INTRODUCTION INTO THE SURGERY

Lecture for students
Plan of the lecture

1. Surgery - what it is and what a surgeon does.
2. History of world surgery.
3. Legal and ethical issues, and organisation of surgical services.
4. Equipment and organization of the work at the surgical department.
5. Asepsis and antisepsis.
Definition of the surgeon’s profession

- Surgery is defined in the Oxford English Dictionary as: “The art or practice of treating injuries, deformities and other disorders by manual operation or instrumental appliances.” The surgeon, therefore, is one who makes people better chiefly by the exercise of manual skills.
Surgery as science

• Surgery is one of the significant branches of health protection and medical science, studying diseases and traumas. Basically, method of mechanical effect on tissues is applied for their treatment. It is accompanied by their parting to reveal a pathologic focus and eliminate it. Surgery has become a very complex medical speciality.

• Surgery is one of the main leading medical specialities.
Hippocrates (400 years B.C.) was an intelligent general practitioner, a talented surgeon, and an instructor. Having attentively collected anamnesis from his patients, he accurately wrote clinical symptoms of diseases, studied Anatomy on dead bodies. Using different surgical methods of treatment, he devoted a lot of attention to psychotherapy, advising physical exercise and natural methods of treatment (sun-shine, air, water). The “Oath of Hippocratic” became the most famous, which is given to young doctors who are starting their professional additives.
From history of world surgery

The blossoming of ancient Rome determined the displacement of the center of medicine from Greece to Rome, although Roman doctors were students of Hippocratic. The most famous representative of Roman medicine was K. Scellse (I century B.C.) and also CI. Galen (I century B.C.). The compositions of Scellse and treaties of Galen are the basic guiding compositions for doctors of west Europe till XV – XVII century.
From history of world surgery

Scellse was the first to use ligature for dressing of wounded blood flow, used as tubes for the draining of wounds. In this composition, a part from this, we find the first coveting with accuracy of the clinical period of full-blown cancer of the lower lip.
CI. Galen, (130-200), Greek physician, in the period of his times was a doctor of gladiators, saw all processes which happened at the site of wound, tried to sow wounds by silk, used bronze tubes, for the draining of wounds he thought that pus is wounds is a necessary composite part of the process of healing, having misplaced complications of wounds with the process of regeneration (healing through pus formation). Having studied the anatomy and physiology of man he some how thought that the center of blood circulation was not the heart but the liver.
At the same time many daredevils and talented doctors continued to study and to develop surgery, having overcome religious superstitions and having achieved specific success. To these benevolent doctors can be included the Arabian doctor Abu-Iban-Sina (Avicenne), who left more than 100 scientific works on different questions of medicine and surgery; A.Vesalius - the founder of normal anatomy, V.Garvey who discovered blood circulation in man and also Hy-de-Sholiak, Ambrose Pare, Bruno de Longenbourgh, Paracellsus and a number of other surgeons.
Abu Ali Ibn Sina, known as Avicenna in the Western World, was born in the village of Afsana near Balkh, a 2500-year-old city in the west of Mazari Sharif, Afghanistan. He displayed exceptional intellectual prowess as a child. His next six years the young man devoted to studying Islam Jurisprudence, Philosophy, Logic and Natural Science and became familiar with Euclid and the Almeagest. Ibn Sino turned his attention to Medicine at the age of 17 years and found it, in his own words, "not difficult". Of Ibn Sina's 16 medical works, eight are versified treatises on such matter as the 25 signs indicating the fatal termination of illnesses, hygienic precepts, proved remedies, anatomical memoranda etc. Amongst his prose works, after the great Qanun, the treatise on cardiac drugs, of which the British Museum possesses several fine manuscripts, is probably the most important, but it remains unpublished.
A. Vesalius (Andries Van Wesel) Renaissance Flemish physician who revolutionized the study of biology and the practice of medicine by his careful description of the anatomy of the human body. Basing his observations on dissections he made himself, he wrote and illustrated the first comprehensive textbook of anatomy.
Paracelsus (1493 in Einsiedeln, Switzerland – 1541) was an alchemist, physician, astrologer, and general occultist. Born Phillip von Hohenheim, he later took up the name Philippus Theophrastus Aureolus Bombastus von Hohenheim, and still later took the title Paracelsus, meaning "equal to or greater than Celsus", a Roman encyclopedist from the first century known for his tract on medicine.
Ambroise Paré (1510 – December 20, 1590) was a French surgeon, the official royal surgeon for kings Henry II, Francis II, Charles IX and Henry III, is considered by some as one of the Fathers of Surgery. He was a leader in surgical techniques, especially the treatment of wounds. Paré was born in Bourg-Hersent, France. Paré was a major figure of surgery in the 16th century.
From history of world surgery

