

**MINISTRY OF HEALTH
OF THE REPUBLIC OF UZBEKISTAN**

**SAMARKAND
STATE
MEDICAL
UNIVERSITY**

**METHODS OF EXAMINING SURGICAL PATIENTS.
GENERAL CLINICAL, LABORATORY,
AND INSTRUMENTAL METHODS.
ASEPSIS AND ANTISEPSIS.
METHODS OF TREATING THE SURGEON'S HAND
AND THE OPERATING FIELD**



The educational and methodological manual is intended for 6th-year students of medical universities, faculties of medical work and vocational education, clinical residents, students of medical colleges, masters, and doctoral residents.



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Compilers:

Khursanov Y.E Associate professor of the department of surgical diseases
№2, Samarkand state medical university

Reviewers:

Rakhmanov Q.E Professor Samarkand state medical university

Davlatov S.S Professor Bukhoro state medical institute

Annotation. *The educational and methodological manual “Methods of Examination of Surgical Patients” presents the main theoretical and practical information on the methods of examining surgical patients, including history taking, physical examination, assessment of general condition, examination of individual organs and systems, laboratory and instrumental diagnostic methods, as well as special methods of examination used in surgical practice. Test questions, situational problems, and tasks aimed at developing practical and professional skills are also provided. The educational and methodological manual is intended for 6th-year students, postgraduate residents, clinical residents, and students of the medical treatment, professional education, and pediatrics faculties of medical universities.*

The educational-methodological manual was approved by the Academic Council of Samarkand State Medical University.

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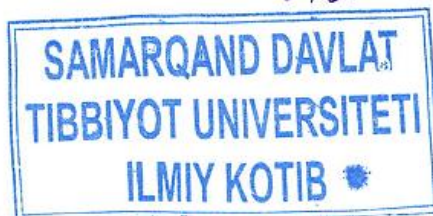


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Methods of examining surgical patients . General clinical, laboratory and instrumental methods. Asepsis and antiseptics . Methods of treating the surgeon's hand and the operating field .

Scientific and technical progress has equipped clinical medicine and surgery with new diagnostic and treatment technologies. However, the use of general clinical examination methods, laboratory and instrumental examinations used by a general practitioner are factors in improving patient care. Knowledge of the principles of examination and treatment of surgical patients by a general practitioner is a criterion for timely and effective treatment of these patients. Processing of the surgical field and the surgeon's hand is a factor in preventing purulent complications that may occur after surgery .

purpose of the training .

Antiseptic methods. Care of patients with purulent pathology. Sterilization of dressings and operating drapes. Organization of work in the operating room. Surgical treatment of the surgeon's hands and the operating field. Organization of work in the sterilization room. Preparation and sterilization of cutting, optical and general surgical instruments for sterilization. Sterilization of sutures. Development of students' thinking skills, development of independent reasoning.

Training tasks .

The student must know:

1. The concepts of asepsis and antiseptics.
2. Types of asepsis.
3. Methods of antiseptics.
4. Care of patients with purulent pathologies.
5. Rules for the use of chemical antiseptics.
6. Indications and contraindications to antibiotic therapy.
7. Sterilization of dressings and operating drapes.
8. Organization of work in the operating room.
9. Types of surgical treatment of the surgeon's hands and the operating field.
10. Organization of work in the sterilization room.
11. Preparation and sterilization of cutting, optical and general surgical

instruments for sterilization.

12. Sterilization of sutures.

The student must be able to complete

1. Antiseptic methods: mechanical, physical, chemical, biological and mixed antiseptics.

2. Primary wound treatment.

3. Correctly prescribe antibiotics.

4. Care for patients with purulent pathology.

5. Sterilization of dressings and operating drapes.

6. Organization of work in the operating room.

7. Treatment of the surgeon's hands.

8. Surgical treatment of the operating field.

9. Organization of work in the sterilization room.

10. Pre-sterilization treatment of instruments.

11. Methods of disinfection of instruments before sterilization.

12. Placing instruments, drapes and gowns in bins.

13. Preparation and sterilization of cutting, optical and general surgical instruments for sterilization.

14. Methods of sterility control.

15. Sterilization of sutures.

Basic study questions

1. Antiseptics and their historical development.

2. Types of antiseptics.

3. Methods of using antiseptics.

4. Historical development of asepsis and unuig.

5. Types of sterilization .

5. Sterilization stages .

6. Sterility control .

7. Disinfection .

8. Methods of treating the surgeon's hand.

9. Stages of surgical hand treatment.

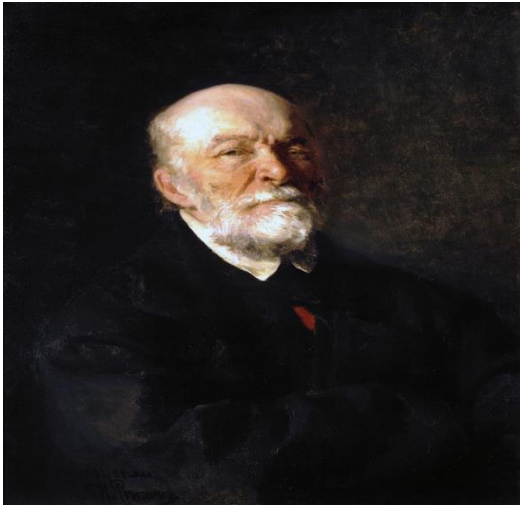
Methods of examining surgical patients . General clinical , laboratory and instrumental methods. Asepsis and antiseptics . Methods of treating the surgeon's hand and the operating field .

Asepsis and antiseptics are an integral part of surgery and are directly related to operations, joint replacements, and the treatment of diseases. The basis of organizing work in surgical departments begins with compliance with the rules of asepsis and antiseptics.

The main stages in the development of surgery were the discovery of aseptic and antiseptic methods. Because before the advent of aseptic and antiseptics, most patients died not from the original disease, but from its complications. The great scientist MI Pirogov wrote during the Crimean War: "It can be noted that the majority of wounded people die not from the wound itself, but from hospital infection." The Hungarian physician IF Semmelweis in 1847 noted that the cause of postpartum sepsis was the introduction of "corpse poison" by the doctor during manual examination of the uterus of a woman in labor. He suggested that obstetricians wash their hands with a solution of chlorinated lime and somewhat reduced the number of complications. English surgeon George Lister, studying the causes of death of patients after surgery, came to the conclusion that these complications were caused by bacteria that had entered the surgical wound, and developed a system of measures that made up the antiseptic method. Only after this did the development of not only surgery, but also all medicine, reach a new level. Taking into account the above, the rules of asepsis and antiseptics should be well known not only to surgeons, but also to doctors of all specialties, paramedics.

The knowledge acquired in the department of aseptics and antiseptics within the discipline is necessary for organizing work in all departments of surgery, such as the surgical department, the correct treatment of open and closed wounds, wounds in surgical infection departments, the elimination of hospital infections , and the correct implementation of sterilization. In addition, knowledge of the laws and regulations of aseptics and antiseptics serves as an important basis for supplementing the knowledge learned in other disciplines such as human anatomy, histology, biology, biophysics, ENT, traumatology, obstetrics and gynecology, emergency surgery, and all medical sciences.

ANTISEPTICS - a set of measures aimed at combating microorganisms in a wound, pathological focus, or in the body as a whole.



Historical note . The scientist who correctly assessed the etiopathological factors of purulent complications of wounds was undoubtedly MI Pirogov.

Thus, MI Pirogov came to the conclusion that, until the role of microorganisms in the etiology of purulent- septic diseases was determined, the causative factor was some invisible, organic thing in the environment, in the surgeon's hands, on instruments , and in care items .

1. Surgical instruments , sutures and dressings , as well as the surgeon's hands, were disinfected with a 2–3% carbolic acid solution .
2. The surgical site was treated with a 2–3% carbolic acid solution .
3. After the operation, the surgical wound was closed with a special dressing soaked in 5% carbolic acid.

of antiseptics .

1. Mechanical antiseptic .

2. Physical antiseptic . 3.

Chemical antiseptic . 4.

Biological antiseptic . The

combination of several of these antiseptic methods is called mixed antiseptic .

d e b.

Mechanical antiseptic.

In order to prevent the development of bacteria in the wound, it is important to remove necrotic tissues and foreign bodies from the wound by mechanical

methods, which can be a nutrient medium for microbes. For this, the wound is subjected to primary surgical treatment and a primary surgical suture is applied: the edges and walls of the wound are cut to the bottom at the border of healthy tissue, and the integrity of the tissue is restored by suturing.

The method of mechanical treatment of wounds was first used by A.A. Charakovsky in 1836.

Physical antiseptic.

Physical antiseptics are the use of physical factors aimed at creating unfavorable conditions for the development of bacteria in the wound, reducing the absorption of their toxins and tissue decomposition products. The main task of physical antiseptics is the release and absorption of wound exudate into the dressing, which is based on the phenomenon of hygroscopicity, which is achieved through the ability of medical gauze to absorb wound exudate (exudate) itself. (M.Ya. Preobrazhensky, 1894).

The method of actively removing exudate from a purulent wound or cavity is called **drainage** .

It is performed using drainage tubes. The most common type of drainage tube is a gauze pad of various lengths and widths . Rubber tubes and gauze are used as drainage tubes for draining purulent wounds or cavities . Sometimes in clinical practice, rubber and gauze drains are used together for draining wounds .

The use of gauze is based on its hygroscopic properties, which are enhanced when soaked in a hypertonic (5-10%) solution of sodium chloride . A gauze drainage located sparsely in the wound cavity opens its edges and prevents the accumulation of pus. When draining, exudate from the wound can be discharged passively (into a bandage, in a wound into a Bülow drainage) and actively - into a Radon drainage .

Physical antiseptics also include open wound treatment, the use of ultraviolet light, laser light , and ultrasound.

In open wound treatment, drying of tissues creates unfavorable conditions for the development of microbes, especially if the wound surface is in an abacterial environment created by special devices. Drainage tubes are tubes with side holes

made of red rubber, proposed by the French surgeon Chassagnac, to drain accumulated pus and wound fluid in general. Previously, tubes made of glass, aluminum, and tin were used.

