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Small surgical manipulation (Manual training)

Mukhamedgaliyeva B.M.

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Major surgery begins with minor manipulations that constantly accompany surgeons in their daily work. The methodological recommendation presents the technical aspects of performing the main diagnostic and therapeutic interventions necessary in emergency surgery. The indications, contraindications, technical performance and possible complications are described.

Approved by the Teaching and Methodological Council and authorized to print.

Letter №___ «___»._____year

Content

Introduction

This practical manual " Small surgical manipulation " should fill a niche where no publications currently exist. There’s a lot of manipulation that a young surgeon needs to master. These skills are usually acquired through on-the-job training. Management provides basic information and, step by step, technical details.

This will enable the young doctor to acquire the necessary skills without the risks and dangers associated with their study. There are many outstanding publications that describe the clinical picture, the pathogenesis, the diagnosis, and the treatment of surgical diseases.

In addition, there are a number of manuals, sufficiently compact to fit in the pocket of a robe, which in general terms provide the young doctor with the information necessary for the treatment of patients. There are no publications, however, that would exhaustively provide an aspiring surgeon with technical information for training in his field of specialization. Most agencies require that young surgeons have these skills without offering an appropriate training programme. This guide will fill this gap.

1. Surgical treatment of wounds.

Depending on the time of injury, there are several types of primary surgical treatment (PHO):

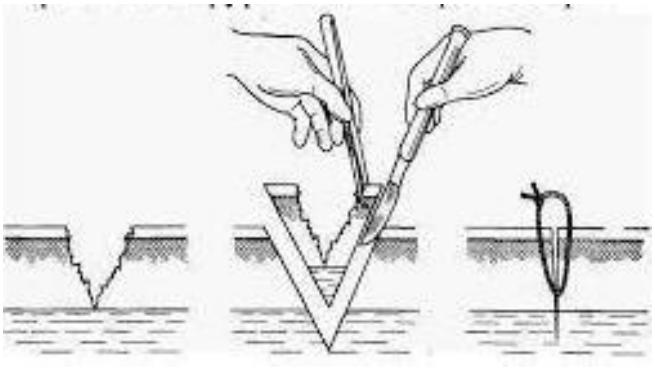
• early - carried out in the first 24 hours after injury;

• delayed - performed 1-2 days after injury;

• late - carried out 2 days after receiving damage

Algorithm for performing primary surgical treatment of a wound

Prepared equipment: For a wound toilet (antiseptic solution, dressings, scissors, Mikulich clamps, tweezers). For local anesthesia (disposable syringe, novocaine 0.25% or 0.5%, another anesthetic is possible).



Pic 1- surgical treatment of a wound

For the procedure (sterile dressing and diapers, scalpel, Billroth hemostatic clamps, ligatures, surgical needles with a needle holder, drainage tubes).

• Introduced himself to the patient. Clarified the name of the patient, his state of health.

• Confirmed that informed consent is available.

• Explained the purpose and course of the procedure.

• He treated his hands, dressed as for an operation.

• Treated the skin around the wound with an antiseptic three times according to surgical principles, if necessary, shaved the skin around the wound.

• Delimited the operating area with sterile linen.

• Performed local anesthesia on the wound.

• I washed the wound with a disinfectant solution (0.05% chlorhexidine solution, 3% hydrogen peroxide).

• Removed foreign bodies (if any) of the wound channel;

• Performed excision of nonviable tissues (taking into account the degree of tissue damage, blood vessels, the presence of "pockets").

• Stopped bleeding from the surgical wound.

• Placed a drain (glove graduate or drain tube as indicated) to the bottom of the wound.

• Performed wound closure (sutured with interrupted sutures in the first 24 hours, did not apply sutures for a gunshot wound).

• Put on a bandage, if necessary performed immobilization.

• Prescribed tetanus and rabies immunization as instructed.

• Recorded compliance with medical records.

2. Classifications of blockades.

Depending on the level of interruption of nerve impulses:

• Local infiltration (blockade of bone fracture sites, intra- and periarticular, intrapelvic block, etc.)

• Regional: conduction (stem, plexus, ganglionic); spinal;

• epidural; intraosseous; intravascular.

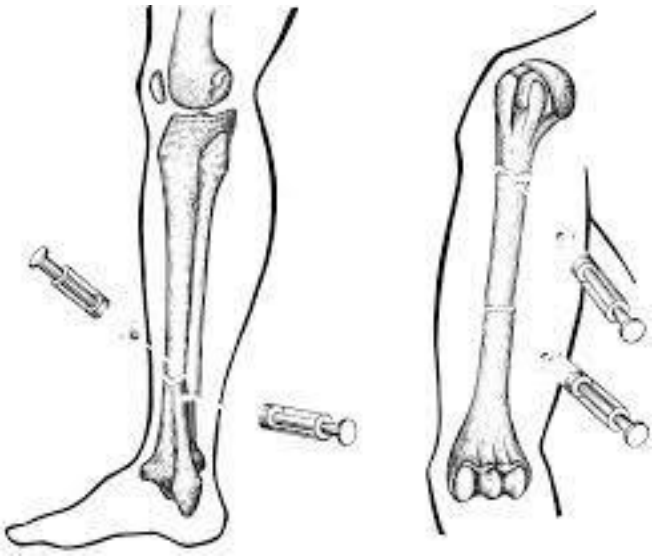
• Mixed blockade (the anesthetic infiltrates tissues, blocks both terminal nerve endings and nerve trunks, plexuses and ganglia).

• By the purpose of the conduct:

• Diagnostic.

• Medicinal.

• Preventive.



Pic 2 - Blockades.

DIAGNOSTIC BLOCKS are used for differential diagnosis (for example, coronary pathology from manifestations of cervicothoracic osteochondrosis).

TREATMENT BLOCKS can have both pathogenetic and symptomatic orientation. Therapeutic blockade should be performed by injecting an anesthetic solution directly into the irritation zone, and not into the irritation transmission zone. In the area of the pathological focus, along with anesthetics, other drugs (glucocorticosteroids, chondroprotectors, etc.) can be administered.

PREVENTIVE BLOCKS are used to prevent the development of complications (shock in severe injuries, operations). They contribute to the early restoration of the function of the damaged organ and recovery. So, in case of rib fractures, the removal of the pain factor eliminates shallow breathing, secretion retention, bronchospasm, atelectasis and prevents the development of pneumonia.

3. Characteristics of anesthetics used when performing blockades.

NOVOCAINE (synonym: Procaine) is a widely used local anesthetic of the ether type, which is the standard of anesthetic activity and toxicity taken as a unit. This anesthetic is selectively absorbed by the nervous tissue, cells and fibers of the sympathetic nervous system are especially sensitive to it, which is due to its vasodilating effect. Under the influence of novocaine, various types of sensitivity are sequentially turned off, first of all the cold reaction, then the heat, painful and tactile ones. It can be used for all types of local and regional anesthesia, but amide-type anesthetics are preferred for epidural and spinal anesthesia. The drug is more often used in combination with adrenaline, which reduces its absorption rate by about 2 times. For blockades use 0.25; 0.5; 1; 2% solutions of novocaine. Contraindicated in case of individual intolerance.

TRIMECAINE is an amide-type drug, in terms of anesthetic effect and its duration, it exceeds novocaine by 3 times, it is used for all types of local anesthesia, causing a fast, deep and long-term anesthesia. Unlike novocaine, it has an effect in scar tissue. Applied in the form of a 0.25-2% solution at a dose not exceeding 20 mg / kg body weight. Trimecaine is low-toxic, causes fewer side reactions, does not irritate tissues.

DIKAIN (syn.: Tetracaine, Pontocaine) is a strong local anesthetic of the ether type, significantly superior in activity to novocaine, but highly toxic (10 times more toxic than novocaine). Children under 10 years of age are not anesthetized with dicain. Mainly used for spinal anesthesia.

LIDOCAINE (syn.: Xylocaine, Xycaine, Lignocaine) is one of the most chemically stable anesthetics of the amide type, which does not lose its properties under the action of acids, bases and boiling. It has a quick onset of action, the analgesic effect is relatively short-lived. Used for all types of local and regional anesthesia. Rarely causes allergic reactions, 4 times stronger than novocaine, but 2 times more toxic. The maximum single dose for adults in a solution that does not contain adrenaline is 200 mg, in a solution with adrenaline - 500 mg. With individual intolerance to novocaine, lidocaine can be used as an alternative anesthetic. Contraindicated in cardiovascular insufficiency, impaired liver and kidney function.

SOVKAIN (syn.: Tsinhokain, Dibukain) is one of the most powerful amide-type anesthetics, 15-20 times more active than novocaine and the same number of times

more toxic, has a longer effect (3-4 hours). For potentiation, sovcaine can be added to novocaine. It has a pronounced hypotensive effect, is slowly excreted from the body.

NEZAKAINE (syn.: Chloroprocaine) is an ether-type anesthetic that has a quick onset of action, a short analgesic effect, and low toxicity. It is used for infiltration, regional and epidural anesthesia. Subarachnoid administration of the drug is contraindicated.

MEPIVACAINE (syn: Carbocaine, Scandicaine) has an average potency and toxicity. The analgesic effect is longer than that of lidocaine. It is used for infiltration, regional and epidural anesthesia.

Bupivacaine (syn.: Markain, Carbostezin, Anekain) is an amide-type anesthetic that has a slow initial, long-term analgesic effect, high potency and toxicity. It is used for infiltration, regional, epidural and spinal anesthesia. Sensory activity is more pronounced and lasts longer than motor activity. The addition of vasoconstrictors to the bupivacaine solution does not affect the duration of the blockade. Accidental intravascular injection of the drug can cause blockages and ventricular arrhythmias, up to and including cardiac arrest.

EDITOCAINE (synonym: Duranes) is an amide-type anesthetic, has a fast onset and high potency, long-term analgesic effect, but toxic. Used for infiltration, regional and epidural anesthesia. Motor activity is more pronounced than sensory activity.

ROPIVACAINE (synonym: Naropin) is an amide-type anesthetic, has a slow initial and long-term analgesic effect, high potency. Cardiotoxicity is less pronounced than that of bupivacaine. It is used for infiltration, regional, epidural and spinal anesthesia. Motor activity is more pronounced than sensory activity.

Possible complications and side effects of anesthetics.

• toxic reactions associated with an anesthetic overdose (administration of a large volume of anesthetic, its high concentration or accidental intravascular administration);

• allergic reactions, anaphylactic shock;

• infectious complications;

• puncture (mechanical) damage to blood vessels, nerve trunks, internal organs;

• technical complications (puncture needle fracture, catheter detachment).

4. Tracheostomy

The main indications for tracheostomy:

1. Acute stenosis of the larynx (causes - foreign bodies, chemical burns, diphtheria of the larynx, false croup, bilateral paralysis of the vocal cords, edema (inflammatory, allergic), tumors.

2. Hypoventilation due to impaired drainage function of the tracheobronchial wood:

• severe traumatic brain injury

• severe trauma with damage to the chest

• impaired cerebral circulation

• brain tumor

• massive bronchopneumonia, long-term asthmatic condition

• coma of any etiology with impaired swallowing and suppression of the cough reflex

3.Insufficiency or absence of spontaneous breathing:

a) bulbar or bulbospinal form of poliomyelitis,

b) polyneuritis, polyradiculoneuritis,

c) fracture of the cervical spine with spinal cord injury,

d) poisoning with sleeping pills, drugs, carbon monoxide, etc.,

e) severe neuroinfections (tetanus, botulism, rabies),

f) postoperative respiratory failure in patients with myasthenia gravis or prolonged action of relaxants.

Carrying out anesthesia in case of impossibility of intubation - defects and deformities of the laryngopharynx, anatomical features.

Classification According to the level of dissection of the trachea relative to the isthmus of the thyroid gland, the upper one is distinguished - above the isthmus of the thyroid gland, the middle one - through the isthmus and the lower tracheostomy - under the isthmus of the thyroid gland. In the direction of the trachea incision - longitudinal, transverse, P-shaped (according to Biork) tracheostomy.

For adults, an upper tracheotomy is performed, for children, a lower one, since their thyroid gland is located higher. A middle tracheotomy is rarely performed if it is impossible to perform an upper or lower one, for example, with a special anatomical variant of the location of the thyroid gland or with a tumor of the thyroid gland.

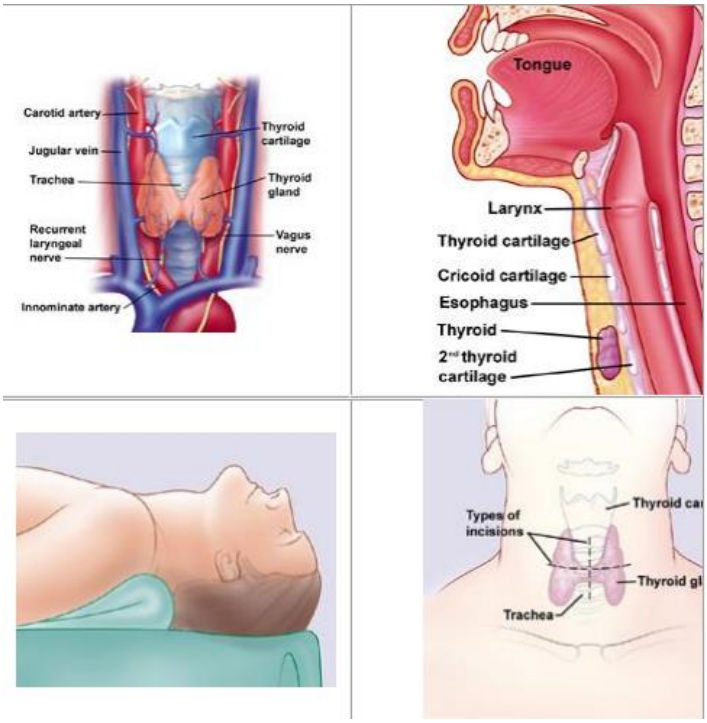
Instrumentation for tracheostomy

A set of general surgical instruments: pins, anatomical forceps, surgical forceps, Billroth and Kocher hemostatic forceps, scalpel, straight and Cooper scissors, sharp hooks, blunt hooks, grooved probe, elastic catheter for blood suction, syringe suitable for the catheter, or surgical a pillow with oxygen, needle holders, 10-15 needles of various numbers.

Pic 3- instruments for tracheostomy

Special instruments for tracheostomy: Tracheostomy cannulas. The most widespread is the Luer cannula, which consists of two tubes - external and internal. The modern design consists of metal rings and is arranged like a corrugated tube; Sharp single-tooth tracheostomy hook of Chessignac, designed to fix the trachea; Blunt hook to push back the isthmus of the thyroid gland; Tracheal dilator for spreading the edges of the tracheal incision before inserting a cannula into its lumen. The most widespread are the tracheal dilators of Trusso (1830) and S.I. Wolfson (1964).

Technique of the operation of forming a tracheostomy



Pic 4- Technique of tracheostomy

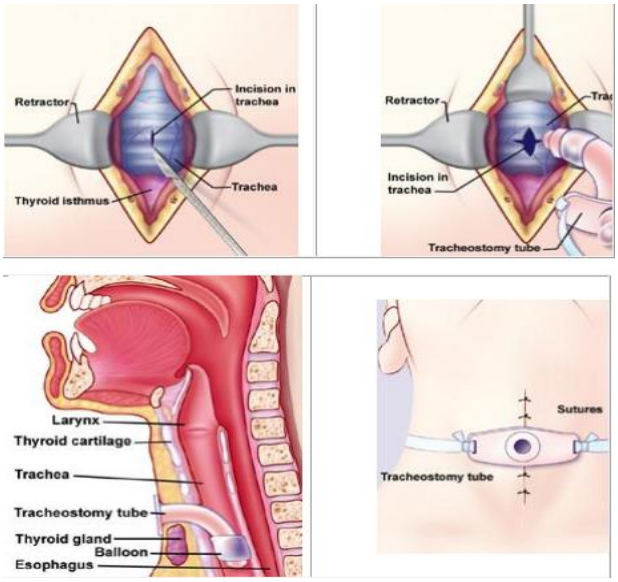
When performing a tracheostomy, it is necessary to take into account the degree of hypoxia, the general condition of the patient, the individual constitutional parameters of his physique (hyper-, a- or normosthenic), the possibility of extending the cervical spine to access the anterior wall of the trachea. Difficulties during tracheostomy can arise in patients with a short thick neck, poorly unbending cervical spine. General anesthesia (endotracheal combined anesthesia with the introduction of muscle relaxants) is preferred, but local anesthesia with 1% lidocaine solution is more often used.

The position of the patient in the reverse Trendelenburg position - on the back with the head as far back as possible and the bolster under the shoulders. Excessive tilting of the head leads to displacement of the trachea in the cranial direction and changes in anatomical landmarks. In such a situation, it is possible to perform an excessively low tracheostomy (at the level of 5-6 semirings). When the neck is overextended, the displacement of the brachiocephalic arterial trunk above the jugular notch is also possible, which is accompanied by the risk of damage to it when the anterior wall of the trachea is exposed.

A midline incision of the skin and subcutaneous tissue of the neck is made from the level of the cricoid cartilage to the jugular notch of the sternum. Using curved clamps in a blunt way, the anterior wall of the trachea is isolated in layers. This should not be done over a long distance, especially along the side walls, since there is a possibility of a violation of the blood supply to this part of the trachea and

damage to the recurrent nerves. In patients with a long thin neck in this position, the isthmus of the thyroid gland is displaced upward; in patients with a thick short neck and a retrosternal location of the thyroid gland - downwards behind the sternum. If it is impossible to displace the isthmus of the thyroid gland, cross between two clamps and stitch with synthetic absorbable threads on an atraumatic needle. The tracheostomy is formed at the level of 2-4 tracheal half-rings.

The size of the incision must match the size of the cannula; an increase in length can lead to the development of subcutaneous emphysema, a decrease - to necrosis of the mucous membrane and adjacent cartilage. To form a tracheostomy, the edges of the skin are brought without much tension to the edges of the incision and sutured at the interchondral spaces. Tracheostomy one- or two-cuffed thermoplastic tubes of the appropriate diameter are inserted into the tracheal lumen. The main differences between these tubes are that their angle is 105 °. This anatomical bend allows you to minimize the risk of complications associated with irritation caused by the contact of the distal end of the tube with the tracheal wall.



Pic 5- Operation steps

Mistakes, dangers and complications of tracheotomy

• Loss of orientation when the trachea is exposed: when the muscles covering the trachea and larynx are separated.

• Incorrect position of the scalpel during opening of the trachea: the scalpel must only be held perpendicularly.

• Trauma to the cricoid cartilage with the development of chondroperichondritis.

• Subcutaneous emphysema as well as mediastinal emphysema. Do not tightly suture the skin around the tube. When emphysema appears, dissolve the stitches.

• Bleeding. If there is bleeding, the tube is removed, the edges of the wound are examined, and a ligature is applied to the bleeding vessel.

• Postoperative pneumonia occurs with immobility of the patient, aspiration of blood, wound secretions. Careful hemostasis is necessary, the patient's mobility in the postoperative period is to turn on the side, sit down, banks on the chest, back, mustard plasters, sulfonamides, antibiotics.

5. Cricothyrotomy.

Cricothyrotomy (dissection of the conical ligament) is a safer method than tracheotomy, because:

• in this place the trachea is located closest to the skin; • there are no large vessels and nerves;

• manipulation is relatively easy to perform. It is used in adults and children over 8 years old, since up to 8 years old there is a great danger of damage to the cartilaginous larynx. Conicopuncture is performed in children under 8 years of age. In adults, conicopuncture is possible only as a temporary measure (for 30-45 minutes).

Indications:

1. Fatal obstruction of the larynx (edema, trauma, foreign body that could not be removed by other methods).

2. Unsuccessful attempt at endotracheal intubation.

3. Extensive maxillofacial trauma that prevents laryngoscope

Preparation for the procedure

1. Place the patient on his back with his head thrown back and a roller placed under the shoulder blades.

2. Wash and dry your hands (using soap or antiseptic).

3. Wear gloves.

4. Treat the neck surface with iodonate twice.

5. Cover the front of the neck with diapers, secure them with pins.

6. Perform local infiltrative anesthesia of the skin of the anterior surface of the neck with 0.25% novocaine solution at the site of the intended incision (between the thyroid and cricoid cartilage).

Technique

1. With your index finger, feel the gap between the thyroid and cricoid cartilages.

2. Fix the thyroid cartilage 1 and 2 fingers with the fingers of the left hand (for left-handers, vice versa).

3. With the fingers of your right hand, grasp the cutting tool two centimeters from the tip.

4. With the right hand, make a transverse incision up to 2 cm long, simultaneously dissecting the skin and the conical ligament.

5. Insert the tracheal dilator in the direction of the tracheal keel

6. Introduce the tracheostomy cut into the lumen of the larynx through the incision and remove the dilator.

7. Inflate the cuff, connect oxygen.

Pic 6- Anatomy of thyroid

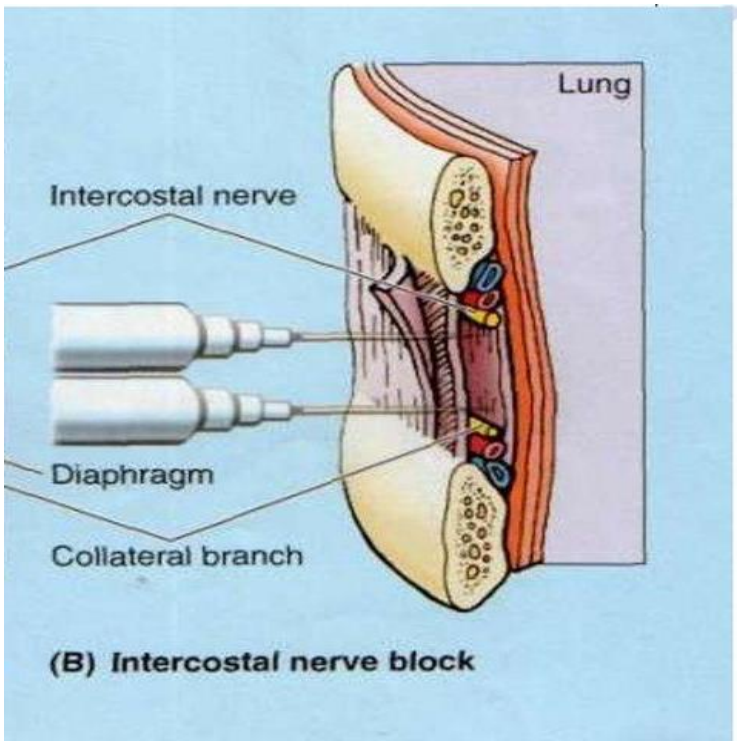
Complications: Bleeding, subcutaneous emphysema, pneumomediastinum, pneumothorax, pneumopericardium, damage to the esophageal wall, infection (mediastinitis).

6. Blockade of intercostal nerves.

INDICATIONS: single and multiple rib fractures, chest contusions, intercostal neuralgia, thoracalgia, xifalgia.

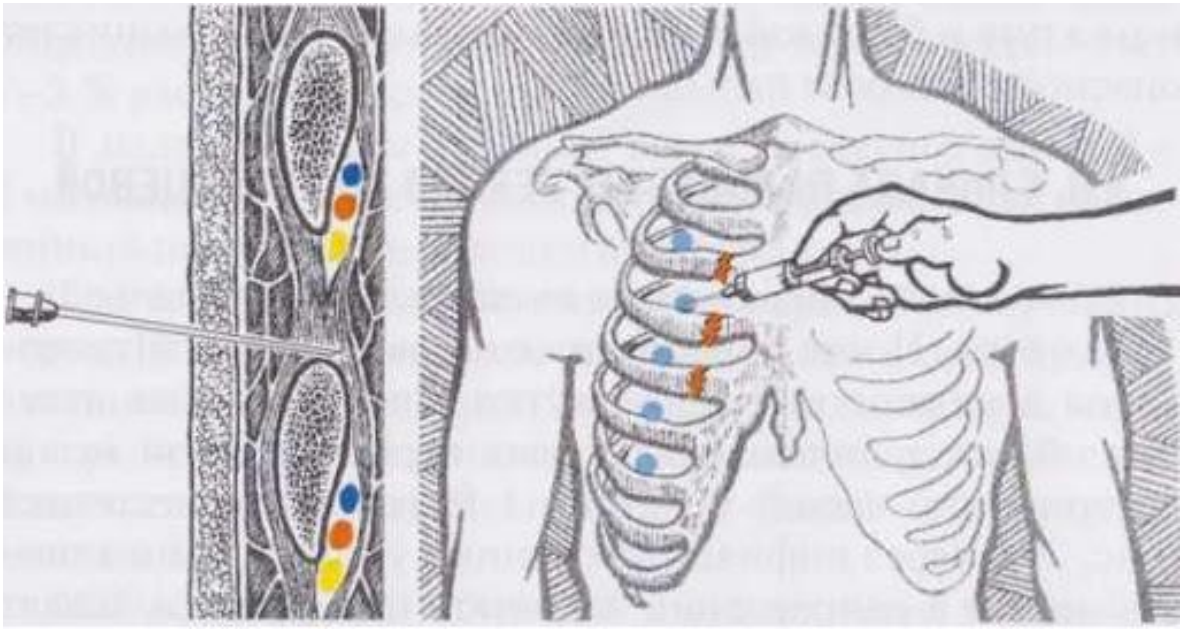
TECHNICS.

The position of the patient on a healthy side or sitting. At the level of the fracture and retreating 3-4 cm along the rib towards the spine, the needle is inserted all the way into the lower edge of the rib, infiltrating the soft tissues with an anesthetic solution. Having reached the rib, the needle is partially removed and advanced, sliding off the lower edge of the rib. An aspiration test is carried out, after which 5-10 ml of 1% anesthetic solution is injected. As a rule, blockade of the superior and inferior intercostal nerves is performed.



Pic 7- Intercostal nerve block

A number of authors, when performing blockade of intercostal nerves, recommend focusing on the upper edge of the underlying rib, making infiltration of soft tissues, and then guiding the end of the needle cranially, to the lower edge of the damaged rib and, advancing the needle 0.5-1 cm, inject 5-10 ml 1 % anesthetic solution. To enhance the action of the anesthetic, medical alcohol can be added to it in a ratio of 4: 1.



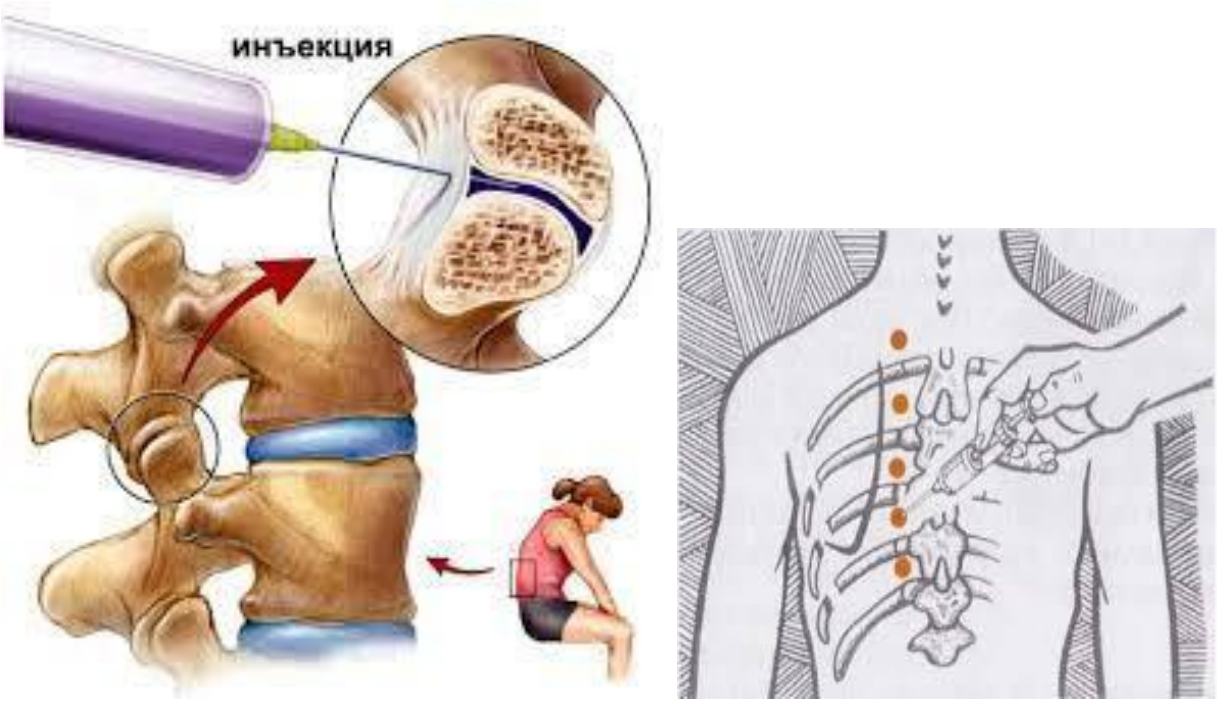
Pic 8- Blockade of intercostal nerves.

POSSIBLE COMPLICATIONS: damage to the lung with the development of pneumothorax.

7. Paravertebral blockade.

INDICATIONS: multiple and double rib fractures, “fenestrated” rib fractures, sternum fractures, thoraco- and laparotomies in combination with a solar plexus block.

TECHNICS. The position of the patient is lying on a healthy side or sitting. Having retreated 4-5 cm to the side from the lower edge of the spinous processes of the thoracic vertebrae, a thin needle is used to anesthetize the skin and subcutaneous fatty tissue with an anesthetic solution. Then the needle is deflected 45 ° outward from the sagittal plane and advanced inward until it contacts the rib or transverse process. After the aspiration test, 5-10 ml of 0.5-1% anesthetic solution is injected. To reduce the number of injections, the volume of the anesthetic solution can be increased to 20 ml in order to spread it to the adjacent paravertebral region.



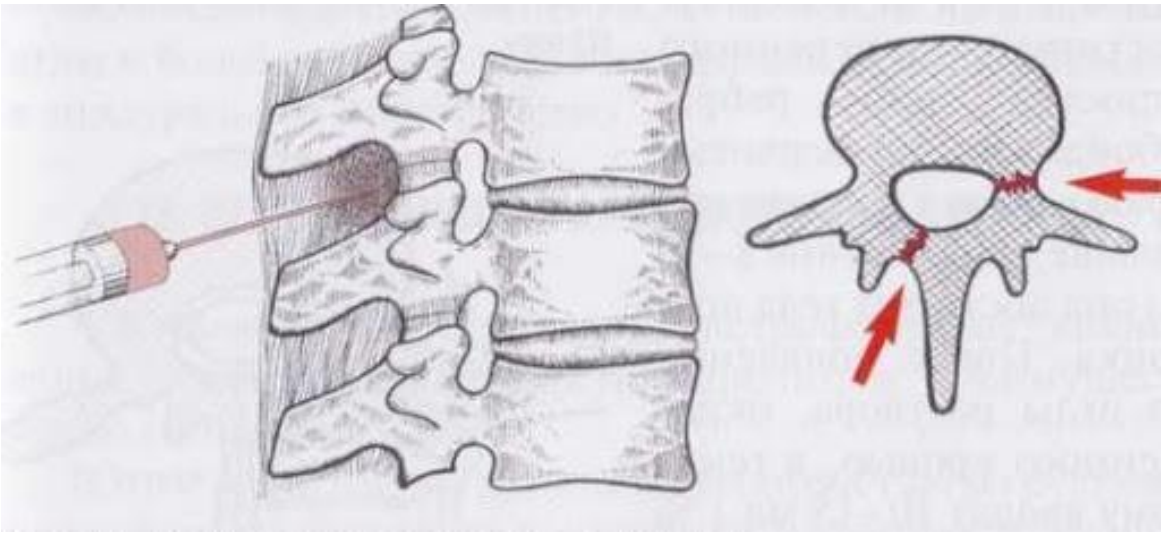
Pic 9- Paravertebral blockade.

POSSIBLE COMPLICATIONS: damage to the lung.

8. Vertebral blockade.

Vertebral block according to Behler. INDICATIONS: spinal fractures, mainly with damage to the posterior supporting complex, interspinous ligamentosis.

TECHNICS. At the level of the fracture, 10-30 ml of 0.5% anesthetic solution is injected into the interspinous space above the broken vertebra after skin anesthesia to a depth of 2-4 cm.