Nikolay Ivanovich Pirogov (1810–1881) was a prominent Russian and Ukrainian scientist, doctor, pedagogue, public figure, and corresponding member of the Russian Academy of Sciences (1847). He is considered to be the founder of field surgery, and was one of the first surgeons in Europe to use ether as an anaesthetic. He was the first surgeon to use anaesthesia in a field operation (1847), invented various kinds of surgical operations, and developed his own technique of using plaster casts to treat fractured bones. His name is one of the most widely recognised in Russian medical history, and he is considered a Russian national hero.
In 1316 the French surgeon Guy de Chauliac published Chirurgia magna (Great Surgery). This massive text describes how to remove growths, repair hernias (protrusion of an organ through surrounding structures), and treat fractures using slings and weights. The text helped surgery gain respect as a serious science. At this time a new order of surgeons arose in France.

They were called surgeons of the long robe, distinguished from the barber surgeons who were known as surgeons of the short robe. The barber surgeons had little medical training, while the surgeons of the long robe were studied physicians and considered such practices as bloodletting primitive. Corporations, or guilds, of surgeons of the long robe were formed in several countries.
In England, there was a brief period in the early 16th century when the surgeons were associated with the physicians, but later in the 16th century Henry VIII granted a charter to the Guild of Barbers and Surgeons, and, despite various attempts to break away, the surgeons remained organized with the barbers until 1745. The distinction is still perpetuated in England where a surgeon is addressed as Mr. Smith while a physician is referred to as Dr. Smith.
Series of teaching of surgeons in Higher Medical Establishments

Teaching of surgery is taken into account in department of common surgery, preparatory hospitals of surgery, in boarding schools. After achieving profession of doctor, further specialization and improvement provided in one of departments during five years with the help widely developed surgical methods of cure of different diseases. Departments of II, III, IV course are not duplications of one another, but they add and does more the knowledge of student.

After studying by students of II course basis of general surgery, students of III, IV course study classical symptoms and methods of curing series of pathological stages and the other methods of cure of diseases, aside from classical diseases, methods of curing complicate form of diseases (“special surgery”), in spring semester on IV course — surgery of injuries.
General concepts of a deontology

Deontology, besides common principles and right, showed the form of professional moral, which has principles of “must” in short form. Public opinion of person, in given condition – is medical profession.

Medical deontology – this is the right of behavior doctor with the patients, doctor with other medical works, but like that and questions of preparing of doctors for their profession, their desire for self concluding.

“A Flaring suppository” – symbolical emblem, which the Dutch doctor Van Tull Psi has offered in XVII century: « Shining by another – to be consumed itself ». This emblem opens deep essence of a deontology of treatment, demonstrating simultaneously infinity of opportunities of a reign of a principle « a mental asepsis » of the doctor, which protects life of the distressed man.

Accuracy, smart, legibility, courtesy, and compulsion – feature, which allocate the doctor. They cause trust to him, irrespective of age.
Equipment and organization of the work at the surgical department

• A surgery department is intended to accommodate the patients in the period of their treatment.

• It consists of hospital wards, dressing rooms, operation unit, nurse workplace, manipulation room, sanitary units, doctors room, room of the chief of the department, and staff rooms, subsidiary rooms.

• A professor‘s room, a senior lecturer, assistant rooms and study room for 10-12 persons should be provided as well.