Currently, the use of drains is limited and is mainly used for wounds with artificial or natural cavities in the body. For example, in empyema, a large amount of pus accumulates in the pleural cavity, a drainage tube is inserted into the pleural cavity and connected to a suction device. In addition, drainage tubes are also used for general edema that cannot be reduced with medication. Usually, the tubes are made in the number 16, depending on their thickness. Disinfection is achieved by washing them in water (by shaking), placing them in a 0.5% solution of sodium chloride for 3 weeks. The side holes of the drainage tubes (not more than 1/3 of their circumference) are made using scissors or special cutters before direct installation. In small wounds, fistulas, etc., instead of drainage tubes, slits made of lengthwise cut tubes are installed. To prevent the drainage tubes from shifting in one direction or another, the wound is is attached to the surface in some way.

Bülau drainage (G. BULAU, 1835-1900, German physician) is a method of removing fluid and air from the pleural cavity using a tubular drain, which is inserted through the chest wall using a trocar and works on the principle of a closed container. At the outer end of the drain is a valve made of a rubber glove It prevents air from re-entering. The most common types of drainage include **Redon drainage**.

Ultraviolet rays have a bactericidal effect, stimulate immunity and accelerate the processes of cleansing and regeneration in wounds. Low-energy laser rays change chemical reactions in tissues, sensitivity to red and infrared radiation. Among other physical factors, diadynamic current (Bernard current), electrophoresis of various antiseptic agents, and X-ray therapy have been widely used in clinical practice.

The bactericidal effect of ultrasound is based on the cavitation process - the impact of a pressure pulse on a microbial cell at a speed higher than the speed of sound.

Under the high energy of the laser beam, the following changes occur in the tissues: 1) the temperature increases sharply, resembling a thermal burn.

2) As a result of the transition of solid and liquid substances to a gaseous state for a short period of time, the pressure inside the cells and tissues increases sharply, that is, an "explosion effect" occurs.

3) An electric field is created that changes the electrical properties, specific gravity, and dielectric constant of tissues, resulting in the formation of a sterile coagulation film on their surface that prevents the absorption of toxins.

Laser beams are used in medicine in two types - high-energy and low-energy. High-energy laser beams have the following effects: The temperature in the tissues reaches several hundred degrees. The changes observed in the tissues resemble thermal burns.

The "explosion effect" - "shock flow" - that occurs in tissues occurs as a result of the instantaneous transition of solid and liquid substances into a gaseous state. As a result, the pressure inside cells and tissues increases sharply.

The high energy of the laser beam causes the formation of an electric field in the tissues, which causes electrochemical effects in the form of changes in electrical parameters, specific gravity, dielectric constant, etc. As a result, a sterile coagulation film is formed on the surface of the tissues, which prevents the absorption of toxins and the spread of infection.

Low-energy lasers deliberately change the reactions in the tissues.

Low-power laser acts as an optical catalyst for chemical reactions sensitive to red and infrared radiation. Monochromatic red light has anti-inflammatory and vasodilating effects, improves metabolic processes, accelerates the process of cell proliferation in the bone marrow and spleen, and the growth and development of blood vessels.

Abacterial controlled environment is a method of open treatment of wounds and burns, based on the creation of a sterile environment and microclimate that is moderate for the wound process, but unfavorable for microbes multiplying in the wound. Treatment in an abacterial controlled environment is carried out in conjunction with active surgical procedures (excision of tissues that have lost their viability in the wound, appropriate drainage), and then the wound surface is closed with sutures or skin grafting. Special arotherapeutic devices have been created for an abacterial controlled environment. After filtering the atmospheric air in arotherapeutic devices, it is freed from small dispersed dust and microbes and becomes sterile. Then the temperature, pressure, air flow rate and its relative

humidity are adjusted individually for each patient. All physical factors of an abacterial controlled environment significantly reduce arterial blood flow, accelerate venous blood flow, and eliminate tissue edema. Thus, a soft, easily removable coating is formed on the wound surface. Regular removal of the coating with microbes leads to wound cleansing. Treatment in a controlled bacterial environment reduces the rate of growth of gram-negative pathogenic microflora by 4-6 times in a short time (5-7 days). The number of microbial cells per 1 g of tissue in the wound decreases sharply.

Chemical antiseptic .

Chemical antiseptics - refers to the destruction of microbes in a wound, pathological focus, or in the patient's body and the surrounding environment with chemicals. The use of various chemicals that have a bactericidal or bacteriostatic effect constitutes chemical antiseptics. The general and local effects of chemical antiseptics should be sufficiently safe for microorganisms and their tissue cells and deadly for microbes. Antiseptics have oxidizing, adsorbing, denaturing, dehydrating and other effects on microbes. Currently, a large number of antiseptics are used. The substances in the groups listed below are the most well-known.

The main groups of chemical antiseptics are the Halides group.

Chloramine B. 1 - 3% solution is used to disinfect hands, non-metallic instruments, catheters, drains, and drapes.

Iodine. A 5–10% alcoholic solution of iodine is a powerful antiseptic agent that has a bactericidal, bacteriostatic, cauterizing, and astringent effect.

Iodonate. 1% solution is used to treat the surgical field.

Iodopyrone. 0.1% solution is used to treat the surgeon's hands, 1% solution is used to treat the surgical field, and 0.5-1% solution is used to treat purulent wounds.

Lugol's solution (iodine - 1 part, potassium iodite - 2 parts, water - 17 parts). It is used to sterilize catguts, to wipe the throat and larynx in bacterial carriers. When preparing patients with thyrotoxicosis for surgery, 10-15 drops are recommended 2 times a day.

Iodobac. The drug is used to treat mucous membranes, skin, wounds, ulcers, bedsores, and the surgical field. It has bactericidal, sporicidal and virucidal

properties. It has the ability to kill tuberculosis mycobacteria . **Chloran**, chlorantoin. This is a powder or tablet agent intended for the preparation of disinfectant solutions . Iodized salt .
Used in the treatment of purulent infections .

Oxidizers.

Hydrogen peroxide . A 3% aqueous solution of hydrogen peroxide is used to treat wounds. A 6% solution is used to disinfect surgical instruments .

Potassium permanganate . This is a strong oxidizer. Aqueous solutions are used for rinsing the mouth, washing the stomach, treating purulent wounds (0.1 - 0.5%) and treating burns (2 - 5%).

Heavy metal salts. Sulphur solution (1:1000 – 1:2000) has a strong bactericidal effect. It is used for sterilizing silk , disinfecting skin , bed linen , clothing , gloves, metal catheters , and patient care equipment .

Mercury oxycyanide is a disinfectant , used in a ratio of 1:1000 and 1:5000 for washing the bladder, disinfecting optical instruments , cystoscopes , rectoscopes , laparoscopes .

Diocide. A 1:5000 solution of diocide is used for hand treatment . A 1 : 1000 solution is used for cold sterilization of sutures (catgut) , equipment, and instruments .

Silver nitrate. A 0.1–0.2% solution is used for washing wounds and purulent cavities, a 1–2% solution is used for treating ulcers and cracks, and a 5–10% solution is used for cauterizing excessive granulation.

Protargol. A 1–5% solution is used for applying to mucous membranes in urological practice .

Collargol (colloidal silver). A 0.2–1% solution is used to treat wounds. A 2% solution is administered intravenously in sepsis .

Inorganic acids and alkalis

Boric acid. A 2–3% aqueous solution is used to wash purulent wounds, abscesses, and cavities infected with *Pseudomonas aeruginosa*. Sodium hydroxide solution. A 0.5% solution has antimicrobial and sporicidal effects.

Used in the treatment of the surgeon 's hand in the **Spasokukotsky** -Kochergin method . Sodium bicarbonate solution. A 2% solution increases the boiling point to 104-106 ° C, is used to sterilize medical instruments

. A mixture of 1% sodium hydroxide and 3% hydrogen peroxide is used to disinfect drains and catheters .

Alcohols

Ethyl alcohol. A 70% solution is used for disinfection , and a 96 % solution is used for cleaning surgeons' hands, preserving sterile silk , and disinfecting sharp instruments .

Previous guides

Formaldehyde solution or formalin (aqueous solution containing 36.5–37.8% formaldehyde). Has a strong bactericidal effect . Used for disinfecting rubber gloves , drains , and medical instruments .

Lysoform. Consists of 40 parts formalin, 40 parts potassium soap, 20 parts ethyl alcohol. Has a disinfectant and deodorizing effect. A 1 - 3% solution is used to disinfect medical instruments and surgeons' hands .

Karzol - eks – Basic. This product is intended for disinfection of thermolabile and thermostable medical devices .

Phenols

Phenol , or carbolic acid. A 2-3% solution is **used** to disinfect drains , catheters , gloves , and medical instruments .

Lysol. A 10% solution is used to disinfect bed linen , wipe operating and dressing rooms, and a 1-3% solution is used to deodorize hands . Birch **tar** (birch tar) . Has disinfectant properties and is part of Vishnevsky ointment, which is used to treat wounds . Picric acid . A 5% solution is used to disinfect the skin . Ichthyol . 5-20 % ointment, also used in the form of suppositories . Has an anti - inflammatory effect.

Three-component solution (Krupen 's solution). Composition: carbolic acid (3 g), sodium carbonate (15 g), formalin (20 g), distilled water (100 g). Used for sterilization of sharp instruments, adhesives , polyethylene tubes .

Organic acids

Salicylic acid. 1–2% alcohol solution, 2–5% solution, and 1–10% ointment are used as antiseptics .

Pervomur (preparation S-4). A 2.4% solution is used to treat hands and surgical wounds . A 4.8% solution is used to sterilize gloves, surgical instruments , and sutures .

Coloring agents

Brilliant green. 1 - 2% aqueous or alcoholic solution is used for sterilization of catgut , treatment of the surgical field and wound surface .

Ethacridine lactate (rivanol). 0.05 - 0.1% aqueous solution is used in the treatment of pyoderma .

Methylene blue . A 1–3% alcohol solution is **used to** treat superficial wounds and pyoderma .

Detergents

Serigel . Used in manual processing .

Degmicide . 1% solution is used for hand and surgical field treatment .
Chlorhexidine .

Chlorhexidine is produced in the form of a 20% aqueous solution of bigluconate. A 5% alcohol solution is used for hand treatment . Rocal . A 1 :1000 solution is used for surgical hand treatment , a 1% solution is used for surgical field treatment , a 1:1000 solution is used for surgical instruments , and a 10% solution is used for sterilizing rubber gloves .

Organic substances of natural origin

Chlorophyllipt. Used in the treatment of purulent wounds. A 1% alcohol solution is mixed with a 0.25% novocaine solution in a ratio of 1:5.