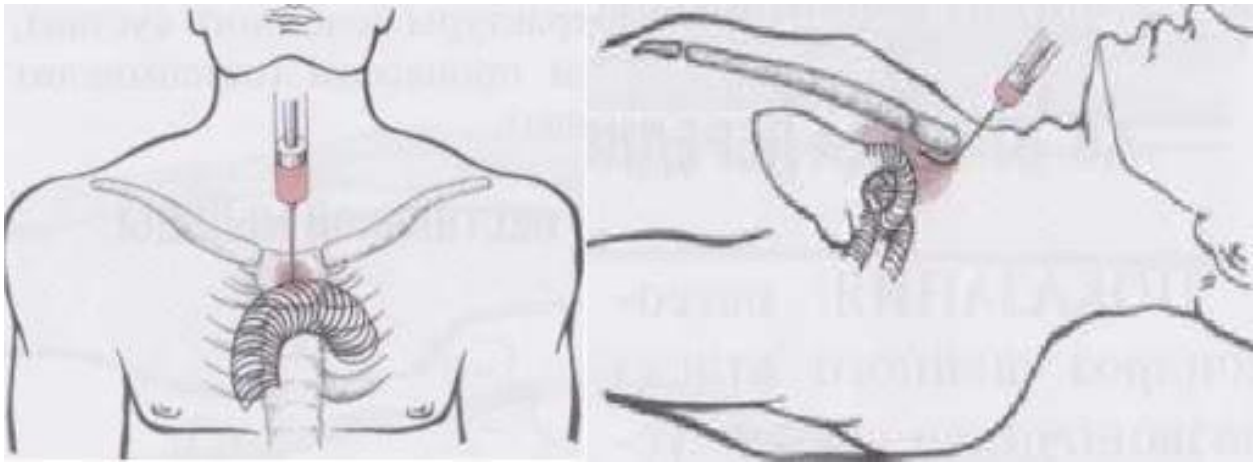


Pic 10- Vertebral blockade.

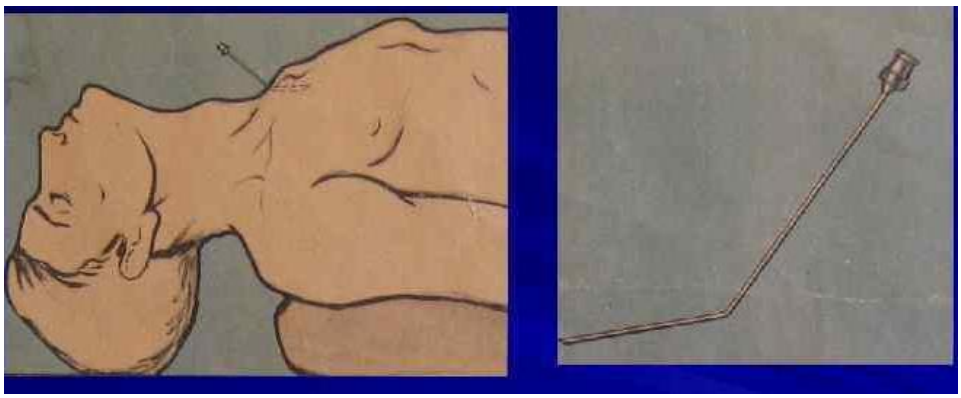
POSSIBLE COMPLICATIONS. Deeper needle insertion is fraught with penetration into the epidural space.

9. Chest blockade across Kazansky.

INDICATIONS: chest trauma, fractures of the sternum, concussions and contusions of the heart. TECHNICS. The patient lies on his back with a roller under the shoulder blades, the head is thrown back. The curved needle is inserted into the suprasternal fossa strictly in the sagittal plane. Sliding the needle along the posterior surface of the sternum, they pass into the anterior mediastinum to the level of the aortic arch, which is determined by elastic pulsation. 100 ml of a 0.5% solution of anesthetic, heated to 30C, is injected, infiltrating the surrounding tissues, blocking the cardiac plexus.



Pic 11- Chest blockade across Kazansky



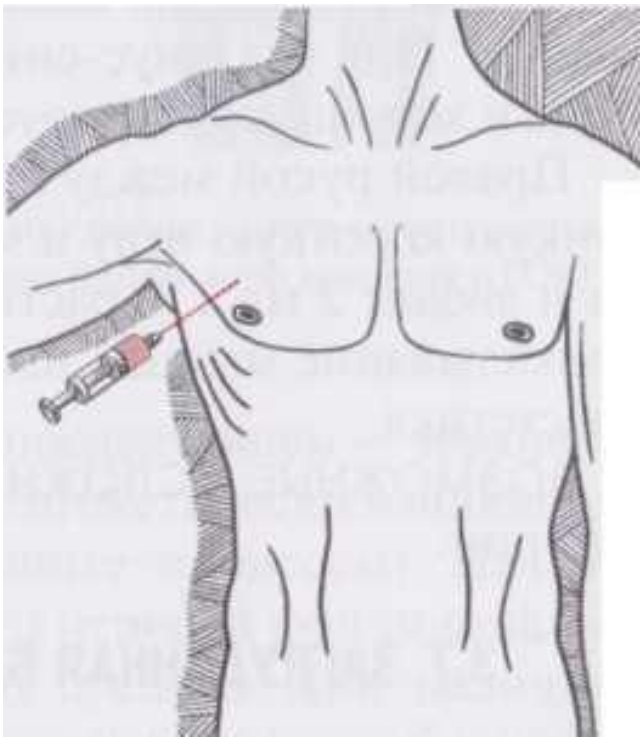
Pic 12- Chest blockade across Kazansky

POSSIBLE COMPLICATIONS: damage to the aorta, brachiocephalic vein, pleura, lung.

10. Subpectoral blockade according to Marev

INDICATIONS: intercostal neuralgia; as an adjunct to other types of local anesthesia during surgery on the upper limb.

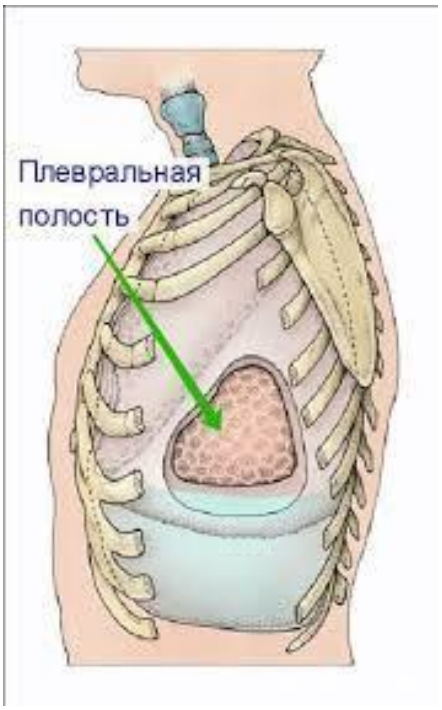
TECHNICS. The position of the patient is lying on his back with an abducted hand. The outer edge of the pectoralis major muscle is determined and the skin is anesthetized at the level of II-III ribs. Then the needle is advanced under the pectoralis major muscle to a depth of 6-7 cm and up to 200 ml of 0.25% anesthetic solution is injected. The anesthetic spreads along the inner surface of the pectoralis major and lesser muscles and penetrates the axillary cavity and supraclavicular space along the intermuscular fissures, spreading between the scalene muscles.



Pic 13- Subpectoral blockade according to Marev

11. Pleural puncture.

Indications for puncture: diagnostic: the nature of the effusion, puncture biopsy if a tumor is suspected; therapeutic: the presence of stagnant effusion, inflammatory exudate, spontaneous or traumatic pneumothorax, hemothorax, pleural empyema, in the presence of a lung abscess, as well as for local administration of antibiotics.



Pic 14- Pleural cavity

• Before and after the procedure, carry out hygienic treatment of hands

• During the procedure, use individual healed products (clothing, cap, mask, gloves, glasses or protective screen, apron)

• Observe the rules of asepsis throughout the procedure

2 Informing the patient about the procedure being performed

• The doctor obtains consent from the patient (or his legal representative) to carry out the medical procedure.

• The doctor informs the medical staff about the upcoming medical procedure.

• The patient receives information about the upcoming medical procedure from a medical professional

3 Material resources

• Devices, instruments, medical products

• cotton balls

• sterile forceps, clamp

• 10.0 or 20.0 ml syringe

• 06-25 mm needle for anesthesia

• 60 ml syringe

Pic 15- Pleural puncture.

• needle 2.0-90 mm for fluid evacuation

• connecting tube

• sterile napkin

• plaster

• test tube

• drainage container 2 l with anti-return valve and 3-way valve.

Medicines 3% iodine solution in a glass, ethyl alcohol solution 70 in a glass, novocaine solution 0.5% to 10 ml 3 Description of the procedure.

Preparation for the procedure

1. For puncture, the patient is placed in a comfortable position, usually sitting with a forward bend and support on a table or chair back.

2. The place for puncture is determined by the totality of percussion data, the results of a radiograph of the lungs in two projections and ultrasound examination of the pleural cavity. Usually in the 7-8th intercostal space from the scapular to the posterior axillary line.

Procedure

1. The puncture site is treated with antiseptics: twice with iodine solution and once with alcohol.

2. Anesthesia is carried out with a 0.5% solution of novocaine with the creation of a lemon peel and layer-by-layer infiltration of subcutaneous tissue and muscles.

3. After anesthesia, the needle is changed to a puncture needle and an injection is made, focusing on the upper edge of the rib so as not to damage the vessels and nerves located at its lower edge.

4. Before the introduction of the needle, the skin is fixed to the upper edge of the rib with the index finger of the left hand.

5. Perpendicularly to the skin, the needle is held inward until a feeling of failure appears, which indicates a piercing of the parietal pleura, the movement of the piston becomes free.

6. When you pull the piston towards you - we get liquid.

7. We replace the syringe with a disposable system for pleural puncture and start evacuating the fluid.

8. A single removal of more than 1000 ml of fluid is not recommended, since there is a possibility of mediastinal displacement, which will lead to the development of collapse. (Exception: blood, removed completely).

Completion of the procedure

1. At the end of the puncture, the needle is removed.

2. The puncture site is treated with an antiseptic and sealed with a sterile napkin using an adhesive plaster.

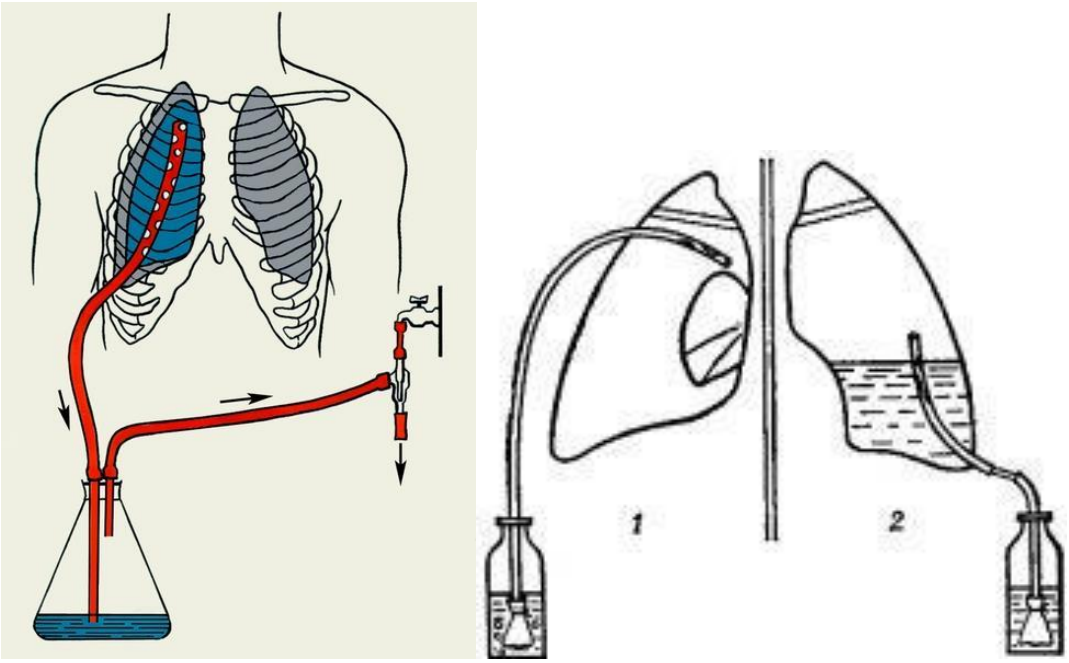
3. After the completion of the puncture, an X-ray examination is mandatory.

4. Additional information about the peculiarities of the technique

• In case of pneumothorax, puncture is performed in the 2nd intercostal space along the mid-clavicular line without anesthesia. Skin treatment similar to pleural puncture.

12. Drainage of the pleural cavity according to Bulau.

With a large accumulation of air or pus in the pleural cavity, one of the options for removing the contents is passive aspiration according to Bulau. This method is based on the principle of communicating vessels. The fluid or air is drained passively into a container located below the plane of the lung. A valve at the end of the tube prevents backflow of substances.



Pic 16- Drainage of the pleural cavity according to Bulau.

To evacuate air, thoracocentesis is performed in the second intercostal space along the antero-axillary or midclavicular line (on the right), and to remove exudate, in the lower part of the chest. If necessary, the drain tube is extended through an adapter. A valve made of a rubber sterile glove is installed at its outer end. Two valve options can be used: a simple finger-tip cut and a spacer. This end of the tube is lowered into a container with an antiseptic solution.

This technique is more often used in the treatment of pneumothorax, if there is no active electric vacuum-aspiration system, in which the pressure and, accordingly, the rate of evacuation of the contents of the pleural cavity are regulated. With abundant and thick exudate, the drainage system quickly becomes clogged with pus and becomes unusable.

Drainage for pneumothorax is indicated with a large accumulation of air in the cavity (more than ¼ of the volume), mediastinal displacement. If the patient is lying, then the puncture is performed in the 5-6th intercostal space. The position of the patient on a healthy side, the opposite hand is thrown back behind the head.

Thoracocentesis is performed along the mid-axillary line. When sitting, the puncture is made in the upper part of the chest.

Under aseptic conditions, thoracocentesis is performed under local anesthesia and a drainage tube is inserted into the pleural cavity. Its outer end is connected to an active or passive aspiration system. The appearance of bubbles in the liquid of the aspirator indicates the flow of air through the drainage. With active air removal, the pressure is set to 5-10 mm of water. Art. This will allow the contracted lung to expand quickly.

Possible complications after drainage

The development of complications depends on the experience of a specialist in carrying out this procedure, the correctness of determining the area of the pathological focus (with exudate, abscess), anatomical features and age of the patient, the presence of concomitant pathology. Possible drainage complications include:

• lung injury;

• damage to blood vessels and nerve fibers;

• puncture of the diaphragm;

• injury to the abdominal organs (liver, intestines, kidneys);

• infection of the pleural cavity and puncture area;

• peritonitis;

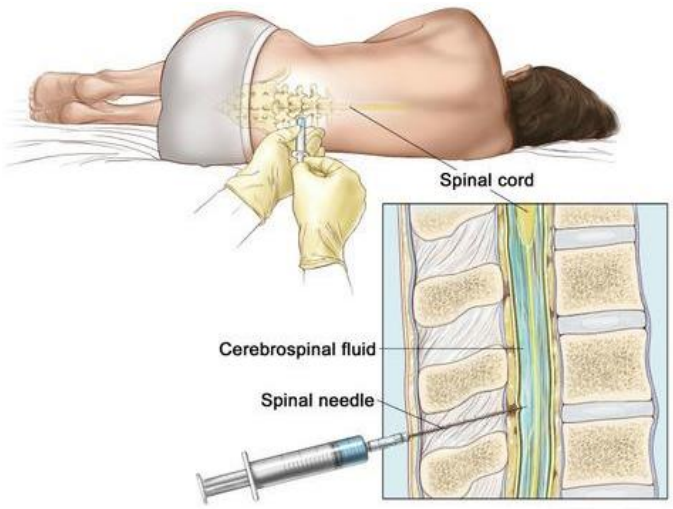
• bleeding.

The reasons for unsuccessful drainage may be incorrect positioning of the puncture needle or trocar above the liquid level, penetration into the lung tissue, fibrin clot, penetration into the abdominal cavity.

13. Spinal puncture (blockade).

Spinal anesthesia involves the introduction of an anesthetic solution into the subarachnoid space, causing a temporary block of somatic and autonomic sensitivity, as well as blockage of motor conduction of the anterior and posterior roots of the spinal cord.

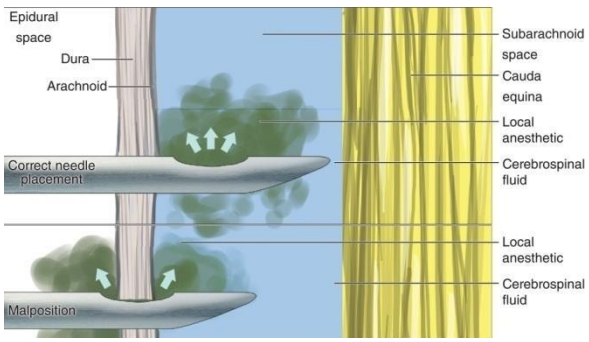
INDICATIONS: surgical interventions on the lower limbs, bones and pelvic organs.



Pic 17- Spinal puncture

TECHNICS. According to the level, spinal anesthesia is divided into low, medium and high. In orthopedic and trauma practice, as a rule, low and medium anesthesia is used. With a low blockade, the puncture site is the L4-L5 or L5-S1 levels, with an average block - L3-L4. The puncture is performed in a sitting position or lying on the side with a well bent spine, hips pressed to the stomach and head bent to the chest.

The skin of the back is treated twice with an antiseptic or alcohol. It is not recommended to use iodine solutions, since even traces of iodine introduced into the subarachnoid space can cause aseptic arachnoiditis. After anesthesia of the skin and subcutaneous tissue, a long lumbar puncture needle is used.



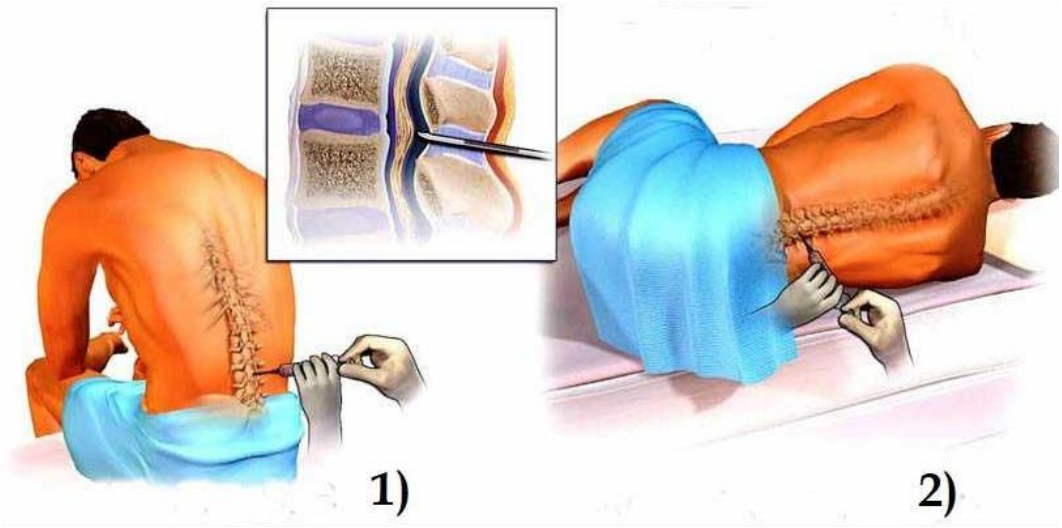
Pic 18- Local anesthetic

The needle is slowly advanced strictly along the midline, between the spinous processes with a slight cranial deviation in accordance with the slope of the spinous processes. It is desirable that the needle cut is located in the sagittal plane, which will minimize its damaging effect on the inner layer of the dura mater. When the needle is slowly passed through the ligamentous apparatus, the resistance of dense tissues is felt, which suddenly disappears after puncture of the yellow ligament. After that, the mandrel is removed and the needle is advanced by 3 mm, piercing the dura mater. The outflow of cerebrospinal fluid from the pavilion of the needle is an absolute sign of its exact localization in the subarachnoid space. If the needle has entered the bone or periosteum, then it should be assumed that its lumen is clogged. The needle is removed, washed or replaced with a new one. A repeated puncture attempt is made by changing the direction of the needle. When blood appears from the pavilion, the needle is removed and inserted into another interspinous space. In the case when blood is secreted with cerebrospinal fluid and there is a tendency to lighten the latter, the anesthetic is not administered until a clear cerebrospinal fluid is obtained. Solutions of local anesthetics for spinal anesthesia, depending on the specific gravity, are divided into hyperbaric, isobaric and hypobaric. When introducing solutions with different specific gravity, it is imperative to take into account their hydrodynamic properties in the subarachnoid space. In the Trendelenburg position, the hypobaric solution will spread caudally, and the hyperbaric solution will spread cranially. When the head end of the operating table is raised, the hypobaric solution will spread cranially and the hyperbaric solution will spread caudally.

14. Epidural blockade

Epidural (syn.: Epidural, extradural) blockade (anesthesia) according to the mechanism and level of action of the anesthetic solution on the segments of the nervous system refers to the regional type of anesthesia. The local anesthetic is injected into the epidural space, which does not communicate with the spinal cord or the brain, so the anesthetic does not directly affect the brain.

INDICATIONS: surgical interventions on the lower extremities and pelvic region (to achieve long-term postoperative analgesia), administration of drugs for degenerative-dystrophic diseases of the spine.

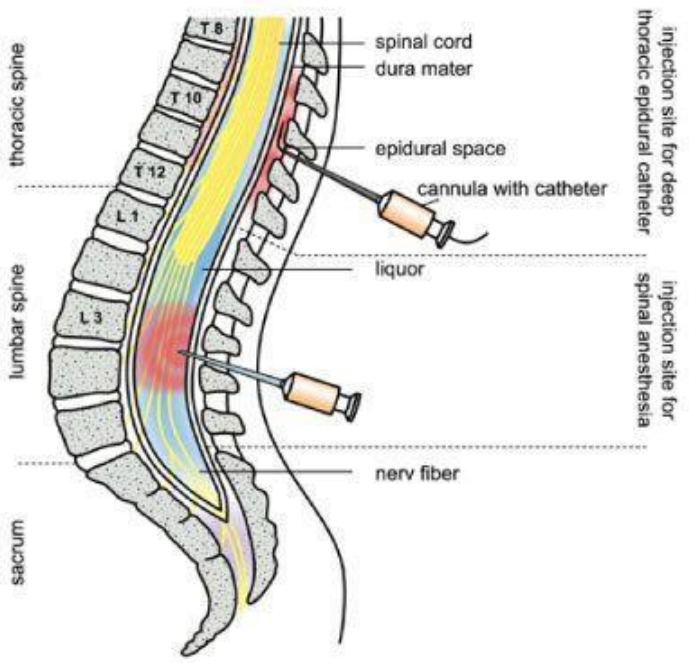


Pic 19- Epidural blockade

TECHNICS. Epidural blockade is performed while the patient is sitting or lying on his side with legs brought to the abdomen. The puncture site depends on the desired level of anesthesia. Two needles are used: one for subcutaneous anesthesia and the other for blocking. The first needle is used for preliminary anesthesia of the skin and subcutaneous fat. Determine the place where the needle is inserted between the spinous processes. For blockade use a needle 10 cm long, with an inner diameter of about 1 mm, with a sharp but short end. The needle is inserted between the spinous processes in the sagittal plane, strictly along the posterior midline, with a slight cranial deviation. The needle should also be guided cranially. The needle is advanced to a depth of 2-2.5 cm, in the lumbar spine - perpendicular to the spinal column, in the thoracic spine - at an angle, slightly deviating the needle downward, according to the direction of the spinous processes. Then a syringe is attached to the needle with isotonic sodium chloride solution and an air bubble in it. Further advancement of the needle inward is carried out under the control of the degree of air compression in the syringe. Before entering the epidural space, the needle passes through the skin, subcutaneous fatty tissue, supraspinous, interspinous and yellow ligaments. While the end of the needle is between the fibers of the ligaments, the solution, when pressed on the plunger of the syringe, moves very slowly, and the air bubble in it contracts. Once the needle enters the epidural space, resistance is reduced and the plunger is easily pushed forward. When removing the syringe from the needle, liquid should not flow out of its lumen. The appearance of fluid indicates that the tip of the needle has entered the subdural space. If the needle falls into the epidural space, 10-15 ml of anesthetic solution or a therapeutic mixture is injected into it. To provide long-term anesthesia or a therapeutic effect, a thin PVC catheter can be passed through the

needle for fractional administration of the anesthetic or therapeutic mixture. If muscle relaxation is not so important, then 1-1.5% xicaine solution, 2% trimecaine solution and 0.25% bupivacaine solution are used. A single dose depends on the type of anesthetic and is calculated per kilogram of the patient's body weight. The maximum single dose of lidocaine is 400 mg (15-20 ml of 2% lidocaine solution); the maximum single dose of bupivacaine is 150 mg (10-20 ml of 0.70% bupivacaine solution); the maximum single dose of mepivacaine is 400 mg, nezacaine is 800 mg. The limits of anesthesia are determined 10-20 minutes after the injection of the anesthetic solution. As clinical experience shows, the use of narcotic analgesics for epidural anesthesia gives a more powerful and long-lasting analgesic effect. Approved pharmacopoeia for epidural use are morphine and fentanyl.

Figure 1 - Method of CSTEA.



Pic 20- Method of catheterization

POSSIBLE COMPLICATIONS: collapse (the higher the level of epidural anesthesia, the greater the risk of its development). The collapse is eliminated by the introduction of 1-2 ml of a 0.5% solution of ephedrine hydrochloride. If the level of epidural anesthesia is high, breathing may be impaired. In these cases, mechanical ventilation is indicated.

After epidural anesthesia, headache, pain at the puncture site, traumatic radiculitis, and infection of the epidural space may occur. When a full dose of anesthetic

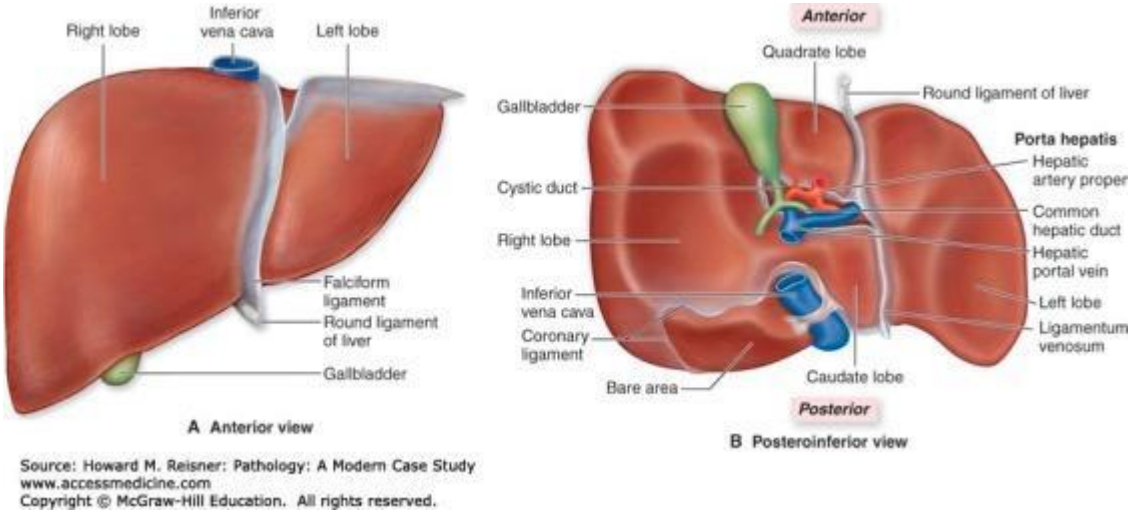
solution is injected into the subdural space, spinal anesthesia or total spinal block may occur. Development of a general toxic reaction with convulsive syndrome is possible.

CONTRAINDICATIONS: hypovolemia, severe shock, intoxication, sepsis; spinal diseases that make it difficult to insert a needle into the epidural space; diseases of the peripheral and central nervous systems; the presence of inflammatory processes in the area of the proposed puncture.

15. Blockade of the round ligament of the liver.

Indications: acute cholecystitis and its complications (hepatocholecystitis, cholecystopancreatitis, jaundice)

Contraindications: common for novocaine blockades, skin changes, skin diseases in the blockade area, diffuse peritonitis, peri-vesicular and subhepatic abscesses.



Pic 21- Anatomy of Liver

There are 2 methods of blockade of the round ligament of the liver.

Technique 1. Position of the patient on the back. The reference point for the injection is a point determined along the midline 4 cm above the navel and to the right of it 2 cm (projection of the round ligament of the liver). They pierce the skin and advance the needle in the direction inward and upward, all the time pre-sending novocaine along the needle. The soft tissue of the needle passes freely to the aponeurosis, where there is a relative resistance to advancing the needle. In this

place, the aponeurosis is carefully punctured and 40-60 ml of 0.5% warm novocaine solution is injected into the subgaleal space.

Technique 2. It consists in 2cm.above and 2 cm to the right in the projection of the round ligament of the liver (which is determined by the connection of the point of the linia clavicularis media perpendicular to the costal arch and connected to the navel). Passing the needle vertically, pierce the skin with an easy entry, all the time pre-sending novocaine along the needle, subcutaneous fat, the anterior sheath of the rectus abdominis muscle, the posterior leaf, and inject solution of novocaine.

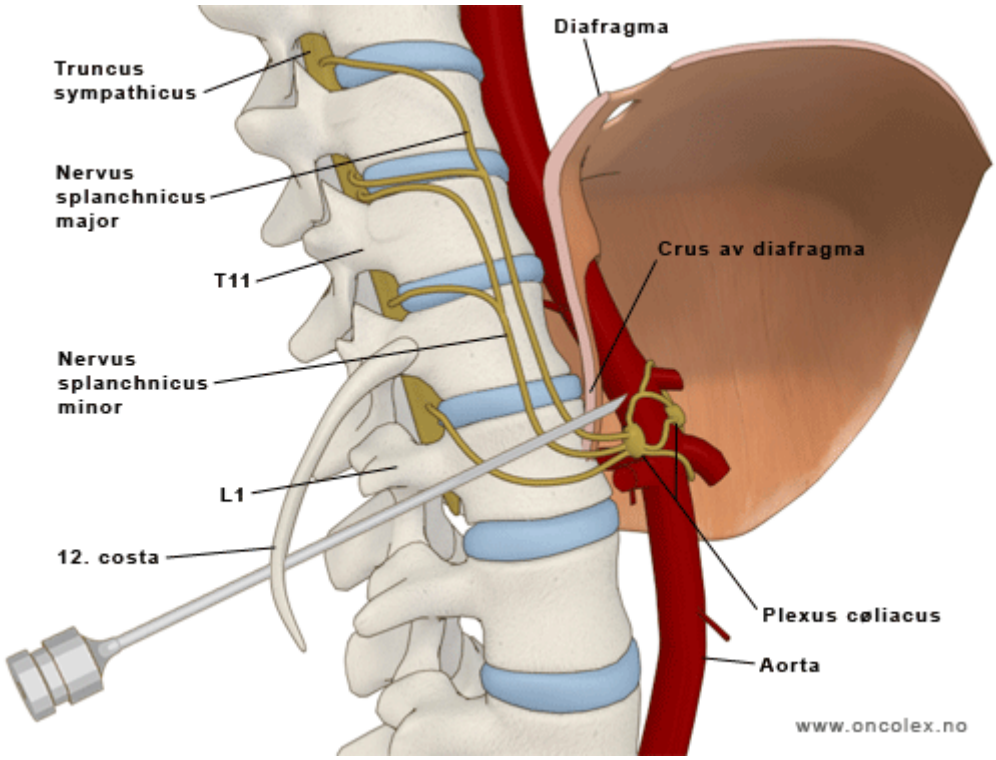
16. Blockade of the celiac plexus.

The celiac plexus innervates most of the internal organs, including the stomach, liver, bile ducts, pancreas, spleen, kidneys, adrenal glands, omentum, small intestine, and colon to the level of the splenic flexure. Indications for celiac plexus blockade:

• chronic pain due to the so-called surgical adhesions in the abdominal cavity;

• pain in chronic pancreatitis and Crohn's disease;

• chronic pain in malignant tumors in the upper abdominal cavity (especially in pancreatic cancer).



