SURGICAL OPERATION & POST-OPERATION PERIOD

Surgical operation is a traumatic intervention on organs or tissues with the aim of treatment or diagnostics

The classification of operations:

According to the term of performance:

- urgent
- emergency, or fixed-term planned

According to the aim:

- Radical
- Palliative

According to the technique:

- one-stage
- many-stage
- repeated

- Simultaneous
- combined

Special operations:

- Endoscopic
- Microsurgical
- endovascular etc

The operation consists of 3 stages:

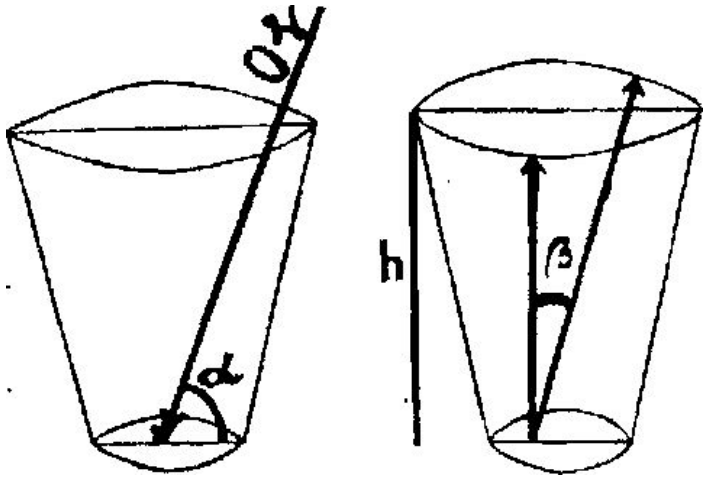
- operative approach (incision)
- operative method
- consummation of the operation.

The operation consists of 3 stages: operative approach (incision), operative method, consummation of the operation

Demands for the operative approach

Demands for the operative approach: it must provide a comfortable performance of the main stage of the operation, it must be sparing, anatomic, physiologic, cosmetic. Criteria according to Sozon-Yaroshevich exist

1. direction of axis of operative action (OS) - line joining surgeons eye with the deepest point of the wound;
2. angle of axis slope (a) - is formed by axis OS &
3. depth of the wound (h) - a distance between wound borders & its bed;
4. angle of operative action (8). - between wound walls (90° - excellent, 45° - good, 32° - difficult, < 24° - operating is impossible);
5. zone of accessibility - characterizes the degree of organ to be looked from all the sides.



Operative methods

Operative methods can be:

removing the whole organ (ectomia)

removing an injured part of the organ (resection) reconstruction of anatomical relations (so called, reconstructive operations - anastomosis, etc)

Indications for the operation can be absolute & relative.