Nitrofurantoin products

Furacilin (produced in the form of tablets of 0.1 g and 0.02 g). It is used in the form of a 0.02% aqueous solution or 0.066% alcoholic solution for the treatment of purulent wounds and in the form of a 0.2% ointment for the treatment of wounds in the dehydration phase, bedsores, and burns.

Furazolidone (trichofurin, 0.05 g tablet) . For oral administration.

Furagin. Produced in the form of 0.05 g tablets for oral administration .

Furadonin. Produced in the form of 0.05 g tablets for oral administration . Nitrofurantoin, aponitrofurantoin (nifurantin), nifurtinol (levantina), and nifuroxazide are also used in clinical practice .

Sulfanilamide preparations

Sulfanilamides are active antimicrobial agents. They have a bacteriostatic effect, but at high concentrations they can have a bacteriocidal effect. According to their therapeutic effect, sulfanilamides are divided into 2 groups: drugs used in systemic infections and administered orally; 2) drugs used in intestinal infections: sulgin, succinylsulfathiazole, stelazole, salicylazosulfapyridine, etc.

According to the duration of the effect:

1. Short-acting agents: norsulfazole (0.5 g tablet), norsulfazole sodium (5% solution), sulfazin (0.5 g tablet), sulfadimezine (0.5 g tablet), sulfacyl sodium (30% solution), sulfafurazine (0.5 g tablet), etazol (0.25 and 0.5 g tablet), etazol sodium (10% and 20% solution).
2. Medium-acting agents: sulfamethoxazole (0.5 g tablet), sulfazimosin (0.5 g tablet), sulfaphenazole (0.5 g tablet).
3. Long-acting agents: sulfadimethoxine (madribon; 0.2 and 0.5 g tablets), sulfamethoxazole (0.5 g tablet), sulfapyridazine sodium (10% solution), sulfamonomethoxine (0.5 g tablet), sulfalene (kelfizin; 0.2 g tablet), sulfalene (18.5% solution). Trimethoprim. Sulfanilamides are also used in the form of ointments: 10% streptocid ointment, etc.

Quinoxalines.

Dioxidine. A 1% aqueous solution is used to wash purulent wounds, and a 5% ointment is used to treat burns and trophic ulcers. In sepsis, a 0.5% solution is administered intravenously (the drug is mixed with 5% glucose or isotonic sodium chloride solution).

Quinoxidin. Used in the treatment of purulent inflammatory processes.

Nitronidazole derivatives.

Metronidazole (produced in the form of 0.25 and 0.5 g tablets, 0.5 g suppositories, and 500 mg metronidazole preservative solutions in 100 ml vials).

Naphthyridines and quinolines

Nevigramon (nalidixic acid, negra; in the form of 0.5 g capsules and tablets). Used for urinary tract infections.

Gramurin (oxolinic acid: 0.25 g tablets). Used for urinary tract infections.

8-Oxyquinoline derivatives

Chlorquinaldol (Quezil , Chlorquinaldine; 0.1 g tablets) . Int estopan (0.2 and 0.04 g tablets) . Used for intestinal infections .

5-NOK (nitroxoline, nibiol, nitrox; 0.05 g tablets) . Used for urinary tract infections .

Drugs with anti-inflammatory effects .

Dimexide (available in 10 and 25 ml ampoules, 50 and 100 ml vials). A 20 - 30% dimexide solution is used to treat deep burns and wounds, a 25 - 50 % solution is used for compresses , and a 10 - 15% solution is used for microenemas.

Mefenamic acid sodium salt (available as a 0.1 - 0.2% aqueous solution or 1% paste) .

Mixed antiseptic .

In clinical practice, the combined use of several antiseptic agents and the combined use of several different antiseptic methods is often observed . This increases the effectiveness of treating patients . Because in many cases, it is difficult to achieve full effectiveness with the use of one antiseptic method , and then the complex use of other types of antiseptics is the most preferable method. Mixed antiseptics are widely used in practice today.

For example:

1. During the primary treatment of a wound, necrotic tissue is excised (mechanical antiseptic);
2. The wound surface is treated with ultrasound (physical antiseptic);
3. Gauze swabs are inserted into purulent wounds (physical antiseptic) ;
4. They are soaked in a solution of boric acid (a chemical antiseptic) ;
5. Antibiotics are used (biological antiseptics) .

of using antiseptics .

Enteral administration - antiseptic agents are administered through the gastrointestinal system.

- External (surface) application - antiseptics are applied to wounds in powder, ointment, and solution form.

- Intracavity injection - by injecting antiseptic agents into the joint, abdominal, or pleural cavity .

- Parenteral administration - by injection into a vein or artery .

- Endoscopic application - to the lung abscess cavity through a bronchoscope, to the esophagus, stomach and duodenum through a fibrogastroscope.

- Endolymphatic administration - in peritonitis or purulent processes, by injecting antiseptic substances (antibiotics, enzymes) into the lymphatic nodes or vessels.

ASEPTICS is a set of measures aimed at preventing infection from entering a wound .

Historical note : 25 years after the foundation of antiseptics , a new method emerged based on the sterilization of all objects that came into contact with a wound.

The golden rule of asepsis is that everything that comes into contact with a wound must be sterile .

The basis of asepsis is the sterilization of instruments, suture materials, and dressings related to wounds. To put these laws into practice, we need to know the main source of microorganisms.

In life endogen – that is , organism in itself , and exogenous – from the organism outside to be microorganisms occurs .

Endogenous infections in the skin , mucous **membranes** in the membranes , stomach - intestines on the road and high breath on the roads They enter the wound directly or through blood-brain barrier fluid .

Exogenous infections can be transmitted by airborne, airborne-droplet (when talking, sneezing), contact (touching unclean instruments) and through suture material, drainages left in the wound permanently or temporarily (implantation - migrated). In addition, a "dormant" infection **is also** distinguished , that is, a microorganism that is always present in the body, but does not cause disease, after a certain time, when the human body's immunity decreases , becomes capable of causing disease. For example, after a successful operation , the patient leaves the hospital , and after 5-6 months, the postoperative scar may fester or a fistula may appear. The only way to eliminate microorganisms transmitted by contact (touch) is to sterilize all objects that may have come into contact with the wound . For this, it is necessary to sterilize surgical drapes , dressings and suture materials , gloves, instruments, surgeon's hands and the surgical field . Sterilization of nylon, silk, catgut, etc. used for suturing is important in preventing both contact and implantation infections .

Sterilization is the destruction of microbes and their spores . **Sterilization** can be achieved by various methods: burning, dry heat, annealing, boiling,

autoclaving, cleaning with chemicals. **Sterilization** of dressings , instruments and linen consists of 4 stages:

Stage 1 - preparation of materials for sterilization .

Stage 2 – placement of materials .

Stage 3 – sterilization .

Step 4 – storage of sterilized materials .

of sterilization , each of which is described below . Steam sterilization under pressure . This method sterilizes linen, dressings, and surgical instruments. They are sterilized for 45 minutes at a pressure of 1.1 atm (120 ° C), for 20 minutes at a pressure of 2 atm (about 134 ° C) . Before sterilization , the materials are placed in special metal jars with small holes for the entry of hot steam . A label is attached to the jar handle with the name of the material being sterilized and the date of sterilization

of the operating area.

To perform the operation under aseptic conditions, it is important to prepare the surgical field for the operation .

the surgical field. Before the operation, the patient is placed in a hygienic bath or shower. The patient's underwear, bed linen and pillowcases are changed in the morning. The surgical field is shaved on the day of the operation (preferably dry). After that, it is advisable to wipe this area with ethyl alcohol. There are several methods for treating the surgical field .

Filonchikov-Grossix method. It consists of applying a 5-10% alcohol solution of iodine 4 times, strictly as follows:

- 1) extensive surgical treatment (2 times) until the surgical site is covered with sterile gauze;
- 2) processing after fixation with sterile gauze (before cutting);
- 3) processing the wound edges before suturing;
- 4) Post-suture processing.

If the skin is delicate and in children, to prevent burns, the iodine solution is partially wiped with alcohol. Currently, treatment with 10% iodine is prohibited . Instead, it is recommended to use the following agents: 5% tannin solution, picric acid, serigel , 1 % brilliant green, 1% idonate solution, 4% iodopyrone solution, 2.4% pervomur solution . Currently, modern agents such as Kutasept G, Kutasept

F, yodobak, betadine, braunosal are used to treat the surgical site. They have bactericidal , fungicidal and virucidal (lipophilic viruses , HIV, hepatitis B virus) properties, and also have a destructive effect on mycobacteria of tuberculosis.

The Bakkal method is used in people with sensitive skin. The surgical site is treated with a 1% solution of brilliant green.

Treatment with formic acid . The preparation method is described above. In this case, alcohol and iodine are not used.

To treat the surgical site, a 1% solution of degmin and a 1:30 concentration of degmicide , as well as a 1% solution of Roccall, can be used. When preparing the patient for surgery , if there is a collection of pus in the surgical site, it is necessary to postpone the planned operation .

For the operation, the surgeon, his assistants , and the operating room nurse wear special clothes. In most surgical institutions, medical staff wear special light clothing of salad or light blue color.

Operation block

An operating room is a set of special rooms where operations and procedures are performed to ensure them.

The operating room should be located in a separate wing of the building, connected to the surgical department by a corridor, or on a separate floor of a multi-story building .

It is advisable to separate surgical departments with purulent diseases from other surgical departments. If this is not possible, separate operating rooms should be established for performing " clean " and "purulent" operations .

Regions according to the degree of sterility :

1. Sterile zone

(including operating room, pre- operating room and sterilization rooms).

2. Acute regime zone .

3. Ch e clanged r e silent area.

4. General regime area .

of operating room cleaning:

1. Initial.

2. Current.

3. After the operation .

4. Final.

5. General (general) .

the operation begins, all objects, equipment, and window sills are wiped with a damp cloth to remove any dust that has settled overnight (initial cleaning). Wipes , balls, and surgical instruments that have fallen during the operation are collected (current cleaning).

Between operations, after the patient is removed from the operating room, the linen and surgical instruments are collected, the operating table is wiped with a towel moistened with an antiseptic solution and a sterile sheet is laid, the floor is wiped with damp cloths (post- operative cleaning) . At the end of the working day, final cleaning is carried out. This includes wiping the ceiling, walls , window sills , all objects and equipment, as well as the floor with a disinfectant solution. Then the bactericidal lamp is turned on.