• The surgical department to be placed in the same building with reception, operating unit and department of resuscitation, as functionally depend from each other.
Equipment and organization of the work at the surgical department

• The special functional beds and minimum quantity of subjects of furniture (bedside table, chair) and placed in the wards.

• The nurse workplace is located in the corridor in order to supply a good review of the wards.

• In the surgical department it is allocate a manipulation room, a room for medical procedures: intramuscular, intravenous injections, preparation system intended for intravenous of medical solutions in the ward.
**Dressing rooms**

- There are dressing rooms in the structure of surgical department: one dressing room for the patients with aseptic wounds are bandaged, in the other room with infected wounds.

- The equipment of the dressing room are:
  1. A dressing table for the patients;
  2. A table for dressing material and surgical tools;
  3. A glasscase for antiseptics storage;
  4. A table for medicines used during bandaging.
Dressing rooms

• In pure dressing rooms wounds healing without pus are bandaged. The puncture of joints, abdomen and thoracic cavities, using novocain blocks and the “small” operations are provided too.

• In purulent dressing room bandaging of purulent wounds, punctures of pus cavities, novocain blocks are carried out. The division between pure and purulent dressing rooms is aimed to facilitate the use of aseptic and not to allow secondary infection wounds during bandaging.
Dressing materials

Dressing materials include gauze balls, towels, pack, and swabs. They are used during operation and dressing mainly for keeping the wound dry, stopping bleeding, for drainage or for packing the wound. Dressing material is prepared from gauze and cotton wool and rarely from viscose and linen. They have to have the following characteristics:

1) they should be biologically and chemically inert and void of any negative effects on wound healing;
2) they should have good hygroscopic, or water absorbing, properties;
3) they should have a few free threads from outside; this will prevent pieces of thread from falling into the wound as these can act as foreign bodies in the wound;
4) they should be soft, elastic and not traumatize the wound;
5) they should be easy to sterilize without loosing its qualities;
6) they should be cheap, considering its wide use. Annually, 200 meters of gauze and 225 pieces of bandage are normally spent per a surgical bed. Appendectomy alone, for example, requires about 7 meters of gauze.
**Operation unit**

- Operation unit is a complex of the special equipment for performing operations.
- Besides main theatre the operation unit includes special premises: preoperation room, narcosis room, functional zones, room of the head of the operation unit, personnel room.
Kinds of instruments for operation

The instruments may be divided into the following groups:

1. Instruments for operating on soft tissues;
2. Instruments for operating in the abdominal cavity;
3. Instruments for operating on the bones of the skull, spine and extremities;
4. Instruments for operating on the thoracic organs;
5. Instruments for operating on the urinary tract;
6. Instruments for operating on the rectum.
Instruments for operating on soft tissues

- Cutting instruments;
- Hook retractors (sharp and blunt);
- Dissecting and dressing thumb forceps;
- Haemostatic forceps (with wide and narrow ends, with fine teeth);
- Scissors;
- Needles;
- Needle Holders.
ASEPSIS AND ANTISEPSIS

• In surgery, infections are very common and may even lead to death in spite of a high quality of operative technique. The prevention of such a complication in surgical practice is therefore a major challenge which should be based on the principles of asepsis and antisepsis.

• The measures to prevent an infection from entering a wound are referred to as asepsis, while those to cause the exclusion or destruction of harmful microbes are generally called antisepsis.

• The two principles represent the united whole in the prophylaxis of surgical infections. They have to be considered in terms of the interrelationship between the source of infection, its mode of transmission and the susceptibility of the body.

• The source is taken to mean the place of dwelling, growth and proliferation of microorganisms. Relative to the patient the source of infection can be either exogenous (from outside) or endogenous (from within the body).
ASEPSIS AND ANTISEPSIS

- The main sources of *exogenous infections* include patients with purulent inflammation or «healthy» carriers of the microbes, and occasionally animals.
- The *modes of transmission* from exogenous sources are usually as follows: airborne, direct contact and implantation.
- The major *sources* of *endogenous infections* incorporate chronic infections outside the area of the operation (e.g. skin diseases, dental or tonsillar conditions) or of the organs operated on as is (e.g. appendicitis, cholecystitis, osteomyelitis), as well as the oral, intestinal and respiratory saprophytes.
- Among the *modes of transmission* of endogenous infections are direct contact, lympho- and haematogenous spread.
- To successfully prevent an infection, it is necessary to affect each stage of the infectious process, i.e. the source of infection, the mode of transmission, and the host.
ASEPSIS

• A surgical hospital contains the main functional blocks which are as follows: a surgical block, surgery departments, plaster and treatment rooms and dressing-rooms.