Operative methods

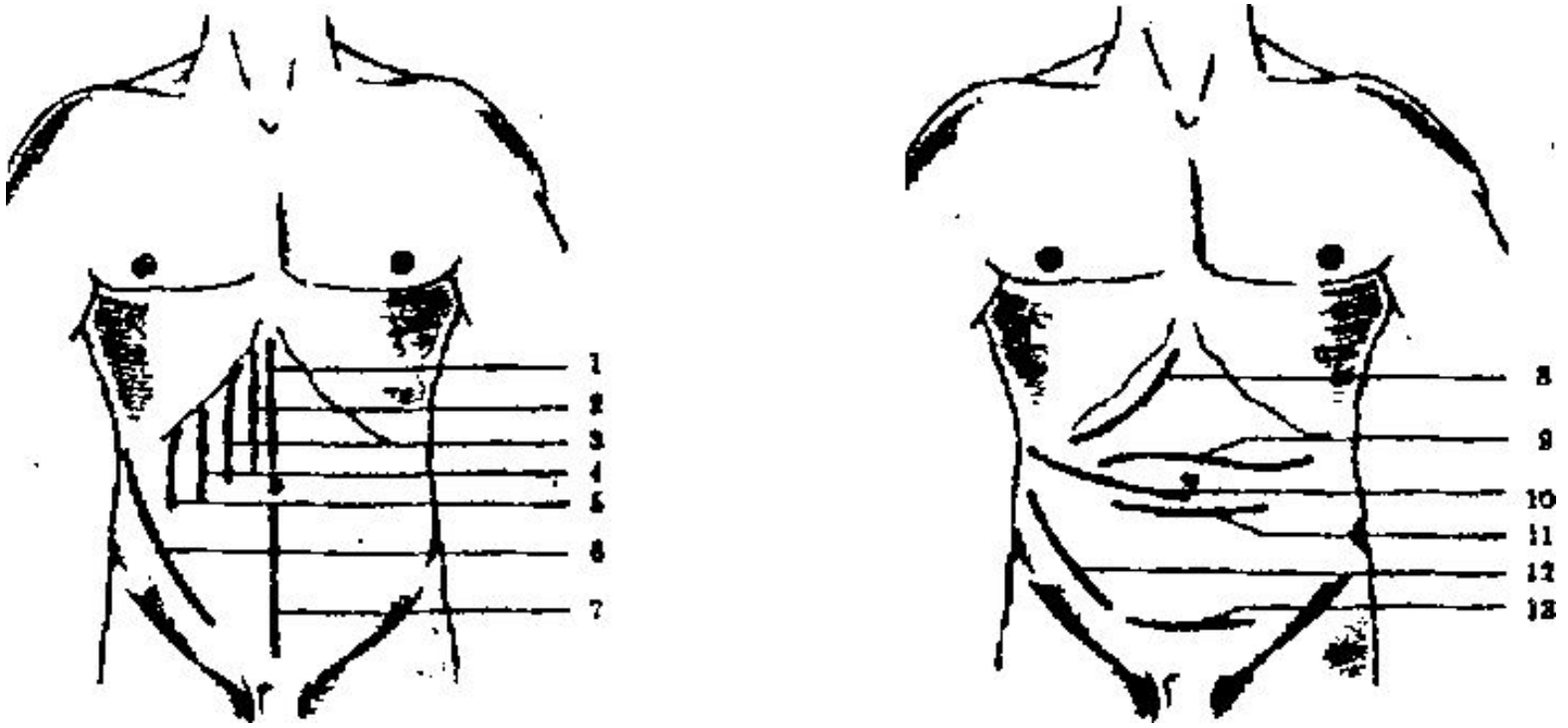
- Absolute indications are diseases, which are dangerous for the patient's life & may be removed only in a surgical way.
- Absolute indications for urgent operations are called vital (asphyxia, bleeding, acute suppurative diseases, acute diseases of abdominal cavity - acute appendicitis, perforating ulcer, bowel obstruction, strangulated hernia).
- Absolute indications for the planed operations are: malignant tumors, stenosis of esophagus & pyloric part of stomach, mechanical jaundice, etc.

Relative indications

Relative indications may be divided into 2 groups:

a) diseases which can be cured only with the operation but are not dangerous for patient's life (varicose disease, hernias, cholelithiasis, benign tumors)

b) diseases which may be cured in conservative way & in surgical method (ischemic heart disease, non-complicated ulcerative disease, obliterating diseases of blood vessels).



Types of longitudinal, transverse & oblique laparotomy (I - median, 2 -paramedian, 3 - transrectal, 4 - pararectal, 5 - via I. semilunaris, 6 - inferior transmuscular, 7 - inferior median, 8 - subcostal, 9 - superior transverse, 10 -with changed direction; II- inferior transverse, 12 - oblique by Volkovitch-Dyakonov, 13 - by Pfannenstiel).

The general state of the organism is valued by **physical examination :**

- Palpation
- Percussion
- Auscultation;

minimal standard complex of laboratory analyses :

- clinical blood test
- biochemical analyses (for protein amount, bilirubin, transaminases, sugar, urea)
- time of clotting
- group of blood & Rh-factor
- urine test
- X-ray-fluorography
- ECG
- the certificates about examination from a therapeutist, stomatologist, gynecologist (for women).

As a result of fulfilled examinations a doctor can discover some accompanied diseases which may be contraindications: absolute & relative.

