

LECTURE 19, 20 : POSTOPERATIVE CARE AND COMPLICATIONS

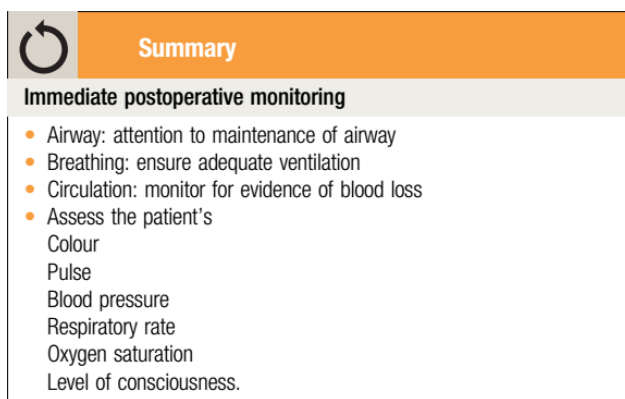
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Postoperative care and complications

- There are three phases of patient care following an operation:
 1. *Immediate postoperative care* in a recovery room to ensure the full return of consciousness.
 2. *Surgical ward care* unless there are indications for transfer to a high-dependency or intensive therapy unit.
 3. *On discharge from ward care*, patients may still require rehabilitation before they are ready to normal activities.

Immediate postoperative care

- In the recovery room until they are conscious and their vital signs are stable.
- Major life-threatening complications:
 1. Airway obstruction.
 2. Myocardial infarction, cardiac arrest,
 3. Hemorrhage
 4. Respiratory failure.
- In general, the anesthetist responsible for the patient's cardiopulmonary function and the surgeon is responsible for the operative site, the wound and any surgically placed drains.



Summary

Immediate postoperative monitoring

- Airway: attention to maintenance of airway
- Breathing: ensure adequate ventilation
- Circulation: monitor for evidence of blood loss
- Assess the patient's
 - Colour
 - Pulse
 - Blood pressure
 - Respiratory rate
 - Oxygen saturation
 - Level of consciousness.

Airway obstruction

- The main causes of airway obstruction are as follows:
 1. Obstruction by the tongue may occur with a depressed level of consciousness.

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2. Obstruction by foreign bodies, such as dentures and loose teeth.
 3. Laryngeal spasm can occur at early extubation.
 4. Laryngeal edema: unfit endotracheal tube size.
 5. Tracheal compression may follow operations in the neck, and compression by hemorrhage after thyroidectomy.
 6. Bronchospasm or bronchial obstruction may follow inhalation of a foreign body or the aspiration of irritant material, such as gastric contents.
- Hemorrhage
 1. Significant blood loss into a surgical drain with hypovolemic shock, is an indication for immediate re-exploration and control of the bleeding source.
 2. Reactive bleeding is usually caused by a slipped ligature or dislodgement of a diathermy coagulum as the blood pressure recovers from the operation.
 3. Superficial bleeding into the surgical wound rarely requires immediate action.
 4. Late secondary hemorrhage typically occurs 7–10 days after an operation and is due to
 - 1) Infection eroding a blood vessel.
 - 2) Rigid drain tubes may also erode a large vessel and cause dramatic late postoperative bleeding.
 5. Interventional radiological techniques may achieve temporary control, but surgical re-exploration is usually indicated.

Surgical ward care

- General care
 - Monitoring of vital signs, temperature, urine output, nasogastric tube and surgical drains.
 - morning and evening visit by medical staff to ensure satisfactory progress.
 - Anxiety and changes in personality, behavior or appearance are often the earliest signs of complications.