Pic 22- Blockade of the celiac plexus.

There are two main methods of blockade execution.

In the more long-term method, the needles are inserted to carry out a deep internal blockade. This leads to the spread of the anesthetic solution towards the head end of the body and posterior to the legs of the diaphragm.

The second method involves placing a needle through one leg of the diaphragm from the posterior approach or through the anterior abdominal wall, ending with the placement of the needle in front of the aorta in the celiac plexus region. This leads to the spread of the anesthetic drug around the celiac trunk, in front of the diaphragmatic legs. To block the celiac plexus, the patient should lie on his stomach with a pillow placed under the stomach to reduce lumbar lordosis.

The spines of the XII thoracic and lumbar vertebrae should be found and noted. Then draw lines parallel to the median line, 7-8 cm from the latter. The XII rib is palpated, a mark is placed on both sides where the paramedian lines intersect the XII rib. Another mark is made along the midline between the spines of the XII thoracic and I lumbar vertebrae. Drawing lines between the three marks create a wide isosceles triangle. The equal sides of this triangle serve as guide wires for the needles installed on both sides. Next, create a "lemon peel" at the marks immediately below the XII rib, then a 12-15 cm needle of 20 or 22 gauge is injected without a syringe. The needle is advanced at an angle of 45 ° to the plane of the table surface in the direction of the gap between the spines of the ThXII and L1 vertebrae.

During the insertion of the needle, it contacts the LI vertebral body at a depth of 7-9 cm. If contact with the bone occurred at a more superficial level, it is likely that there was a meeting with the transverse process of the vertebra. When the vertebral body is confidently identified, the needle is retracted to the subcutaneous level and the insertion angle is increased to allow the tip of the needle to pass the lateral edge of the vertebral body. On the left side (from the side of the aorta), as soon as the needle has passed the vertebral body, it should be inserted an additional 1.5-2 cm or until then. until the aortic wall is identified by pulsation transmitted along the length of the needle.

On the right side, the needle can be inserted another 2-3 cm after it has passed the vertebral body. It is helpful to insert the left needle first when advancing the needles to the correct depth, as it can be advanced slowly until the fingertips feel the aortic pulsation transmitted through the needle. Once the depth of the aorta has been determined, the right needle can be further inserted and easily advanced to a slightly deeper level. Before the administration of a solution of a local anesthetic or

a neurolytic agent, blood, urine, or cerebrospinal fluid should be excluded from the needle. If the needle is not seated correctly, one of these fluids will spontaneously escape from the needle. The sensation of injecting a local anesthetic solution through a needle should be similar to that of a properly installed epidural needle. If a 20 gauge or 22 gauge needle is correctly positioned in the retinal region, there should be little injection resistance.

17. Laparocentesis.

Alternative names: diagnostic laparocentesis, fluid removal for ascites of various etiology, abdominal drainage, therapeutic and diagnostic laparocentesis.

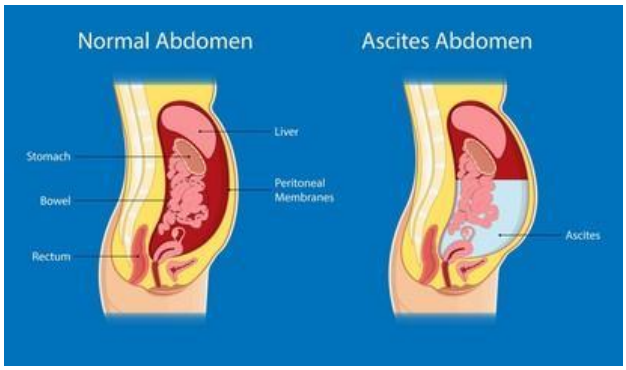
Laparocentesis is a surgical procedure involving puncture of the anterior abdominal wall in order to determine the pathological contents of the abdominal cavity. Using this procedure, a pneumoperitoneum is applied - gas is pumped into the abdominal cavity before laparoscopic operations or for diagnostic purposes.

Indications for laparocentesis:

1. Closed abdominal trauma (in the absence of other diagnostic methods for intra-abdominal bleeding - ultrasound or CT).

2. Suspicion of a penetrating wound to the abdomen.

3. The need to apply pneumoperitoneum - at the initial stage of laparoscopic operations or for X-ray diagnosis of diaphragm damage.



Pic 23- normal (a) ascites (b) abdomen

4. Suspicion of purulent or any other peritonitis.

5. Ascites - the presence of free fluid in the abdominal cavity. There are many causes of ascites - liver cirrhosis, cancer, heart failure. In this case, the fluid is removed by laparocentesis.

Contraindications:

This manipulation should not be performed under the following conditions:

- adhesive intestinal disease;
- severe flatulence;
- the patient has a large ventral hernia;

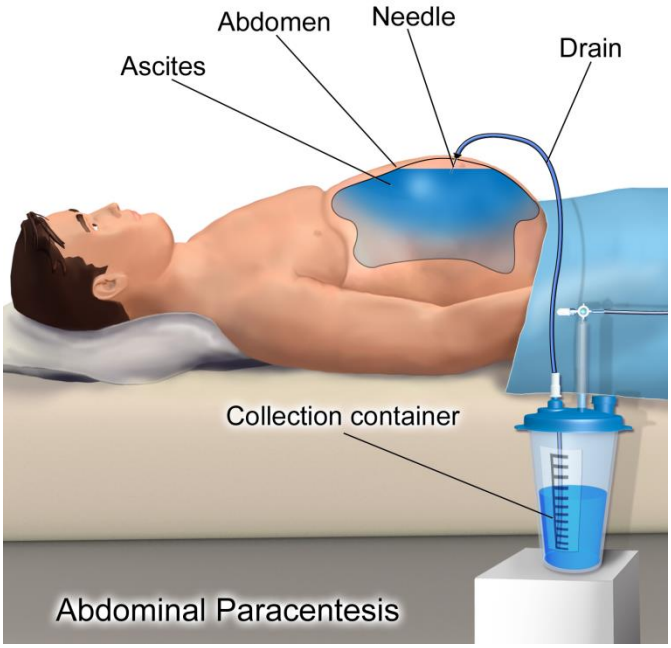
Relative contraindications:

- severe, uncontrolled violation of the blood coagulation system;
- infection or rough scars on the abdominal wall at the puncture site;
- extreme portal hypertension with prominent abdominal veins.

Preparation for laparocentesis:

1-2 hours before the procedure, the patient is given a cleansing enema, immediately before the laparocentesis, the bladder should be emptied - the patient urinates on his own or a urinary catheter is installed. For the purpose of premedication, an injection of atropine and a narcotic analgesic, promedol, is performed.

The position of the patient is supine or half-sitting. Puncture of the abdominal wall is carried out in the midline 2-3 cm below the navel. First, the surgeon performs local anesthesia, after which he makes a small incision in the skin and subcutaneous tissue with a scalpel - 0.7-1.2 cm.



Pic 24- Abdominal paracentesis

A trocar with a stylet is inserted into the wound, with which the aponeurosis and peritoneum are punctured by twisting movements. At the moment of entering the cavity, the surgeon feels a failure. In this way, laparocentesis is performed with ascites. When applying pneumoperitoneum, the skin near the navel is grasped with clamps and pulled up as much as possible. Next, a puncture is performed with a puncture hollow needle with a mandrel, the mandrel is removed and carbon dioxide or air is pumped into the stomach. After removing the needle, the

procedure is similar to that described above. In this case, an endoscope is inserted through the trocar.

Complications:

Laparocentesis is a rather serious surgical procedure, during which the development of severe complications is possible:

1. Accidental damage to internal organs - intestines, liver.

2. Damage to the intestinal mesentery.

3. Intra-abdominal bleeding.

4. Bleeding at the puncture site.

5. A sharp decrease in blood pressure during the evacuation of fluid from the abdominal cavity.

6. Subcutaneous emphysema when air enters the subcutaneous tissue.

7. Phlegmon of the anterior abdominal wall in case of violation of the rules of asepsis during the manipulation or with purulent peritonitis.

18. Puncture and catheterization of the bladder.

Puncture of the bladder

Indication:

• acute urinary retention in case of impossibility of catheterization of the bladder (injuries and strictures of the urethra, prostate adenoma, acute prostatitis, periurethral abscess, false passages in the urethra after attempts at catheterization).

Contraindications:

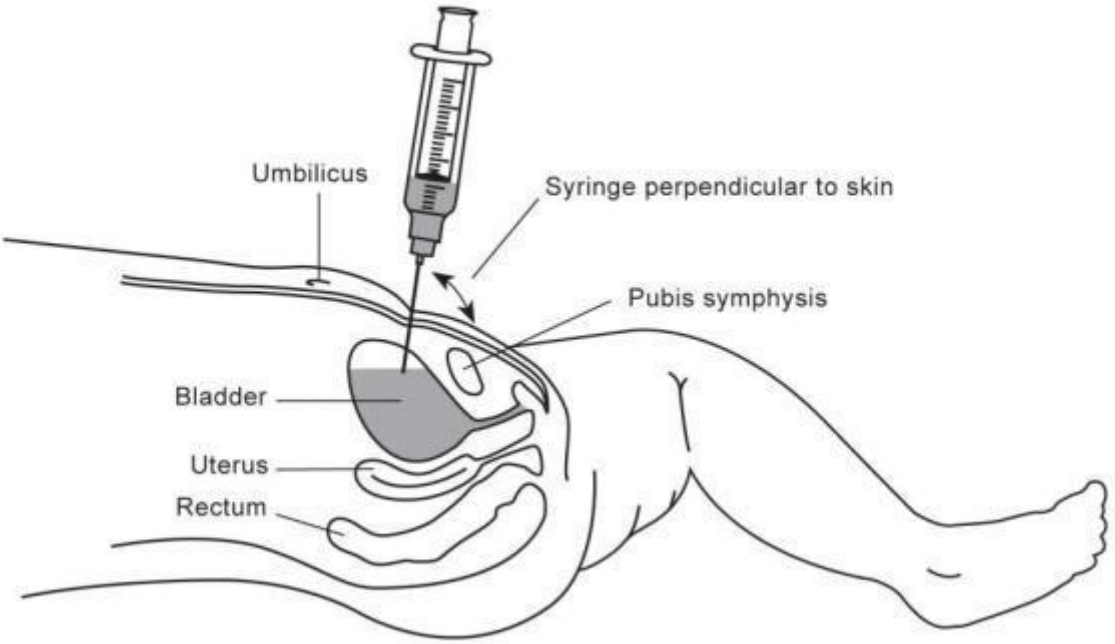
• unstretched bladder;

•pregnancy;

• violation of blood clotting;

• swelling of the bladder;

• scars along the midline of the abdomen below the navel.



Pic 25- Puncture of the bladder

Technique:

1. The patient lies on his back, the pubic hair is shaved off, the skin is treated with an antiseptic solution and fenced off with sterile material. Percussion and palpation, the surgeon defines the contours of the bladder.

2. In the midline of the abdomen, 2 cm above the symphysis, anesthesia of the skin and soft tissues is carried out with 10-20 ml of 0.5% novocaine solution.

3. A fine needle with a stylet punctured the bladder through the tissues infiltrated with novocaine. When the stylet is removed from the needle, urine flows out. A rubber drainage tube is put on the needle to drain it.

4. After emptying the bladder, the needle is removed, the puncture site is treated with an antiseptic and sealed with a sterile bandage.

5. If it is necessary to leave a cystic fistula for several days, the puncture of the bladder after tissue anesthesia and skin dissection is performed with a trocar, through the sleeve of which a plastic catheter with lateral holes is passed and sutured to the skin.

Actions in case of possible complications:

• bleeding: hand pressing, bandage;

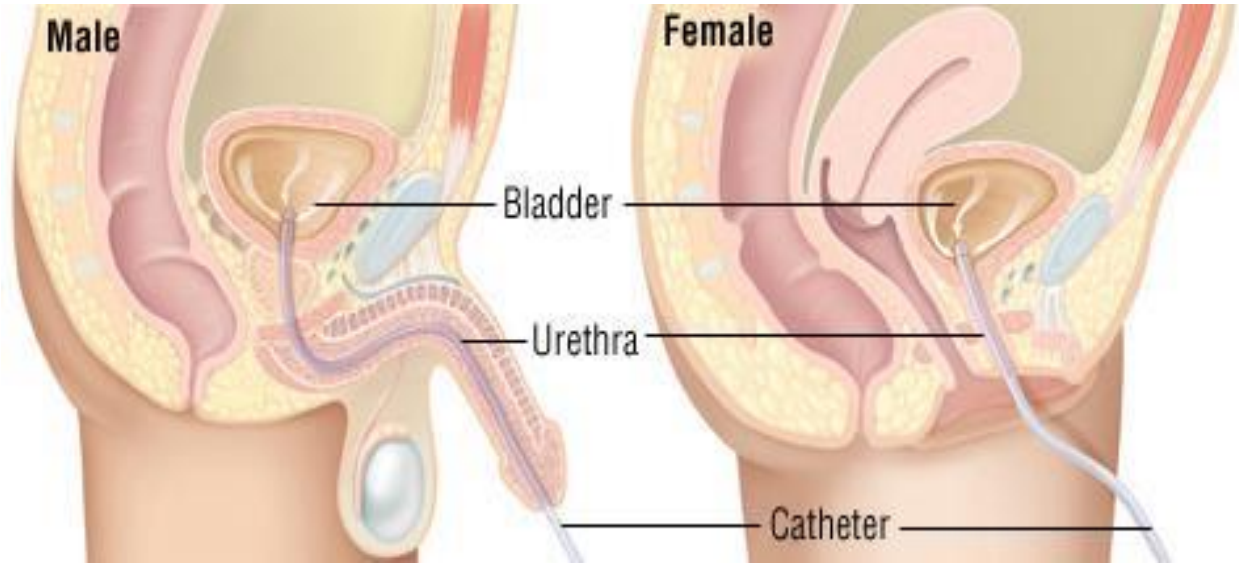
• infection: antibiotics, change of puncture site;

• catheter thrombosis: careful flushing with furacilin solution or saline.

1. Male Catheterization .

Take the penis in your hand, slide the foreskin and disinfect. Using a conical tip, inject the gel into the urethra, apply the gel to the tip of the catheter. Check the tightness of the catheter balloon by filling it with water for injection, then deflate the balloon.

Position the penis perpendicular to your torso by gently pulling upwards. Insert the catheter into the urethra with smooth movements until urine flows out, then fill the balloon and push the foreskin. Connect the catheter to the urine bag, making sure that urine flows further.



Pic 26- Male(a) and Female(b) Catheterization

2. Female Catheterization.

Part the labia minora, wipe the external os of the urethra with napkins moistened with disinfectant solution. Using a conical tip, inject the gel into the urethra, apply the gel to the tip of the catheter. Check the tightness of the catheter balloon by filling it with water for injection, then deflate the balloon. Insert the catheter to a depth of 10–12 cm or until urine appears, then fill the balloon. Connect the catheter to the urine bag, making sure that urine flows further. The resistance that makes it impossible to insert the catheter, especially in men, can be overcome by using a larger diameter (20 F) catheter. In case of failure, you can try using a Thiemann

catheter (Nelaton catheter with a Thiemann tip) - it is more rigid, has a curved tip and does not have a balloon. If you cannot insert the catheter into your bladder, call your urologist.

19.Epicystostomy

Indications for the imposition of an epicystomy

Operative epicystomy is indicated for many pathologies and conditions that provoke prolonged stagnation of urine.

Operation required:

• in the absence of normal tone of the urinary reservoir, provoked by chronic processes of urine retention;

• with the development of intravesical calculi and neoplasms that prevent the outflow of urine;

• in the presence of acute conditions caused by tamponade of the bladder cavity (the presence of blood clots, due to injuries, operations, etc.);

Pic 27- epicystomy

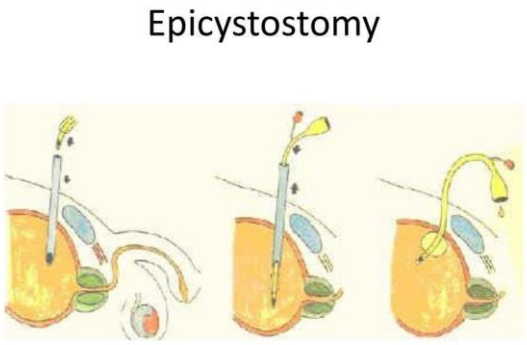
• in case of violation of the urinary-vesical walls (medical manipulations or injuries);

• in the presence of neurogenic dysfunctions (wheelchair patients);

• with different genesis of urethral obliteration (partial or complete clogging of the urethral canal areas).

Types of epicystostomy

Until recently, two types of MP epicystomy were used for urine diversion - open and trocar. Today, a new drainage method is being successfully introduced - without opening the urinary bladder cavity.



Pic 28- epicystomy

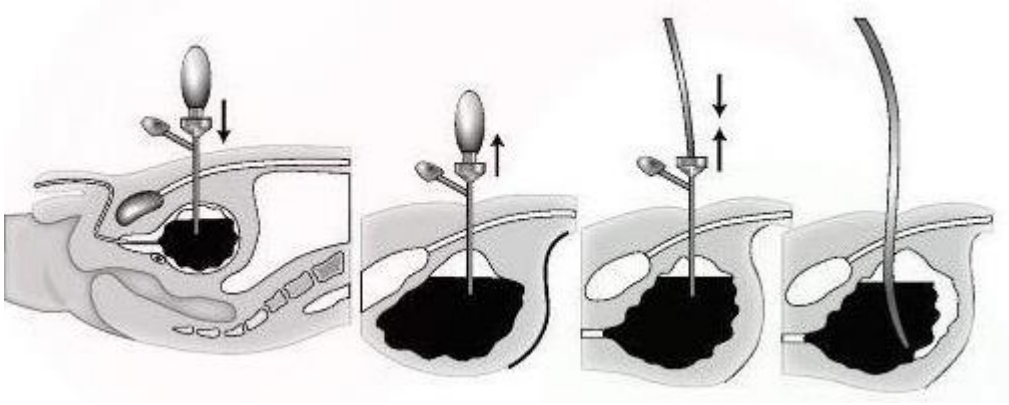
1. The method of open epicystomy provides for the installation of a drainage system through a high section of the MP and the formation of a fistula in the suprapubic area of the peritoneum. It can be used as a temporary measure, as a preparation for the main surgical treatment, and as a permanent drainage.

2. Trocar epicystomy is the formation of a suprapubic urinary-vesical fistulous tract by puncturing the anterior abdominal wall and installing a drainage system using special instruments - a trocar or a hollow needle. It is used for short-term drainage of MP. This makes it possible to thoroughly examine the patient in the period of preoperative preparation for delayed surgical interventions and eliminates the need for permanent drainage.

Technique of Trocar Epicystomy.

The insertion of the epicystostomy is carried out under visual control using a special set of epicystomy instruments - a trocar with a tube and a stylet. With the help of a camera or cystoscope, all manipulations are displayed on the monitor. The operation begins with infiltration of local anesthesia, filling the bladder with a disinfectant and inserting a transmission device (camera or cystoscope) through the urethra. The area of the operating field is treated with an antiseptic. On the anterior wall of the peritoneum, a small, up to 2 cm incision is made. The muscles and tendon plates (aponeurosis) of the peritoneum are pierced by rotational movements of a trocar with an inner tube diameter of 16–20 mm, monitoring the pressure on the urinary-vesicle walls using video surveillance. The bladder wall is perforated with helical movements. After the introduction of the trocar into the vesical cavity, the trocar stylet is removed, and a corresponding catheter with a balloon fixture is inserted into the bladder along the lumen of the tube. The tube is removed and the

catheter is pulled until the balloon contacts the bladder wall. The end of the drain is fixed with ligatures to the skin of the peritoneum.



Pic 29- Technique of Trocar Epicystomy

20. Rectal examination of the rectum.

Digital examination of the rectum is used both for preventive examinations and for the diagnosis of diseases of the anorectal zone.

Indications for rectal examination:

- Persons over 40 years of age are subject to rectal examination once a year as a screening for rectal cancer.

- diagnostics of pathological processes in the anorectal zone.

- suspicion of inflammatory and oncological processes in the small pelvis, diseases of the prostate, uterus.

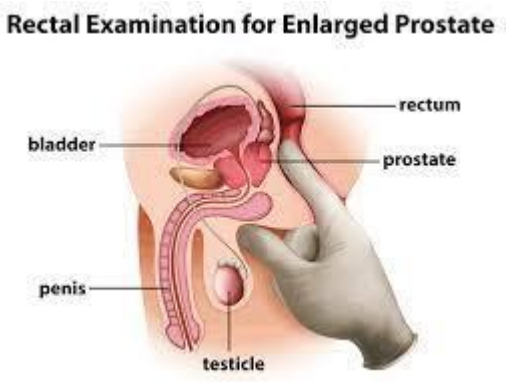
In coloproctological practice, digital examination has a double meaning. At first, it is indicative in nature, despite the diagnostic hypothesis already formed for the doctor based on the results of questioning and external examination. Tentative palpation of organs and tissues through the rectum is carried out to the maximum extent and the question of the need for sigmoid and colonoscopy is resolved.

The immediate objectives of the approximate digital examination of the rectum are:

• assessment of the condition of the anal canal tissues and the closure function of the anal sphincter;

• determination of the degree of preparation of the rectum for endoscopic examination;

• assessment of the condition of the rectal mucosa;



Pic 30- Rectal examination

• determination of the state of organs and tissues surrounding the rectum;

• identification or preliminary determination of the pathological process;

• assessment of the nature of the discharge from the rectum;

• selection of the optimal position of the patient's body to perform the main targeted examination.

A targeted digital examination serves to detail the local signs of the disease with the involvement of additional diagnostic methods. The study of the anal canal is carried out by sequential palpation of its walls, starting (most often) from the back or (less often) from its anterior semicircle. These techniques make it possible to determine the mobility, elasticity and the nature of the folding of the mucous membrane of the anal canal and to identify the existing changes in various layers of the anus wall.

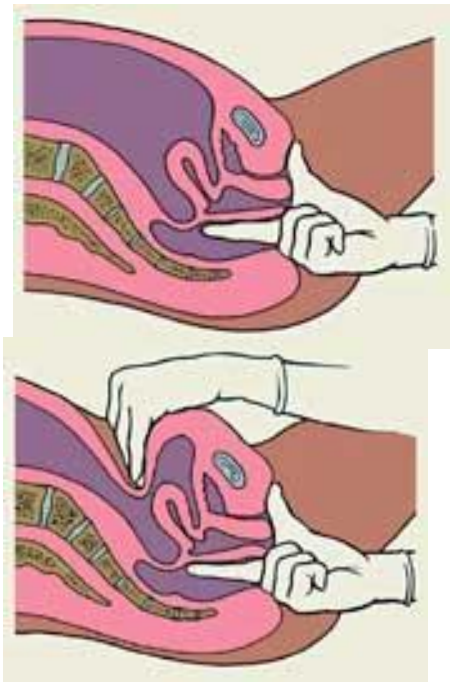
In this case, special emphasis is placed on the study of the posterior and anterior walls of the anal canal, since pathological processes are most often localized in these zones.

The most important stage in the approximate digital examination of the rectum is the study of its ampullar section.

Research technique

Rectal digital examination is carried out in various positions of the patient: lying on the side with legs bent at the hip and knee joints, in the knee-elbow position, in the supine position (on the gynecological chair) with the legs bent at the knee joints and brought to the stomach.

Sometimes, to assess the condition of the hard-to-reach upper parts of the rectum with a digital rectal examination, the patient is given a squatting position. If peritonitis or abscess is suspected, digital rectal examination is performed with the patient in the supine position.



Pic 31- rectal examination

Only under this condition can a symptom of overhanging and soreness of the anterior semicircle of the rectal wall be detected.

A digital rectal examination should always be preceded by a thorough examination of the anus, which often reveals signs of the disease (external fistulas, thrombosis of external hemorrhoids, insufficient closure of the edges of the anus, proliferation of tumor-like tissue, skin maceration, etc.).

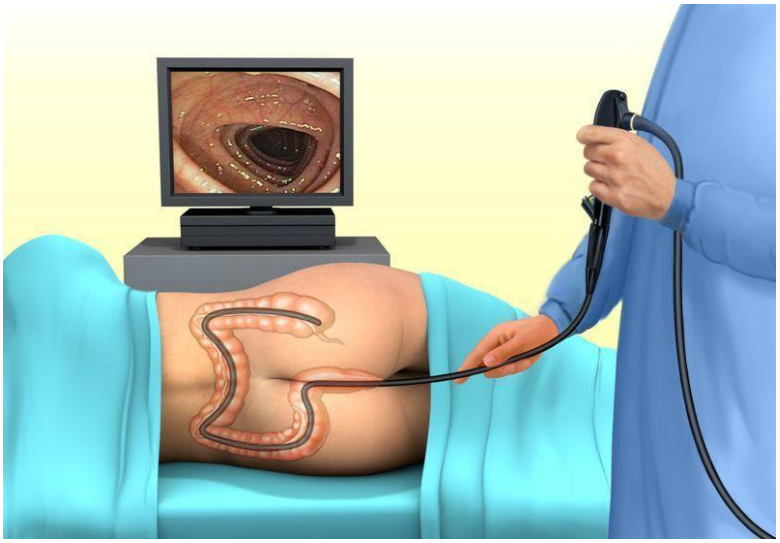
The method of digital examination of the rectum is as follows: the index finger of the right hand, on which a rubber glove, abundantly lubricated with petroleum jelly, is put on, is carefully inserted into the anus, the patient is advised to “push”, as during a bowel movement. And during the study, relax as much as possible, the nail phalanx of the finger inserted into the intestine with the palmar surface, with gentle pressure on the intestinal wall, slides along the mucous membrane within one semicircle, then the other sides of the intestine are examined in turn. Staged sequential palpation of the intestinal walls is important for the detection of neoplasms, especially small ones.

It should be emphasized once again that the choice of the patient's position for digital rectal examination is not a routine matter. It depends on the patient's condition, experience and knowledge of the doctor, allowing him, according to the history and examination, to choose the most optimal conditions for rectal examination.

21. Anoscopy.

Anoscopy is a method of instrumental examination of the rectum by examining its inner surface using an anoscope inserted through the anus for the purpose of examining the anal canal and rectum to a depth of 12-14 cm.

Anoscopy is performed in any position of the patient, but it is better when the patient is in the supine position on the gynecological chair. The instrument is inserted in a circular motion, easily, without violence. After removing the obturator, perform the necessary manipulations; the inspection is carried out when the anoscope tube is removed.



Pic 32- Anoscopy

Indications for anoscopy are pain in the anus, pathological discharge from it, and stool disorders. Anoscopy is usually an adjunct to digital rectal examination and should precede endoscopic examination methods such as sigmoidoscopy and colonoscopy. Examination with an anoscope is mainly used to clarify the diagnosis, take biopsies and smears for medicinal purposes.

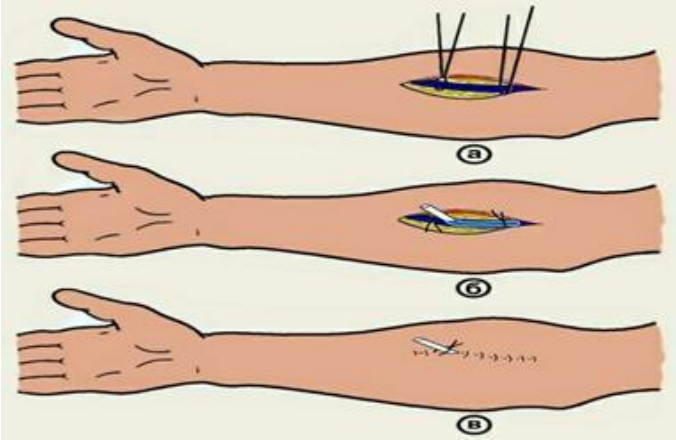
For a normal and high-quality conduct of anoscopy, it is enough to make an ordinary cleansing enema - 1.5–2 liters of water at body temperature after a bowel movement. Relative contraindications are narrowing of the lumen of the anal valve and rectum, acute inflammatory processes in the anus, stenosing tumors of the anal canal; chemical and thermal burns in the acute stage.

22. Venesection. Venipuncture.

Venesection - opening the lumen of a vein using an incision. Venesection is performed as soon as the superficial veins in the patient are poorly expressed, and long infusion therapy is indicated for him. Indications: the need for prolonged infusion of blood substitutes if venipuncture is impossible.

Technics.

After local infiltration anesthesia with 0.5% novocaine solution, a 3-4 cm incision is made, corresponding to the projection of large venous trunks. Most typical sites: just above the inner ankle of the lower leg, in the elbow bend, in the lower third of the forearm on the radial side.

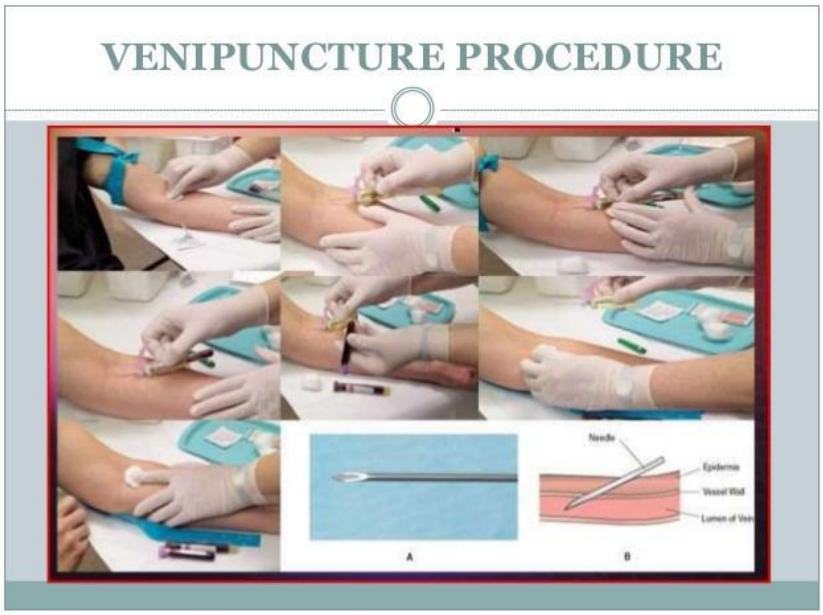


Pic 33- Venesection

Bluntly, using a hemostatic forceps, a vein is isolated and 2 silk ligatures are brought under it. The vein is ligated with a peripheral ligature and, pulling it up in the wound, a needle for intravenous transfusion (Dufo type) is inserted, which is fixed with a second ligature (it is better to insert a sterile polyethylene venous catheter, pre-opening the lumen of the vein, and tie it up with a second ligature).

The vein between the ligatures is crossed. The wound is sutured with 2-3 sutures and an aseptic bandage is applied. The needle or catheter is removed already in the hospital. Probable complications are phlebitis, thrombophlebitis, cannula blockage.

Venipuncture.



Pic 34- Venipuncture.

Usually, puncture of the saphenous veins in the elbow bend area is performed, which are clearly visible (especially in men), but if necessary, veins in the forearm, dorsum of the hand or veins ofthe leg and feet can be punctured.

The patient's hand is placed on a firm pad in an extended position at the elbow. For good filling of the veins, an elastic rubber tube is applied to the shoulder area in the form of a tourniquet. The compression should be such as to restrain the blood flow only in the veins, but not in the arteries, and the pulse on the radial artery should be well felt. If the veins are poorly expressed, then you can identify them by applying massage, tapping, or invite the patient to clench his fingers into a fist several times. The skin in the area of the elbow bend is treated with alcohol. The vein is carefully fixed with the second finger of the left hand below the puncture site so that it does not move at the time of puncture. The needle is held in the right hand so that its direction coincides with the line of the vein and that the cut of the needle tip is directed upwards. The skin is pierced at an acute angle, and then with a faster movement - the vein wall so as to immediately penetrate into its lumen.