Contraindications

Absolute contraindications are:

- Shock (besides hemorrhagic shock in continuing bleeding)
- acute myocardial infarction
- disorders of brain circulation (insult)

Contraindications which worsen the results of any operation & can cause postoperative, complications:

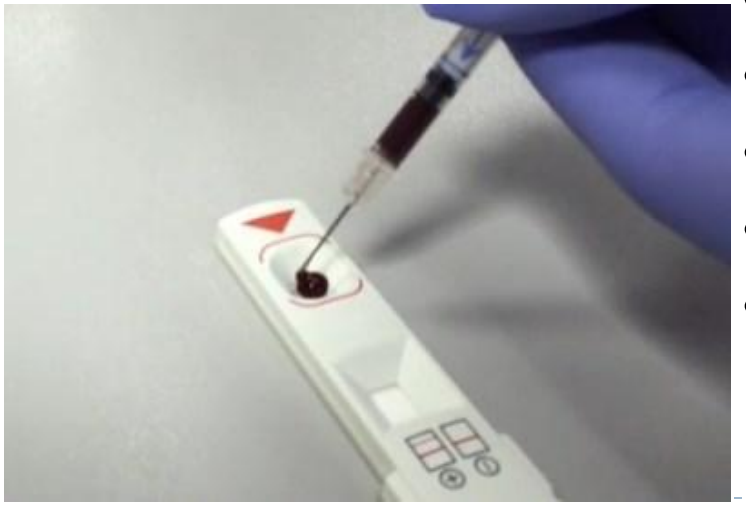
- hypertensive disease
- ischemic heart disease
- cardiac insufficiency
- Arrhythmia
- Thrombosis
- Smoking
- bronchial asthma
- chronic bronchitis
- renal insufficiency
- Hepatitis
- Anemia
- Obesity
- diabetes

Preparation

Psychological preparation includes convincing a patient that the operation is necessary & inspiring with the confidence in a doctor

The general preparation has the aim to get the compensation of disorders in organs & systems of the organism:

- blood transfusions
- hypotensive therapy
- the administration of anticoagulants
- the correction of water-electrolyte balance
- sanitation-hygienic preparation.
- Special preparation depends on type of surgical intervention & region of operation.



ASA

The doctor must determine the risk of the operation which depends on many factors: patient's age, his state, character of the basic & accompanied diseases, the duration of the operation, the skill of a surgeon & an anesthesiologist, a method of anesthesia.

They use **the classification of American society of anesthesiologists (ASA)** abroad:

Planned operation */ degree of risk - healthy patients*

- *degree of risk - easy diseases without functions disorders*
- *degree of risk - severe diseases with function disorders*
- *degree of risk - severe diseases with function disorders which in the combination with the operation or without it are dangerous for patient's life -*
- *degree of risk - patient's death is expected during 24 hours after the operation or without it*

Urgent operation

- *degree of risk - patients of 1-2 degrees being operated in urgent order*
- *degree of risk - patients of 3-5 degrees being operated in urgent order*

The assessment of operation risk by Malinovsky

Value ofgeneral state		Value of the operation		Value of the anesthesia	
Satisfactory	0,5 point	Small поп-cavitary	0,5 point	Local	0,5 point
Middle	J point	Simple cavitary or difficult non-cavitary	I point	Regional, peridural or other one in spontaneous breathing	1 point
Severe	2 points	Large long operations	1.5 ■ point	CIN	1,5 point
Very severe	4 points	Difficult operations on heart & big blood vessels without AC, reconstructive operations	2 points	CIN in combination with other kinds of anesthesia	2 points
Terminal	6 points	Operations with AC <& transplantation	2,5 points	CIN in combination with AC, HBO & resuscitation	2,5 points

We use **me classification of Moscow society of anesthesiologists, 1989 (by** Malinovsky) (look table).