• An operating unit houses special rooms for operating on patients. It has to be isolated from surgery departments on a separate floor or detachment of the building and be connected with the them by a corridor.

• To provide the regimen of sterility, there are the four special functional zones in the surgical block:
  1. The sterile zone, i.e. the operating theatre (to operate on patients), scrub-up room (for preoperative cleansing surgeons' hands and arms) and the room for sterilisation (to sterilise the instruments to be used during the operation).
  2. The clean zone, i.e. the rooms for personal hygiene and changing clothes of the staff.
  3. The technical zone, i.e. the rooms where apparatus for air-conditioning or oxygen supplying and vacuum devices are stored.
  4. The dirty zone, i.e. the sister's room, the room of the head of surgery and the one for dirty clothes etc.
ASEPSIS

- The operating theatres equipped for using laminated sterile conditioned air are needed for the following types of operation: tissue grafting with subsequent application of immune suppressors, implantation of prosthetics, operations for burns.
- Setting of a special isolator box with laminated air flow is possible in the operation rooms built long ago.
- The compounds that have antibacterial effects fall into two main groups - chemotherapeutic agents (see «Antiseptics») and chemical agents for disinfection and sterilisation.
- The compounds for disinfection and sterilisation are used to prevent microbes from entering the wound, i.e. to affect their transmission. Several chemical antibacterial agents can be applied as both a chemotherapeutic agents and those for disinfection and sterilisation (e.g. chlorhexidine, hydrogen peroxide).
Prevention of microorganisms' contact with the wound

- Prevention of the contact (contagious) infection requires that everything that touches the wound be sterile. This is achieved via disinfection of instruments, as well as cleaning the surgeon's hands and operative site. Sterilization of the suturing material prevents both contact and implant infection of wounds.
- Sterilizing instruments, operating sheets, towels and dressing materials involves the following stages:
  - stage 1 - preparation of the materials,
  - stage 2 - preparing for sterilization itself,
  - stage 3 - sterilization,
  - stage 4 - safe-keeping of the materials sterilized.
- All these stages are to be performed in accordance with specific standards «Sterilization and disinfection of materials for medical use».
**Suturing material**

- Materials from different sources (e.g. metallic brace, clips and wires) are used in sewing tissues together during operations. There are more than forty types of suturing materials: widely used are those made of silk, nylon, catgut, vicryl, metallic braces.

- Both resolvable and non-resolvable threads may be used. *Natural resolvable* threads are made of catgut. To lengthen the resolution time of catgut, metallic compounds are impregnated into them (chromic and silver catguts). The examples of *synthetic resolvable* sutures are dexon, vicryl and oxylon.

- *Non-resolvable natural* sutures include sutures made of natural silk, cotton, yarn; their *synthetic* equivalents are dacron, nylon, ftolon, silk, kapron, etc.

- Suturing material should meet the main requirements as follows:
  - have smooth level surface without causing additional damage to the tissues;
  - have good manipulating qualities - slip easily through tissues;
  - be elastic;
  - be firm at the knots;
  - be non-hygroscopic and not swell up;
  - be biologically compatible with bodily tissues and not be allergic to the body.

- Breakdown of the suture and healing the wound should be simultaneous.
Control of sterility

- The sterility of the items and the working regime of the steam steriliser can be controlled either by a direct or indirect method.