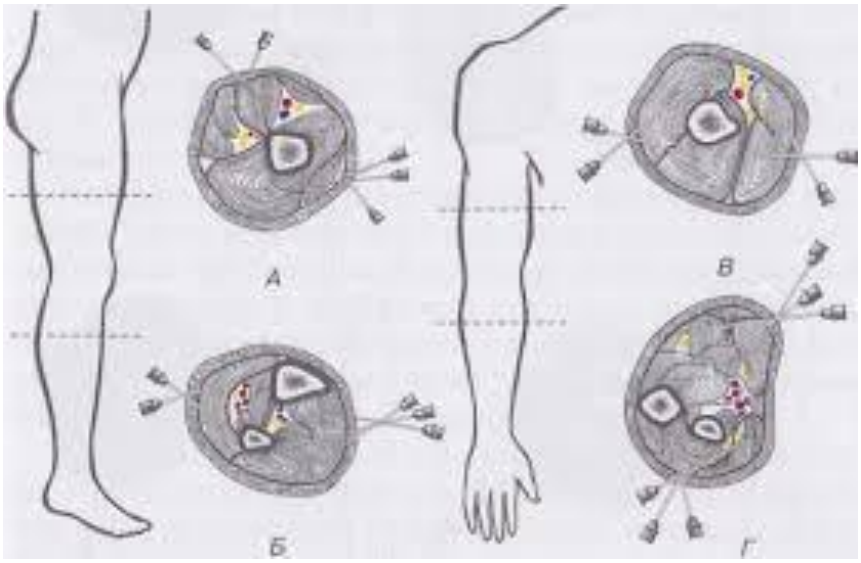
Sometimes venipuncture is carried out in two steps: first, the skin is pierced next to the vein, and then with a short movement, the vein wall is punctured obliquely. In order for the needle to be fixed in the lumen of the vein, it is advanced along the vein by another 5-10 mm. Failures with venipuncture are most often associated with the fact that both walls of the vein are pierced simultaneously, resulting in a subcutaneous hematoma.

With the help of venipuncture, venous pressure can be determined. In a neurological clinic, the determination of peripheral venous pressure can serve as an indirect indicator of intracranial pressure. These parallels are closest when measuring the venous pressure in the ulnar vein with the patient in the supine position with the arm laid aside. The measurement is carried out using the Waldman apparatus, which is an II-shaped glass tube mounted on a graduated scale and a special stand.

23. Case blockade of the limbs (shoulder, forearm, thigh, lower leg).

INDICATIONS: traumatic shock, open and closed injuries of the extremities, burns, frostbite, prolonged crush syndrome, positional tissue compression syndrome, poisonous snake bites, inflammation of the extremities, long-term healing wounds, trophic ulcers, joint contractures.

TECHNICS. The lower limb of the patient is placed on a table or on a stretcher in the extension position. When performing a blockade on the upper limb, the latter is taken away from the body and placed on a special stand or side table.



Pic 35- Case blockade

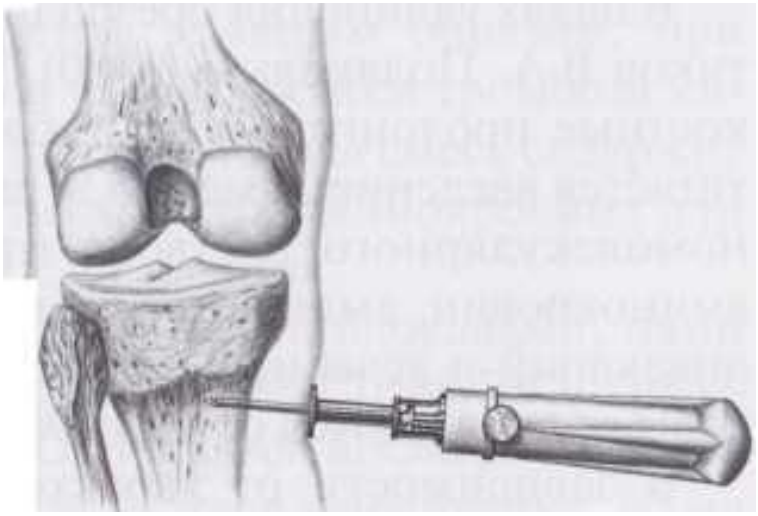
A thin needle on the front surface of the thigh or shoulder, in a place located to the side of the neurovascular bundle, infiltrates the skin with a 0.25% solution of anesthetic, then a long needle pierces the area of the "lemon peel" and, under increased pressure, fan-shaped anesthetic substance is introduced into the bone muscle cases, where the bone (bones) is located or the nerve trunks of the corresponding limb segment pass.

For this, the introduction of anesthetic is performed from 3-4 points, according to the number of cases in a given anatomical region. The needle is passed perpendicular to the skin deep into the bone. The advance of the needle must be preceded by a stream of anesthetic. The manipulation must be carried out with the utmost care: the needle must not damage the bone, the injection must be performed smoothly, without jolts. After blockade, the limb should be immobilized. The blockade can be repeated at intervals of 7-8 days. On the shoulder there are two musculoskeletal cases - anterior and posterior. The anesthetic is injected in the middle third of the shoulder, from two points located on the front and back surfaces. In each case, 70-80 ml of 0.25% anesthetic solution is injected. There are three musculoskeletal cases on the forearm. Since the nerve trunks pass in the anterior musculoskeletal case, 80-100 ml of 0.25% anesthetic solution is injected into it to a depth of 1-1.5 cm. There are three musculoskeletal cases on the thigh. The femur is located in the antero-external musculoskeletal sheath, therefore, after infiltration anesthesia of the skin and subcutaneous tissue, a long needle is inserted through the antero-outer surface of the thigh to the bone. After contact with the bone, they recede by 0.5-1 cm, and 100-200 ml of 0.25% anesthetic solution is injected. Four musculoskeletal cases are isolated on the lower leg. When performing the block, it is necessary to inject anesthetic into the sheath of the tibialis anterior and extensor muscles, as well as into the sheath of the posterior tibialis muscle and flexors of the fingers. The needle is inserted 2 cm away from the outer edge of the tibia and directed parallel to the lateral surface of the bone. The second injection of the needle is made at a point 2 cm medially from the inner edge of the tibia. In each case, 50-70 ml of 0.25% anesthetic solution is injected.

POSSIBLE COMPLICATIONS: damage to the great vessels and nerve trunks.

24. Intraosseous blockade.

INDICATIONS: surgical interventions on the distal extremities, fractures, dislocations, prolonged crush syndrome, osteomyelitis, post-traumatic neurotrophic disorders.



Pic 36- Intraosseous blockade.

TECHNICS. When performing intraosseous blockades, the following requirements must be observed: the introduction of the needle should be carried out into the cancellous bone, far from the place where the vessels and nerves pass; use special needles with a mandrel (such as Kassirsky, Bir, CITO); before the introduction of the intraosseous needle, it is necessary to infiltrate the skin, subcutaneous tissue and periosteum with an anesthetic solution.

The intraosseous needle is inserted into the bone to a depth of 1-1.5 cm (a sign of the needle entering the spongy part of the bone is the appearance of a drop of bone fat from its pavilion). When blocking the limbs, a tourniquet is preliminarily applied proximal to the injection site. On the upper extremity, the places of introduction of the intraosseous needle are: the large tubercle and condyles of the humerus, the olecranon, the distal epiphyses of the radius and ulna, the heads of the I and II metacarpals.

On the lower limb - the greater trochanter and the condyles of the thigh, the condyles of the tibia, the ankle, the calcaneus, the head of the first metatarsal bone. For pelvic fractures, an intraosseous needle can be inserted into the iliac crest, ischial tubercle; with fractures of the scapula - in the spine of the scapula, with fractures of the sternum - in the area of her body and arm. The amount of solution needed to achieve analgesia depends on the area to be anesthetized.

So, to anesthetize the foot, 50-60 ml of a 0.25% solution of anesthetic is injected into the heel bone or the head of the metatarsal bone. To anesthetize the shins, 100-120 ml of 0.25% anesthetic solution are injected into the ankle or heel bone. When anesthetizing the thigh, the needle is inserted into the condyles and 120-150 ml of the specified solution is injected.

When carrying out intraosseous blockades, preference should be given to anesthetics of the xylide group, the addition of adrenaline to the anesthetic solution does not affect the quality and duration of anesthesia. It should be remembered that the first portions of intraosseous anesthetic injected cause increased pain; during the introduction of the anesthetic solution, white spots appear on the skin, which indicates the onset of anesthesia. In order to lengthen the analgesic effect of anesthetics, V.A. Polyakov (1980) developed intrabone prolonged blockade. Prolongation is achieved by introducing a mixture of 5% anesthetic solution and a large molecular solution (polyglucinol, gelatinol, aminocrovin, aminopeptide) in a ratio of 1: 9. The analgesic and therapeutic effects of prolonged blockade last from 18 to 96 hours. Depending on the nature of the damage, the characteristics of the injury, the presence or absence of complications, the author developed 5 types of prolonged intraosseous blockades

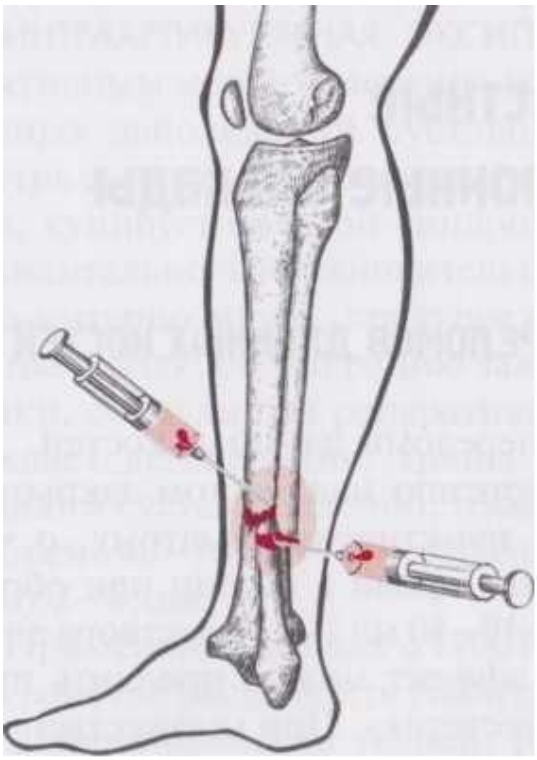
25. Blockade of fracture sites.

BLOCKED LONG BONES FRACTURES

INDICATIONS: closed long bones fractures.

TECHNICS. Anesthesia is performed over the site of the closed fracture.

A hematoma is punctured with a needle, as evidenced by the flow of blood into the syringe during the reverse stroke of the piston, and 10-50 ml of a 1-2% solution of anesthetic is injected. The analgesic effect can be prolonged by using a mixture of "alcohol-anesthetic". In case of multiple fractures, each segment is anesthetized separately, taking into account the total amount of anesthetic, reducing its concentration accordingly.



Pic 37-. Blockade of fracture sites

When performing blockades, the following rules must be observed:

- the place of needle insertion should be away from the projection of the great vessels and nerve trunks;

- the needle cannot be inserted in the place where the bone fragments are located directly under the skin;

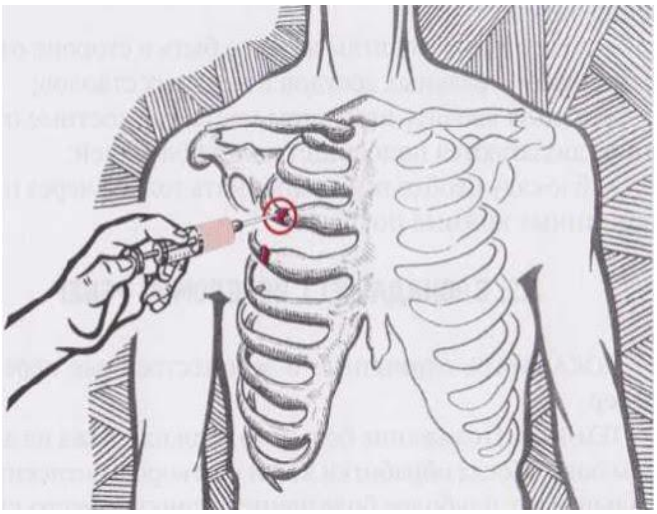
- the blockade must be performed only through intact skin.

BLOCKADES OF RIB Fractures

INDICATIONS: single and multiple rib fractures.

TECHNICS. The position of the patient is sitting or lying on a healthy side.

After treating the skin with a solution of antiseptics, palpate the most painful point and the place of crepitus of bone fragments, inject 3-5 ml of 1-2% anesthetic solution,



Pic 38- Blockades of rib fractures

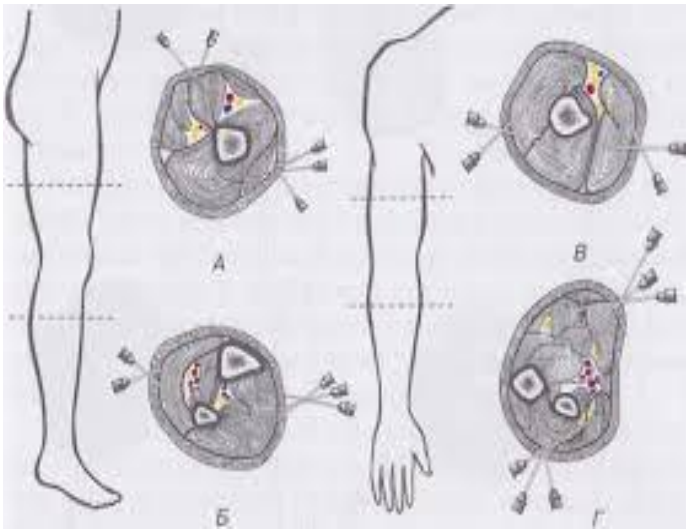
then, tilting the needle tip caudally to the lower edge of the rib, inject another 3-5 ml of a mixture of anesthetic and alcohol in the ratio 4: 1.

POSSIBLE COMPLICATIONS: lung damage.

CROSS-SECTION BLOCK

INDICATIONS: open, including gunshot, fractures of long bones, prolonged crush syndrome, positional tissue compression syndrome, burns and frostbite of the extremities.

The blockade must be performed before removing the long-applied tourniquet or tourniquet.



Pic 39-CROSS-SECTION BLOCK

TECHNICS.

Proximally to the fracture site or an imposed tourniquet, 200-500 ml of 0.25% anesthetic solution is injected circularly from several points into the soft tissues to the entire depth to the bone.

Each time, the needle is inserted perpendicular to the skin in a radial direction to the bone, without taking into account the anatomical relationships of the fascial sheaths and nerve trunks. In this case, a complete chemical block of all nerves is achieved at the selected level.

POSSIBLE COMPLICATIONS: damage to the great vessels and nerve trunks. With a large volume of injected anesthetic, a toxic effect, a collaptoid state is possible.

26. Kramer's splint.

Indications: fracture of the lower leg, dislocation of the knee joint.

Pic 40- X-ray of bone with Kramer's split

Equipment: 3 Kramer ladders; bandage 20 cm wide; scissors. When a splint is applied to the lower limb, two joints are fixed: the joint above the fracture site (knee) and the joint below the fracture site (ankle).

Sequence of actions

1. Lay the patient on his back, calm him down. Explain the course of the upcoming manipulation.

2. Cut the clothing along the seam, open the injury site (if the clothing cannot be moved and does not fit the limb freely).

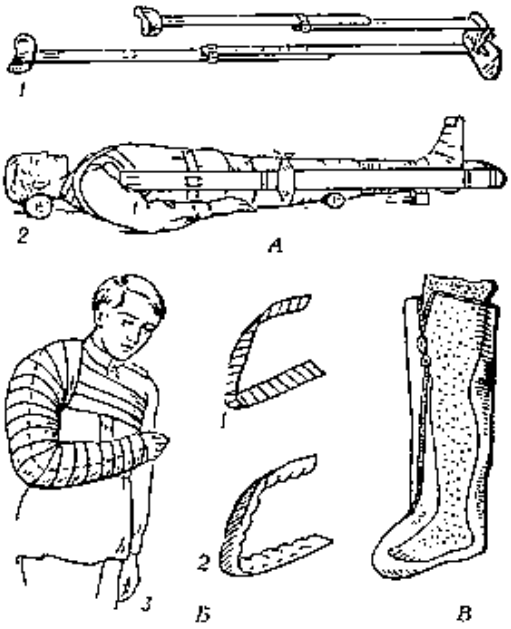
3. Inspect the site of injury, make sure there is a fracture or dislocation.

4. Choose Kramer's stair rail: first 120 cm long, 11 cm wide; two tires - 80 cm long, 8 cm wide. 5. Wrap cotton wool on both sides of the bus and fasten the cotton to the bus.

6. Apply the end of the splint (120x11) to the patient's healthy limb, from the toes to the heel.

7. Bend at the heel at a right angle (90 degrees).

8. Place your foot on the prepared splint.



Pic 41- Kramer's splint.

9. 1 splint runs along the foot, the back of the lower leg to the middle third of the thigh (toes should be pulled to the lower leg);

10. The splint runs along the outer surface of the lower leg from the outer edge of the foot;

11. The splint runs along the inner surface of the lower leg from the inner edge of the foot.

12. Fix the splints on the limbs with spiral bands of bandage.

27. Dieterich's splint.

The Dieterichs splint consists of 2 wooden crutches - external and internal, a strap for fixing the foot (foot) and a twist stick attached to the splint with a cord. Each crutch consists of 2 parts, thanks to which the length of the splint can be changed depending on the patient's height. The splint is applied directly at the scene of the accident before the patient is transported to the hospital. Moving the patient without a splint is strictly prohibited.

Pic 42- Dieterich's splint.

The splint combines fixation with the simultaneous creation of some limb extension. Before applying the Dieterichs splint, the patient is given anesthesia. The splint is applied for fractures in the hip, injuries in the hip and knee joints.

Dieterich's splint technique.

1. Reassure the patient

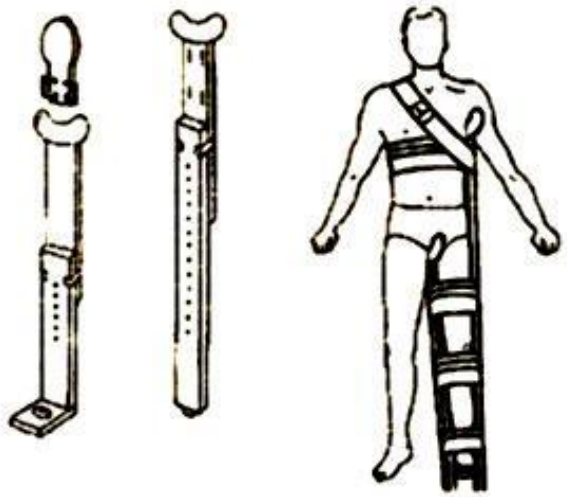
2. Explain the course of the upcoming manipulation

3. Tight clothing should be cut along the seam, in other cases the splint is applied either over the trousers or directly on the skin, previously covered with cotton at the contact points.

4. Inspect the injury site to make sure there is a fracture

5. Apply the inner and outer parts of the Dieterichs splint to the patient's healthy limb to shape the splint in the desired shape depending on the victim's height.

6. Tie the plantar part of the splint to the patient's injured foot (flat-soled shoes can be left on).



Pic 43- Dieterich’s splint.

Place the outer part of the splint in the armpit from the side of the injured limb and fix it so that it protrudes beyond the sole by 8-10 cm.

7. Align the metal eyelet of the sole of the splint and the outer part of the Dieterichs splint.

8. Place the inner part of the splint in the groin area from the side of the injured limb and pass through the inner metal eyelet of the plantar part, fasten the bridge of the plantar part.

9. In places of bony protrusions (ankles, knee and hip joints, wing of the ilium) create a pad of cotton to avoid compression and the development of necrosis.

To prevent sagging of the lower leg at the site of the fracture and possible displacement of the fragments back, in addition to the Dieterichs splint, it is recommended to use the Cramer splint, placing it on the back of the leg.

10. Fasten the belts from the armpit of the diseased limb to the healthy shoulder girdle and at the level of the thigh.

11. Pull the cord through the hole in the jumper and attach the twist stick.

12. Twist it, gently creating a traction of the leg until the lateral grooves of the splint rest against the groin and axillary regions. It is not recommended to fully extend the limb to a healthy length in order to avoid additional injuries.

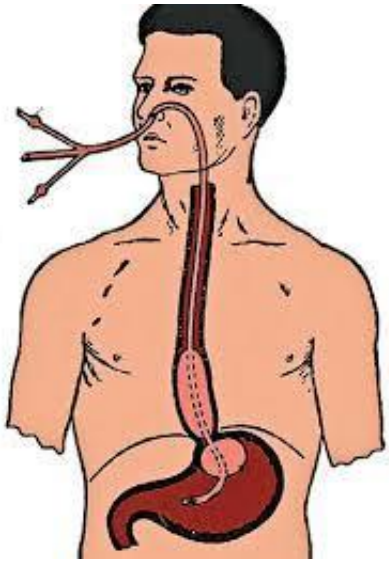
13. Fasten the twist stick on the shoulder of the outer tire.

14. The splint is fixed on the injured limb with spiral bandages from the ankle joint to the hip joint.

28. Installation of the Blackmore tube.

Indication: Continuous bleeding from varicose veins of the esophagus with ineffective drug therapy.

The Blackmore probe is a three-lumen rubber tube. At the end of this tube is a round balloon, a little higher is a cylindrical balloon. Two channels of the Blackmore probe serve to inflate the balloons, the third lumen serves for aspiration of gastric contents and control of the effectiveness of hemostasis.

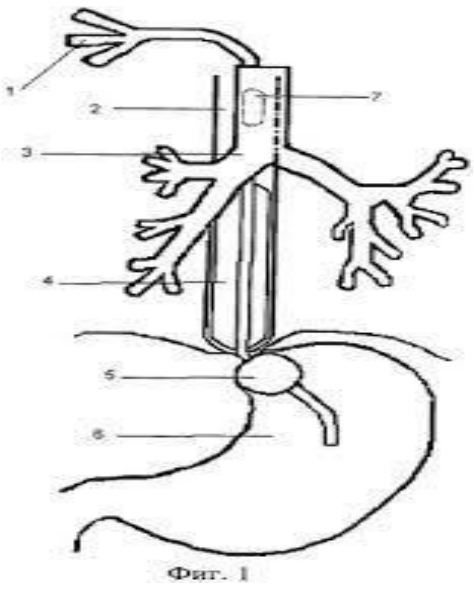


Pic 44- Blackmore tube

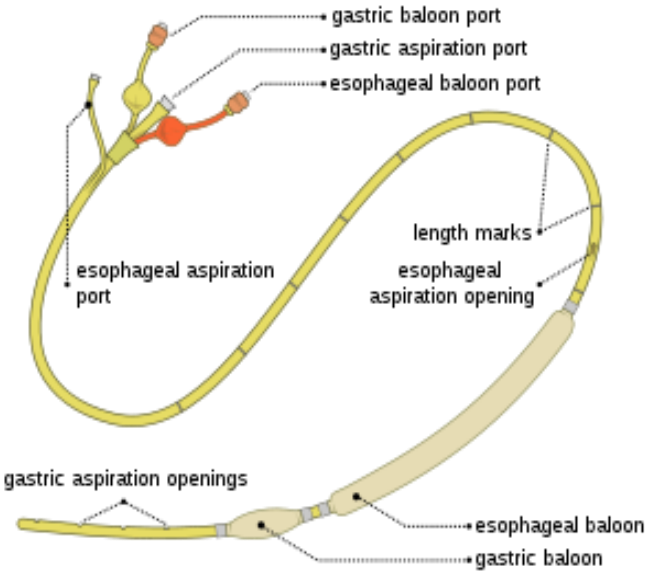
Technique for placing the Blackmore tube:

The Blackmore esophageal tube is inserted through the nose.

After the probe has reached the stomach, the distal balloon is inflated by injecting about 60 ml of air with a syringe. After that, the probe is pulled up to the stop. Thanks to this, the Blackmore tube is in the correct position, and the second balloon is located exactly in the esophagus. Then the second (proximal) balloon is inflated, injecting 100-140 ml. air. If the Blackmore tube is installed correctly, it stops the separation of blood. After a couple of hours, it is necessary to deflate the esophageal (proximal) balloon to avoid the formation of esophageal pressure ulcers and to control hemostasis. If bleeding from esophageal varices (esophageal varices) continues, the proximal balloon is re-inflated. After the esophageal balloon has been deflated, the bleeding from the esophageal esophageal esophagus has not resumed, then the Blackmore tube is not removed, but left in the stomach to control hemostasis, so that in case of recurrence of bleeding, the proximal (esophageal) balloon is inflated again.

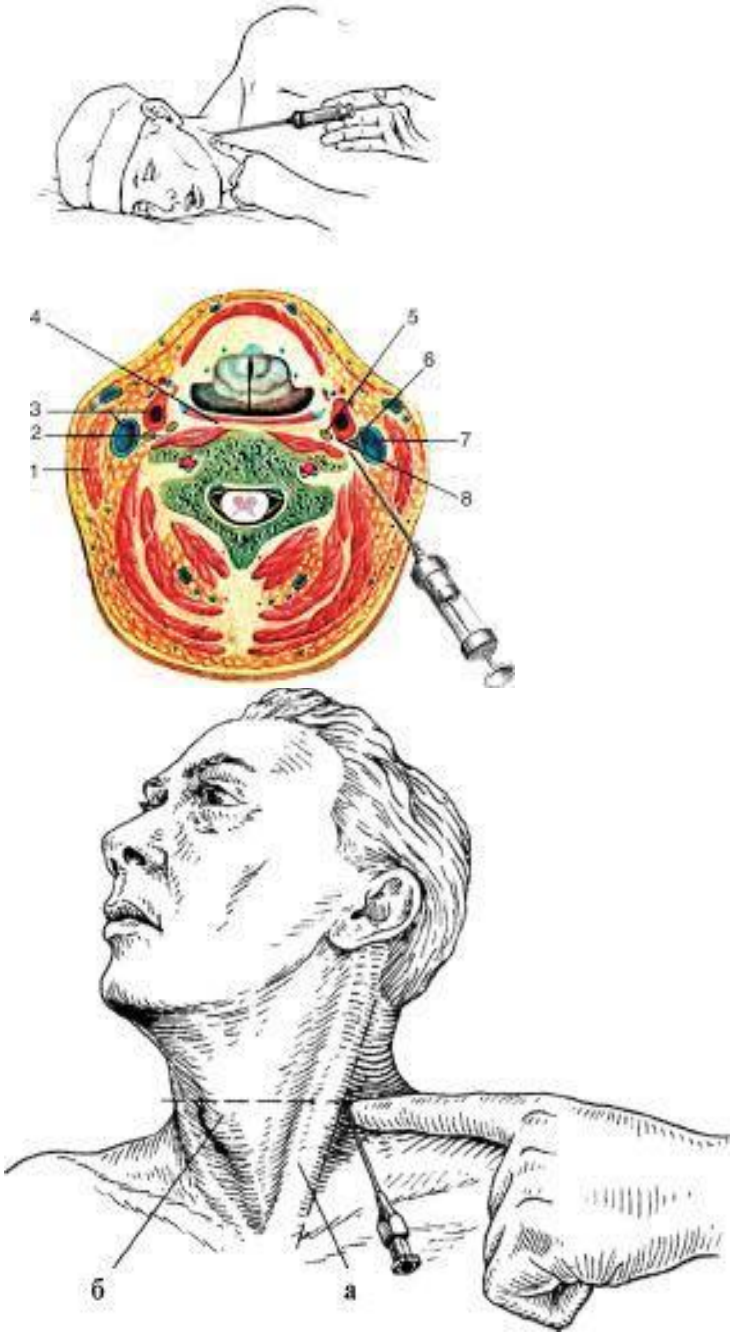


Pic 45- Blackmore tube



Pic 46-Blackmore tube

29. Cervical vagosympathetic blockade according to Vishnevsky.



Pic 47- Cervical vagosympathetic blockade according to Vishnevsky.

INDICATIONS: pleuropulmonary shock, multiple rib fractures, open, closed and valvular pneumothoraxes, burns of the airways, postoperative pneumonia, traumatic asphyxia syndrome, fat embolism syndrome (pulmonary form).

TECHNICS. The position of the patient is lying on his back with a roller placed under the shoulder blades, the head is turned to the side opposite to the blockade

site. The patient's arm on the side of the blockade is pulled downward. 1-1.5 cm above the middle of the right sternocleidomastoid muscle, along its posterior edge, 1-2 ml of 0.25-5% anesthetic solution is injected intradermally. With the index finger of the left hand, the muscle and blood vessels are mixed inward and the anterior surface of the cervical vertebrae is felt. Then a long needle is inserted at the tip of the finger and advanced inward towards the anterior surface of the cervical vertebrae. As the needle moves in small portions (2-3 ml each), an anesthetic solution is injected, which makes the procedure painless. Having touched the tip of the needle to the vertebrae, an aspiration test is carried out and, making sure that no blood is entering the syringe, 30-60 ml of a 0.25% solution of anesthetic is slowly injected. After that, the needle is removed, and the injection site is pressed with a sterile gauze ball for 1-2 minutes. With strict adherence to the technique of conducting vagosympathetic blockade, the anesthetic solution blocks the vagus nerve and nerves extending from the cervical nodes of the sympathetic trunk. Signs of blockade effectiveness are ptosis, miosis, enophthalmos (Horner's triad), reddening of the face and mucous membrane of the eye, pericorneal vascular injection, and decreased sweating on the side where the block is made. Vagosympathetic blockade relieves pain, cough reflex, tones up the circulatory system and increases blood pressure.

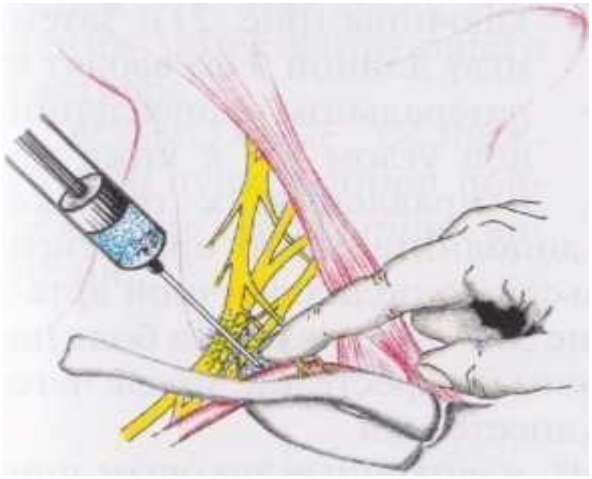
CONTRAINDICATIONS: it is not recommended to carry out vagosympathetic blockade simultaneously from both sides, the interval between blocks should be at least 30-40 minutes. When performing vagosympathetic blockade, it is unacceptable to add adrenaline to the anesthetic solution.

POSSIBLE COMPLICATIONS: puncture damage to the carotid artery, internal jugular vein, esophagus. The development of intestinal atony and paresis is possible (does not require special treatment).

30. Brachial plexus block.

Kulenkampf brachial plexus block (supraclavicular approach).

INDICATIONS: pain relief during operations on the upper limb, neurodystrophic syndrome of the upper limb (Zudeck's syndrome).



TECHNICS. The position of the patient is lying on his back with a roller at the level of the shoulder blades; the head is turned in the direction opposite to the injection.

The point of insertion of the needle is 1 cm above the middle of the clavicle, outward from the pulsation of the artery.

Pic 48- Brachial plexus block.

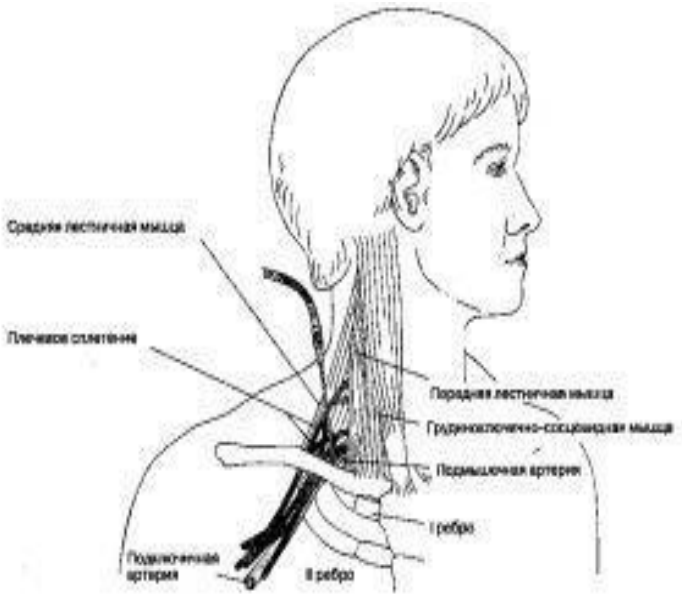
After infiltration of the skin and subcutaneous tissue, the needle is inserted from front to back and down at an angle of 60 ° to the frontal plane until it stops in the I rib, to a depth of not more than 5 cm. A rubber stopper placed on the needle can serve as a limiter for the immersion depth. Then, sliding along the upper edge of the 1st rib, the needle reaches the branches of the brachial plexus, as evidenced by the appearance of shooting pains along the course of all the nerves of the upper limb. After a double aspiration test with a 180 ° rotation of the needle, 30 ml of 1% anesthetic solution is injected. Anesthesia occurs in 10-15 minutes.