CIN - combined intubation narcosis AC - artificial circulation HBO - hyperbaric oxygenation **Degrees of risk:**

1 (inconsiderable) - 1,5 points
2 (moderate) -2-3 points
3 (considerable) - 3,5-5 points
4 (high) - 5,5-8 points
5 (very high) - 8,5-11 points

Postoperative period

Postoperative period

Everything dealing with the operation & the influence of anesthesia is determined like an operative stress & it's consequences like a postoperative state. **The main aim of postoperative period** is to facilitate the processes of regeneration & adaptation in patient's organism & prevent, recover & fight against any complications.

In postoperative state we distinguish 4 phases

- Catabolic
- reverse development
- Anabolic
- phase of body mass increase.

Non-complicated course

In cases of **non-complicated course** of postoperative period intensive therapy includes:

1. struggle against pain
2. the restoration of cardiovascular system & microcirculation;
3. the prevention & treatment of respiratory
4. the correction of water-electrolyte balance
5. detoxication therapy;
6. balanced food
7. the control over the excretion function.

The complications

The complications of early postoperative period take place due to 3 main factors:

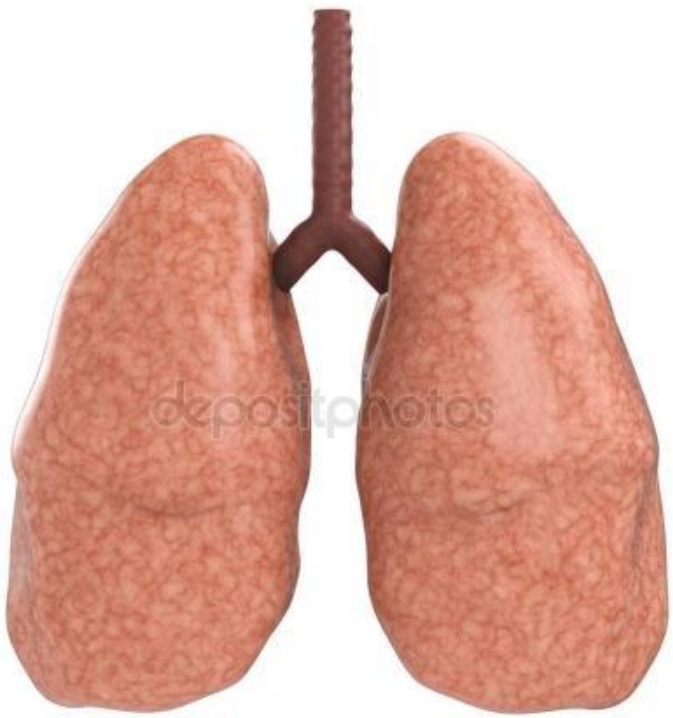
- the presence of postoperative wound
- unwilling position
- an influence of operative trauma & narcosis.

Methods of prophylaxis of cardiovascular disorders:

- early activation of patients
- the treatment of chronic diseases of vessels
- the provision of stable hemodynamics
- the correction of water- electrolyte balance with the tendency to hemodilution
- the use of drugs improving the rheologic properties of blood
- the use of anticoagulants in patients of increased risk of thrombosis-embolic complications.

Methods of prophylaxis of pulmonary disorders:

- early activation of patients
- antibiotics
- adequate posture in bed
- respiratory gymnastics
- dilution of sputum & the use of expectorants
- sanitation of respiratory tract
- mustard-plasters, cups
- massage, physical therapy.



Methods of prophylaxis of intestinal disorders:

- early activation of patients
- rational diet therapy
- draining a stomach
- peridural blockade (or paranephric Novocain blockade)
- colonic tube
- hypertonic & cleansing enemas
- the stimulation of bowel motility (proserin, pituitrin, hypertonic solution i/v, cleaning & hypertonic enemas)
- physical therapy (electrostimulation of bowel, diadynamotherapy). Postoperative complications

Complications

- When complications occur in the recovery room or in the perioperative period the importance of consultation with the anesthetist who gave the anaesthetic cannot be over-emphasized.
- The anesthetist may be able to suggest other causes for the problem, and may wish to see the patient to discuss these problems further.