At the end of the week, a general cleaning of the operating room is carried out. This begins with the disinfection of the operating room: the ceiling, walls , all equipment , and the floor of the room are sprayed with a disinfectant solution and wiped. After this , a general wet cleaning is carried out and bactericidal ultraviolet lamps are turned on. An extraordinary general cleaning is carried out after the operation on a patient with an anaerobic infection (gas gangrene) if the operating room is contaminated with feces, intestinal products, or if an operation is performed.

In order for students to learn the lesson more deeply and to teach them critical thinking, we use the pedagogical technology " Brainstorming" during the lesson . The "Brainstorming" method is used to solve problematic issues when discussing the topic of asepsis and antiseptics . During the game, a problem is posed, and students express their ideas to solve this problem. In this, attention is paid not only to the quality of students' ideas, but also to their quantity. At the end of the game, a conclusion is drawn based on the answers given by the students .

GUIDELINE ON OPERATION BLOCK

1. Definition of the Operation Block

The operation block is a specialized and structurally isolated part of a hospital, exclusively dedicated to performing surgical interventions. It is designed with strict adherence to sterility and aseptic protocols to reduce the risk of infection. The block ensures a high degree of control over the environment including

airflow, temperature, and hygiene. Operation blocks house operating rooms, preparation zones, sterilization areas, and staff facilities. The layout is planned to allow seamless patient transfer and staff workflow while maintaining strict infection control standards.

2. Objectives of the Operation Block

- To provide a safe and sterile environment for all surgical interventions.
- To minimize the risk of surgical site infections (SSIs) and contamination.
- To facilitate efficient workflow for surgeons, anesthesiologists, and support personnel.
- To enhance postoperative outcomes and patient safety.
- To standardize surgical protocols and enforce discipline in surgical practices.

3. Main Components of the Operation Block

1. Operating Theaters (Rooms)
2. Scrub Area
3. Preparation/Induction Room
4. Post-Anesthesia Care Unit (PACU)
5. Sterile Storage Room
6. Dirty Utility Room
7. Changing Rooms
8. Control/Observation Room

4. Zoning System of the Operation Block

- Unrestricted Zone – Offices, corridors, no special attire.
- Semi-restricted Zone – Inner corridors, sterile storage, scrubs and caps required.

- Restricted Zone – Operating rooms, full surgical attire required.

5. Sterility and Infection Control Measures

- Hand hygiene and aseptic techniques.
- Instrument sterilization.
- Laminar airflow and HEPA filtration.
- Traffic control.
- Use of sterile barriers.

6. Roles and Responsibilities of Personnel

- Surgeon
- Surgical Assistant
- Anesthesiologist
- Scrub Nurse/Technician
- Circulating Nurse

7. Standard Operating Procedures (SOPs) in the OR

- Preoperative checklist.
- Time-out protocol.
- Instrument count.
- Sterile field management.
- Documentation of the procedure.

8. Hygiene and Environmental Sanitation

- Daily and terminal cleaning.
- Disinfectant use.

- Sterile attire policy.
- Waste segregation and biohazard management.

9. Safety Protocols and Emergency Preparedness

- Fire and electrical safety.
- Anesthesia monitoring.
- Emergency response kits.
- Regular training and simulations.

10. Maintenance and Quality Assurance

- Equipment inspection and calibration.
- Internal audits.
- Feedback and incident reporting systems.

11. Integration of Modern Technologies

- Laparoscopic and robotic surgery.
- Digital operating rooms.
- Smart sterilization tracking.
- AI-based monitoring systems.

12. Conclusion

The operation block is essential to hospital function. It must be clean, safe, and well-managed to reduce complications and ensure surgical success.

Methods of Treating the Surgeon's Hand and the Operating Field

Part 1: Preoperative Surgical Hand Antisepsis

Purpose:

To eliminate transient flora and reduce resident skin flora on the surgeon's hands and forearms before donning sterile gloves.

Indications:

- Required before every surgical procedure or when hands become contaminated.
- Necessary for all personnel involved in the sterile field (surgeons, assistants, scrub nurses).

General Principles:

- Short, clean, unpolished nails (no artificial nails or nail polish).
- Removal of rings, watches, and bracelets.
- Use of sterile scrub brushes or alcohol-based hand rubs.
- Duration: 3–5 minutes, depending on method.

Methods:

1. Traditional Scrubbing Method (with brush and antimicrobial soap):

- Step 1: Wet hands and forearms with warm water.
- Step 2: Apply antiseptic soap (e.g., chlorhexidine gluconate or povidone-iodine).
- Step 3: Scrub fingers, hands, and forearms thoroughly (nails with a nail cleaner).
- Step 4: Rinse from fingertips to elbows (do not move hands backward).
- Step 5: Repeat scrubbing and rinsing cycle for a total of 3–5 minutes.
- Step 6: Dry with a sterile towel, starting from fingertips down to elbows.

2. Alcohol-Based Hand Rub (Waterless Method):

- Step 1: Perform preliminary hand wash if visibly soiled.
- Step 2: Apply alcohol-based hand rub (e.g., ethanol 60–95%) to dry hands and forearms.
- Step 3: Rub thoroughly for 90 seconds to 2 minutes, allowing air-dry before

gloving.

- Recommended for short procedures or rapid sterilization.

Part 2: Preparation of the Surgical Operating Field (Patient's Skin)

Purpose:

To eliminate skin microorganisms at the incision site to prevent surgical site infections (SSIs).

Preconditions:

- Patient positioning must be finalized before skin prep.
- Hair removal only if necessary (use clippers, not razors).
- Use sterile gloves and instruments to apply antiseptics.

Antiseptic Agents Commonly Used:

- Chlorhexidine gluconate (preferred for its residual activity).
- Povidone-iodine (effective against broad range of microbes).
- Isopropyl alcohol (fast-acting, often used in combination).

Steps of Skin Preparation:

1. Mark surgical site with sterile marker.
2. Apply antiseptic in concentric circles, starting at the incision site and moving outward.
3. Avoid returning to the central area with the same sponge.
4. Let antiseptic air dry before draping.
5. Repeat application if contamination occurs.

Special Considerations:

- In emergency surgeries, rapid iodine-alcohol prep may be used.
- For infants and neonates, gentler, less irritating solutions are selected.
- Avoid pooling of alcohol-based solutions (fire hazard with electrocautery).

Summary Table

Area	Method	Duration	Agent Used
Surgeon's Hands	Brush + Soap Scrub	3–5 minutes	Chlorhexidine, Povidone-iodine
Surgeon's Hands	Alcohol-Based Rub	90 sec–2 min	Ethanol, Isopropyl Alcohol
Patient Skin	Antiseptic Painting	~2 minutes	Chlorhexidine, Povidone-iodine

Conclusion

Proper surgical hand preparation and skin disinfection are critical pillars of infection control in the operating room. Strict adherence to guidelines ensures patient safety, reduces surgical site infections, and promotes best practices in surgical hygiene.

Laboratory tests

Laboratory tests include determination of hematocrit and hemoglobin, leukocyte and erythrocyte counts, leukocyte formula, ESR, blood group and Rh compatibility, liver and pancreatic enzymes, bilirubin and its fractions, blood electrolytes, and a general urine analysis.

Examination methods. Diagnosis of the gallbladder and bile ducts is based primarily on the study of patient complaints, medical history, and the results of a physical examination of the body.

Patients most often complain of the following : pain , dyspepsia , fever, chills, skin rash , jaundice . When determining the anamnesis, it is necessary to pay attention to whether the patient has previously had jaundice and acute diseases of the liver and gallbladder, attacks of colic , which are likely to have triggered the disease in these organs (chronic cholecystitis, cholangitis and cholelithiasis). Physical examination methods include inspection, palpation, percussion, auscultation of the patient. They allow to gain an understanding of anatomical and functional changes and are often considered one of the main methods for assessing the dynamics of the patient's condition during treatment .

Functional examination of the liver reflects the specific activities of this organ, such as pigment, detoxification, protein synthesis , and pharmacometabolism .

In many cases, X-ray examination is of decisive importance in the diagnosis of biliary diseases .

the patient is lying on his stomach can provide information about the size, shape, and location of the liver and major structural changes in it .

Choleography. The method of choleography is based on the ability of the organ to secrete iodine-containing substances when they enter the bile ducts of the liver, which allows obtaining an X-ray contrast image of them . Intravenous cholecystocholangiography helps to obtain an X-ray contrast image of the bile ducts, regardless of the condition of the gallbladder , in case of impaired contractile function , blockage of the gallbladder, as well as when the gallbladder is removed after cholecystectomy.



Holography.

Percutaneous cholecystography . It consists of an X-ray examination of the enlarged gallbladder after puncture and injection of a contrast medium. Operative cholangiography is an X-ray contrast examination of the bile ducts during surgical operations and during **surgery** . In modern conditions, this examination is considered a mandatory step in operations on the bile ducts , as it increases the quality of diagnostics, reduces the number of complications and improves the results of surgical treatment.



cholecystography

Endoscopic **retrograde cholangiopancreatography (ERCP)** - consists of injecting a contrast medium using a catheter inserted into the bile duct or into the mouth of the biliary anastomosis during duodenoscopy.