POSSIBLE COMPLICATIONS: damage to the pleura and lung. To avoid this, it is necessary to strictly limit the immersion depth of the needle by the level of the stop (rubber stopper).

Morgan brachial plexus block (subclavian access).

INDICATIONS: identical to those for the supraclavicular method.

TECHNICS. The patient is in the supine position, the head is in a neutral position. The skin and subcutaneous fatty tissue infiltrate 2.5 cm below the middle of the clavicle. Then the needle 9 cm long is inserted laterally at an angle of 45 ° to the skin towards the head of the humerus, and the pulsation of the subclavian artery in this area is determined by palpation as an additional reference point.



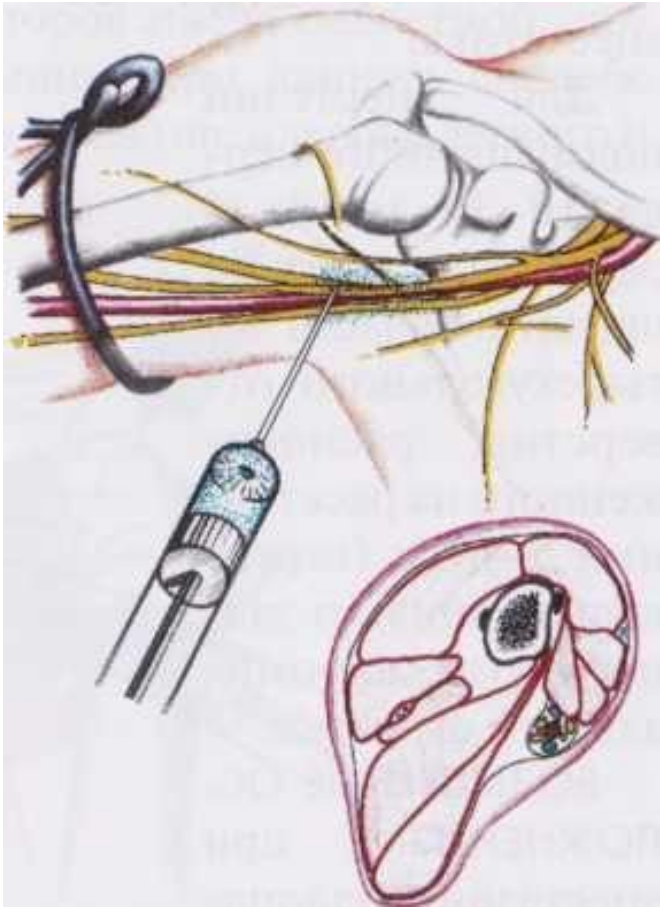
Pic 49- Morgan brachial plexus block

At a depth of 5-7 cm, pain appears along the nerves of the upper limb and paresthesia, after which 20-25 ml of a 1% anesthetic solution is injected.

POSSIBLE COMPLICATIONS: identical to those with the supraclavicular method.

Pashchuk's brachial plexus block (axillary access).

INDICATIONS: pain relief during operations on the upper limb, mainly from the middle third of the shoulder.



Pic 50- Pashchuk’s brachial plexus block

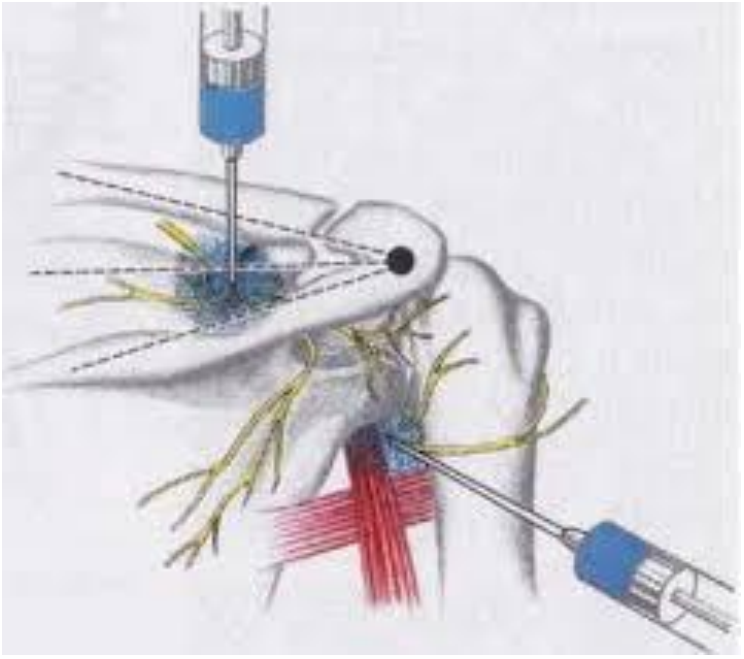
TECHNICS. The position of the patient is lying on his back with a limb abducted and rotated outward. A tourniquet is applied at the level of attachment to the humerus of the pectoralis major muscle and the vastus dorsi muscle. The insertion site of the needle in the axillary fossa corresponds to the pulsation site of the axillary artery, directly above the head of the humerus. The skin is infiltrated with an anesthetic solution, a thin short needle is inserted perpendicular to the axis of the humerus. A sign of a puncture of the fascial vagina is a click and "failure" of the needle, after which paresthesias should appear. After an aspiration test, 35-40 ml of a 1% anesthetic solution is injected. By manipulating the needle from the first skin puncture, the anesthetic is injected in front and behind the axillary artery. The tourniquet is removed 5-8 minutes after the injection of the anesthetic solution.

POSSIBLE COMPLICATIONS: puncture damage to the axillary artery.

31. Blockade of the suprascapular, axillary, radial, median, ulnar and digital nerves.

Blockade of the suprascapular and axillary nerves according to Brown.

INDICATIONS: periarthrosis of the shoulder, post-traumatic dystrophy of the upper limb, acute and chronic bursitis of the shoulder joint, acute and chronic capsulitis, auxiliary anesthesia in posterior arthrotomy and reduction of shoulder dislocations.



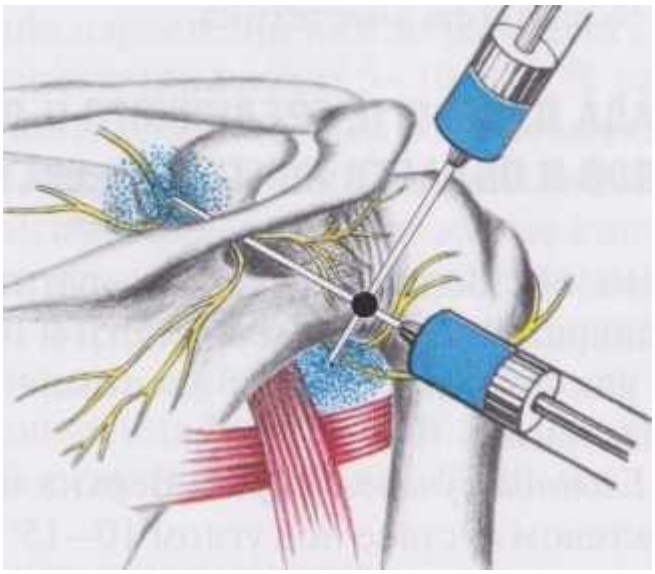
Pic 51- Blockade of the suprascapular, axillary nerves.

TECHNICS. The injection site is located on the bisector of the angle formed by the spine of the scapula and the clavicle, 3.5 cm from its apex. After anesthesia of the skin and subcutaneous tissue, the needle is passed through the tissues of the supraspinatus fossa until it stops in the bone and 5-10 ml of a 1% solution of anesthetic is injected.

For anesthesia of the axillary nerve, 10-15 ml of a 1% anesthetic solution is injected into the area of the quadrangular opening located at a distance of 5-6 cm (vertically downward) from the posterior angle of the acromial process.
POSSIBLE COMPLICATIONS: with anesthesia of the suprascapular nerve - damage to the pleura and lung; during anesthesia of the axillary nerve - puncture damage to a.axillaris and v.axillaris, penetration of the needle into the cavity of the shoulder joint.

Blockade of the suprascapular and axillary nerves according to Mityunin-Eliseev.

TECHNICS. The position of the patient is sitting. The blockade is performed from one puncture of the skin with a needle 8 cm long. The point of insertion of the needle is located 2-2.5 cm from top to bottom from the posterior edge of the acromial process.



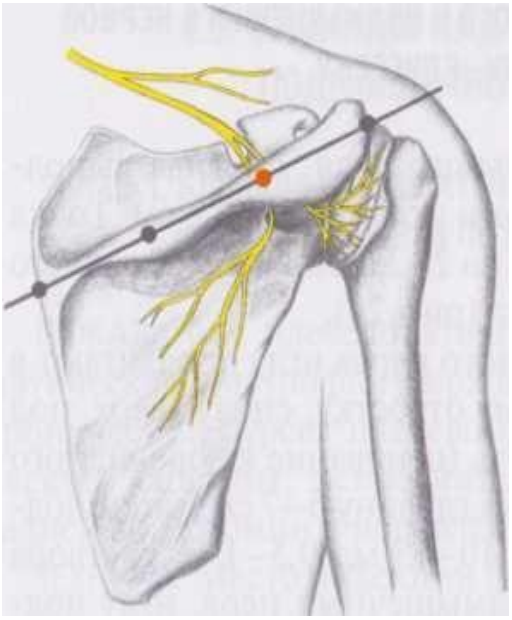
Pic 52- Blockade of the suprascapular and axillary nerves

To block the suprascapular nerve, the needle is advanced in the direction of the coracoid process, from the bottom up, at an angle of 15-20 °, until it stops in the bone (the base of the coracoid process or the body of the scapula) to a depth of 5-7 cm, then tightened by 5 mm and 10- 15 ml of 0.5-1% anesthetic solution.

Anesthetizing the axillary nerve, the needle is pulled towards itself and passed downward and anteriorly in the direction of the scapula neck to a depth of 4-6 cm, where 10-15 ml of 0.5-1% anesthetic solution is also injected. Thus, relaxation of the rotators of the shoulder of the supraspinatus, infraspinatus and deltoid muscles is achieved. With this method, damage to the pleura, lung and great vessels is practically excluded.

Suprascapular nerve block according to Grishko-Grabovoi.

TECHNICS. To simplify the technique of finding the suprascapular nerve, the authors proposed the following guidelines. The spine of the scapula is determined and a straight line is drawn along its upper edge with methylene blue or brilliant green from the inner edge of the scapula to the outer edge of the acromial process.



Pic 53- Suprascapular nerve block

The line is divided into 3 equal parts. At the border of the outer and middle third of the segments, the skin and subcutaneous tissue are anesthetized, then the needle is inserted at an angle of 45 ° to the frontal plane, open cranially until it stops in the bone (suprascapular fossa). After that, fan-shaped movements of the needle are performed until paresthesia is obtained in the shoulder joint. Then 20-30 ml of 0.5% anesthetic solution is injected.

Blockade of the radial, median and ulnar nerves in the region of the elbow joint.
INDICATIONS: pain relief during surgery and injuries to the area of the hand and the lower third of the forearm; as additional anesthesia for brachial plexus block.

TECHNICS.

Radial nerve block.

The upper limb is bent at the elbow joint at an angle of 10-15 °, after which the lateral border of the biceps tendon is palpated in the ulnar fossa. Anesthesia of the skin and subcutaneous tissue, then a 2-2.5 cm needle with a blunt cut angle (or a needle with a restrictive rubber stopper) is inserted parallel to the forearm, directing it to the head of the radius and the lateral epicondyle of the humerus until paresthesias or contact with the bone appear .When paresthesia appears, the needle is removed by 1-2 mm and 5-10 ml of a 1% anesthetic solution is injected. Upon contact with the bone, the needle is removed by 8-10 mm and a similar amount of anesthetic is injected.

Median nerve block.

The position of the upper limb, as in the first case. In the cubital fossa, in the medial edge of the biceps tendon, the brachial artery is palpated. Use a 4 cm blunt needle (or with a rubber stopper). The needle is inserted immediately medially from the artery and directed to the medial epicondyle of the humerus, before paresthesia or bone contact. When paresthesia appears, 5-10 ml of a 1% anesthetic solution is injected, upon contact with the bone, the needle is removed 1 cm, after which a similar amount of anesthetic is injected.

Ulnar nerve block.

The position of the limb is similar. A needle with a blunt cut angle, 2 cm long, is used. The needle insertion site is the upper edge of the medial epicondyle of the humerus. The needle is inserted until paresthesias or an induced motor reaction appear and 5-10 ml of 1% anesthetic solution is injected.

POSSIBLE COMPLICATIONS: puncture injury of the brachial artery.

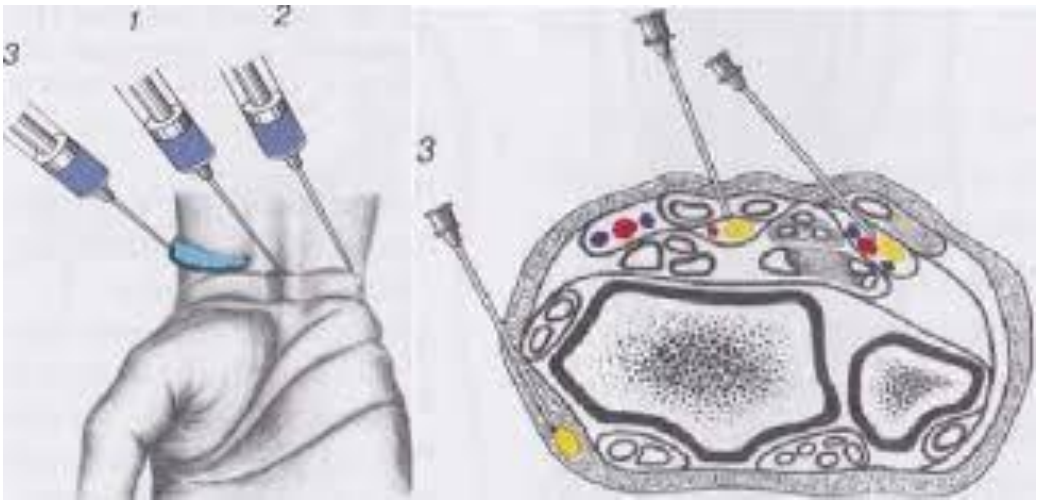
Blockade of the radial, median and ulnar nerves in the lower third of the forearm according to Brown.

INDICATIONS: hand injuries, hand surgery.

TECHNICS. Anesthesia begins with the median nerve. The needle is inserted 1 cm proximal to the line of the wrist joint at the ulnar edge of the radial flexor tendon of the hand. It can be easily identified by abducting the thumb and bending the hand to the radial side.

They use a thin short needle, which is inserted to a depth of 0.5-0.7 cm, fan-like moving transversely to the course of the median nerve, trying to get paresthesia. The advancement of the needle is stopped and 3-5 ml of a 1-2% solution of anesthetic is injected, when the needle is removed, another 2-3 ml of anesthetic is injected (the palmar branch of the median nerve is blocked). If paresthesia cannot be obtained, up to 10 ml of anesthetic is injected in a fan-shaped manner. The second is anesthetized with the ulnar nerve. The needle is inserted 2 cm proximal to the wrist joint line, at the radial edge of the ulnar flexor tendon. Obliquely, at an angle of 60-70 °, fan-like moving the end of the needle, try to get paresthesia, after which 4-5 ml of 1-2% anesthetic solution is injected.

In order to block the dorsal branch of the ulnar nerve, 2-3 ml of anesthetic solution is injected into the fiber in the region of the palmar surface of the ulna head. The third is anesthetized by the superficial branch of the radial nerve. The needle is inserted 3 cm proximal to the line of the wrist joint in the "snuffbox" area and subcutaneously, between the tendons of the long and short extensors of the thumb, 5-7 ml of 1-2% solution of anesthetic is infiltrated.



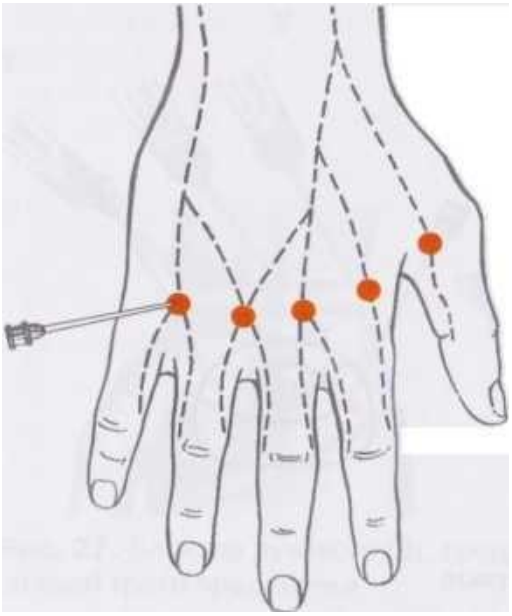
Pic 54- Blockade of the radial, median and ulnar nerves

POSSIBLE COMPLICATIONS: puncture damage to the saphenous veins.

Digital nerve block according to Usoltseva.

INDICATIONS: surgical interventions on the fingers.

TECHNICS. After treating the skin with antiseptic solutions, 0.5-1 ml of a 1% solution of anesthetic is injected with a thin needle into the interosseous spaces, proximal to the division of the common palmar digital nerves. Through the infiltrated areas of the skin with a long needle in the direction of the palmar surface, 20-25 ml of a 1% solution of anesthetic is injected.



Pic 55- Digital nerve block according to Usoltseva

The anesthetic is administered on each side of the metacarpal bone. Gradually infiltrating all tissues, the needle is advanced deeper under the skin of the palmar surface.

POSSIBLE COMPLICATIONS: puncture damage to the digital arteries, intravascular injection of anesthetic.

32. Puncture of joints.

Puncture of the joint is performed with a needle of sufficient length and diameter. The skin at the point of needle insertion is displaced to the side. Anesthesia of the skin, subcutaneous tissue; advancement of the needle in the tissue must be preceded by an anesthetic solution. When the needle passes through the joint capsule, the surgeon's hand experiences resistance, after which the needle freely penetrates into the cavity.

With the reverse stroke of the piston, you can get synovial fluid, blood, pus, exudate. Medicines can be injected into the joint. When removing the needle, the skin that was displaced at the beginning of the manipulation is released, and the channel of the needle is closed. After treatment with iodine solution, an aseptic bandage is applied to the puncture site. INDICATIONS: evacuation of pathological contents, administration of anesthetics and drugs.

33. Puncture of the sternoclavicular, shoulder, elbow and wrist joints.

<u>BLOCKADE OF THE STERNAL CLAVICULAR JOINT</u>

INDICATIONS: post-traumatic arthrosis, arthritis of non-infectious etiology.

TECHNICS. The blockade is performed while the patient is sitting or lying on his back. The patient's upper limb is bent at the elbow joint at an angle of 90 "and brought to the trunk.

Pic 56- blockade of the shoulder joint

The line of the joint is determined by palpation. After treating the skin with an antiseptic solution, the skin and subcutaneous fat are infiltrated, the needle is directed from front to back perpendicular to the skin and injected to a depth of 1 - 1.5 cm. The volume of the injected therapeutic mixture is 2-3 ml.

BLOCKADE OF THE SHOULDER JOINT

The blockade is performed from the front, from the back and from the lateral side. When punctured from the front, the patient is placed on his back, the arm is bent at the elbow joint, brought and rotated outward so that the elbow joint is in the frontal plane. At the same time, on the anterior surface of the shoulder joint, the small tubercle of the humerus and the coracoid process of the scapula are easily determined, between which a place for puncture of the shoulder joint is chosen. The needle is guided exactly from front to back. For puncture from behind, the patient is placed on the stomach, the posterior edge of the apex of the acromial process and the edge of the deltoid muscle lying underneath are felt. Here, a shallow fossa is determined, bounded by the edge of the mentioned muscle and the supraspinatus muscle running almost horizontally. The needle is inserted into the bottom of the fossa, advancing in the direction of the coracoid process. Puncture of the shoulder joint from the lateral side is performed in a sitting position or lying on a healthy side. The arm is laid along the body. The needle is inserted midway between the end of the acromial process and the large tubercle of the humerus.

BLOCKADE OF ELBOW JOINT

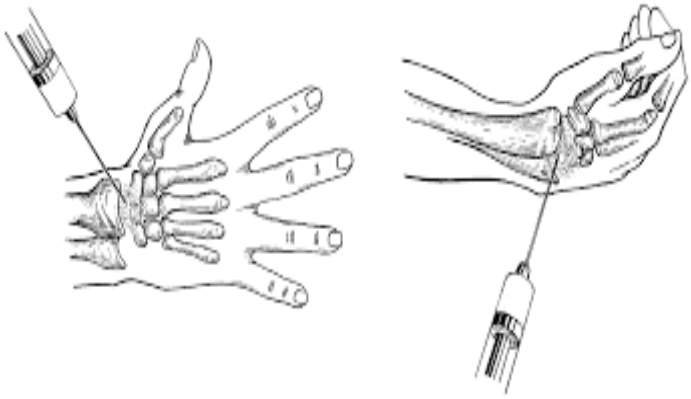
TECHNIQUE. The blockade is performed after flexion of the forearm to a right angle, in the fossa on the posterior outer surface of the joint in the projection of the radial head. The injection site is located between the edge of the olecranon and the lower edge of the lateral epicondyle. The needle should be advanced perpendicular to the skin.

Pic 57- Blockade of elbow joint

The joint CAN also be punctured from behind - the needle is inserted between the outer edge of the humerus and the outer edge of the olecranon and is advanced somewhat anteriorly and distally. The volume of anesthetic or therapeutic mixture is 5-7 ml. Puncture of the elbow joint from the inside should not be performed due to possible damage to the ulnar nerve.

WRIST BLOCKADE

TECHNIQUE. The blockade is performed from the dorsal-radial surface, between the tendons of the extenor pollicis longus and the so-called Indicts proprius, on the line connecting the scyloid processes of the ulna and radius. The joint is penetrated between the radius on one side and the scaphoid and lunate bones on the other. The hand should be in a position of pronation and volar flexion so that the dorsum of the joint space opens up. The volume of anesthetic or therapeutic mixture is 5-7 ml.



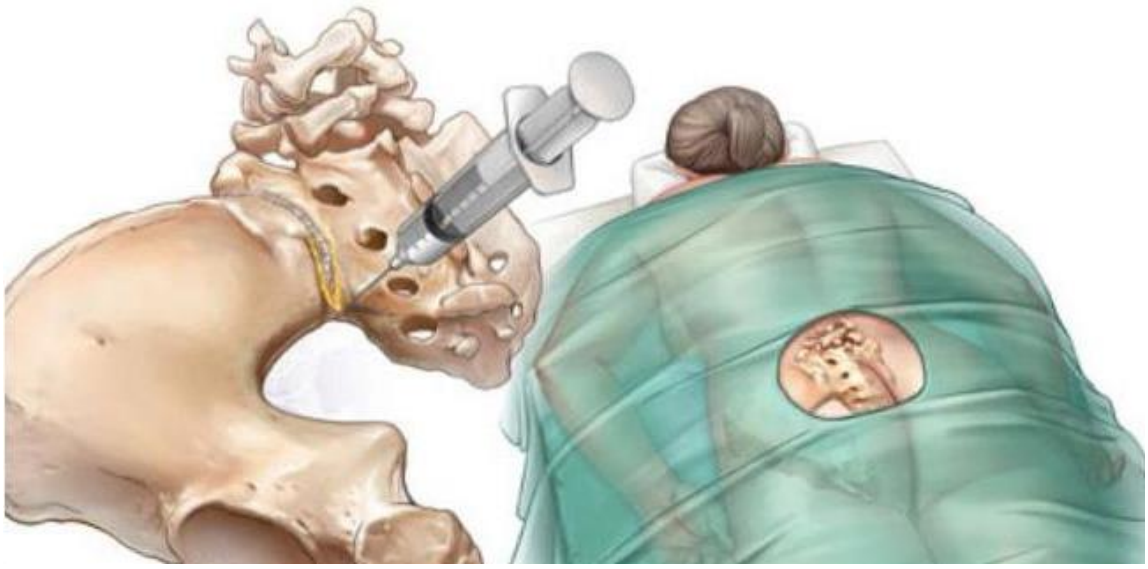
Pic 58-Wrist blokade

34. Puncture of the sacroiliac, hip, knee and ankle joints.

BLOCKADE OF THE CROSS-AIR JOINT

TECHNIQUE. The blockade is performed with the patient lying on his stomach. Palpation determine the posterior superior and posterior inferior spine of the pelvis. The distance between them is halved. At the point of division, anesthesia of the skin and subcutaneous fat is performed.

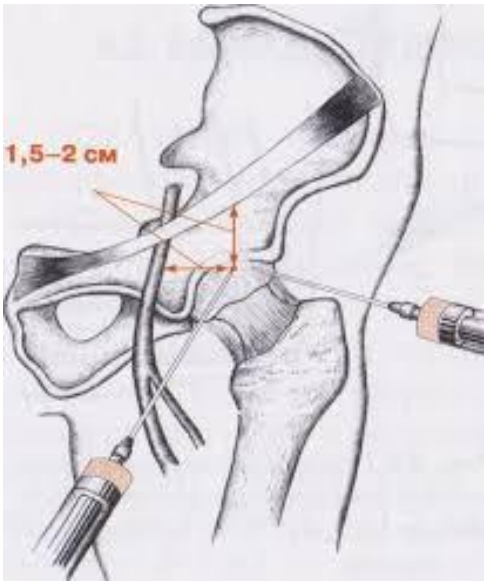
A thin long needle is inserted through the infiltrated area at an angle of 45 "to the sagittal plane until it stops in the ligaments (interspinous sacroiliac, dorsal sacroiliac and sacroiliac) and 10-20 ml of 0.5-1% solution of anesthetic or therapeutic mixtures.



Pic 59- Puncture of the sacroiliac joint

BLOCKADE OF THE HIP JOINT

TECHNIQUE. Can be performed from the front or external surface in the supine position with the hip straightened. When puncture with anterior approach, the point of needle insertion is located 1.5-2 cm down from the inguinal ligament and 1.5-2 cm outward from the femoral artery.

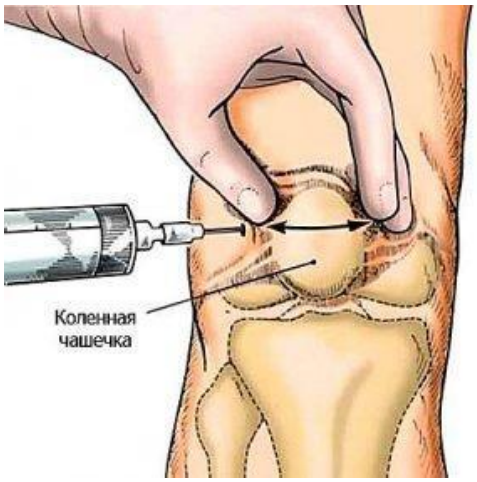


The needle is inserted from front to back until it stops in the bone. For puncture from the outer surface, the needle is inserted directly above the apex of the greater trochanter at right angles to the skin surface until it touches the bone. Then the needle is advanced along the femoral neck upwards by 2-3 cm, penetrating into the joint cavity. The volume of anesthetic or treatment mixture is 10-15 ml.

Pic 59-Blockade of the hip joint

KNEE JOINT BLOCK

TECHNIQUE. The blockade is performed, as a rule, from the outside. The position of the patient lying on his back. A small roller is placed under the knee joint. The needle is inserted at the border of the upper and middle third of the outer edge of the patella, 0.5-1 cm dorsally, and advanced parallel to the posterior surface of the patella. The volume of the injected anesthetic or therapeutic mixture is 5-15 ml.

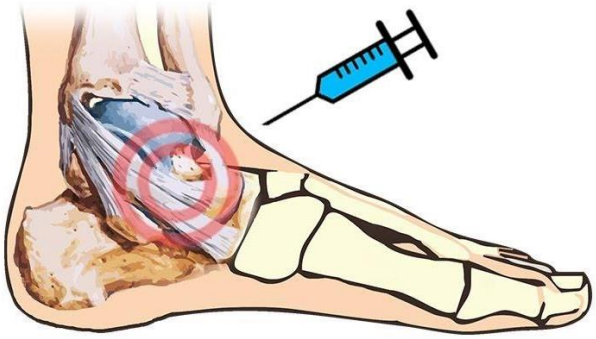


Pic 60- KNEE JOINT BLOCK

For puncture of the upper torsion of the knee joint, the needle is inserted from the lateral side proximal to the upper pole of the patella and advanced perpendicular to the outer surface of the knee joint to a depth of 3 cm under the tendon extension of the quadriceps muscle of the thigh. When the upper fold is punctured, the elastic resistance of the tissues is overcome.

ANKLE JOINT BLOCK

TECHNIQUE. The blockade is performed on the front surface. The foot is given a slight plantar flexion (5-10 "). The needle is directed posteriorly perpendicularly, so that it passes between the tibia and the talus, and 10-15 ml of 0.5-1% anesthetic solution is injected.



Pic 61- Ankle joint block

35. Examination and palpation of the mammary glands.

The procedure for examining the mammary glands

• collecting anamnesis and complaints in case of breast pathology;

• examination and palpation of the mammary glands and regional zones of lymph drainage;

• overview mammography of both mammary glands in two projections: direct (cranio-caudal) and oblique (with the course of the radiation beam at 45 degrees)

• ultrasound examination of the mammary glands.

Indications for the examination of the mammary glands:

- preventive examination; the presence of complaints of pain in certain parts of the glands;
- the presence of seals, formations, retractions in various parts of the glands and next to them; discoloration of the skin of the glands;
- local hyperthermia;
- discharge from sodoscids of a different nature; enlargement of the mammary glands in males.

Algorithm for examination and palpation of the mammary glands

Examination and palpation of the mammary glands is carried out in two positions of the patient's body: standing and lying. In each position, examination precedes palpation. The position of the patient "standing with his hands down": assess the presence of the following signs during examination:

• Asymmetry or deformation of the contours of the mammary glands.

• Skin condition: edema, localized redness, retraction, swelling, areas such as pad, umbilization or lemon peel, ulceration.

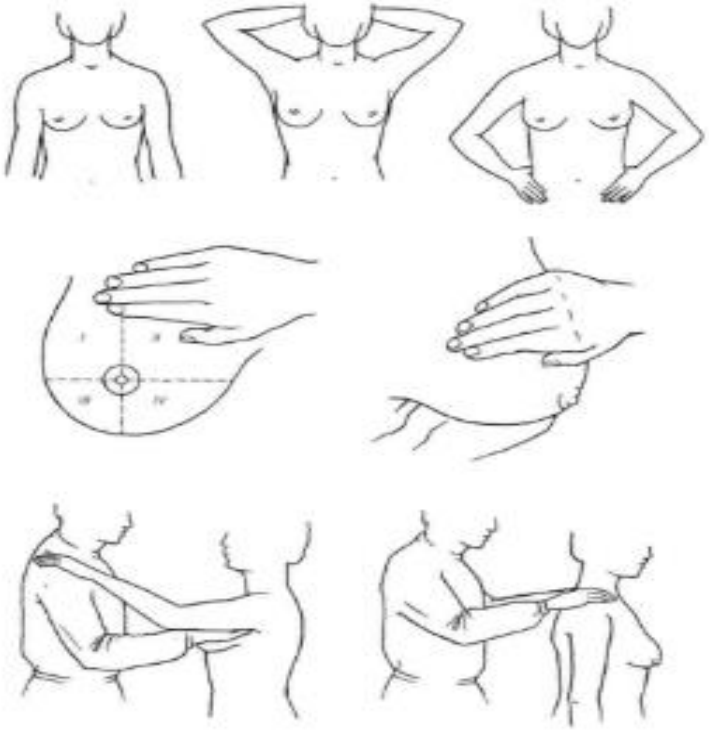
• Deformation of the areola.