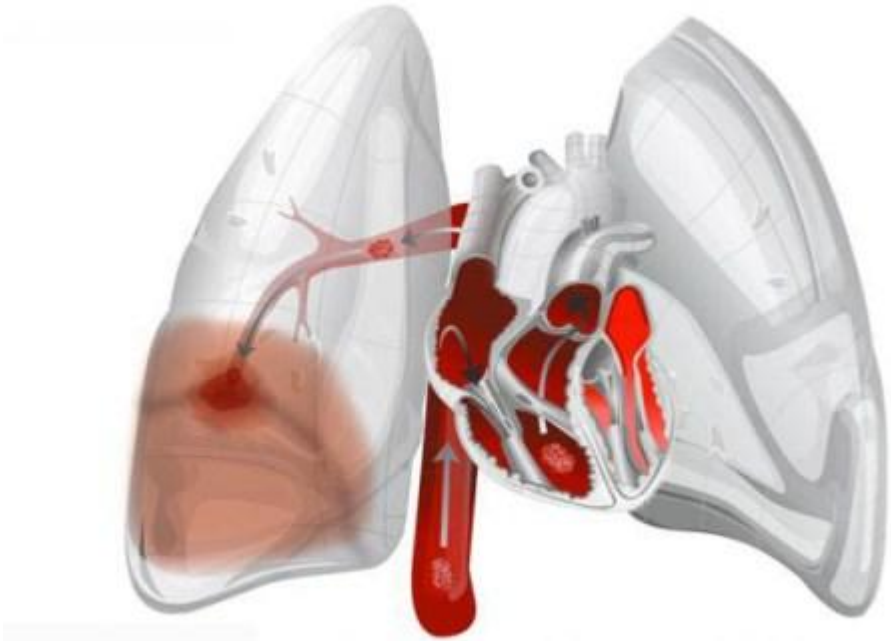
Respiratory

Postoperative respiratory depression is most commonly due to opiates used for pain relief. However, other causes may include over-sedation, recurarization, or the development of pulmonary oedema. Consultation with the anesthetist is important.

- When respiratory depression is severe, immediate respiratory support is necessary, using an Ambu bag or similar-device.
- Atelectasis may occur when inadequately treated pain limits chest movement, and pre-existing disease may increase the severity.
- Optimal analgesia and intensive physiotherapy are needed.
- Occasionally, bronchoscopy may be required to remove sputum.

Cardiovascular system

Cardiac failure occurs when reduced myocardial contractility is unable to cope with the additional stress of fluid shifts and drug-induced depression of myocardial contractility. Clinical manifestations range from dyspnoea, which may mimic asthma in mild cases to frank pulmonary oedema with frothy sputum.



Cardiovascular system

- Management involves optimization of oxygenation, posture, and diuretics and in severe cases intermittent positive pressure ventilation may be required.
- The ECG should be reviewed as ischemia or arrhythmias will worsen cardiac output

Postoperative hypertension may be due to pain, or to the withdrawal of preoperative antihypertensive medication. Optimal pain relief should be ensured before further antihypertensive medication is given. Initially, drugs should be given intravenously to reduce delays and to ensure that reliable blood levels are achieved.