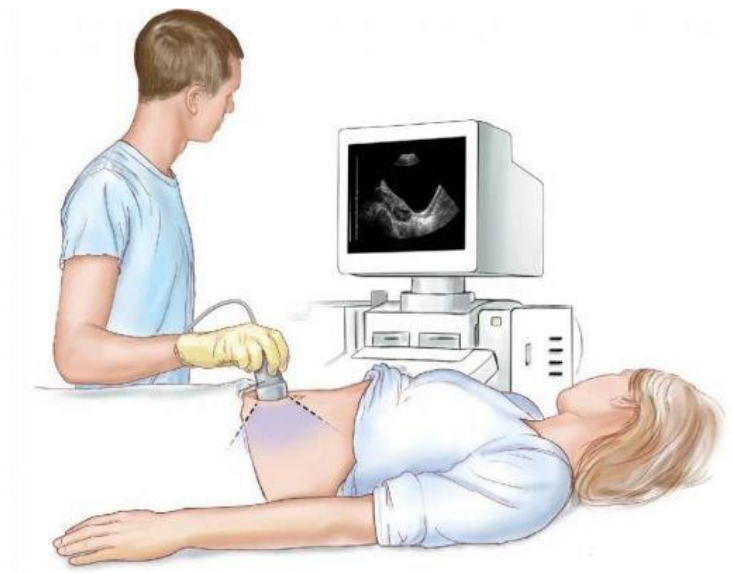


Endoscopic **retrograde**
cholangiopancreatography (ERCP)

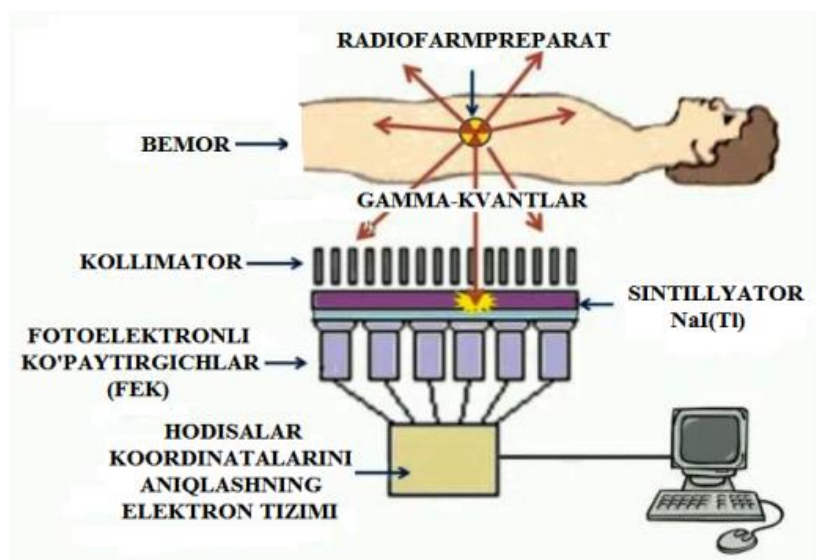
Skin or q ali liver or q ali cholangiography (CCHG) liver inside grass the ways puncture to them contrast substance send and later X - ray to check own inside Percutaneous cholangiography is usually performed mechanically : this method allows you to confirm the presence of obstruction in the bile ducts , determine its location and find out the cause. This technique has become widespread due to the use of thin steel needles and X-ray equipment for examination .

Manometric examination of the bile ducts - cholangiomanometry - consists in determining the pressure indicators after injecting fluid into them , which allows us to draw conclusions about the functional capacity and patency of the biliary tract .

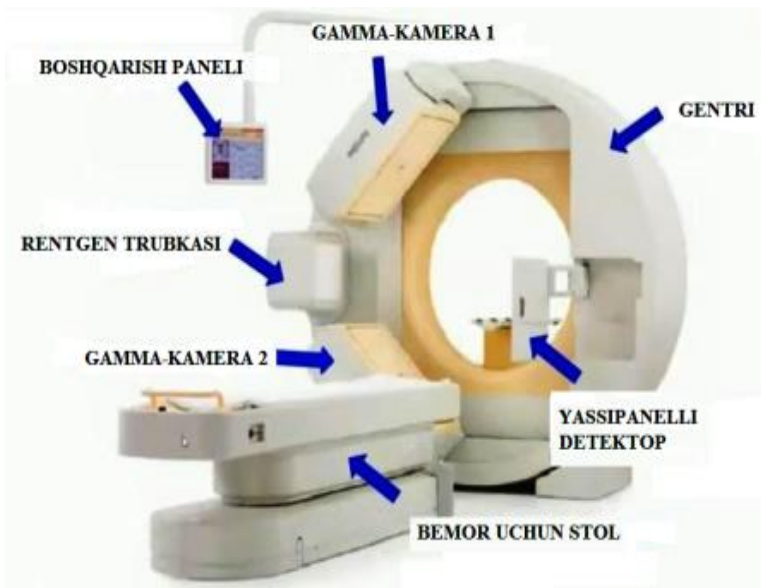
Ultrasound examination of the hepatic bile ducts . Ultrasound examination of the gallbladder can provide very valuable information, allowing you to determine the presence of concretions or newly formed structures in them .



Radioisotope examination of the liver is based on its ability to absorb radioactive substances. Based on this, the functional state of the liver is determined by the dynamics of radioactive drug absorption and the morphological characteristics of the distribution of the radioactive drug in the liver tissues are studied .



The working principle of a gamma camera



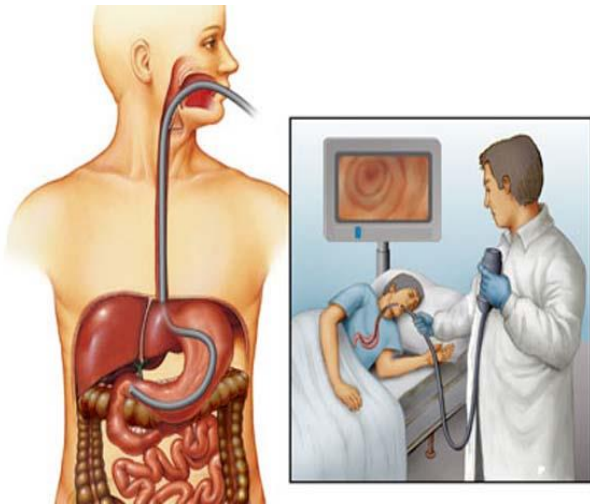
Single-photon emission
computed tomography

Methods of endoscopic examination of the bile ducts . In surgical practice , laparoscopy is most often used to detect focal liver lesions , bile duct cancer , as well as for differential diagnosis of jaundice .



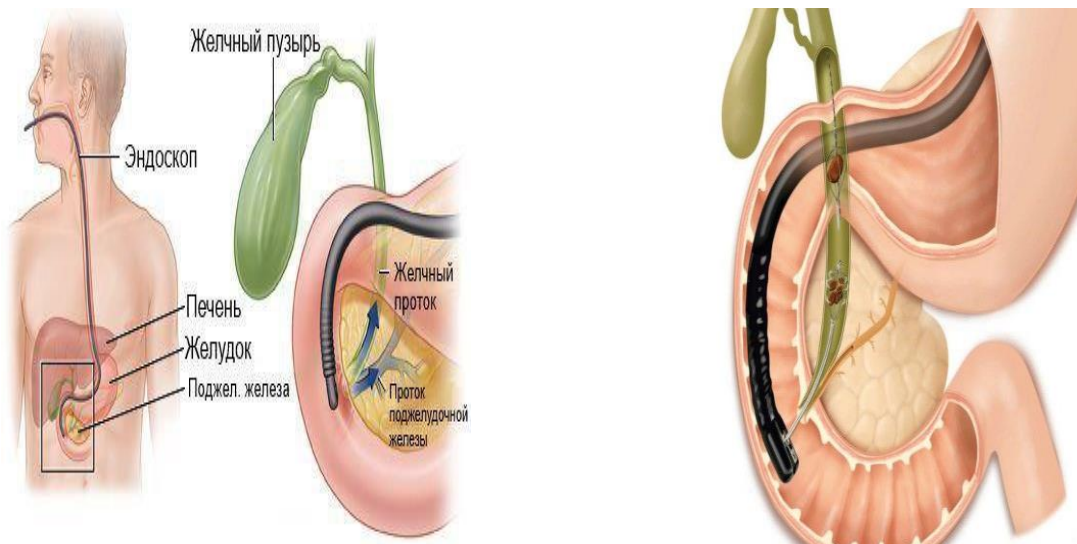
Endoscopic examination of the bile ducts

allows you to examine the condition of the large duodenal ulcer and exclude duodenal pathology .



Duodenoscopy

a surgical diagnostic method and is an important stage of the examination .



It is a choledohoscopy .

In the stomach and 12- fingered the intestine diagnostic check methods

Gastric juice analysis. The test is performed in the morning. The stomach is probed with a thin probe and the collected fluid is aspirated . Then, the fluid is continuously aspirated for 1 hour to check the basal acid function . The basal acid function Based on the performance indicators, it is possible to draw indirect conclusions about the vagus tone and its effect on the secretory apparatus .

Maximum histamine (pentagastrin) test is the most important method for studying secretion: it is possible to assess the state of the mucous membrane pathomorphology by the secretion of gastric juice . Taking into account the

possible additive effect of histamine, antihistamines are administered in advance . Gastric juice is aspirated within 1 hour (30 minutes after the administration of histamine at a dose of 0.024 mg/kg) . The volume of secretion , total acidity and free hydrochloric acid in titration units, hydrochloric acid flow rate in mmol/ h are determined by the following formula :

$$\text{NSL debit} = \frac{\text{gastric juice volume (ml)} \times \text{NS1 titer unit}}{1000}$$

The following norms of maximum histamine (pentagastrin) tests are distinguished: hourly excretion - 180 - 220 ml per hour; basal acid production – 18–20 mmol/hour; for older and elderly people they are somewhat lower – 15–20 mmol/hour. Normal basal secretion rates are: hourly excretion – 50–100 ml/hour; basal acid production – 4.5–5.5 mmol/hour.

In gastric ulcers, secretion indicators are normoacid or hypoacid, in duodenal ulcers - hyperacid (up to 40-45 mmol per hour), with slightly higher secretion indicators (hypersecretors), it is necessary to consider the possibility of Zollinger-Ellison syndrome (in such cases, it is necessary to study serum gastrin).

When using the Hollander insulin test, insulin is administered intravenously at the rate of 2 TB per 10 kg of body weight, during which gastric juice is collected over 2 hours (8 portions every 15 minutes). The test is performed while controlling the level of sugar in the blood. The use of this test allows you to study the effect of the vagus nerve on gastric secretion. However, it provides less information than the Kay test. It is still used today. In the elderly and the elderly, the Kay test should be used sparingly when assessing gastric secretion.

GUIDELINE: ENDOSCOPY IN CLINICAL PRACTICE

1. Definition

Endoscopy is a minimally invasive medical procedure that allows direct visualization and examination of internal organs and body cavities. Using an

instrument called an endoscope—a flexible or rigid tube with a camera and light source—clinicians can explore organs without making large incisions. It plays a critical role in diagnostics, monitoring, and performing therapeutic interventions.

2. Purpose of Endoscopy

Endoscopy serves several key purposes:

- Diagnostic: Identify causes of symptoms such as pain, bleeding, or weight loss; detect ulcers, tumors, inflammation, and blockages.
- Therapeutic: Perform procedures such as biopsies, foreign body removal, bleeding control, polyp resection, or stent placement.
- Monitoring: Evaluate disease progression, treatment efficacy, or recurrence, especially in chronic or precancerous conditions.