**Direct methods**
- Inoculation of medium with a swab of the dressing material.
- To inoculate medium with a swab, open the dressing box in the operating theatre, using a sterile instrument. Soak a piece of sterile gauze in normal saline which is passed several times on the material to be tested, then drop the piece of gauze into a sterile test tube and send it to the microbiological laboratory.
- Bacteriological tests.
- A test tube that contains reference nonpathogenic cultured microorganisms known to die, if exposed to a certain temperature, is used. Place the test tube inside the dressing box and send it to the laboratory after sterilisation is over. Absence of bacterial growth implies that the items are sterile.
- The swabs should be taken from once every 10 days.
Control of sterilility

Indirect methods

• Control of sterility of materials is done each time they have been sterilized. Compounds with known specific melting points are used for this purpose: benzoic acid (120°C), resorcinol (119°C), antipyrin (110°C). These compounds are kept in ampoules. They can also be put into test tubes (0.5g each), and closed with gauze plug. One or two ampoules are placed in between the layers of materials to be sterilized. Melting of the powdered compound into a liquid mass implies that the temperature in the box was at least as high as the melting point of the compound. If sterilization is performed at 2 atmospheres (temperature 132.9°C), compounds with higher melting points are used: ascorbic acid (187-192°C), succinic acid (180-184°C), pilocarpine hydrochloride (200°C), thiourea (180°C).

• Thermometry is known to be the most objective indirect methods of sterility control. In each dressing box 1 or 2 thermometers are placed in between the layers of materials to be sterilised. The readings will indicate the maximum temperatures but not the exposition time, i.e. for how long such a temperature was maintained in the chamber. Hence this method does not preclude the use of direct methods like the bacteriological test.
Preparation of the hands for operation

- Scrubbing of the hands is a very important way of preventing infection.
- **Fuerbringer's** and **Alfred's** methods are only of historic value and involve using sterile brush and sterile soap to scrub the hands.
- **Spasokukotski-Kochergin's method.** This method involves mechanical cleansing of the hands with 0,5% ammonium.
- **Pervomur** (C-4). Pervomur is a solution that contains formic acid and hydrogen peroxide.
- **Chlorhexidine** (0,5% alcohol solution). The hands (the finger up to the midforearm) are smeared with gauze swabs soaked in the solution of chlorhexidine for about three minutes; prior to this the hands are washed with soap for a minute.
- **AHD solution and Eurosept.** These solutions contain the antiseptics such as ethanol, chlorhexidine, and polyiolic fatty acid ether.
- The hands can also be cleansed by rubbing the hands with 96% ethyl alcohol for 10 minutes (**Brun's method**) or with 2% alcohol solution of iodine for 3 minutes.
Cleaning the operative field

• Preparation of the place of the expected incision (operative field or site) starts on the day preceding the operation, which includes hygienic baths and a change of underwear. On the day of operation, the skin of the expected place of incision is dry-shaved and cleaned with alcohol.

• Immediately before the operation, on the operating table, the operative field is abundantly smeared with 5% alcohol solution of iodine and repead after the suturing. This is know as Grossich – Filonchikov’s method.

• In a patient allergic to iodine the skin can be prepared with brilliant green (Bakkal's method). On the operating table, the operation site can be can be prepared with derivatives of iodine such as iodonate, povidon-iodine, betadin.

• In urgent operations, the preparation of the operation site involves shaving of the hair, cleaning the skin with 0.5% ammonium, using one of the methods (Grossich-Filonchikov's or Bakkal's one or application of iodine derivatives).
ANTISEPSIS

• There are four types of antisepsis: mechanical, physical, chemical and biological.

Mechanical and physical antisepsis

• **Mechanical antisepsis** is based on surgical debridement of wounds. This is performed in the surgical theatre and involves excision of the edges, walls and the floor of wounds to remove the nonviable tissue and microorganisms within the wound. It is the major method to treat accidental, infected wounds.

• **Physical antisepsis** starts from the law of capillarity, hygroscopicity, diffusion, osmosis, siphoning, ultrasound and laser effects.