Postoperative hypotension

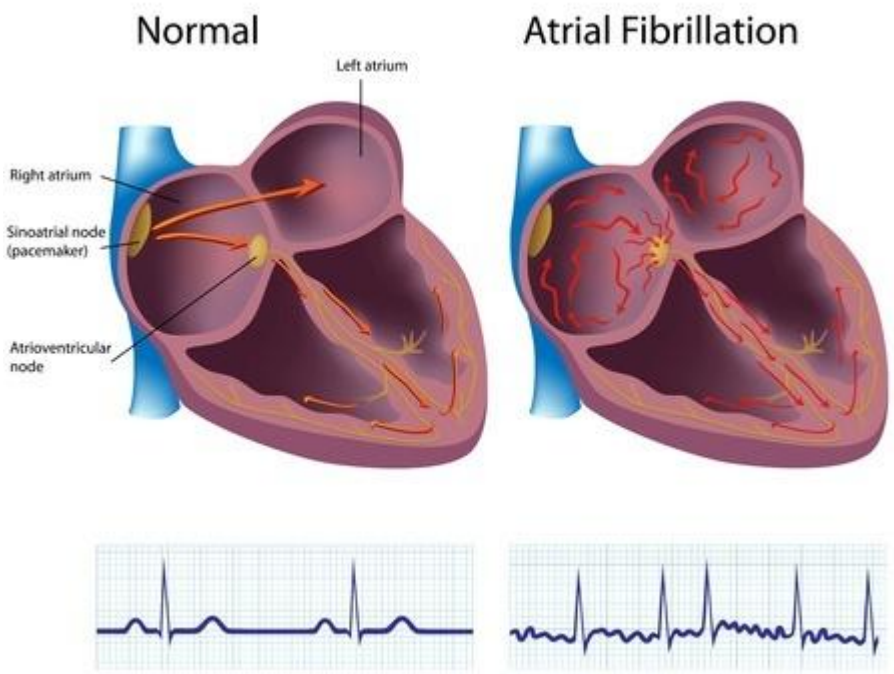

Hypotension

Hypotension is most commonly due to inadequate fluid replacement. Drain tubes should be checked for correct function and concealed blood loss should be excluded. Following spinal or epidural anesthesia, especially in patients whose operations were performed in the lithotomy position, fluid shifts can occur because of the loss of sympathetic tone..

Postoperative hypotension

In the absence of demonstrable fluid problems, ischemia, arrhythmia, and drug-induced myocardial depression should be excluded. Uncommon causes of postoperative hypotension include relative Cortisol deficiency in steroid-dependent patients and subclinical hypothyroidism

Atrial fibrillation



Atrial fibrillation is the most common arrhythmia arising postoperatively. Patients previously maintained on digitalis may suffer arrhythmias following cessation of therapy or due to poor absorption in the presence of abdominal conditions.

Following ECG confirmation of the arrhythmia, specific therapy should be commenced. Rapid atrial fibrillation with haemodynamic instability may require intravenous verapamil or in very severe cases, DC countershock.

Atrial fibrillation

- Pre-existing disease,
- pain,
- poorly controlled hypotension,
- intraoperative events,
- and suboptimal oxygenation,

especially in combination with hypertension or tachycardia, may lead to ischemic events in the perioperative period

Nervous system

- Confusion is common in the **perioperative period**, especially in the elderly.
- Diagnosis is frequently difficult and management is often suboptimal.
- Diagnosis is frequently made by exclusion of possible causes and in many cases no obvious cause for the acute brain syndrome is ever discovered.
- Relatively inexperienced house staff often have to manage patients with acute postoperative confusional states.

Hypoxia

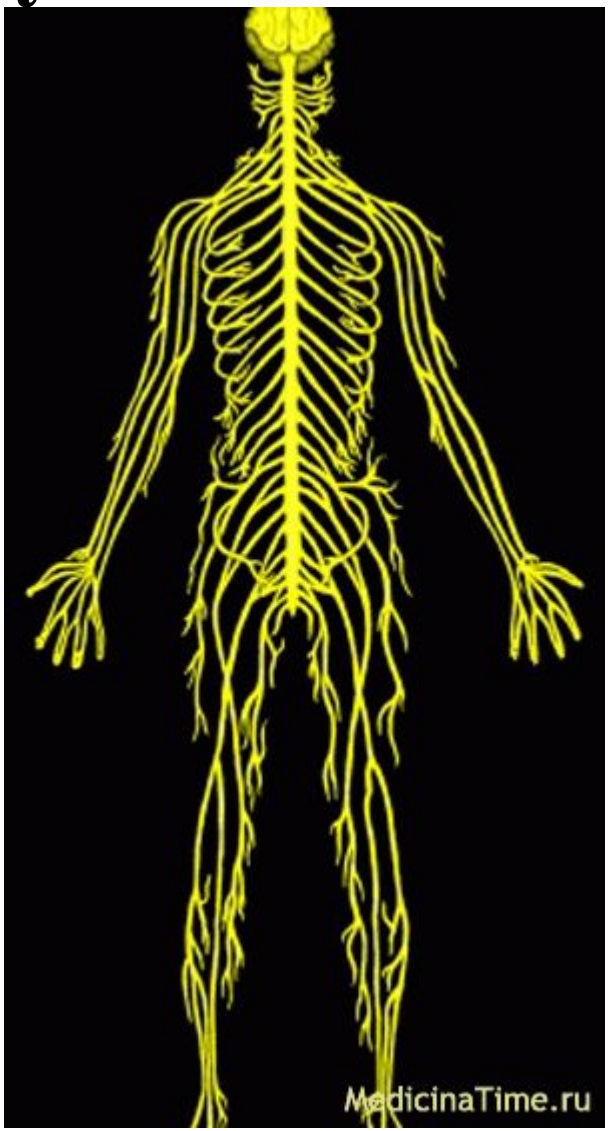
- Hypoxia must be excluded, either by oximetry or blood gas estimation.
- Review of the anaesthetic chart or recovery room notes will often reveal a likely cause; however, in the majority of cases no cause is ever ascertained.
- Management involves reassurance of the patient and staff, combined with measures to prevent damage to suture lines, intravenous equipment and wound drains.
- Sedation should be used cautiously if at all.