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- Full chest expansion, coughing are encouraged and sputum inspected.
- The abdomen is examined for evidence of excessive distension or tenderness, return of bowel sounds and free passage of flatus reflect recovery of gut peristalsis.
- The legs are checked for swelling, discoloration or calf tenderness.
- Blood transfusion
 - A full blood count undertaken within 24 hours of surgery and, as a general rule, blood is administered if the hemoglobin is less than 80 g/L with a low hematocrit (<24).
 - Above this level, patients can be prescribed oral iron, unless they have cardiovascular instability or are symptomatic from their anemia.
- Nutrition
 - Enteral or parenteral nutrition is essential if starvation is prolonged.
 - Enteral nutrition is preferred, as it is associated with fewer complications and is believed to augment gut barrier function.
 - If a prolonged period of starvation is anticipated in the postoperative period, a feeding jejunostomy tube can be inserted at the time of abdominal surgery.
 - If the enteral route cannot be used, total parenteral nutrition can be prescribed.
 - Dietary intake should be monitored in all patients in the postoperative period, and oral high-calorie supplements given if appropriate.

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Complications of anaesthesia and surgery
General complications <ul style="list-style-type: none">• Nausea and vomiting• Hiccups• Headache
Pulmonary complications <ul style="list-style-type: none">• Pulmonary collapse• Pulmonary infection• Respiratory failure• Acute respiratory distress syndrome (ARDS)• Pleural effusion• Pneumothorax
Cardiac complications <ul style="list-style-type: none">• Myocardial ischaemia/infarction• Cardiac failure• Arrhythmias• Postoperative shock
Urinary complications <ul style="list-style-type: none">• Urinary retention• Urinary tract infection• Renal failure
Cerebral complications <ul style="list-style-type: none">• Cerebrovascular accidents (CVA)• Neuropsychiatric disturbances• Delirium tremens
Venous thromboembolism <ul style="list-style-type: none">• Deep venous thrombosis• Pulmonary embolism
Wound complications <ul style="list-style-type: none">• Wound infection• Wound dehiscence.

Complications of anesthesia and surgery

- General complications
 - Nausea and vomiting can be caused by surgery and/or anesthesia >>> an antiemetic.
 - Transient hiccups in the immediate postoperative period are usually no more than a nuisance.
 - Persistent hiccups are more serious, may be due to diaphragmatic irritation, gastric distension or metabolic causes, such as renal failure.

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- Spinal anesthesia may cause headache from leakage of cerebrospinal fluid, and patients should remain recumbent for 12 hours when this occurs.
- If headache persists>>> seal the injection site with a 'blood patch.
- Pulmonary complications
 - The largest single cause of postoperative morbidity and the second most common cause of postoperative death in patients over 60 years of age.
 - Pulmonary special hazards are posed by preexisting chronic obstructive pulmonary disease (COPD).
 - Pleural effusion and pneumothorax occur less commonly.
 - Pulmonary embolism (PE) is a major complication of deep venous thrombosis (DVT), which is considered later.
- Postoperative hypoxemia:

Postoperative hypoxaemia: contributing factors
Immediately postoperative <ul style="list-style-type: none"> ● Persisting ventilation (V)/perfusion (Qc) imbalance ● Anaesthetic gases such as nitrous oxide or halothane diffuse into lungs ● Respiratory depression due to use of anaesthetic drugs and opioids ● Shivering (provokes muscle oxygen utilisation)
24 hours postoperative <ul style="list-style-type: none"> ● Aging (loss of lung elasticity) ● Preexisting pulmonary disease ● Obesity ● Pain (especially upper abdominal or thoracic incisions) ● Excessive sedation or use of opiates ● Massive collapse ● Hypovolemic shock ● Pneumothorax
2–5 days postoperative <ul style="list-style-type: none"> ● Preexisting cardiopulmonary disease ● Retained bronchial secretions ● Pneumonitis ● Abdominal distension with diaphragmatic splinting ● Acute respiratory distress syndrome
8–12 days postoperative <ul style="list-style-type: none"> ● Pulmonary embolism

- Postoperative shock
 - Hypovolemic shock may be caused by inadequate replacement of pre- or perioperative fluid losses, or postoperative hemorrhage.
 - cardiogenic shock is usually secondary to acute myocardial ischemia/infarction or an arrhythmia.