Changes in the position of the nipple, shape and color, the presence of retraction and displacement, ulceration or cracks. Evaluate the shape of the mammary glands in a standing position with lowered and slowly raising arms above the head - assess the displacement of the gland, examine the axillary region and assess the presence

of bulging, retraction or redness areas there. Deformities and neoplasms are detected in the process of raising the hands. The position of the patient "standing, hands behind the head" evaluate these signs and proceed to palpation:

Palpation is performed starting from a potentially healthy breast.

• Examination gloves should be used (especially if there are sources of pathological secretions).



Pic 62- Step-by-step breast examination

• Palpation should be started from the junction of the clavicle and sternum, using the pads of the index, middle and ring fingers of the leading hand, the other hand is used to fix (immobilize) the volume of the breast.

The breast tissue is pressed against the chest with small circular movements. Light pressure is used to assess the superficial layer, moderate efforts to palpate the middle layer, and more perceptible pressure when trying to palpate deeply located glandular tissue.

• First, superficial palpation is performed, then deep.

Palpate the gland methodically, in a vertical direction, so that the boundaries of the examined fragments overlap each other. Palpation is continued until the entire gland has been examined, including the axillary process.

• Palpation of the areola and podoskat area.

• Gently squeeze the nipple between the index and thumb, assess the discharge - assess their color, including the nature of the discharge on the underwear. The discharge can be clear or white (normal or galactorrhea), bloody (with malignant neoplasms), or have a greenish-purple color (with cystadenopapilloma).

• Inspection in a similar way from the other side.

• Lower the patient's hand, palpate the armpit (sequentially from both sides). The lymph nodes are located in the gap between the pectoralis major and the latissimus dorsi.

The main clinical signs of diseases of the mammary glands

Fibroadenoma is a benign tumor characterized by clear boundaries. This benign tumor is characterized by the formation of rounded mobile seals with clear contours. An increase in axillary lymph nodes is possible.

A breast cyst is a common, single or multiple pathology of the breast cavity with liquid-like contents that form in the ducts. A painful, smooth lump is oval in shape, not associated with the skin. An increase in size leads to the appearance of symptoms such as a change in the shape of the breast, white with a greenish tint from the nipple, reddening of the skin (the appearance of a bluish tint), and swollen axillary lymph nodes.

Intraductal papilloma is a benign neoplasm that forms in the milk duct. Manifested by bloody profuse discharge from the nipple.

Breast cancer is a malignant tumor of the glandular tissue of the breast. A dense, shapeless, inactive tumor is formed. The appearance of altered skin areas is possible. There is asymmetry of the nipples, distortion of the shape of the mammary glands, spotting, swelling in the area of the lymph nodes.

Paget's cancer is one of the rare types of breast cancer that affects the nipple-areola complex. Its thickening is observed, the skin in the area of the areola becomes covered with crusts and scales.

Mastitis is an inflammatory process in the tissues of the breast. It is manifested by severe bursting pains in the chest, swelling, induration, reddening of the skin of the gland, a sharp rise in body temperature, chills.

36. Blood group and Rh factor.

Determination of blood group and Rh factor is divided into two ways: • primary determination of blood group and Rh factor (anti-A, Anti-B and Anti-D coliclones)

• secondary diagnosis of blood group and Rh factor (standard serum and cross method, determination of the phenotype, i.e. antigens C, c, E, e, Cw, K, k).

Express diagnostics (primary determination of the blood group and Rh factor) does not take into account Kell's antigens, not to mention other verification systems. Therefore, tsoliclones are used only for the primary determination of the blood group and Rh factor and for emergency indications of transfusion of blood components.

Determination of the blood group and Rh factor by anti-A, anti-B and Anti-D tsoliklones according to the AB0 system and the Rh system Determination of the blood group and Rh factor by anti-A, anti-B and Anti-D super tsoliclones is the most modern and relatively simple method. To determine the blood group, tsoliclones are used, i.e. monoclonal antibodies.

What is required to determine the blood group and Rh factor?

tsoliclones - tsoliclon anti-A;

- tsoliclon anti-B;

- tsoliclon anti-D;

- sodium chloride solution 0.9%; special tablet; sterile sticks.

Pic 63 – tsoliclone

Pic 64- blood type determination

Algorithm and procedure for determining the blood group Apply anti-A, anti-B tsoliclones on a special plate, one large drop (0.1 ml), under the appropriate labels. Next to them, drop the test blood (0.01–0.03 ml), one small drop at a time. Stir

them and observe the onset or absence of an agglutination reaction for 3 minutes. If the result is doubtful, add 1 drop of 0.9% saline.

Deciphering the results of determining the blood group

- If the agglutination reaction occurred with anti-A tsoliclone, then the blood under study belongs to group A (II);
- If the agglutination reaction occurred with anti-B tsoliclone, then the test blood belongs to group B (III);
- If the agglutination reaction did not occur with anti-A and anti-B tsoliclones, then the blood under study belongs to group 0 (I);
- If the agglutination reaction occurred with anti-A and anti-B tsoliclones, then the blood under study belongs to the AB (IV) group.

Determination of the Rh factor with anti-D

Zoliclone A large drop (0.1 ml) of anti-D zoliclon and a small drop (0.01 ml) of the patient's blood to be examined are mixed on the plate. The onset of the agglutination reaction or its absence is observed for 3 minutes.

- If the agglutination reaction occurred with anti-D tsoliclone, then the test blood is Rh-positive (Rh +);
- If the agglutination reaction did not occur with anti-D tsoliclone, then the test blood is Rh-negative (Rh—)

In other words, when mixing tsoliklon Anti-D with Rh-positive erythrocytes, an agglutination reaction occurs, and if the blood is Rh-negative, there is no agglutination (as shown in the figure, the fourth blood group is Rh-negative).

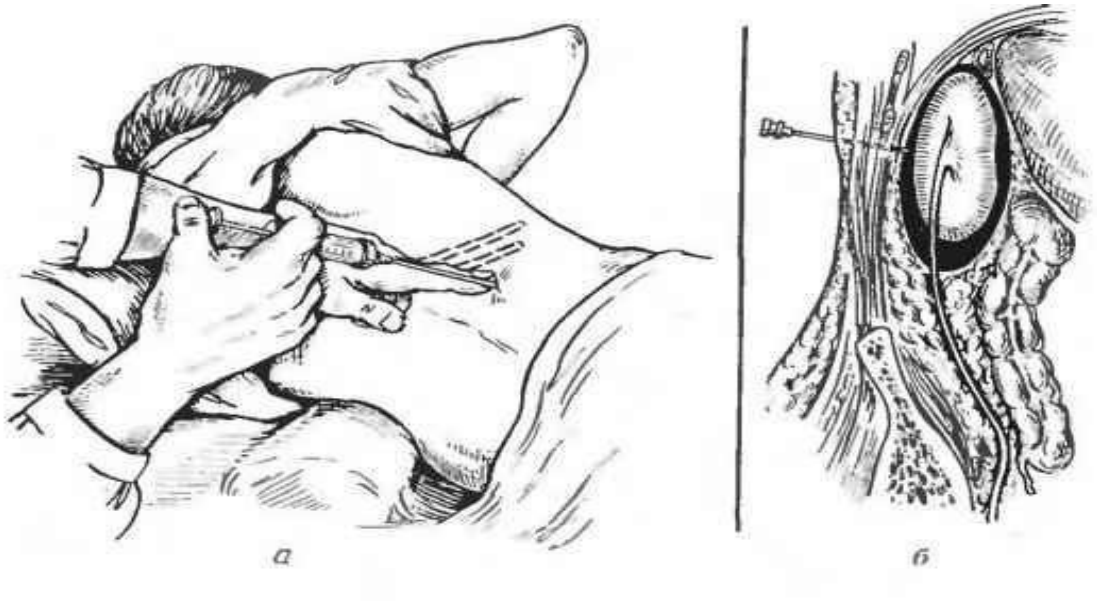
37. Paranephral blockade according to Vishnevsky.

INDICATIONS: traumatic, burn shock, trauma to the abdominal organs, injuries of the thigh and lower leg, post-hemotransfusion shock, prolonged crush syndrome, positional tissue compression syndrome.

TECHNICS. The patient is placed on his side, the roller is placed between the XII rib and the wing of the ilium. The leg on which the patient lies is bent at the knee and hip joints, the other leg is in the extension position. At the point of intersection of the XII rib with the outer edge of the iliocostal muscle of the lower back perpendicular to the skin surface with a thin needle, the skin and subcutaneous tissue are infiltrated with an anesthetic solution.

A long needle (10-12 cm), put on a 20 ml syringe, is advanced through the infiltrated tissues deep into the soft tissues. The position of the needle is perpendicular to the injection site, the advance of the needle is preceded by a stream of anesthetic solution. The syringe plunger is periodically pulled towards itself and the appearance of blood is monitored. Having passed through the muscle tissue and the transverse fascia, the end of the needle enters the perirenal tissue.

The fact that the needle has reached the perirenal space is evidenced by the following signs: a feeling of falling into the void, the anesthetic solution flows without tension, when the syringe is removed from the needle, the anesthetic solution does not flow back. After making sure that the needle has reached the perirenal space, 60-100 ml of 0.25% anesthetic solution is injected, which, spreading, washes the renal, adrenal and celiac plexuses, as well as the borderline trunk of the sympathetic nerve.



Pic 65- Paranephral blockade

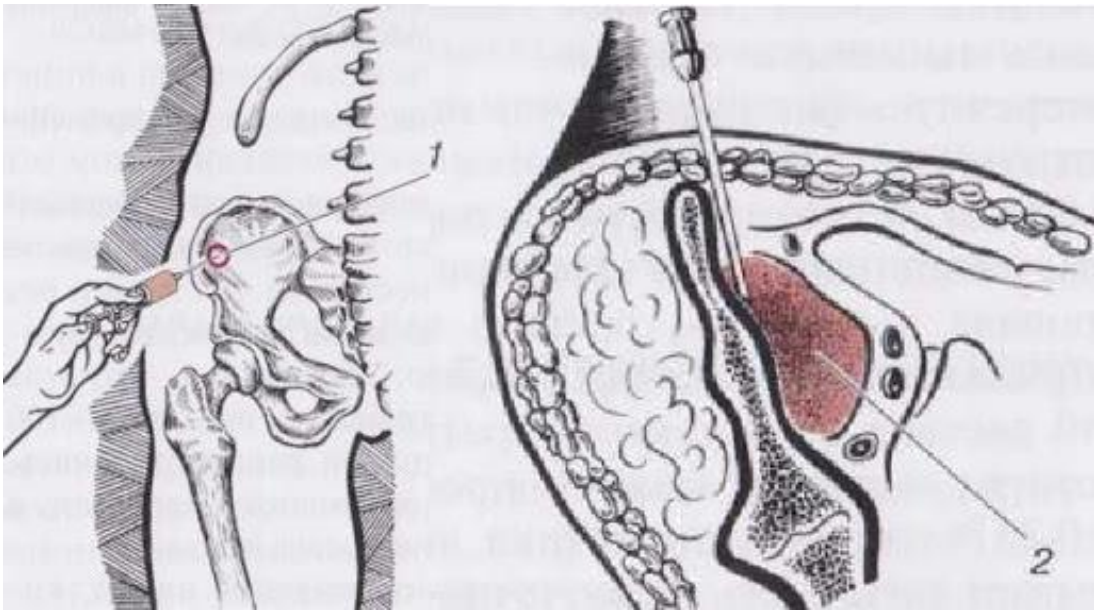
POSSIBLE COMPLICATIONS: damage to the kidney, intestines.

38. Pelvis blockade across Shkolnikov-Selivanov.

INDICATIONS: traumatic shock with fractures of the pelvic bones and damage to the pelvic organs, isolated fractures of the ilium.

TECHNICS. The patient lies on his back. A thin needle is used to anesthetize the skin of the subcutaneous tissue 1 cm inwards from the anterosuperior spine of the ilium.

A needle 14-15 cm long is inserted through the infiltrated area. The needle is advanced from top to bottom and from front to back, pre-sending a 0.25-0.5% solution of anesthetic, constantly feeling the inner surface of the ilium with the needle. The needle should be oriented so that the cut slides over the inner surface of the ilium. At a depth of 12-14 cm, the needle rests against the iliac fossa, where 250-300 ml of 0.25% anesthetic solution is injected. When performing bilateral blockade, 250 ml of 0.25% anesthetic solution can be injected on each side.



Pic 66- Pelvis blockade

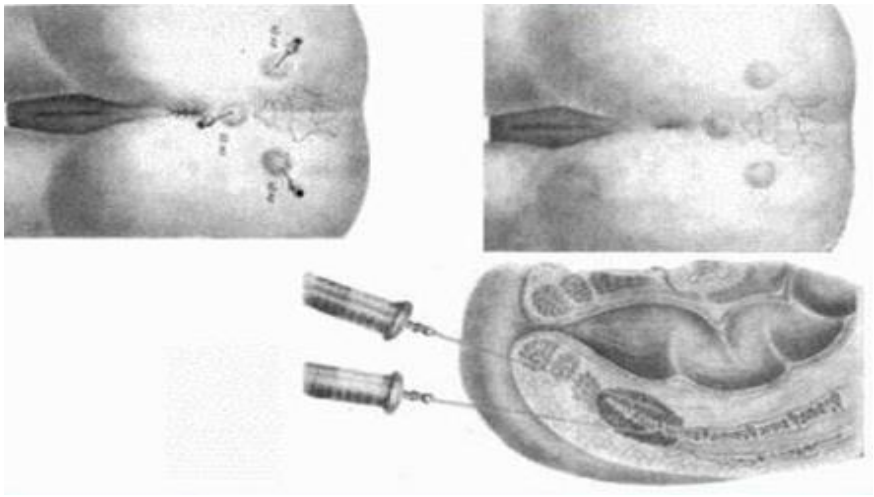
POSSIBLE COMPLICATIONS. With strict adherence to the blockade technique, no complications were noted.

39. Coccyx blockade according to Aminev.

INDICATIONS: tailbone fractures, coccygodynia.

TECHNICS. The position of the patient is lying on his back with legs taut. This position can be given to a patient on a gynecological or urological chair. In this case, the following requirements must be observed: the patient's pelvis must be raised and slightly pushed to the edge of the table, the legs are located on supports with grooved supports, the head end of the table is slightly raised. Along the posterior midline between the apex of the coccyx and the anal canal, the skin and subcutaneous tissue are infiltrated with a 0.25% anesthetic solution with a thin needle.

Under the control of the index finger of the left hand, inserted into the rectum, an anesthetic solution is injected with a long needle (8-10 cm), concentrating it mainly around the tailbone and in front of it. To carry out the blockade, 100-150 ml of a 0.25% anesthetic solution are consumed. A solution of ethyl alcohol in a ratio of 1:10 can be added to the anesthetic solution.



Pic 67- Coccyx blockade according to Aminev.

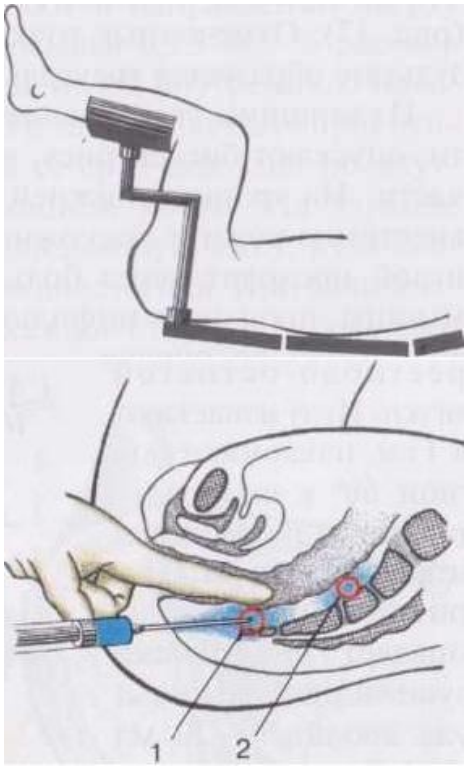
POSSIBLE COMPLICATIONS: infection of the perrectal tissue, the introduction of anesthetic into the lumen of the rectum.

40. Presacral blockade according to Vishnevsky.

INDICATIONS: sacral fractures, coccygodynia.

TECHNICS. The patient is placed on the right side with legs pulled up to the stomach. The position of the patient may be the same as when performing a peri-coccygeal blockade.

Between the tailbone and the anus, a thin needle is used to anesthetize the skin and subcutaneous tissue, a long needle (8-10 cm) is inserted through this area. As soon as the anesthetic solution has passed through the dense structures of the tissue, they begin to inject it, advancing the needle deeper and constantly focusing on the anterior surface of the sacrum.



Pic 68 - Presacral blockade

The anesthetic solution washes the sacral and hypogastric plexus. Inject from 100 to 120 ml of a 0.25% solution of anesthetic.

CONTRAINDICATIONS: the same as in the previous blockade.

POSSIBLE COMPLICATIONS: puncture damage to the rectum, infection of pararectal tissue.

41. Caudal (sacral) epidural block according to Pashchuk.

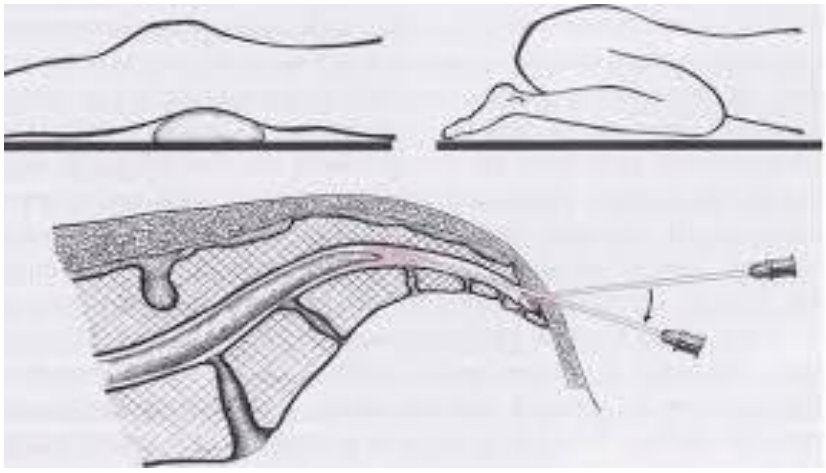
Caudal anesthesia is a type of epidural anesthesia with a specific site for the injection of anesthetic - the outlet of the sacral canal. The sacral foramen is located at the caudal apex of the sacrum and is bounded laterally by the sacral horns. As a rule, the length of the sacral opening is about 2 cm, the width is no more than 1.5 cm, the entrance to the opening is covered by the sacrococcygeal ligament. The sacral canal is a continuation of the vertebral column and has a length of about 10 cm.

INDICATIONS: in orthopedics, this type of blockade is used for osteochondrosis of the lumbar and lumbosacral spine in combination with other methods of treatment: manual and traction therapy.

TECHNICS. The patient lies on his stomach on a "broken" operating table or with a roller under the pubic articulation. The legs are slightly parted and rotated inward to open the upper anal fissure. Caudal epidural block:

A - position of the patient;

B - the principle of introducing a needle into the sacral opening.



Pic 69- Caudal (sacral) epidural block

A line is drawn between the posterior superior spines of the iliac bones, and a second line is drawn parallel to it at a distance of 1 cm from the caudal side (the prohibition line). The sacral horns are found with the thumb and forefinger of the palpating hand in the cranial part of the anal fold. It is advisable to mark them, since after infiltration anesthesia of the skin and subcutaneous adipose tissue, orientation to the opening of the sacral canal can be visually and palpably difficult. The sacrococcygeal ligament is anesthetized through a thin needle, after which a small amount of anesthetic (2-3 ml) is injected into the sacral canal. After

removing the thin needle, the epidural block (with mandrel) is inserted. First, the needle is advanced at an angle of 30-40 ° to the frontal plane. The index and thumb of the palpating hand, located on the sacral horns, prevent the needle from accidentally slipping into the subcutaneous fat. The needle is slowly advanced until the sacrococcygeal ligament passes, which is felt by the sudden cessation of resistance. After that, the angle of inclination of the needle advance is reduced to about 10-15 °. If the end of the needle rests on the bone, it is pulled. With further cranial advancement, the angle of inclination with respect to the frontal plane is further reduced. The needle should not be inserted further than 2-3 cm to avoid damage to the dural sac. If cerebrospinal fluid is not released, then the needle is turned 90 ° 2 times, after which the syringe is connected and an aspiration test is performed. The volume of the anesthetic is 20-25 ml. The anesthetic solution spreads to level I of the lumbar vertebra and anesthetizes all lumbosacral segments.

CONTRAINDICATIONS: similar to those for epidural blocks.

POSSIBLE COMPLICATIONS: general toxic reaction, total spinal paralysis, widespread epidural anesthesia.

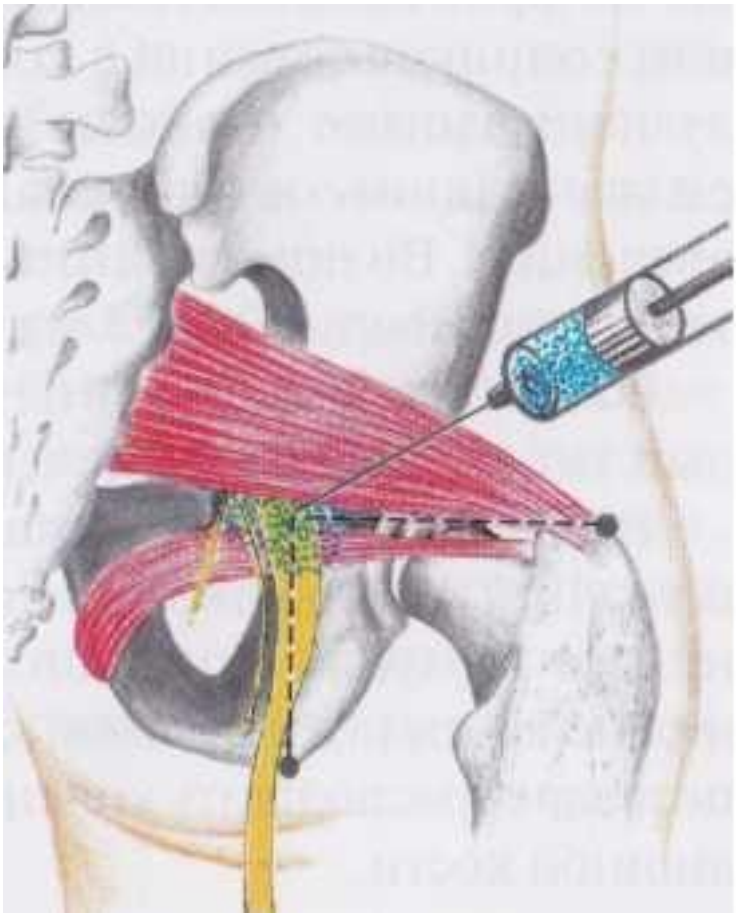
42. Blockade of the sciatic, femoral, lateral cutaneous nerve of the thigh, obturator nerve.

THE SCIATIC NERVE BLOCKED ACCORDING TO VOYNO-YASENETSKY

INDICATIONS: operations on the lower limb.

TECHNICS. The position of the patient lying on his stomach. By palpation, it is necessary to accurately determine the apex of the greater trochanter and the sciatic tubercle.

To do this, the doctor places the hand of the same name on the back of the patient's thigh, the first finger is located at the apex of the greater trochanter, and the sciatic tubercle palpates the nail phalanges of the index and middle fingers, one of which finds the outer and the other - the inner edge. The sciatic nerve is located directly along the outer edge of the sciatic tuberosity.



Pic 70- Blockade of the sciatic

A straight line is drawn from the apex of the greater trochanter, strictly perpendicular to the sagittal plane, another line runs along the outer edge of the sciatic tubercle.

At the apex of the right angle formed by the intersection of these lines, the skin and subcutaneous fatty tissue are infiltrated, then a long thin needle is advanced in a strictly vertical direction until paresthesia is obtained. In this case, 10-15 ml of 2% anesthetic solution is injected. In the absence of paresthesia, the needle is inserted 1 cm proximally or 1 cm lateral from the initial point of injection. If there was no paresthesia, then 20-30 ml of anesthetic solution should be administered for perineural anesthesia.

POSSIBLE COMPLICATIONS: getting the needle into the small sciatic foramen, puncture damage to the sciatic nerve. With a high division of the sciatic nerve, only one common peroneal nerve can be blocked.

SITIATIC NERVE BLOCK ACCORDING TO MOUR

INDICATIONS: operations on the lower limb.

TECHNICS. The position of the patient is lying on his stomach or on his side. The lower limb should be bent at the hip and knee joints at an angle of 45-60 ", the heel is located on the knee joint of the lower limb. From the apex of the greater trochanter, a line is drawn in the direction of the posterior superior spine of the ilium, from the middle of which in the caudal direction a perpendicular is drawn with a length of 4-5 cm. A thin needle 10-14 cm long is used to anesthetize the skin and subcutaneous tissue, then the needle is advanced in the frontal plane until obtaining paresthesia or bone contact. If necessary, the needle is retracted and re-inserted approximately 0.5 cm lateral or medial to the original insertion site. The onset of paresthesia is mandatory. Enter 20-25 ml of 0.5-1% anesthetic solution.

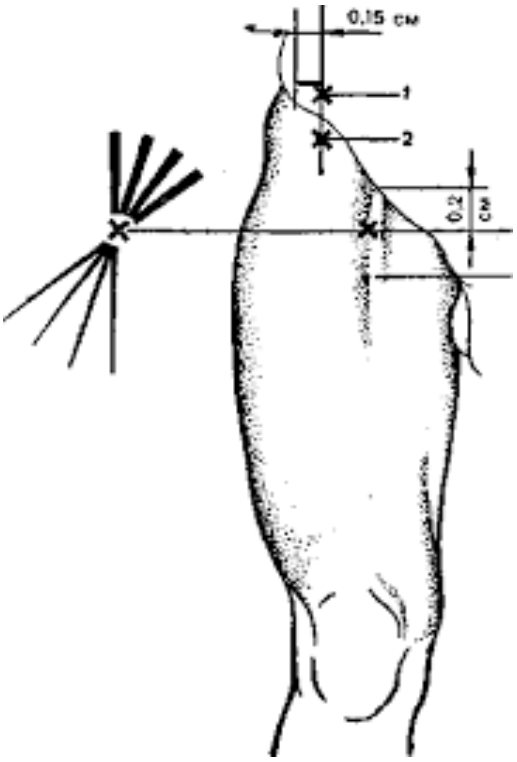
POSSIBLE COMPLICATIONS: penetration of the needle into the small pelvis, damage to the bladder.

In order to exclude these complications A.Yu. Pashchuk (1987) proposes to draw a line from the apex of the greater trochanter towards the posterior inferior iliac spine (and not the posterior superior) as a reference point. This allows the tip of the needle to be positioned directly on the ischium.

BLOCKADE OF THE FEMORAL NERVE

INDICATIONS: surgery for injuries and diseases of the patella, neuritis of the femoral nerve, as an addition to anesthesia of the sciatic nerve; the blockade can be performed for diagnostic purposes.

TECHNICS. The patient is in the supine position. The femoral artery is palpated. Laterally, in the immediate vicinity of it, at a distance of 1.5-2 cm from the inguinal ligament, a needle is inserted perpendicular to the frontal plane.



Pic 71- BLOCKADE OF THE FEMORAL NERVE

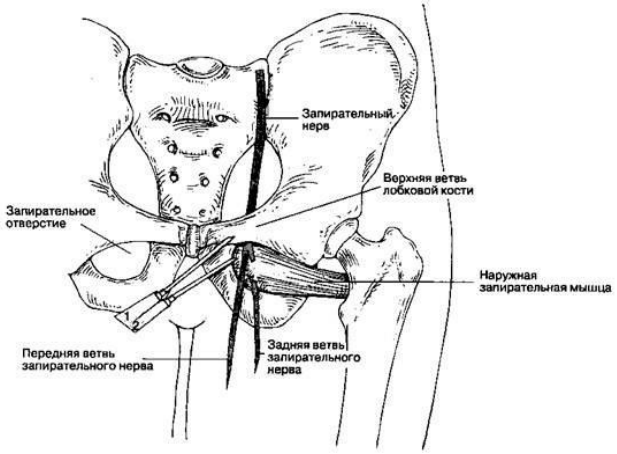
After puncture of the superficial fascia of the thigh, lateral to the artery, the needle is advanced inward until the ileal-scallop fascia passes and 10-15 ml of 1% anesthetic solution is injected fan-shaped.

POSSIBLE COMPLICATIONS: puncture injury of the femoral artery.

BLOCKADE OF THE LATERAL CUTANEOUS NERVE OF THE HIP

INDICATIONS: For the diagnosis and treatment of neuralgia of the external cutaneous nerve of the thigh (Roth syndrome), as an adjunct to the anesthesia of the sciatic and femoral nerves.

TECHNICS. The position of the patient lying on his back. The injection site is located under the groin fold 2.5 cm medial to the anterior superior iliac spine. The needle is inserted at right angles to the skin. After infiltration of the skin and subcutaneous fatty tissue, the needle is advanced under the fascia and 5-10 ml of 0.5-1% anesthetic solution is injected.



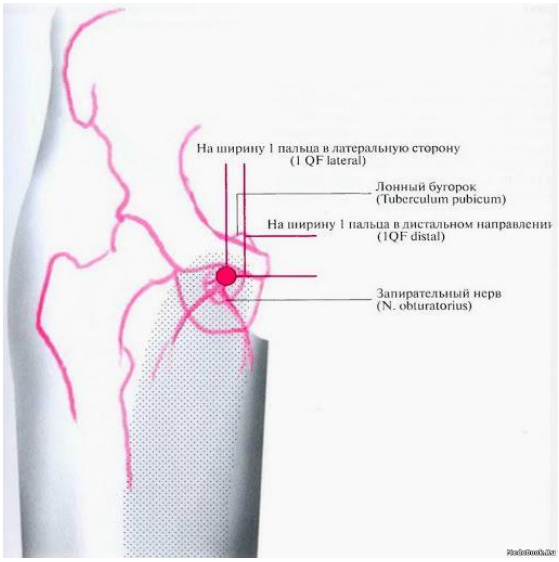
Pic 72- BLOCKADE OF THE LATERAL CUTANEOUS NERVE OF THE HIP

Then the same amount of anesthetic is injected in a fan-shaped manner subfascial medial to the initial injection. In the absence of pronounced obesity, the nerve can be blocked at a point located 1.5 cm medial to the anterior superior iliac spine.

BLOCKADE OF THE OBSTACLE NERVE

INDICATIONS: relief of pain in arthrosis of the hip joint, for the purpose of anesthesia in combination with a blockade of the femoral nerve.

TECHNICS. The position of the patient lying on his back. The point of needle insertion is 1.5 cm below the inguinal ligament on a line located 3 cm medially from the femoral artery and 3 cm outside the pubic tubercle. The needle is inserted at an angle of 60 "to the frontal plane until it contacts the bone. Then it is slightly pulled up and directed inward at an angle of 75 "to the frontal plane.



Pic 73-BLOCKADE OF THE OBSTACLE NERVE

Having determined the upper edge of the obturator hole with the end of the needle, it is additionally advanced 1 to 1.5 cm deep. When paresthesia is obtained, 10-15 ml of 0.5-1% solution is injected anesthetic. If paresthesia does not occur immediately after insertion, then the end of the needle after preliminary tightening is moved approximately 0.5 cm medial or lateral from the place of its initial insertion. When removing the needle to the level of subcutaneous fat, another 10 ml of anesthetic is injected.

POSSIBLE COMPLICATIONS: puncture damage to the obturator artery.