Nerve injury

- The anaesthetized patient is vulnerable to **nerve injury** because of the loss of protective reflexes.
- Nerves especially vulnerable are the ulnar nerve at the elbow, the lateral popliteal nerve during lithotomy, the brachial plexus (lower nerves during abduction, and upper plexus in the Trendelenburg position) and the supraorbital nerve.

Nerve injury

- Catheter-related problems, and postoperative urinary tract infections, although not relevant to the anaesthetic management, need careful follow-up.
- The development of incontinence following spinal or epidural anaesthesia needs immediate follow-up by the anesthetist in consultation with a neurologist.



Postoperative jaundice

Postoperative jaundice is an uncommon problem. Full clinical and biochemical assessment is important. Flalothane hepatitis is a rare postoperative event and its diagnosis is generally made by exclusion.

Many cases of "halothane hepatitis" have turned out to be infection with cytomegalovirus or other viruses. Jaundice may also rarely occur following enflurane anaesthesia

Postoperative jaundice

Thus the incidence of jaundice is significantly lower than that following halothane anesthesia and the mortality in established cases is also lower. Death occurred in 21% of enflurane hepatitis cases compared with 50% of halothane cases.

Suxamethonium apnoea

- Management in the operating theatre should be supportive until other metabolic pathways eliminate the suxamethonium.
- Sedation should be administered to reduce unpleasant recollections of awakening whilst paralyzed

Vomiting

This is one of the most common and distressing postoperative complications.

The incidence of vomiting ranges from 10 to 50% depending on the type of surgery. Many factors contribute to the incidence of vomiting, including use of opiates, type of surgery (gynecological surgery has a very high incidence), gastrointestinal distension (due to ileus), and early ambulation

Rashes

- Skin rashes may be caused by reaction to anaesthetic agents, antibiotics, adhesive dressings, or skin prep solution.
- Management is generally conservative, but well demarcated lesions related to areas of adhesive or skin preparation require follow-up to prevent recurrence in future operations

Sore throat

The incidence of sore throat following endotracheal intubation varies between **2** and 70% of cases. Predisposing factors are the use of red-rubber endotracheal tubes, cigarette smoking, difficult or traumatic intubation, prolonged intubation, and prior laryngeal pathology.

Conflicting results have been found with "high volume-low pressure"; cuff designs used for short-term intubation. The management of postintubation sore throat is conservative; reassurance is usually all that is required

Muscle pains

The development of muscle pains is common in fit, ambulant, muscular young subjects given suxamethonium to facilitate endotracheal intubation. The pain may be quite severe and resembles that caused by unaccustomed exercise. Management involves notification of the anesthetist concerned, reassurance of the patient, and non-opioid analgesics.

Thanks for your attention!