• These are the principles used:
  • to enhance drainage from wounds and pus from abscesses and empyemas,
  • to facilitate flow to the outside (into a dressing or a special container with antiseptic solution).
**Chemical antisepsis**

- Synthetic antibacterial agents are used to combat bacterial infection in the wound or inflammatory foci. These are both effective for therapy and prophylaxis and help achieve antibacterial effect inside the human body.
- Derivatives of nitrofuran (*Furacin*, *Soluble Furagin*).
- Acid group (boric acid).
- Oxidants (*Hydrogen peroxide*, *Potassium permanganate*, *Brilliant green*, *Methylene blue*).
- Detergents (*Chlorhexidine*).
- 5-Nitro-imidazole derivatives (*Metronidazole*, *Dioxydin*).
- Heavy metal salts (*Silver nitrate*).
- *Sulphonamides* (streptocide, ethazol, sulfacyl).
ANTISEPSIS

- **Topical chemotherapy** involves:
  a) application of antiseptics to dressing materials for wounds and burns; these may be applied in the form of solutions to wash the wounds during dressing, soaking the dressing packs as well as in the form of creams and powders;
  b) application of antibacterial solutions directly into the wound, closure of the cavity with subsequent aspiration through a drain - washing, leaking drainage (i.e. a combination of physical and chemical types of antisepsis). Examples of combined use of physical and chemical antisepsis are peritoneal dialysis for purulent peritonitis, leaking drainage of pleural cavity in purulent pleuritis;
  c) infiltration of foci of inflammation with antibacterial solutions to combat local infection (antibiotics are often used for such purposes).

- **Systemic chemotherapy** includes:
  a) oral use of antibacterial agents: tablets of Furagin, Solafur, long-acting and very long-acting sulfonamides (sulfadimethoxin, sulfalen) which act topically on gastrointestinal microorganisms; this is part of preoperative workup for patients with impending intestinal surgery. Absorbed into the blood stream, these drugs also act on the body systemically after they have been absorbed into the bloodstream;
  c) intravenous use of chemotherapeutic compounds: e.g. soluble furagin, dioxidin
Biological antisepsis

• For treatment and prophylaxis of purulent infections biological compounds can also be used. Antibiotics are known to be of greatest importance as far as antibacterial therapy is concerned. Currently, the use of antibiotics has been facing a multitude of problems associated with changes in biology of target microorganisms, i.e. quite a number of drugresistant strains have emerged.
• The major antibiotics used for treatment and prophylaxis of infections are as follows:
  • The penicillins
  • Cephalosporins
  • Aminoglycosides
  • Tetracyclines
  • Macrolides
  • Fluorquinolones

Biologic antiseptic compounds include proteolytic enzymes
Investigation of the surgical patient

In surgery, diagnosis or diagnostics is the process of identifying a medical condition or disease by its signs, symptoms, and from the results of various diagnostic procedures. The conclusion reached through this process is called a diagnosis. The term “diagnostic criteria” designates the combination of symptoms which allows the doctor to ascertain the diagnosis of the respective disease.

In surgery diagnosis formulate in correspondence with International Statistical Classification of Diseases and Related Health Problems. The International Statistical Classification of Diseases and Related Health Problems (most commonly known by the abbreviation ICD) provides codes to classify diseases and a wide variety of signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or disease. Every health condition can be assigned to a unique category and given a code, up to six characters long. Such categories can include a set of similar diseases.
The International Classification of Diseases (ICD)

The International Classification of Diseases is published by the World Health Organization (WHO). The ICD is used world-wide for morbidity and mortality statistics, reimbursement systems and automated decision support in medicine. This system is designed to promote international comparability in the collection, processing, classification, and presentation of these statistics.

The ICD is revised periodically and is currently in its tenth edition. The ICD–10, as it is therefore known, was developed in 1992 to track mortality statistics. ICD–11 is planned for 2011 and will be revised using Web 2.0 principles. Annual minor updates and three yearly major updates are published by WHO. The ICD is part of a “family” of guides that can be used to complement each other, including also the International Classification of Functioning, Disability and Health which focuses on the domains of functioning (disability) associated with health conditions, from both medical and social perspectives.
The differential diagnosis

The differential diagnosis (sometimes abbreviated DDx or ΔΔ) is the systematic method physicians use to identify the disease causing a patient’s symptoms.