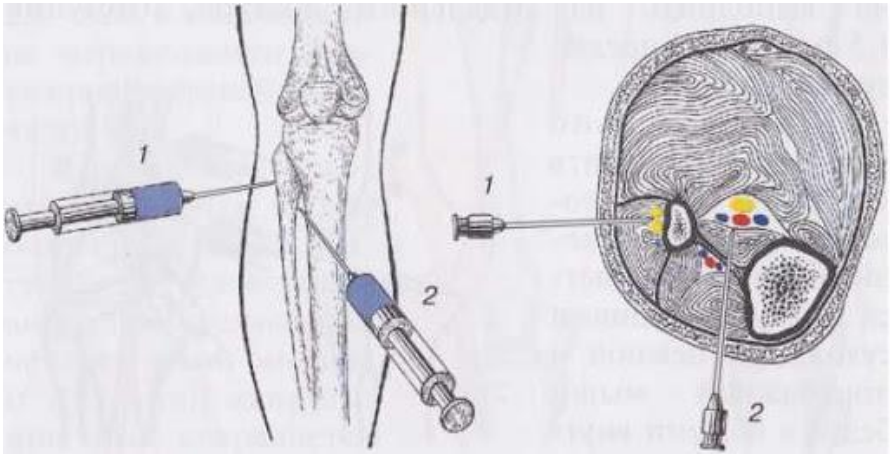
43. Blockade of the tibial and peroneal nerves at the level of the upper third of the lower leg and in the lower third of the lower leg according to Brown.

Blockade of the tibial and peroneal nerves at the level of the upper third of the leg. INDICATIONS: injuries of the lower third of the lower leg, ankle joint and foot, surgical interventions on the indicated anatomical areas.

TECHNICS. For the purpose of anesthesia of the common peroneal nerve, the needle is inserted under the head of the fibula, along its outer surface, and 10-15 ml of 1% anesthetic solution is injected. The latter, spreading in the external muscle-fascial sheath, permeates loose perineural tissue and interrupts the conduction of impulses along the nerve.

For anesthesia of the tibial nerve, the needle is inserted from the front, at the inner edge of the fibula. Next, the needle is advanced through the interosseous membrane to a depth of 5-6 cm. The end of the needle enters the deep section of

the posterior muscle-fascial space of the leg, where 30-40 ml of 1% anesthetic solution is injected.



Pic 74- Blockade of the tibial and peroneal nerves

POSSIBLE COMPLICATIONS: puncture damage to the arteries.

Blockade of the tibial and peroneal nerves in the lower third of the lower leg according to Brown.

INDICATIONS: ankle and foot injuries, foot surgery.

TECHNICS. For blockade of subcutaneous nerves at a distance of 10-12 cm proximal to the apex of the ankles, the subcutaneous tissue is infiltrated with an anesthetic solution in the transverse direction, a so-called "bracelet" is obtained.

At the place of its intersection with the inner edge of the Achilles tendon, the needle is advanced to a depth of 3-4 cm in the direction of the fibula and 5-7 ml of a 1% anesthetic solution is injected, which blocks the tibial nerve. For the blockade of the peroneal nerve, the point where the needle is inserted is the point corresponding to the intersection of the "bracelet" with the outer edge of the tendon of the anterior tibial muscle. The needle is inserted perpendicular to the tibia axis in the direction of the interosseous membrane. 5-7 ml of anesthetic solution is injected. In total, 30-40 ml of anesthetic solution is consumed for the blockade in the lower third of the leg.

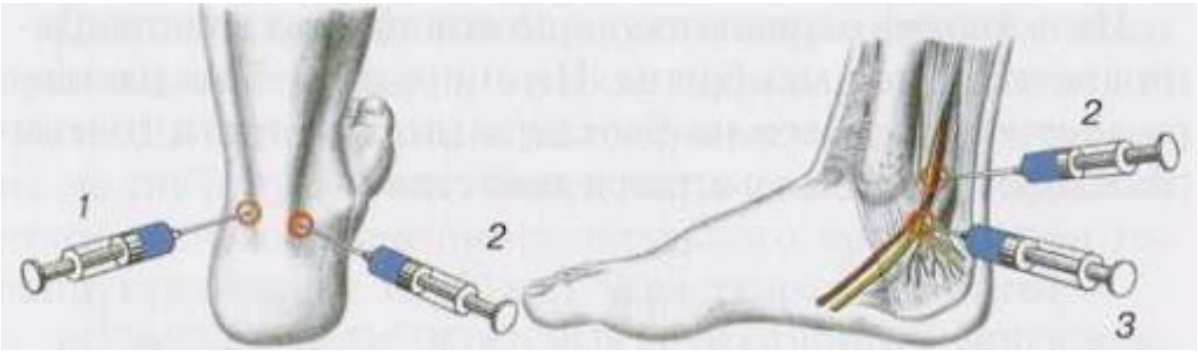
44. Blockade of the posterior tibial and sural nerves according to Brown and the posterior tibial nerve according to Voino-Yasenetsky.

Brown block of the posterior tibial and sural nerves.

INDICATIONS: injuries to the feet, surgery on the feet.

TECHNICS. The posterior tibial nerve is blocked behind the medial malleolus.

The posterior tibial artery is palpated, the needle is directed tangentially to the point of pulsation of the artery until paresthesia is obtained or until it contacts the bone. If paresthesias occur, the needle is removed by 1-2 mm and 5 ml of 1% anesthetic solution is injected. The sural nerve is blocked between the lateral malleolus and the Achilles tendon. 5 ml of 1% anesthetic solution is injected subcutaneously in a fan-shaped manner.

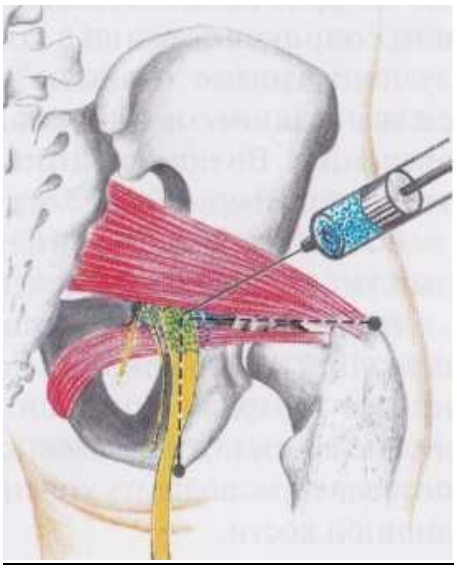


Pic75- Blockade of the posterior tibial and sural nerves according to Brown

POSSIBLE COMPLICATIONS: puncture damage to the posterior tibial artery.

Blockade of the posterior tibial nerve according to Voino-Yasenetsky.

TECHNICS. The nerve is blocked in the place where it passes the retinaculum mm flexorum (lig. Laciniatum according to Voino-Yasenetsky), i.e. somewhat more distal than Brown's method. Immediately after puncture of the retinaculum mm flexorum, 5 ml of a 1% solution of anesthetic is injected, which provides anesthesia of the branches of plantaris med. and n. plantaris lat. With the subcutaneous injection of 3-5 ml of a 1% solution of anesthetic under the retinaculum mm flexorum, at the level of the upper edge of the calcaneal tubercle, the n branch is blocked. tibialis post., n. Calcanei med.



Pic 76- Blockade of the posterior tibial nerve

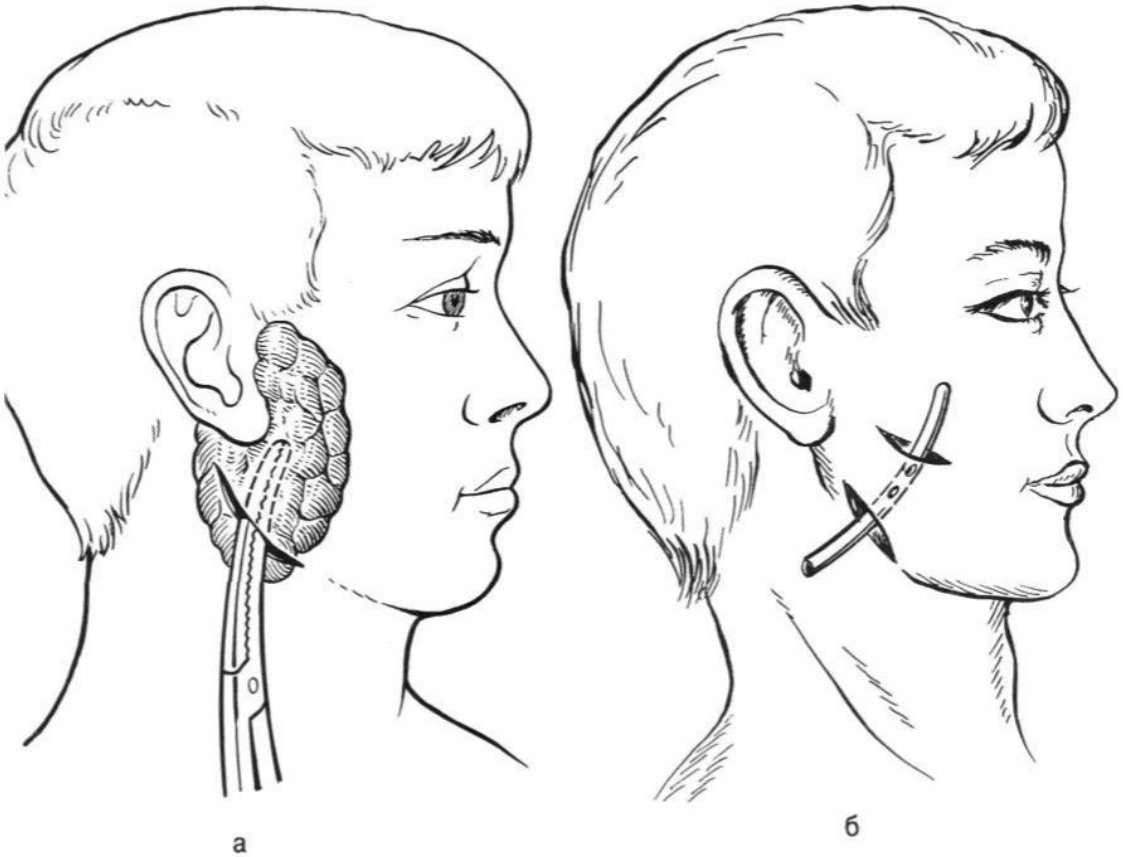
45. Purulent mumps

The indications for surgery are destructive (purulent and necrotic) forms of parotitis. In conditions of inflammatory infiltration, swelling of the tissues surrounding the parotid gland, it is practically impossible to achieve good local anesthesia, which ensures painlessness of the operation, revision and drainage. The operation is performed under anesthesia.

The patient is placed on a healthy side. A skin incision about 2 cm long is made above the place of fluctuation, taking into account the topography of the facial nerve. After opening the abscess, the pus is removed and the cavity is drained. With extensive damage to the gland, it is usually necessary to make 2 incisions. One of them starts 0.5-0.7 cm anterior to the base of the earlobe and is carried out in a horizontal direction parallel to the lower edge of the zygomatic arch 2-2.5 cm long. The skin, subcutaneous tissue and parotid-masticatory fascia are dissected. Pus is removed, the cavity is examined with a finger. In case of necrotic form of

parotitis or purulent parotitis involving the process of the lower pole of the gland, one incision is not enough for adequate drainage, therefore, a second incision is made in the retromaxillary fossa. An incision is made from the earlobe, retreating 1-1.5 cm posterior to the branch of the lower jaw, the direction of the incision is the anterior edge of the sternocleidomastoid muscle. Dissect the skin, subcutaneous tissue, capsule of the gland, remove pus and freely lying sequestered areas of glandular tissue. Carefully connect both incisions with a finger or a blunt instrument and insert a drainage tube. In cases where there is a breakthrough of the abscess into the peripharyngeal space, the latter is drained according to Voyno-Yasenetsky through the submandibular bed. The lower pole of the parotid bed can also be drained through this incision.

Pic 77-Opening of the abscess of the parotid gland at its lower pole with one incision (a), opening with two incisions and drainage with a tube (b).



46. Pelvic abscess

The peritoneum from the rectum passes to the bladder in men and forms a rectovesical depression, bounded on the sides by the rectum-vesical folds, which contain the muscles of the same name. In women, the peritoneum from the rectum passes to the upper part of the vagina and uterus and forms a recto-uterine cavity (Douglas space), which is laterally limited by the recto-uterine folds of the peritoneum.

Douglas space abscess is a secondary disease, it is a consequence of the transition of the inflammatory process from the abdominal organs; with the reverse development of peritonitis, an abscess is one of the residual phenomena. The most common causes of abscess are acute appendicitis, inflammatory diseases of the female genital organs. Abscesses often develop as complications of the early postoperative period on the 4-11th day of surgery.

The position of the patient during the opening of the abscess should be the same as for the operation of the perineal stone section.

Douglas pouch abscess can be opened under local infiltration anesthesia (as in hemorrhoid surgery). A 0.25% novocaine solution is injected intradermally around the anus, then the perianal fatty tissue and the rectal sphincter are infiltrated. A solution of novocaine is injected into the ischiorectal fossa on both sides, into the presacral tissue and into the space anterior to the rectum. To introduce the solution into the cellular space, a long needle is used, the passage of which is controlled by the finger of the left hand inserted into the rectum.

After anesthesia, the sphincter of the rectum is stretched to a width of 2-3 transverse fingers, the intestine is expanded with gynecological mirrors, the mucous membrane is treated with alcohol. In the midline, at the site of the greatest protrusion and softening of the overhanging anterior intestinal wall (in some cases, the intestinal mucosa in this place is dull, hyperemic, bleeds easily when touched), the abscess is punctured with a thick needle and an empty syringe. Having received pus, the needle is not removed, it is left in the cavity of the abscess and the assistant fixes it together with the syringe. If the needle is short, it is held by the pavilion with a Billroth clamp, the syringe is disconnected so that it does not interfere during the operation.

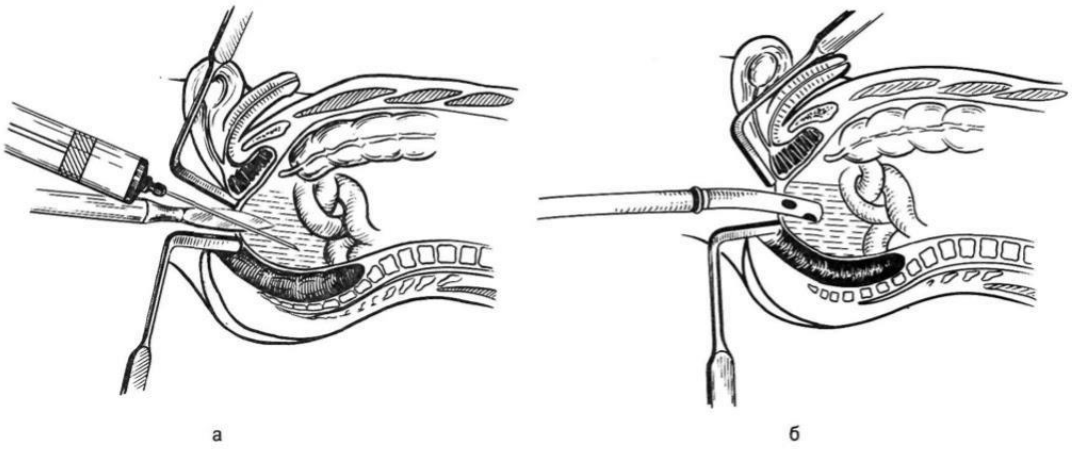
The abscess is opened along the needle with a Rotter perforator or a pointed scalpel, the blade of which is captured with a curved Billroth clamp so that its tip 1-1.5 cm long remains free. The incision is made along the midline along the

length of the intestine. The Rotter perforator is inserted along the Rotter needle so that the lower jaw slides along the needle with its groove. Perforate the wall, pass the tool into the cavity of the abscess, push the branches apart, expanding the hole. If the abscess is opened with a scalpel, then after dissecting the intestinal wall for 1 cm and opening the abscess, the hole is expanded with forceps to empty the abscess. Once the abscess is opened, the needle is removed.

A drainage tube with a diameter of 1.5 cm with dense walls is carried out with an instrument between the branches of the Rotter perforator or forceps, with which the edges of the intestinal incision are bred. To prevent the drainage from slipping upwards, the tube is fixed with one silk suture to the skin of the perineum or the tube is pierced transversely with a large safety pin at the level of the anus. Drainage departs on its own after 3-4 days. By this time, the need for re-drainage, as a rule, disappears. But if there are signs of pus retention, overhanging of the intestinal wall, fluctuation, which is due to premature adhesion of the edges of the wound, then dilution of the edges of the wound with a forceps or a long Billroth clamp creates conditions for the outflow of pus.

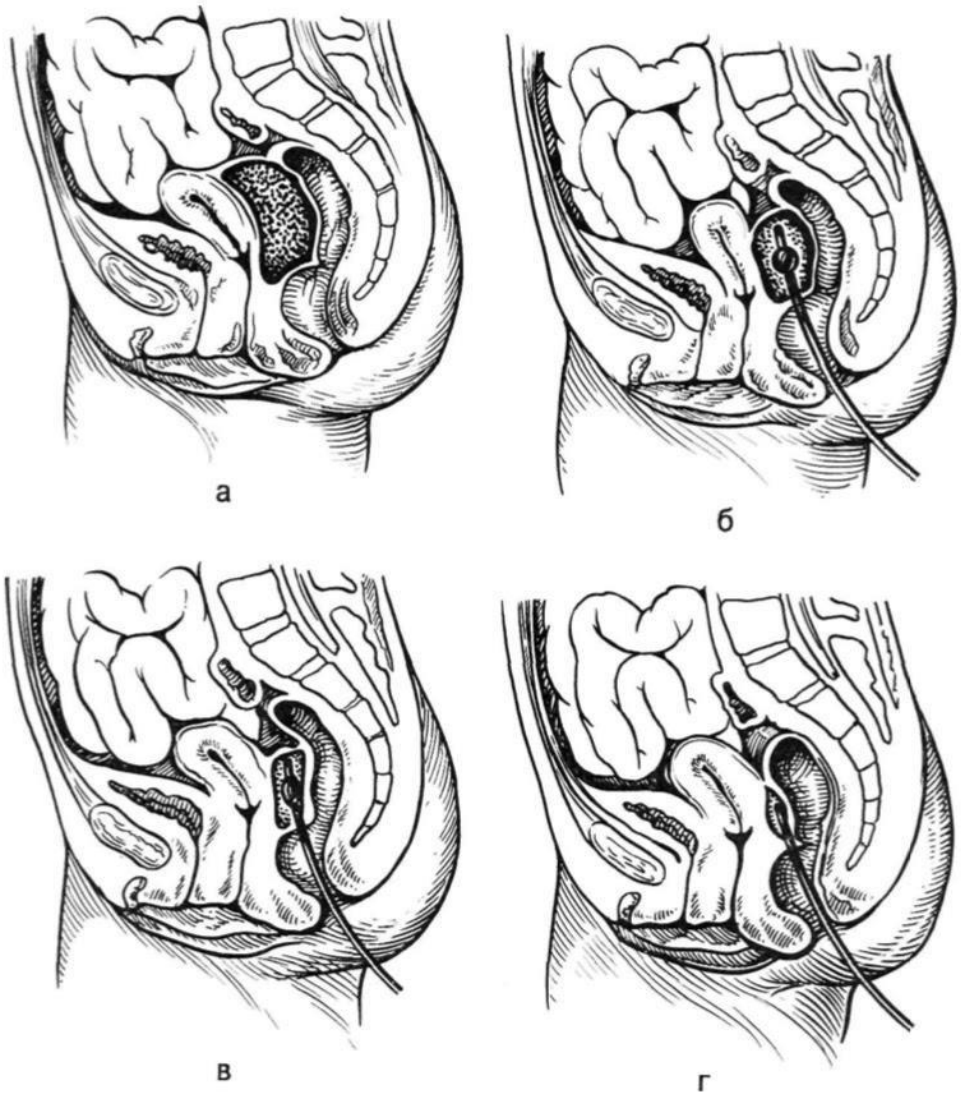
Treatment of an abscess of the Douglas space according to Jachson, Elem is an opening of the abscess through the rectum and draining it with a drainage tube with a cuff. After removing the pus, a tube is inserted into the abscess cavity, the cuff is inflated with air. The abscess cavity is washed with an antiseptic solution. As the cavity subsides, the volume of the cuff is reduced, with the complete subsidence of the abscess, the tube is removed. Drainage time 3-7 days.

One of the possible complications during surgery may be bleeding due to vascular damage. To prevent it, a bowel incision is made strictly along the midline. To prevent damage to the intestinal loops or the bladder wall, the abscess is opened along the needle, the incision is made along the top of the overhanging intestinal wall and in the wall softening zone.

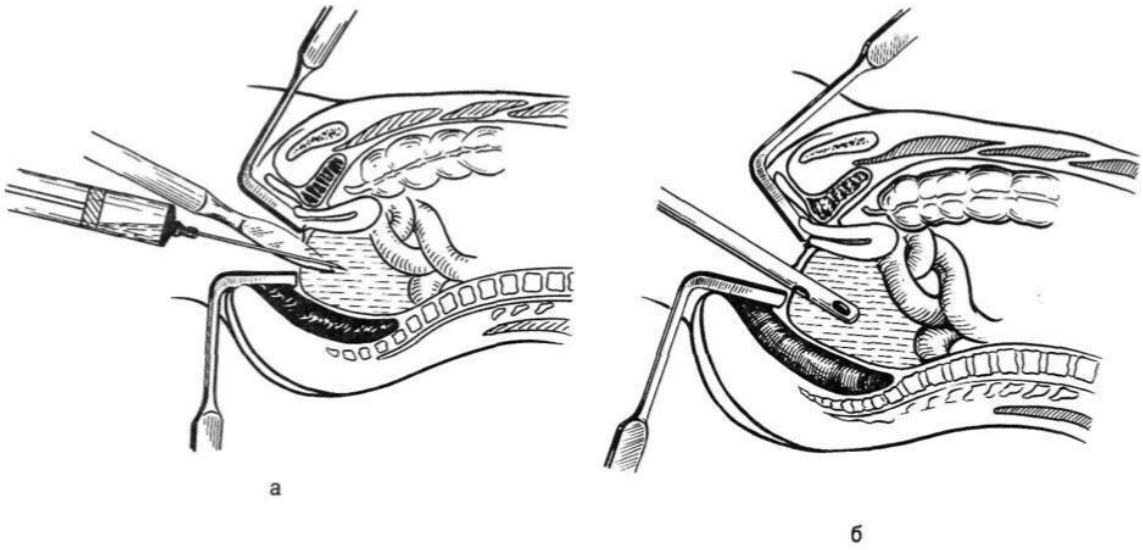


Pic 78- Opening of the abscess of the Douglas pouch,a - opening of the abscess through the rectum; b - drainage of the abscess through an incision in the intestinal wall.

The opening of the abscess of the Douglas space in women is performed through the posterior fornix of the vagina. The position of the patient should be the same as for a gynecological examination. The vagina is treated with alcohol and iodine solution. The cervix is exposed with a vaginal mirror, which is fixed with bullet forceps and pulled downwards and anteriorly, thereby approaching and stretching the posterior vaginal fornix. A thick needle is used to puncture the space of Douglas in the center of the posterior vaginal fornix. Having received pus, the abscess is opened and drained according to the previously described method. In cases where an abscess of the Douglas space develops as a complication of acute appendicitis, purulent salpingoophoritis or other inflammatory diseases of the abdominal organs, when the inflammatory exudate flows down, accumulates in the Douglas space and suppurates, then the treatment tactics should be as follows. The abdominal cavity is opened with a laparotomy incision, dried, and the source of infection is removed. The pus is then removed from the Douglas pouch and drained with a tube. Drainage is removed along the midline or through a separate incision in the iliac region.



Pic 79- Treatment of pelvic abscess according to Jackson, Elcm and — typical pelvic abscess; b - a catheter is inserted into the abscess cavity, the cuff is inflated; c — the abscess is partially emptied, the amount of air in the cuff is reduced; d— the abscess is emptied, air is released from the catheter cuff.



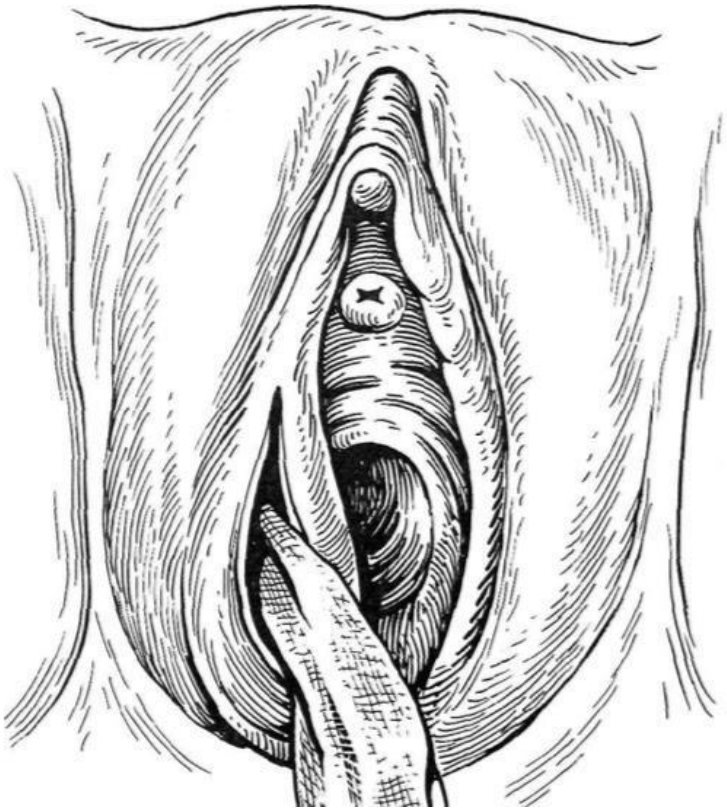
Pic80-Posterior colpotomy (a) and drainage of the abscess through a colpotomy incision (b).

47. Abscess of Bartholin's cyst

A skin incision is made over the protruding part of the cyst along its anterior surface. Having opened the cyst, the pus is removed, the cavity is drained. In case of recurrence of the disease, the cyst is exfoliated.

The cyst is husked in the cold period after the subsidence of acute inflammation. A skin incision 6-8 cm long is carried out along the outer surface of the labia minora, the skin and subcutaneous tissue are dissected up to the gland capsule. On the inside, the wall of the cyst is firmly adhered to the skin, which is thinned, and the cyst can be easily opened with a skin incision. The edges of the skin incision are captured with Kocher clamps (or stitched with silk ligatures) and Cooper scissors, moving along the wall of the cyst, the gland is sharply isolated. To facilitate the selection of the cyst with fingers inserted into the vagina, the cyst is displaced into the wound. If the cyst is accidentally opened, its contents are removed, the cavity is plugged with a gauze swab and the husking is continued.

After removal of the cyst and hemostasis, the bed is sutured with catgut sutures, and capon sutures are applied to the edges of the skin wound.



Pic 81-Drainage of an abscess of the Bartholin's gland.

48. Acute paraproctitis

There are the following forms of acute paraproctitis, in which the localization of the abscess is determined by the anatomical features of the cleft pararectal spaces (subcutaneous, ischiorectal, pelviorechal).

1) subcutaneous paraproctitis (perianal abscess);

2) ischiorectal paraproctitis (abscess is localized in the sciatic-rectal cleft space);

3) pelvirectal paraproctitis (the abscess is localized in the pelvirectal cellular space);

4) posterior rectal paraproctitis (abscess localized in rechorek-

halal klechchahka);

5) submucosal paraproctitis.

Perianal (subcutaneous) abscess. The operation is performed in the position

the patient on his back with legs bent at the knee joints pulled up to the stomach.

An arcuate skin incision passes on the side of the rectum over the site of the greatest swelling, skin hyperemia and fluctuation. After opening the abscess, the pus is removed, the cavity is examined with a finger, the bridge is separated and drained with a gauze swab with a hypertonic solution of sodium chloride, proteolytic enzymes (24 hours).

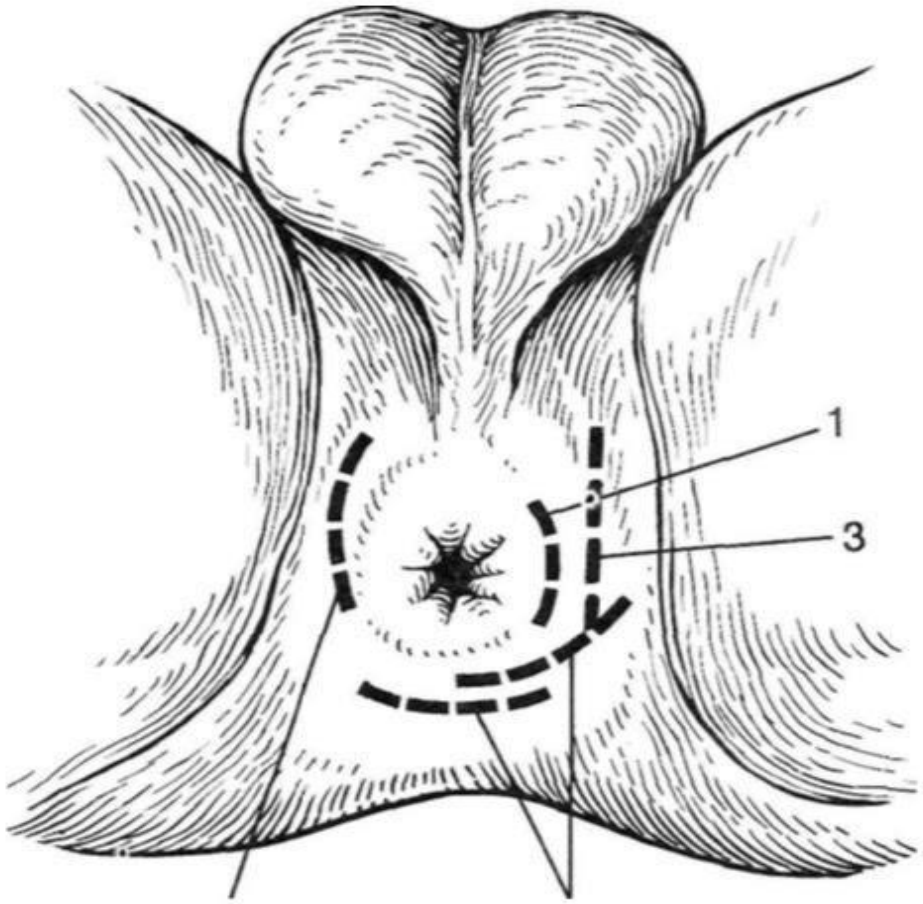
Ischiorectal abscess. The position of the patient is the same. A semi-oval incision in the skin of passers-by outwards from the anus by 3-4 cm. The skin is cut at the height of the infiltrate, subcutaneous tissue, fascia and penetrate into the ischiorectal fossa - an abscess is opened. The pus is removed, the loose bridges in the abscess cavity are separated with a finger, washed with a solution of hydrogen peroxide, dried and drained with a vinyl chloride tube, which is fixed with one suture to the edge of the skin wound.

49. Pelviorectal abscess.

The position of the patient during the operation as for perineal lithotomy. A straight or semi-oval skin incision is made 3-4 cm outside the anus.

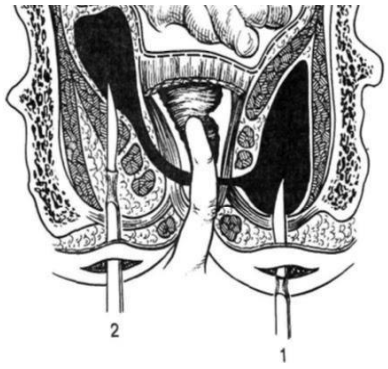
Opening the ischiorectal cellular space, dissect the fatty klechak to the pelvic floor, spread the edges of the wound with hooks and cut the muscle that raises the anus with a scalpel, parallel to the rectum. With severe inflammatory infiltration, it is enough to pierce the muscle with a blunt instrument and penetrate into the pelvirectal space. Pus is removed using an aspirator for this, the cavity is examined with a finger, loose bridges are separated, if necessary, the incision in the muscle is expanded to provide good conditions for drainage of the abscess. The cavity is washed with a solution of hydrogen peroxide and a drainage tube is inserted, which is fixed with one suture to the edge of the skin wound.