3. Types of Endoscopy

- Gastroscopy – To examine the esophagus, stomach, and duodenum.
- Colonoscopy – Used to inspect the large intestine and rectum.
- Bronchoscopy – Provides a view of the airway, trachea, and lungs.
- Cystoscopy – To assess the bladder, urethra, and lower urinary tract.
- Laparoscopy – Minimally invasive examination of abdominal and pelvic organs through small incisions.
- Hysteroscopy – Internal visualization of the uterine cavity.
- Arthroscopy – Visual inspection and treatment of joint structures.

4. Equipment Used

The essential equipment for endoscopy includes:

- Endoscope (flexible or rigid) with a light source and camera.
- Monitor to display real-time images.
- Instruments for intervention: biopsy forceps, snares, electrocautery tools.

- Suction and irrigation systems.
- Insufflation system to expand cavities for better visibility.

5. Pre-Endoscopy Preparation

Preparation depends on the type of procedure:

- Informed consent and explanation of risks.
- Review of medications and allergies.
- Fasting 6–8 hours before upper GI endoscopy.
- Laxatives or enemas before colonoscopy.
- Pre-anesthetic evaluation if sedation is planned.

6. Endoscopic Procedure Steps

1. Patient positioning according to procedure.
2. Monitoring of vital signs.
3. Insertion of the endoscope under direct vision.
4. Visual inspection and diagnostic assessment.
5. Therapeutic intervention if needed.
6. Gradual withdrawal of the endoscope with continued observation.
7. Completion of procedure notes and documentation.

7. Common Indications

Endoscopy is indicated for:

- Gastrointestinal symptoms: bleeding, pain, difficulty swallowing.
- Respiratory conditions: chronic cough, hemoptysis.
- Urologic issues: hematuria, urinary blockage.
- Gynecologic evaluations: uterine abnormalities, infertility.

- Orthopedic assessments: joint pain, suspected tears or degeneration.

8. Contraindications

Absolute and relative contraindications include:

- Unstable cardiovascular or respiratory status.
- Severe coagulopathy or bleeding disorder.
- Recent myocardial infarction or stroke.
- Peritonitis or acute abdomen (for laparoscopy).
- Lack of patient cooperation or consent.

9. Risks and Complications

Although generally safe, complications can occur:

- Bleeding, especially after biopsy or polypectomy.
- Perforation of the organ wall.
- Infection.
- Aspiration pneumonia.
- Adverse reactions to sedatives or anesthesia.

10. Post-Endoscopy Care

Aftercare involves:

- Monitoring in the recovery room until sedation wears off.
- Checking for signs of bleeding, perforation, or infection.
- Dietary restrictions depending on the site examined.
- Explaining findings and arranging follow-up or treatment plans.

11. Advantages of Endoscopy

- Minimally invasive with faster recovery.
- High accuracy in detecting mucosal lesions.
- Possibility to combine diagnosis and treatment.
- Can often be done on an outpatient basis.

12. Limitations

- Operator skill-dependent.
- May miss submucosal or flat lesions.
- Discomfort during non-sedated exams.
- Some areas (e.g., small intestine) may not be easily accessible.

13. Recent Advances

- Capsule endoscopy for small bowel imaging.
- Endoscopic ultrasound (EUS) for deep tissue evaluation.
- Robotic and AI-assisted endoscopy.
- Narrow-band imaging for enhanced mucosal visualization.

14. Conclusion

Endoscopy is an essential diagnostic and therapeutic tool in modern medicine. With advancements in technology, its application continues to expand, providing clinicians with powerful methods to diagnose and treat a wide range of conditions in a minimally invasive manner.

Radiotelemetry and pH-metry . In the first method, a tiny capsule - a radio transmitter - is placed in the stomach, which records changes in the pH environment, transmits the information to a receiving and recording device, and records it on tape in the form of a curve.

determination of RNA using the Bernard probe (1968) . Although this method is more difficult for patients , it allows simultaneous determination of RNA in both the body and the antral section .

The main difference between the aspiration method and the determination of RNA in gastric juice is that in the first case, the NSL is checked , while in the second case, the true values of RNA are determined simultaneously in different parts of the gastric wall without any instruments . These methods are not competing with each other , but rather complement each other. In elderly and debilitated patients, one of these methods can be used .

Routine and emergency surgery in the pathology of gastric and duodenal ulcers, great importance is attached to radiological methods of examination - survey radiography(in case of suspicion of wound perforation or in case of wound perforation, when determining the presence of free gas) ,pneumogastrography (in case of suspicion, repeated radiography with insufflation of 2-3 liters of gas into the stomach).

GUIDELINE: CONTRAST X-RAY EXAMINATION OF THE STOMACH AND DUODENUM

1. Definition

Contrast X-ray examination of the stomach and duodenum is a radiographic technique used to visualize the upper gastrointestinal tract using a radiopaque contrast agent. It is also referred to as an upper GI series or barium meal. This allows for evaluation of the stomach and duodenum's shape, function, and any abnormalities.

2. Purpose

- To assess the shape, position, and function of the stomach and duodenum.
- To detect ulcers, tumors, polyps, or motility disorders.
- To evaluate gastric emptying and diagnose conditions such as pyloric stenosis or gastritis.

3. Indications

- Suspected peptic ulcer disease.
- Chronic dyspepsia or unexplained abdominal pain.
- Gastrointestinal bleeding.
- Suspected gastric or duodenal tumors.
- Screening for gastric carcinoma.
- Evaluation of suspected duodenal diverticula or structural anomalies.

4. Contraindications

- Suspected gastrointestinal perforation (risk of barium leakage).
- Severe swallowing difficulties or aspiration risk.
- Known allergies to contrast materials.
- Uncooperative patients or inability to obtain informed consent.

5. Contrast Agents Used

- Barium sulfate: Commonly used for excellent mucosal coating.
- Water-soluble iodinated contrast (e.g., Gastrografin): Preferred when perforation is suspected.
- Double contrast: Combines barium and air to provide detailed mucosal visualization.

6. Preparation

- Fasting for 6–8 hours before the test.
- Avoid chewing gum or smoking pre-procedure.
- Review of allergies and current medications.
- Obtain informed consent and explain the process to the patient.

7. Procedure Steps

1. Patient is positioned standing or lying down on the fluoroscopy table.
2. Barium suspension is swallowed under observation.
3. Radiologist monitors contrast movement using fluoroscopy.
4. Sequential images are captured during different phases (filling, peristalsis, and emptying).
5. Additional maneuvers (e.g., patient rotation, compression) may be performed.
6. Examination ends when sufficient images of stomach and duodenum are obtained.

8. Radiological Findings

- Normal: Smooth mucosa, uniform filling, visible peristalsis, normal emptying time.
- Abnormal: Filling defects, ulcers (niches), mucosal thickening, strictures, delayed emptying, distorted anatomy.

9. Advantages

- Non-invasive and widely available.
- Allows real-time evaluation of motility and function.
- Helpful in initial evaluations or in areas lacking endoscopy.
- Can be used post-operatively to assess anastomotic integrity.

10. Limitations

- Exposure to ionizing radiation.
- Inability to perform biopsies (unlike endoscopy).
- May miss small or flat lesions.
- Risk of barium-related complications (constipation, impaction, aspiration).

11. Post-Procedure Instructions

- Drink plenty of water to clear barium.
- Expect white-colored stools for a few days.
- Report any signs of pain, fever, or rectal bleeding.
- Resume normal diet unless instructed otherwise.

12. Modern Enhancements

- Use of digital fluoroscopy for better image quality.
- Computer-aided diagnostic systems.
- Enhanced double and triple contrast techniques.
- Integration with cross-sectional imaging modalities for complete GI evaluation.

13. Conclusion

Contrast X-ray examination of the stomach and duodenum remains an essential diagnostic method in gastrointestinal radiology. It provides functional and anatomical data, assisting in early diagnosis and guiding treatment decisions, particularly where other modalities are limited.

Contrast X- ray examination of the stomach and duodenum . Contrast X-ray examination of the stomach and duodenum is performed in the morning. In this case, before taking barium sulfate, it is possible to detect a large amount of fluid in the stomach, which indicates that evacuation or hypersecretory **disorders** have occurred, which must be removed with a probe. After taking a smaller amount of barium mixture, the relief of the mucous membrane is determined , then “tight” During filling, the shape, location, size, contours, absorbability, the course and timing of emptying, pathological changes (filling defects, "shelf" symptom), the condition of the gas bubble, its deformation, and pain points are determined. When dynamic , fluorographic, and kinematographic examinations are performed using an electron-optical transducer, it is possible to record the motility of the stomach, its various sections, and evacuation times.



X - ray examination of the stomach and duodenum .

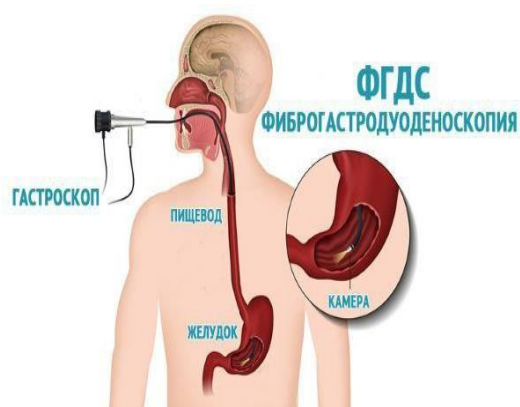
Double and triple contrasting are used in a number of cases . Double contrasting can be used in two ways:

- 1) introduction of contrast medium and gas into the stomach ;
- 2) Injecting gas into the abdomen and performing tomography in case of pneumoperitoneum .

Triple contrast is a procedure that involves injecting gas into the abdomen, pneumoperitoneum , and contrast medium .

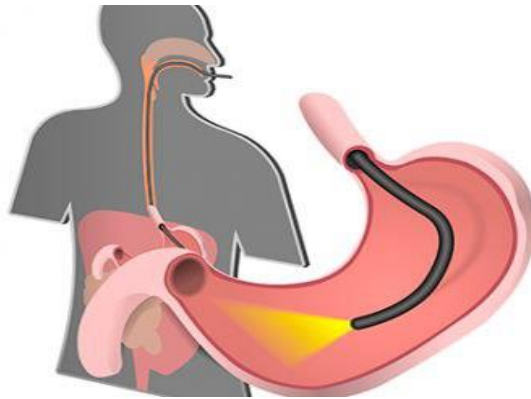
Duodenography is performed to study the condition of the duodenum in detail (mainly to study the condition and processes of the pancreaticobiliary tract).