Before a medical condition can be treated, it must be identified. The physician begins by observing the patient’s symptoms, examining the patient, and taking the patient’s personal and family history. Then the physician lists the most likely causes. The physician asks questions and performs tests to eliminate possibilities until he or she is satisfied that the single most likely cause has been identified.

Once a working diagnosis is reached, the physician prescribes a therapy. If the patient’s condition does not improve, the diagnosis must be reassessed.

The method of differential diagnosis was first suggested for use in the diagnosis of mental disorders by Emil Kraepelin. It is more systematic than the old–fashioned method of diagnosis by gestalt (impression).
Operation is the main method of treatment in surgery.

An OPERATION (from the Latin word "operari" - "to work") is a mechanical influence upon the tissues and organs with the curative or diagnostic purpose.
Surgical operations we can divide on:
1. extrimal operations (urgent);
2. emergency;
3. planned (non urgent).

Instead of that we divide operations on:
- radical
- palliative.
OPERATION

• Operations can be one-stage or multi-stage.
• Surgical operation we can divide on:
  - typical and
  - non-typical operations.
• Next kinds are:
  - opened and
  - closed operations (endoscopic).
OPERATION

• The operations are divided into 4 groups:
  1. clean;
  2. relatively clean (when the lumen of the alimentary tract is cut open);
  3. contaminated (when the content of the internal organs gets into the wound);
  4. dirty or primary infected.
OPERATION

- **Microsurgical** operations work under the influence of from 3 to 40 times with help raisin glasses of microscope.
- **Endoscopic** operations do with help of endoscopical tools. Through endoscope we complete excision, take away polyps of ventricle, urinary bladder, mucous membrane; hemostatic, delusion.
- **Endovascular operation** - is kind of closed operation wit help of catheter.
- **Reoperations**- can be planned (multi-stage) or forced - under development of postoperational complications, treatment can be only in surgical way.
OPERATION

There are THREE MAIN STAGES in a surgical operation:

1 - the preoperation period and preparation of the patient to the operation;

2 - the operation itself, with its particular features;

3 - intensive care and nursing of the patient during the postoperation period.
OPERATION

The preparation to the surgical intervention includes, besides the above-mentioned measures:

1. psychological preparation;
2. general somatic preparation;
3. local preparation.
Preoperative Preparation of the Surgical Patient

1. Review the patient’s history and physical examination, and write a preoperative note assessing the patient’s overall condition and operative risk.

2. Preoperative laboratory evaluation: Electrolytes, BUN, creatinine, INR/PTT, CBC, platelet count, UA, ABG, pulmonary function test. Chest x-ray (>35 yrs old), EKG (if older then 35 yrs old or if cardiovascular disease). Type and cross for an appropriate number of units of blood. No screening laboratory tests are required in the healthy patient.

3. Skin preparation: Patient to shower and scrub the operative site with germicidal soap (Hibiclens) on the night before surgery. On the day of surgery, hair should be removed with an electric clipper or shaved just prior to operation.
4. Prophylactic antibiotics or endocarditis prophylaxis if indicated.

5. Preoperative incentive spirometry on the evening prior to surgery may be indicated for patients with pulmonary disease.

6. Thromboembolic prophylaxis should be provided for selected, high-risk patients.


8. IV and monitoring lines: At least one 18-gauge IV for initiation of anesthesia. Arterial catheter and pulmonary artery catheters (Swan-Ganz) if indicated. Patient to void on call to operating room.

9. Medications. Preoperative sedation as ordered by anesthesiologist. Maintenance medications to be given the morning of surgery with a sip of water. Diabetics should receive one half of their usual AM insulin dose, and an insulin drip should be initiated with hourly glucose monitoring.

10. Bowel preparation
POST-OPERATION PERIOD

The POST-OPERATION PERIOD IS DIVIDED INTO THREE PHASES:

1. the early phase - the first 3-5 days after the operation;
2. the late phase - 2-3 weeks after the operation;
3. the remote phase - until the patient recovers his capacity to work.
The End