaO₂
- Chest X-ray- areas of opacification
- If left untreated: Infection- lobar or bronchopneumonia can develop
- Prophylaxis: stop smoking, physiotherapy for COPD
- Delay surgery if chest infection
- Treatment: encourage deep breathing/cough, mobilization, analgesia, chest physiotherapy
- If severe hypoxia develops- intubation, suction, bronchoscopy

2-Pulmonary Infection:

- Follows atelectasis, gastric aspiration
- Strep. pneumo., H influenzae or gram negatives are the most common causatives
- Pyrexia, tachypnoea, greenish sputum
- ↓ breath sounds, coarse crepitations, bronchial breath.
- Chest X-ray: patchy fluffy opacities
- Treatment: antibiotics, encourage to cough
- Severe cases: O₂, bronchoscopy, ventilation

3-Respiratory Failure:

- Definition: Inability to maintain normal PaO₂ & PaCO₂ levels
- Normal PaO₂ = 11.6 -13 kPa
- Resp. failure PaO₂ < 6.7 kPa
- Central cyanosis
- ABG- key to early recognition
- Treatment: Intubation and ventilation

4-Acute respiratory distress syndrome (ARDS):

- Characterized by: Impaired oxygenation, diffuse lung opacification and lung stiffness (↓ compliance)
- Signs: Tachypnoea, ↑ventilatory effort, confusion, hypoxia
- Causes: Systemic/lung sepsis, massive Blood transfusion, aspiration of gastric contents
- Pathophysiology: Endotoxin activated leucocyte → oxygen-derived free radicals, cytokines & chemical ↑capillary permeability → interstitial & alveolar oedema

- CXR- bilateral diffuse fluffy opacities
- Treatment is ventilation PEEP, treatment of sepsis, hypovolaemia
- Mortality: 50%

5-Pleural Effusion:

- Causes: usually happens after surgery only if the patient has another form of pulmonary pathology like: collapse, consolidation, infarction, tumour deposit.
- Also as a result in abdominal pathology: subphrenic abscess
- Approach: Small effusions left to reabsorb, while large effusions aspirated for culture/ cytology.

6-Pneumothorax:

- Insertion of central venous line is the most common cause of post-operative pneumothorax
- **CXR after insertion central venous line is necessary to exclude this complication.**
- Positive pressure ventilation- rupture of pre-existing bullae
- Drained by underwater seal

Cardiac Complications:

- Likelihood of anaesthetic/surgery complications are increased in patients with cardiovascular disease
- Severe aortic/mitral valve dis.- carefully monitor iv fluid administration
- Aortic stenosis impairs heart response to increased post-operative demand
- Whenever possible, treat these before surgery

Myocardial infarction:

- Usually history of preceding cardiac disease
- Patients may experience Gripping chest pain.
- Sometimes hypotension is the only sign. **This is greatly due to the anaesthetics/post operative analgesics, where these drugs mask the other symptoms of ischemia/MI.**
- If ischemia is suspected: ECG changes, Cardiac enzymes should be obtained, and Cardiologist should be consulted.
- 1/3rd postoperative MI are fatal

Arrhythmias:

- Sinus tachycardia: hypovolaemia, hypotension, pain, fever, restlessness
- Sinus bradycardia: anaesthetic agents, pharyngeal suction
- Atrial fibrillation may need medications

Post-Operative Shock:

- Hypovolaemic: Inadequate fluid replacement, bleeding
- Cardiogenic: acute MI, arrhythmias
- ↑pulse, ↓BP, sweating, pallor, vasoconstriction, ↓ urine
- Septic: early-hyperdynamic circulation, bounding pulse, fever, rigor and warm extremity. Later- hypotension and peripheral vasoconstriction

Cardiac Failure:

- Happens in context of Ischaemic or valvular diseases, arrhythmia

- Causes: CF is commonly caused by excessive fluid administration in a patient with limited Cardiac reserve.
- Signs: Progressive dyspnoea, hypoxaemia, and – diffuse pulmonary congestion on x-ray
- Treatment:
 - avoid fluid overload
 - CVP monitoring
 - Diuretics, cardiac inotropes
 - Cardiologist consultation

Urinary Complications:

- Associated with: Groin, pelvic, perineal surgery, operations under spinal/epidural anaesthesia
- Causes: Pain, effect of anaesthetic drugs, lying/sitting position, BPH
- Males > females, especially when men have prostatic problems
- Signs: Palpable distended bladder
- Treatment: Catheterization

Urinary Tract Infections:

- **Most common nosocomial infection, including in postoperative patients.**
- Pre-existing UTI, urinary retention, catheterization
- Frequency, dysuria, fever, flank tenderness
- Urine culture
- Treatment: Adequate hydration, urinary drainage, antibiotics

Renal Failure:

- ARF: protracted inadequate renal perfusion
- Causes: Hypovolaemia (most common cause), sepsis, nephrotoxic drugs like certain antibiotics
- Patients with pre-existing renal disease, jaundice are the most susceptible
- Prevention: adequate IV fluid, urine >0.5ml/kg/hr
- Treatment: replace fluid loss+ 500ml
 restrict dietary protein to <20Gm/day
 u/e monitoring, haemodialysis
- Polyuric phase: monitor of fluid intake and u/e
- Recovery 2-4 weeks
- Mortality up to 50%

Neurological Complications:

- Cerebrovascular accidents (CVA): sudden ↓ in BP during/ post surgery, hypertensive patients. Carotid endarterectomy, cardiac surgery
- Psychiatric disturbance: elderly, dementia due to cerebral atrophy, use of sedatives/ hypnotics
- Acute toxic confusion: sepsis, hypoxia, uraemia, electrolytes imbalance
- Sleep deprivation particularly in ICU
- Delirium tremens: agitation, tremors, hallucinations

Deep venous thrombosis (DVT):

- Virchow's triad: stasis, ↑coagulability, vessel wall injury

- Risk factors: old age, obesity, prolonged surgery, pelvic/ hip surg, malignancy, past DVT, varicose veins, pregnancy, use of oral contraceptive pills
- Presentation: painful swollen tender calf & fever.
- Diagnosis: Duplex ultrasonography
- Prevention: Compression stockings, mechanical compressions of calf during surgery, subcutaneous heparin
- Treatment: iv bolus/ infusion heparin, LMWH, Warfarin for 3-6 months (INR 2-3 times normal)

Pulmonary embolism:

- Massive PE: severe chest pain, pallor & shock
- CP resuscitation, heparinization, CT angiography, streptokinase/ urokinase (if 6 days post surgery)
- Small PE: chest pain, tachypnoea, haemoptysis
- CXR, ECG , V/Q scan, CT
- Heparinization
- Warfarin for 3-6 months

Wound Infection:

- The most common complication
- Incidence 1% (clean) surgeries to 30% (dirty) cases
- Haematoma formation common before infection
- Manifests within 7 days of surgery
- Fever, tachycardia, increased pain at operation site
- Red, tender, swollen, discharging wound
- Remove few sutures to drain the wound
- Antibiotics, if septicaemic

Wound Dehiscence:

- Involves abdominal wall. Incidence <1%
- Partial (deep layer), Complete (deep+ skin)
- Serosanguinous discharge, evisceration
- Manifests within 2 weeks
- Risk factors: Obesity, resp. disease, infection, malnourishment, renal failure, malignancy, diabetes, steroid use, & poor surg. Technique
- Resuture under GA. Develops hernia later

References:

-2012/2013 lecture of general complications of Surgery

-Dr. notes:

-Principle & Practice of Surgery 5th edition Garden, Bradbury, Forsyth & Parks