Gastroduodenoscopy is the most informative method for diagnosing pathology in the stomach and duodenum , **performed using fiber optics** . It is performed in the morning, but in urgent cases , if necessary, it can be performed at any time of the day after gastric emptying .



Gastroduodenofibroscopy

With the help of these modern types of examination, any minor changes in the mucous membrane can be detected: erosion, tearing, ulcers, tumors in the initial stage , and the possibility of performing a biopsy indicates that this method is extremely valuable in the differential diagnosis of malignant tumors and gastric ulcers.



This method provides a fairly accurate picture of the condition of the mucous membrane, sutures, and small intestine in the operated stomach . This method allows for alternative , less traumatic operations on the stomach , and for therapeutic measures (stopping bleeding , inserting probes into the area of the obstruction , etc.) in the early postoperative period .

, laparoscopy differentiates wound perforation from pathology of other abdominal organs , determines the spread of the dangerous process , and allows for biopsy .

Methods of examination for colon diseases .

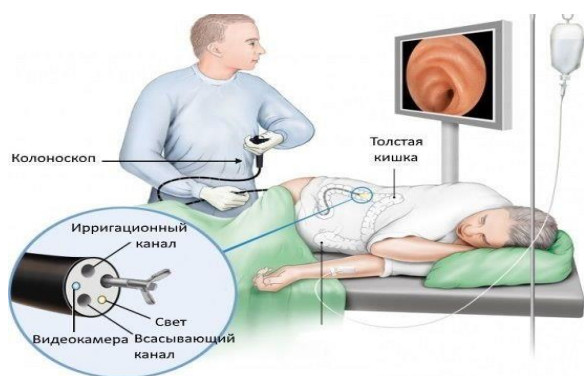
In diseases of the large intestine, X-ray examination is one of the main methods that provides objective information for making a correct diagnosis. Oral administration of a contrast agent is useful for studying the motor function of the intestine and the state of the ileocecal valve.

Irrigoscopy (retrograde contrast) is used to determine the condition, shape, and length of the intestine, and to detect tumors, polyps, colitis, diverticulosis, and other diseases.

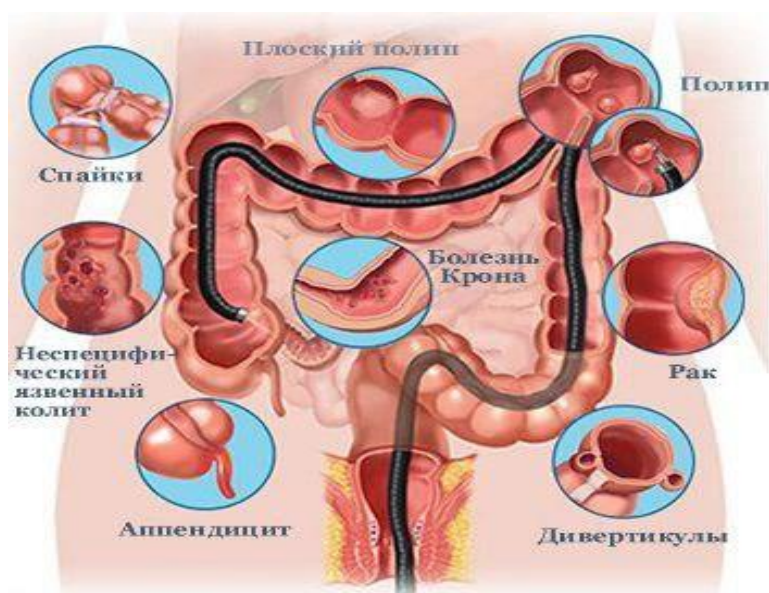


Irrigoscopy (retrograde contrast).

Colonoscopy is a method of endoscopic examination of the large intestine, which somewhat expands the diagnostic possibilities in colon pathology. Coprological examination of feces and intestinal impurities allows us to draw conclusions about functional and organic lesions in various parts of the gastrointestinal tract.

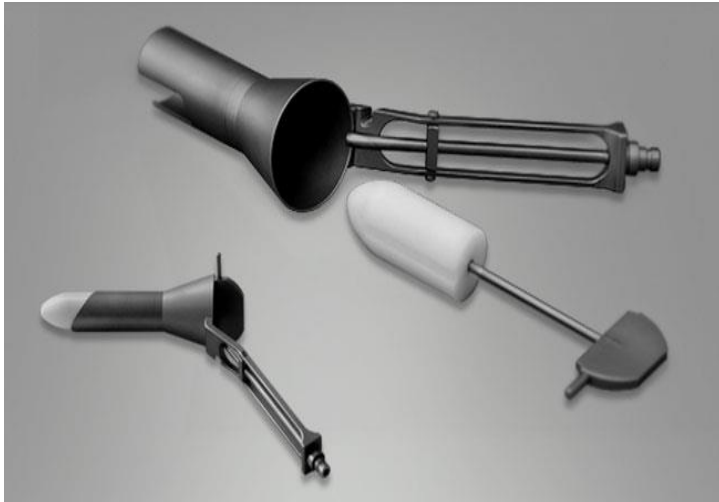


Colonoscopy

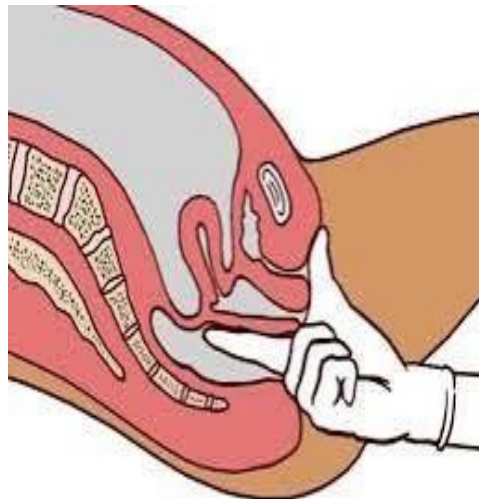
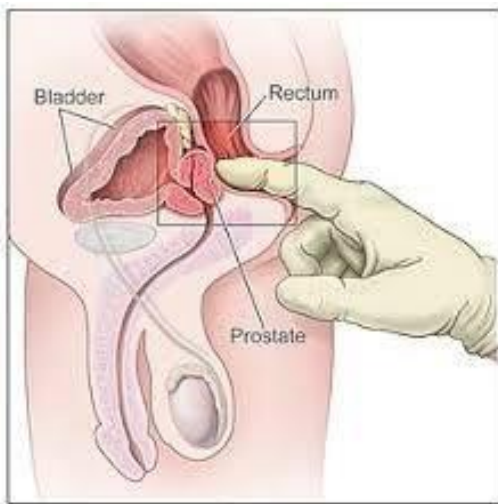


Pathological conditions that can be seen with colonoscopy .

An anoscope can be used to visually examine these pathological phenomena, while sigmoidoscopy can visualize the upper sections of the colon and even pathology in the sigmoid colon.



Anoscope



Digital rectal examination . This is the simplest and most important examination method, which is best performed with the patient lying on his side, on his knees or in a squatting position: rectal tumors, foreign bodies, submucosal paraproctitis, hemorrhoids, rectal fistulas, and scars of the Douglas pouch can be palpated.

Test questions .

1. Chemical sterilization includes:

- a) * sterilization with antiseptic solutions
- b) radiation sterilization
- c) boiling
- d) autoclaving

2. The complex organizational work aimed at combating surgical infection is called :

- a) * anti - optics
- b) asepsis
- c) deodorant
- d) defoliation

Indicate the sources of surgical infection :

- a) * exogenous and endogenous
- b) - conditioned and endogenous
- c) contact or implant
- d) contact and endogenous

How long after surgical treatment is a temporary suture placed?

- a) * There are no signs of inflammation in the wound , on the 3rd day
- b) The wound margins were infiltrated, on the 3rd day
- c) signs of slight inflammation in the wound , on the 5th day
- d) into the wound , 5th day

5. When to treat the surgeon's hand with chlorhexidine -bigluconate ?

- a) * 3 minutes
- b) 1 minute
- c) 5 minutes
- d) 10 minutes

6. How long does it take to treat the surgeon's hand with chlorhexidine bigluconate solution ?

- a) *1 minute.
- b) 30 seconds .
- c) 2 minutes.
- d) 3 minutes.

7. Does the operation not enter the zones in the block?

- a) *empty sterile zone
- b) partial regime zone
- c) strictly sterile zone
- d) sterile zone

8. Where should the operating room be located ?

- a) *On the bottom floor of the building
- b) On the 1st floor of the building
- c) On the top floor of the building
- d) On any floor of the building

9. What concentration of iodine is used to treat the surgical site ?

- a) *1%
- b) 0.5%
- c) 3%
- d) 5%

10. How many times a day should the operating room be thoroughly cleaned at least once?

need ?

- a) *7-10 days
- b) In 2-3 days
- c) In 10-14 days
- d) In 20 days

11. What is the optimal air temperature in the operating room?

- a) *22-25°C
- b) Below 18°C
- c) 25-30°C
- d) 30-35° C

12. Is bacteriological control of the air in operating rooms carried out ?

- a) *Once a week
- b) Once a day
- c) Once a month
- d) Once every six months

13. Is the operating room thoroughly cleaned?

- a) *once a week
- b) at the end of the day
- c) before the operation begins
- d) during the operation

14. Which direction should the windows of the operating room face?

- a) *Northwest
- b) South
- c) East
- d) Southeast

15. Which zone does the operating room belong to?

- a) * relative sterility
- b) absolute sterility
- c) border control
- d) general hospital treatment zone

16. How many sterile zones are there in the operating room ?

- a) *4
- b) 5
- c) 3
- d) 2

17. Which cleaning method is not used in the operating room?

- *continuous
- approximate
- current
- final

18. Is the operating room cleaned after work?

- a) *complete

- b)current
- c)perfect
- d)final

19. Is the operating room told to be cleaned before work begins?

- a) *morning (early)
- b) final
- c) daily
- d) approximate

20. Is the operating room regularly cleaned?

- a)* during operation
- b)before the operation begins
- c)at the end of the day
- d)after surgery

21. Which of the following is not characteristic of colon obstruction? ?

- a)* Rapid dehydration
- b)Constipation
- c)Worsening of symptoms
- d)Abdominal relaxation.

characteristic of hypomotor disc disease of the large intestine ?