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- Postoperative urinary retention
 - Inability to void postoperatively is common, especially after groin, pelvic or perineal operations, or operations under spinal/epidural anesthesia.
 - Causes: postoperative pain, effects of anesthesia and drugs, and difficulties in initiating micturition while lying or sitting in bed.
 - The management of acute urinary retention is catheterization of the bladder, with removal of the catheter after 2–3 days.
- Deep venous thrombosis (DVT)
 - The pathogenesis of venous thrombosis involves stasis, blood hypercoagulability and damage to the blood vessel wall (Virchow's triad).
 - The risk factors of DVT: include increasing age, obesity, prolonged operations, pelvic and hip surgery, malignant disease, previous DVT or PE, varicose veins, pregnancy, and use of the oral contraceptive pill.
 - prophylaxis include: avoid prolonged compression of the leg veins during and after the operation; the use of compression support stockings (mechanical or electrical) compression of the calf muscles during surgery; and low-molecular-weight heparin.
 - DVT is frequently asymptomatic, but may present with a painful, tender swollen calf.
 - Duplex ultrasonography is now the investigation of choice for diagnosing DVT.
- Pulmonary embolism (PE):
 - Massive PE with severe chest pain, pallor and shock demands immediate cardiopulmonary resuscitation, heparinization and urgent computed tomography (CT) pulmonary angiography.
 - Treatment:
 - Fibrinolytic agents,
 - Open pulmonary embolectomy under cardiopulmonary bypass.

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- warfarin therapy is recommended in all patients who have sustained a pulmonary embolus, and therapy is normally continued for 6 months. If the patient cannot be anticoagulated, or sustains further PE despite anticoagulation, placing an inferior vena caval filter.
- Wound complications
 - Infection is the most common complication in surgery.
 - The incidence varies from less than 1% in clean operations to 20–30% in dirty cases.
 - Subcutaneous hematoma is a common prelude to a wound infection, and large hematomas may require evacuation.
 - The onset is usually within 7 days of operation.
 - Symptoms include malaise, anorexia, and pain or discomfort at the operation site.
 - Signs include local erythema, tenderness, swelling, cellulitis, wound discharge or frank abscess formation, as well as an elevated temperature and pulse rate.
 - If a wound becomes infected, it may be necessary to remove one or more sutures prematurely to allow the drainage of infected material.
 - The wound is then allowed to heal by secondary intention.
 - Antibiotics are required if there is evidence of associated cellulitis or septicaemia.
- Dehiscence
 - The incidence of abdominal wound dehiscence (burst abdomen) should be less than 1%.
 - Wound dehiscence may be partial (deep layers only) or complete (all layers, including skin).
 - A serosanguinous discharge is characteristic of partial wound dehiscence.
 - The extrusion of abdominal viscera through a complete abdominal wound dehiscence is known as evisceration.
 - This rare complication usually occurs within the first 2 weeks after operation.

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- Risk factors include obesity, smoking, respiratory disease, obstructive jaundice, nutritional deficiencies, renal failure, malignancy, diabetes and steroid therapy.
- however, the most important causes are poor surgical technique, persistently increased intraabdominal pressure, and local tissue necrosis due to infection.
- The wound should be resutured under general anaesthesia.
- Postoperative fever
 - Fever in a patient who has had surgery can be due to a variety of causes related to the primary disease or complications related to the surgical intervention or general anaesthesia.

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Postoperative fever
Days 0–2 <ul style="list-style-type: none">● Physiological as response to tissue injury: low grade● Pulmonary collapse, atelectasis● Blood transfusion● Thrombophlebitis
Days 3–5 <ul style="list-style-type: none">● Sepsis: wound infection● Biliary or urinary infection: catheter● Intraabdominal collection● Pneumonia
Day 5–7 <ul style="list-style-type: none">● Deep-vein thrombosis (DVT)● Enteric anastomotic leak
>7 days <ul style="list-style-type: none">● Intraabdominal collection● DVT● Septicaemia.

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