- a)*atonic constipation
- b)Blood and mucus in the stool
- c)diarrhea
- d)abdominal pain

23. Which of the following tactics should be used when suturing a colon wound?

- a) *three-row stitch
- b) double-row seam
- c) intestinal anastomosis
- d) stoma removal

24. In which intestines are colonic fistulas located (indicate the incorrect answer)?

- a)*Duodenal intestine
- b)upper intestine

- c) transverse colon
- d) descending, sigmoid colon

used to examine patients with colon pathology (indicate the wrong answer!)?

- a) * computed tomography
- b) palpation of the rectum with a finger
- c) rectal examination
- d) anoscopy, rectomanoscopy

26. What are the types of colon polyps?

- a) *all of the above
- b) hyperplastic
- c) beige, beige - hairy
- d) diffuse hairy polyposis

27. Describe the clinical picture of colon polyps (indicate the incorrect answer) ?

- a) *high blood pressure
- b) diarrhea, bleeding
- c) slime mixed with garbage
- d) constipation, abdominal discomfort

28. Which intestinal tract length is most important in colon obstruction?

- a) *Sigmoid colon
- b) Ascending intestine
- c) Transverse intestine
- d) Descending intestine

following is an informative diagnostic method for colon disease ?

- a) *all of the above
- b) X - ray of the colon with barium sulfate solution
- c) colonoscopy
- d) irrigoscopy

examination methods for colon disease ?

- a) *EGDFS
- b) irrigoscopy
- c) colonoscopy

d) X-ray of the colon with barium sulfate solution

31. Name the benign tumors of the colon and rectum (indicate the incorrect answer): ?

- a) * adenocarcinoma
- b) fibroma, myoma
- c) hemangioma, lymphangioma
- d) neuroma

cause of obstructive bowel obstruction ?

- a) * benign intestinal tumors
- b) foreign bodies
- c) abdominal adhesions
- d) gallstones

characteristic of lower colon obstruction except?

- a) * rapid dehydration
- b) constipation
- c) The emergence of the Clostridium bowli
- d) gradual increase in symptoms

symptom that is not typical of upper intestinal obstruction ?

- a) * Bruising around the navel
- b) Clostridium's cups identified in the upper abdomen
- c) Early vomiting
- d) Painful sensations

Situational issue

1. List 5 types of injuries?

- crushed
- cut
- pricked
- gunshot wounds
- bitten

2. Give the indications for the primary surgical treatment of the wound?

- the time of injury did not exceed 6 hours
- the wound is clean
- smooth edges
- with an open wound.

3. Show that the wound will not heal ?

- hydration
- dehydration
- formation of granular inks
- epithelialization
- scarring.

4. What are the 4 characteristics of cut wounds ?

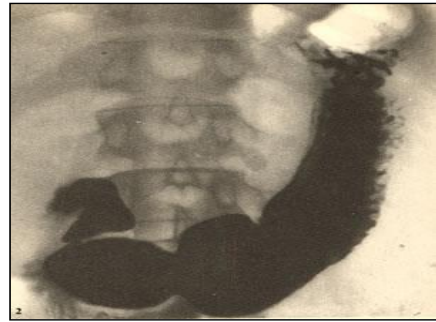
- smooth edges
- smooth edges
- the wound bleeds profusely
- the tissues around the wound are not damaged.

5. What are the main types of surgical treatment of fresh wounds ?

- the edges of the wound are cut
- the blood stops
- the wound is sutured.

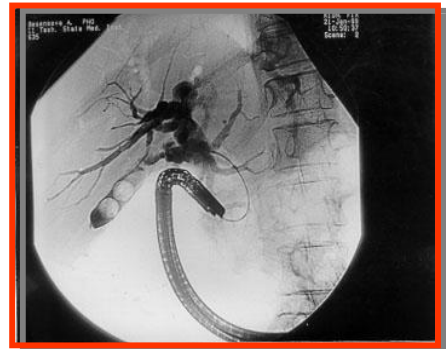
1. This which check method?

- a) Stomach contrasting radiography *
- b) Cholangiography
- c) Holcystography
- d) Irrigography



2. This in the picture which check method illustrated ?

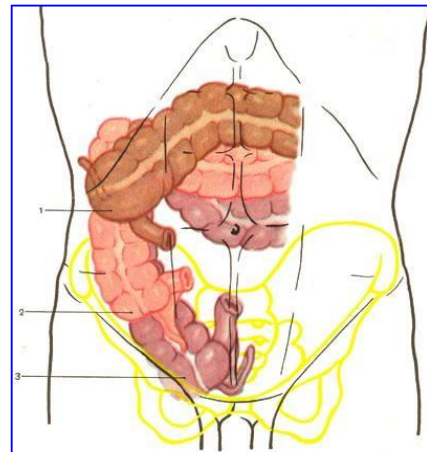
- a) ERPXG*
- b) EGDS
- c) MRI cholangiography
- d) UTT- dopplerography



3. This in the picture worm-like of the tumor liver under location how many number under

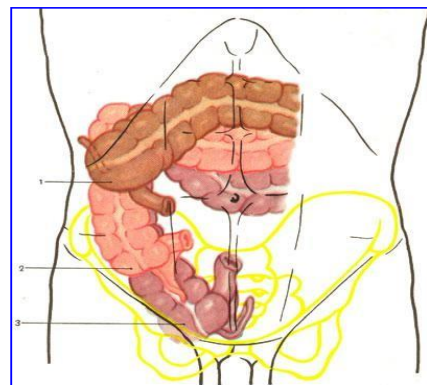
described?

- a) 1*
- b) 2
- c) 3
- d) 4



4. This in the picture worm-like of the tumor right side in the field location how many under the number described?

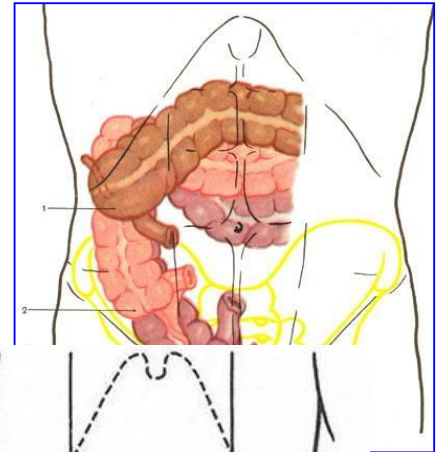
- a) 2
- b) 1
- c) 3



d)4

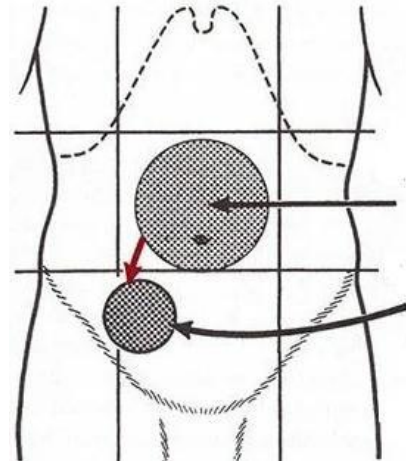
5. This in the picture worm-like of the tumor pelvis in the void location how many under the number described?

- a) 3
- b) 2
- c) 1
- d) 4



6. This in the picture which symptom described?

- a) Kocher-Volkovich
- b) Sitkovsky
- c) Rovzing
- d) Obrastsov



6. Which symptom execution shown?

- a) Voskresensky
- b) Razdolsky
- c) Rovzing
- d) Kocher- Volkovich



7. Which symptom execution shown?

- a) Bartome-Michelson
- b) Razdolsky
- c) C) Rovzing
- d) Kocher- Volkovich



PRACTICAL SKILLS. OF PROCESSING THE HANDS OF THE SURGEON AND THE OPERATING TECHNICIAN WITH S -4 CHUMOLIC ACID

Purpose: hand cleaning.

Indication: before entering operations, various manipulations.

Equipment: soap, soft brushes, working solution, sterile wipes.

Implementation steps				
1. The “S-4” formulation is prepared by mixing sufficient amounts of hydrogen peroxide and formic acid in a glass container and placing it in cold water for 1-1.5 hours, shaking occasionally. The solution is prepared and used on the day of surgery.				
Number of working solutions	Ingredients quantity			Water (l)
	30-33% hydrogen peroxide (ml)	Formic acid		
		100% ml	85% ml	
1	17.1	6.9	8.1	For 1 liter
2	34.2	13.8	16.2	For 2 liters
5	85.5	34.5	40.5	For 5 liters
10	171.0	69.0	81.4	For 10 liters
2. The solution is stored in a hermetically sealed glass container in a cool place for 1 day.				
3. Before the operation, hands should be washed thoroughly with soap and running water, paying special attention to the fingers, between them, and under the nails.				
4. Then rinse in water to remove soap, wipe thoroughly with a disinfecting cloth, and dry.				
5. Hands are treated in a basin with S-4 solution for 1 minute. Then hands are dried and gloves are put on.				

FINGER EXAMINATION OF THE RECTAL INTESTINAL

Purpose: diagnosis of diseases of the small pelvis and rectum.

Indications: rectal diseases, dysfunction, acute intestinal obstruction, diseases of

the abdominal organs, gynecological pathology.

Equipment : rubber gloves and petroleum jelly, antiseptic solution , **gauze** bandage .

Implementation steps
1. Wear rubber gloves .
2. Patient position – knees and elbows, hips and shoulders bent towards the abdomen.
3. The anus is examined for hemorrhoids, tumors, and fissures.
4. Vaseline is applied to the second finger and the finger is inserted into the anus, the patient is slightly tense.
5. The rectum is examined for circulation, a painful area or tumor formation is identified (size, mobility, consistency, connection to tissues - with the external sphincter, prostate gland or uterine appendages).
6. After the manipulation, the finger is checked for discharge (pus, blood, mucus).
7. The glove is removed .



Recommended reading

The main thing

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“Euro vip stele” MCHJ bosmaxonasida chop etildi.

Samarqand shahri, Bo'stansaroy 32a.

**“Euro vip stele” MCHJ, 2026 Terishga berildi: 17.06.2026 y. Nashrga ruxsat
etildi: 24.06.2026 y.**

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Bahosi kelishilgan narxda.