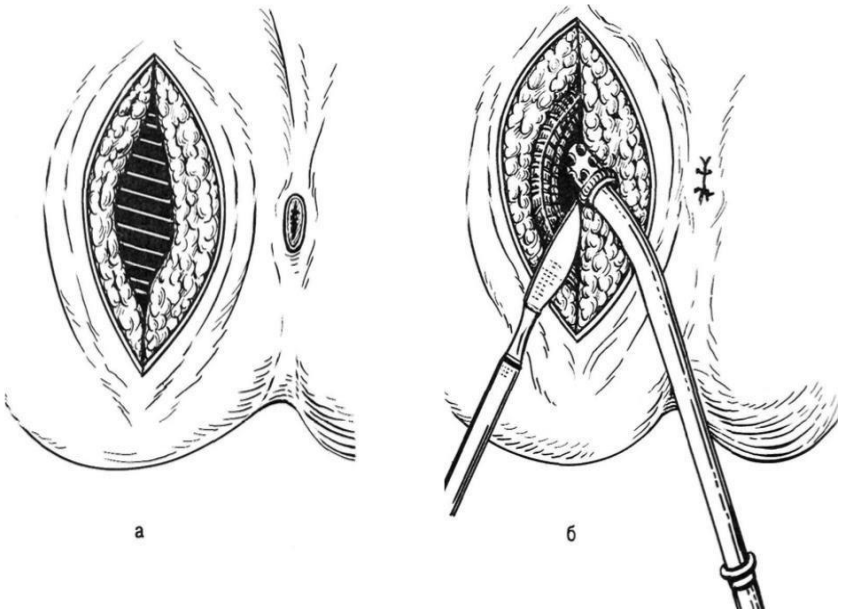
The sphincter of the rectum is stretched, a rubber tube wrapped in a gauze swab with Vishnevsky's ointment is inserted into the rectum to ensure the removal of gases.



Pic 83-Incisions used in acute paraproctitis. 1 - perianal abscess; 2 - behind rectal; 3 - ischiorectal.

Pic 84- Surgical approaches used in ischiorectal (1) and pelvirectal (2) abscesses.





Pic 85-Opening of a pelvirectal abscess. a - at the bottom of the wound, a muscle that lifts the anus (pelvic diaphragm) is visible; b — dissection of the pelvic floor, aspiration of pus.

50. Perirectal abscess.

The position of the patient on the operating table during the operation is knee-elbow. Anesthesia - local infiltration anesthesia or anesthesia.

An arcuate skin incision is made between the tip of the coccyx and the anus or to the side of the midline. The skin, subcutaneous tissue, fascia are dissected, the edges of the wound are bred with hooks and the tissues are cut closer to the anterior surface of the coccyx and sacrum. In order not to damage the rectum during tissue incision, the surgeon with the finger of the left hand inserted into the rectum protrudes its posterolateral wall. An abscess is opened, localized between the rectum and the sacrum, which can sometimes be located at a depth of 10-12 cm from the anus. A thick drainage tube can be used to flush the abscess cavity. The abscess cavity is drained.

51. Submucosal paraproctitis.

The focus is opened with a longitudinal incision of the mucous membrane through the rectum above the site of tissue infiltration.

The operation is performed in the same way as through the intestinal opening of the ischiorectal or pelviorectal paraproctitis, but the incision of the intestinal wall is limited to a longitudinal dissection of only the intestinal mucosa over the place of its protrusion and infiltration. A gauze swab with Vishnevsky's ointment is inserted into the rectum.

Anaerobic paraproctitis. Wide incisions open ischiorectal or pelvirectal cellular spaces, depending on the location of the primary focus. In addition, areas of infiltration and tissue necrosis in the perineum, thighs, scrotum, buttocks, and lower abdominal wall are widely dissected. Areas of necrotic tissues in the putrefactive-necrotic form of anaerobic paraproctitis are excised, the wounds are thoroughly washed with a solution of hydrogen peroxide, potassium permanganate, loosely packed. Dressings are changed 2-3 times a day, the resulting infiltrates are opened. With anaerobic paraproctitis, specific treatment is carried out, oxygen barotherapy against the background of massive antibacterial and detoxification treatment.

52. Paronychia.

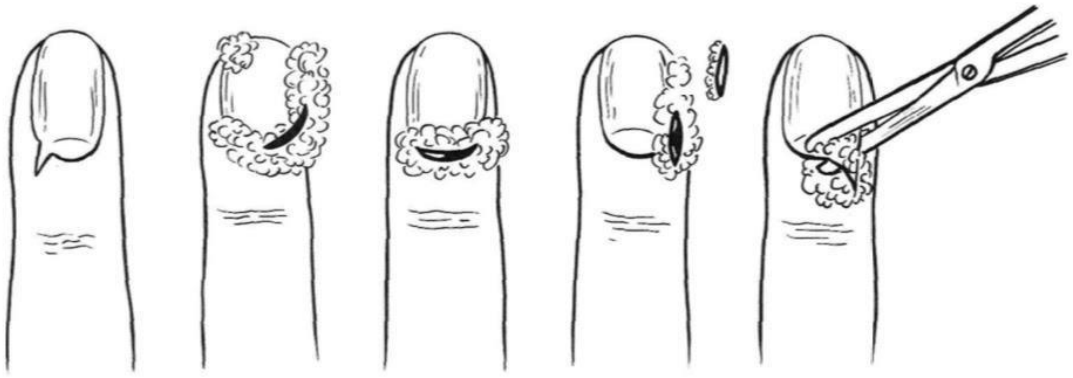
Subungual felon with paronychia, depending on the location of the purulent focus, wedge-shaped, U-shaped, paired lateral incisions are used on the dorsal surface of the nail phalanx. In all cases when there is a spread of pus under the nail plate not throughout, but only in the lateral or distal sections, simultaneously with the opening of the paronychia, it is necessary to resect only the edge of the nail exfoliated with pus up to the zone of its strong fixation to the bed. In this case, the nail bed should not be scraped because of the risk of damage to the growth zone of the nail, which leads to the restoration of the deformed nail plate. Removal of the nail plate leaves the nail bed unprotected, which, due to pain with constant injury, limits the ability of patients to work for a long time.

Based on these considerations, with localized forms of subungual panaritium, it is advisable to confine ourselves to resection of the nail plate. Only with complete exfoliation of the nail plate with pus, it is necessary to remove the latter in order to ensure complete emptying of the focus and bring antibacterial drugs directly to it.

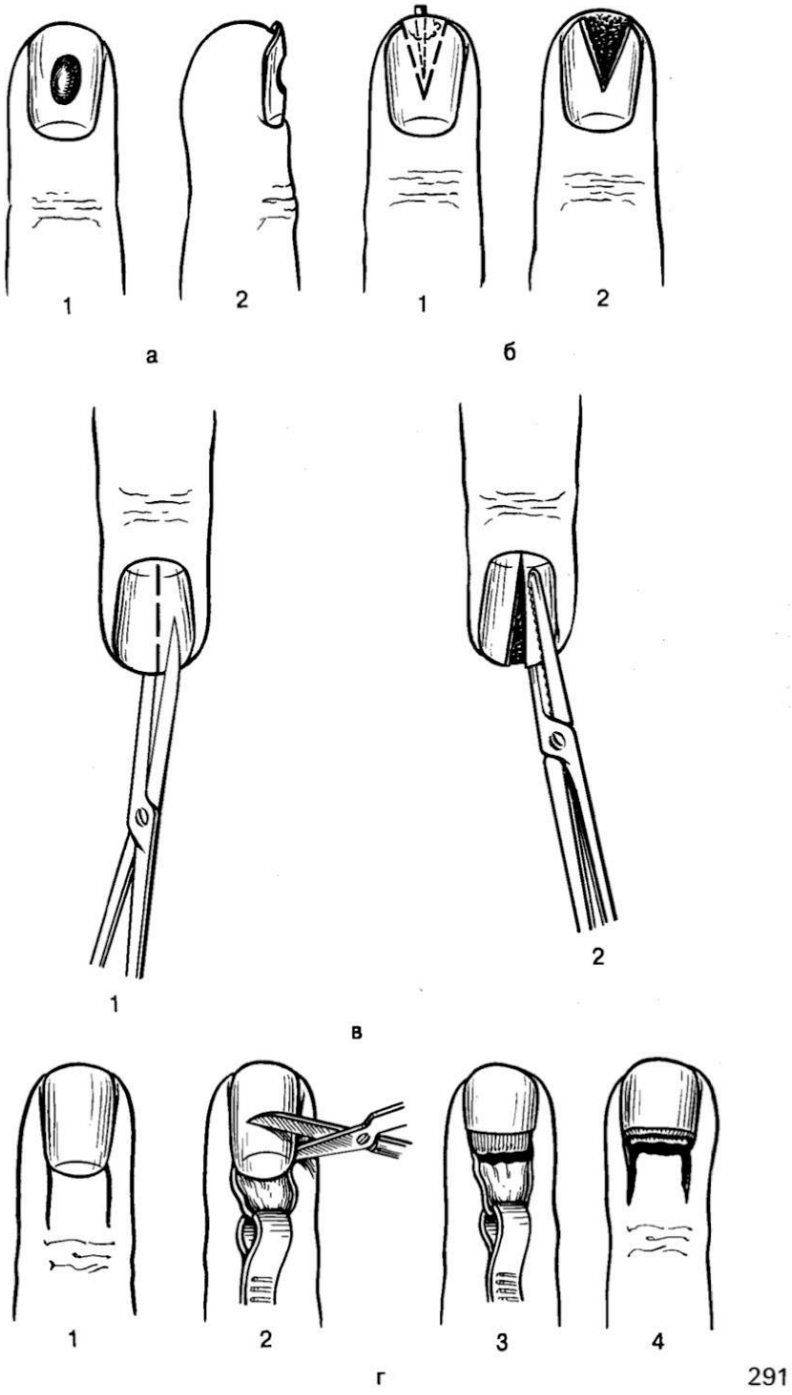
When an abscess is formed under the central part of the nail plate, as is observed with suppuration of the subungual hematoma, one should not resort to removing the nail, but it is necessary to trepan the nail plate directly above the accumulation of pus. To do this, with a scalpel blade set at an acute angle, the layers of the nail plate are gradually cut off until the purulent focus is opened. The hole is expanded to the size of an abscess, while not resorting to scraping the bed because of the risk of damage to the nail phalanx. With the localization of the abscess at the free edge of the nail (more often this is observed with suppuration around the splinter, a wedge-shaped excision of the edge of the nail plate is performed with pointed scissors. One branch is brought under the nail and the nail plate is cut. With the second incision, a part of the nail is excised in the same way in the form of a wedge.

To remove the nail, use pointed scissors, the nail plate is dissected along the midline along the entire length. To do this, one branch of pointed scissors is inserted between the nail plate and the bed of the nail, the other is placed on top. Each of the formed halves is fixed with a Kocher clamp and with an eversion movement, first one and then the other half of the nail plate is removed. After washing with an antiseptic solution, a bandage with a water-soluble ointment is applied to the nail bed.

Pic 86- Operations for paronychia (a, b, c), incisions for eponychia (d) and paronychia that has spread under the nail plate (e).



Pic 87-Operations with subungual panaritium. a - trepanation of the nail plate (1, 2); b—wedge-shaped excision of the distal part of the nail plate with simultaneous removal of the foreign body (1, 2); c - removal of the nail plate (1, 2); d — Canavela operation with total lesion of the nail fold: 1 — skin incisions, 2, 3 — excision of the base of the nail and nail fold, 4 — final view of the nail after the operation.



53. Purulent tendovaginitis.

With purulent tendovaginitis, a belated operation leads to the progression of the inflammatory process, vascular thrombosis, tendon necrosis. Compression by an inflammatory effusion of the mesentery of the tendon, followed by thrombus formation in the vessels feeding the tendon, as a rule, leads to necrosis of the tendon. Only early opening of the tendon sheath can prevent its necrosis. Difficulties in the treatment of tendovaginitis are that even with a timely performed, but technically incorrectly performed operation, the tendon may fall out of its vagina. Under such conditions, the tendon, deprived of blood supply, quickly undergoes maceration, drying and necrosis.

During the operation, one should not be limited to the evacuation of pus that has poured out of the wound. In all cases where the presence of a tendon felon cannot be ruled out, a thorough revision of the tendon sheath is necessary. A tense, fluctuating tendon sheath is characteristic of acute tendovaginitis. In doubtful cases, vaginal puncture helps to clarify the diagnosis: getting pus indicates purulent tendovaginitis.

The point for puncture of the tendon sheath is located in the middle of the palmar surface of the main phalanx. Use a thin needle and a syringe with a well-fitting plunger. The needle is set at an angle of 45-50 °, the skin is pierced, which provides a certain resistance, and, carefully passing the needle, the fibrous vagina is pierced, the passage of which also creates moderate resistance. The appearance of exudate, drops of pus indicate the presence of purulent tendovaginitis. Puncture is not always successful, so a negative result with an appropriate clinical picture does not exclude this diagnosis. When opening the vagina, a small amount of purulent discharge is released, but this eliminates tissue tension, i.e. conditions are created for a favorable course of the inflammatory process. However, one should not rush to excise the swollen tendon. It is necessary to wait for the appearance of a clear demarcation, since the contraction of the proximal end of the tendon after its intersection can serve as a source of infection spread to the hand.

With tendon felons, many approaches have been proposed that differ in the type of tissue dissection, length and localization. Tendon felons are most often opened with linear incisions made along the lateral surfaces of the phalanges.

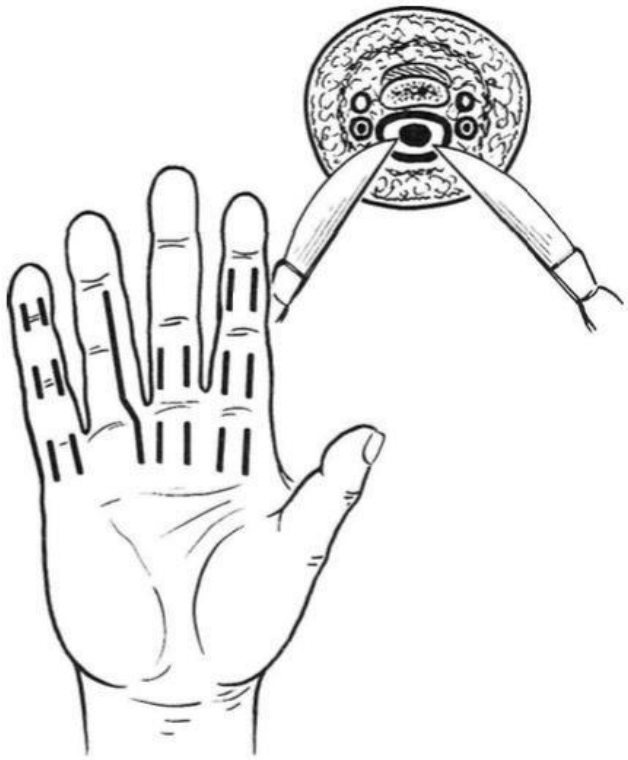
A. Kanavel suggests opening the tendon sheath with incisions along the radial edge of the palmar surface of the middle and main phalanges in case of purulent tendovaginitis. For revision and drainage of the blindly ending tendon sheaths of the II—IV fingers, the author recommends continuing the incision into the palm.

M. Iselin used through cuts at the radial and ulnar edges of the distal end of the metacarpal bone on both sides of the affected finger to open the tendon panaritiums of the II—IV fingers; he considered it sufficient to open only the blindly ending ends of the tendon sheaths and not to make an incision on the fingers; after tissue dissection, it is necessary to carry out through drainages on both sides of the opened tendon sheath.

VF Voyno-Yasenetsky recommends opening the blind end of the tendon sheath of the II—IV fingers with a palmar incision above the metacarpal head. In all cases, according to the author, after a careful examination of the wound, it is necessary to open the tendon sheath and make sure that the purulent-necrotic cavity drains well.

With any method of opening the tendon sheath, after dissecting the skin and fiber with pointed hooks, the wound is expanded and the fibrous sheath is exposed, which is dissected along the length of the skin incision.

Pic 88- The incisions used for tendinous felon on the II finger of the hand according to Clapp, on the III finger - according to Ryzhykh - Fishman, on IV - according to Kanavsl, on V according to Hartl.



54. Bone and articular panaritium.

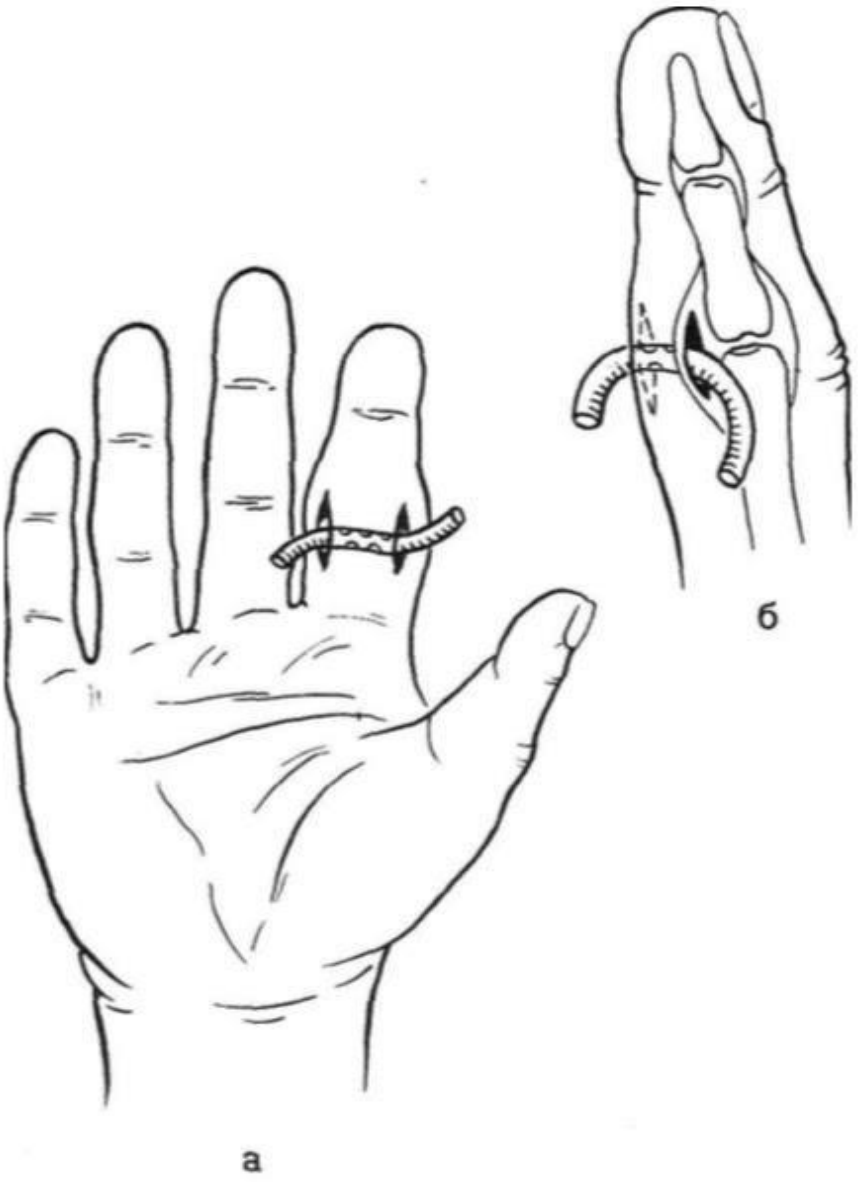
With articular panaritiums, two lateral parallel incisions are made on the back surface of the finger, which open the joint bag on both sides. After washing the joint with antiseptic solutions, it is drained. Depending on the degree of involvement in the process of cartilage and bone tissue, they are sparingly resected. In the postoperative period, immobilization of the finger with a plaster splint is mandatory until the complete elimination of acute inflammatory phenomena. In the future, to prevent stiffness of the joint, along with regular dressings, therapeutic exercises and various physiotherapeutic procedures are also used.

Bone panaritium is one of the serious types of purulent inflammation of the hand. Inflammation is more often localized in the region of the nail phalanx, therefore, the same incisions are used as in subcutaneous felons of the terminal phalanges of the fingers, most often arcuate incisions. When the middle and main phalanges are involved in the process, access to the bone is carried out linearly by lateral incisions.

After dissection of the skin with fiber and emptying of the purulent-necrotic cavity, a thorough revision of the phalanx is performed. Depending on the nature of the lesion, the presence of sequestration (marginal, central or total), either an economical resection of the bone within the healthy tissue is performed, or in an advanced case, the complete removal of the affected phalanx. Particular care must be taken with the first finger. During resection of the phalanx, it is necessary to strive for maximum preservation of the bone, since in the future it is possible to regenerate the phalanx from the preserved part. When resecting a bone, it is not advisable to use nippers, as they crush the bone and the inflammatory process spreads to the rest of the bone through the resulting cracks. Nippers remove bone spikes of a compact bone. Bone resection within healthy tissues should be done with a special saw or Gigli saw. With a central location of the sequester, the operation of choice should be considered curettage of the affected bone with a sharp spoon. At the site of the resulting bone defect, regeneration is possible in the future, while the function of the finger is only slightly limited in the first time after the patient is discharged to work.

Intervention on the bones in all cases must be completed with the immobilization splint until the acute inflammatory process is completely eliminated and granulation tissue appears.

Pic 89- Drainage with articular panaritium. Direct (a) and lateral (b) projections.



Conclusion

The introduction into clinical practice of modern scientific advances, new medical technologies and the active use of various novocaine blockades and minor surgical interventions significantly improve the results of treatment, shortening the period of recovery and rehabilitation of patients.

Today, the capacity of the physician to choose diagnostic methods has increased considerably. At the moment, there is a wide arsenal of novocaine blockades. Despite this abundance, each treatment has its own advantages and disadvantages. The manual covers indications, contraindications, possible complications and technical features that are not only performed in hospitals and outpatients. This makes it possible to determine the high requirements for the training of the doctors involved in the manipulation.

The importance of these novocaine blockades and minor surgical manipulations, as well as the understanding of the mechanisms of the effects on the patient's body, helps doctors to actively use these methods in clinical practice. The wider introduction of these manipulations into clinical practice will undoubtedly improve the quality of early diagnosis and timely preventive and curative care for the population.

Self-control tests

QUESTION 1
Primary surgical treatment includes:

A. Dissection of the wound
B. Treatment of the wound channel with iodine solution
C. Excision of the edges, walls and bottom of the wound
D. Imposition of a primary suture
E. Imposition of a secondary suture

QUESTION 2
Late primary surgical treatment is performed:

A. Only within 1 hour after injury
B. Only 6 hours after injury
C. In the first day after injury
D. During the second day after injury
E. Later 48 hours after injury

QUESTION 3
Anesthetics and drugs used in the implementation of therapeutic blockades includes:

A. Duranes
B. Naropin
C. Carbostezin
D. Tsinhocain
E. everything is correct

QUESTION 4
Specify the timing of the early secondary suture:

A. Up to 8 days
B. 8-15 days
C. 3-4 weeks
D. After 4 weeks
E. After 3 days

QUESTION 5
According to the purpose of the blockade, they are divided into:

A. Diagnostic.
B. Medical.
C. Preventive.
D. Mixed blockades
E. Regional

QUESTION 6
The option of tracheotomy is chosen by the surgeon depending on:

A. Stage of laryngeal stenosis.
B. The level of stenosis of the larynx.
C. The age and condition of the patient.
D. The structure of the thyroid gland.

QUESTION 7
What type of tracheostomy is performed for laryngeal stenosis in children?

A. Lower tracheostomy.
B. Upper tracheostomy.
C. Conicotomy.
D. Middle tracheostomy.

QUESTION 8
When conicotomy is dissected:

A. cricoid - thyroid ligament
B. scoop-supraglottic ligament
C. shield - arytenoid ligament
D. ring - arytenoid
E. sterno-thyroid

QUESTION 9
According to the level of dissection of the trachea relative to the isthmus of the thyroid gland, there are:

A. upper
B. middle
C. lower
D. according to Biork
E. everything is correct

QUESTION 10
Which of the indicated ligaments is located between the cricoid and thyroid cartilage

A. thyropharyngeal
B. signet ring - arytenoid
C. thyroid glandular
D. Conical
E. 5.thyroid hyoid

QUESTION 11
Which surgical method allows you to restore breathing faster than tracheostomy:
A. intubation
B. puncture of the trachea
C. conicotomy
D. cricotomy
E. tyrestomy

QUESTION 12
Cricothyrotomy is a safer method than tracheotomy, because:
A. in this place the trachea is located closest to the skin;
B. there are no large vessels;
C. no large nerves;
D. The manipulation is relatively easy to perform.
E. everything is correct

QUESTION 13
INDICATIONS FOR INSTALLATION OF A TRACHEOSTOMA:
A. Obstruction of the upper airways
B. Respiratory support for patients with prolonged mechanical ventilation
C. Instability of vital processes
D. cyphoscoliosis
E. everything is correct

QUESTION 14
During tracheostomy, the following special instruments are used, all except:
A. Luer’s cannula 1. Kanig’s cannula
B. Chassenyak's hook,
C. Trussot's dilator
D. Huber's needle

QUESTION 15
Cricothyrotomy is
A. opening the tracheal cavity
B. opening the larynx cavity by crossing the posterior wall
C. opening the larynx by dissecting the thyroid-cricoid membrane
D. opening the larynx by dissecting the cricoid cartilage.
E. All right

QUESTION 16
When performing blockade of intercostal nerves, the position of the patient
A. on the healthy side
B. sitting

C. standing
D. Trendelenburg position
E. Sims' position

QUESTION 17
Vertebral block according to Behler. INDICATIONS:
A. spinal fractures, mainly with damage to the posterior supporting complex.
B. interspinous ligamentosis
C. fractures of the spine, mainly the anterior supporting complex
D. sciatica
E. everything is correct

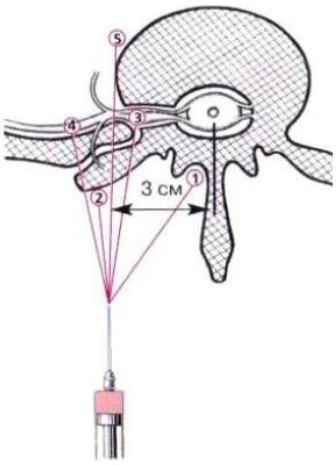
QUESTION 18
Vertebral block according to Schneck.
A. After skin anesthesia, a 10-12 cm needle is inserted paravertebrally, 3-4 cm laterally from the line of spinous processes, at an angle of 35 ° to the horizontal surface.
B. after skin anesthesia, a 5-7 cm long needle is inserted paravertebrally, 3-4 cm laterally from the line of spinous processes, at an angle of 45 ° to the horizontal surface.
C. after skin anesthesia, a 10-12 cm needle is inserted vertebrally, 1-2 cm away medially from the line of spinous processes, at an angle of 35 ° to the horizontal surface.
D. after skin anesthesia, a 5-7 cm long needle is inserted paravertebrally, 1-2 cm away medially from the line of spinous processes, at an angle of 35 ° to the horizontal surface.
E. After skin anesthesia, a 10-12 cm long needle is inserted paravertebrally, 3-4 cm away from the line of transverse processes, at an angle of 45 ° to the horizontal surface.

QUESTION 19
In case of paravertebral autonomic blockade.
A. after treatment and anesthesia of the skin, departing 2.5-3 cm from the midline, pierce the skin with a needle (10-12 cm long) and advance the needle at an angle of 40-45 ° to the base of the spinous processes.
B. after treatment and anesthesia of the skin, departing 2.5-3 cm from the paravertebral line, pierce the skin with a needle (8-10 cm long) and advance the needle at an angle of 40-45 ° to the base of the spinous processes.
C. after treatment and anesthesia of the skin, departing 2.5-3 cm from the midline, pierce the skin with a needle (8-10 cm long) and advance the needle at an angle of 30-35 ° to the base of the spinous processes.
D. after treatment and anesthesia of the skin, departing 2.5-3 cm from the paravertebral line, pierce the skin with a needle (10-12 cm long) and advance the needle at an angle of 30-35 ° to the base of the spinous processes.

E. after treatment and anesthesia of the skin, departing 2.0-2.5 cm from the midline, pierce the skin with a needle (10-12 cm long) and advance the needle at an angle of 40-45 ° to the base of the transverse processes.

QUESTION 20
In case of vertebral block according to Behler.
A. At the level of the fracture, 10-30 ml of 0.5% anesthetic solution is injected into the interspinous space above the broken vertebra after skin anesthesia to a depth of 2-4 cm.
B. At the level of the fracture, 5-10 ml of 0.5% anesthetic solution is injected into the interspinous space under the broken vertebra after skin anesthesia to a depth of 2-4 cm.
C. At the level of the fracture, 10-30 ml of a 2.5% solution of anesthetic is injected into the interspinous space above the broken vertebra after skin anesthesia to a depth of 3-5 cm.
D. At the level of the fracture, 5-10 ml of 2.5% anesthetic solution is injected into the interspinous space under the broken vertebra after skin anesthesia to a depth of 3-5 cm.
E. At the level of the fracture, 20-30 ml of a 2.5% anesthetic solution is injected into the interspinous space above the broken vertebra after skin anesthesia to a depth of 2-4 cm.

QUESTION 21
In a picture 5 shows the blockade



Pic 5

A. Paravertebral vegetative
B. Vertebral according to Schneck
C. Paravertebral intercostal
D. Vertebral according to Behler
E. Anterior vertebral

QUESTION 22
Chest blockade across Kazansky. INDICATIONS:
A. chest trauma
B. fractures of the sternum
C. concussions and contusions of the heart.
D. pneumothorax, purulent mediastinitis.
E. subcutaneous emphysema

QUESTION 23
When in carrying out chest block according to Kazansky
A. the patient lies on his back with a roller under the shoulder blades
B. the head is thrown back
C. the patient lies on his back with a roller under the head
D. the head is not thrown back
E. the patient lies on his back or on a healthy side

QUESTION 24
Chest blockade across Kazansky. Complications:
A. damage to the aorta
B. damage to the brachiocephalic vein
C. damage to the pleura, lung
D. damage to the thoracic duct
E. everything is correct

QUESTION 25
Subpectoral block according to Marev INDICATIONS:
A. intercostal neuralgia
B. addition to other types of local anesthesia during surgery on the upper limb
C. concussions and contusions of the lung
D. during surgery on the chest
E. everything is correct

QUESTION 26
When performing a subpectoral blockade according to Marev.
A. position of the patient lying on his back with an abducted hand.
B. position of the patient lying on his back with a given hand.
C. position of the patient lying on a healthy side.
D. position of the patient lying on his back, sideways or sitting.
E. position of the patient on a healthy side or sitting.

QUESTION 27
Epidural blockade (anesthesia)
A. refers to a regional type of pain relief

B. the injected anesthetic does not have a direct effect on the brain
C. local anesthetic is injected into the epidural space, which communicates with the spinal cord
D. use of narcotic analgesics for epidural anesthesia gives a short-term pain reliever the effect.
E. everything is correct

QUESTION 28
Epidural block (anesthesia). Possible complications:
A. collapse
B. respiratory failure
C. cardiac arrest
D. epileptic seizure
E. everything is correct

QUESTION 29
Spinal anesthesia
A. involves the introduction of an anesthetic solution into the subarachnoid space
B. causing a temporary block of somatic sensitivity, as well as blockade of motor conduction of the anterior and posterior roots of the spinal cord.
C. without causing a temporary block of autonomic sensitivity
D. depending on the level, spinal anesthesia is divided into low and high
E. everything is correct

QUESTION 30
When performing spinal anesthesia, the puncture is performed
A. while the patient is sitting or lying on his side
B. in the position of the patient lying on his side on a heap
C. with a well bent spine
D. thighs pressed to the stomach and head thrown back
E. everything is correct

QUESTION 31
Puncture of the pleural cavity is carried out in
A. V – VIII intercostal space along the middle axillary (axillary) line
B. V – VI intercostal space along the scapular line
C. II intercostal space along the midclavicular line
D. II intercostal space along the parasternal line
E. everything is correct

QUESTION 32
In case of hydrothorax, thoracocentesis is performed
A. in the 2nd intercostal space along the midclavicular line
B. along the upper edge of the underlying rib
C. in the 5th intercostal space along the scapular line
D. along the lower edge of the overlying rib
E. in the 7th intercostal space along the middle axillary line

QUESTION 33
In pneumothorax, thoracocentesis is performed
A. in the 2nd intercostal space along the midclavicular line
B. along the upper edge of the underlying rib
C. in the 2nd intercostal space along the parasternal line
D. along the lower edge of the overlying rib
E. in the 7th intercostal space along the anterior axillary line

QUESTION 34
Drainage according to Bulau refers to
A. passive drainage
B. active drainage
C. flow-flow drainage
D. mixed drainage
E. everything is correct

QUESTION 35
When performing epidural blockade
A. For blockade use a needle 10 cm long.
B. The needle is inserted between the spinous processes in the sagittal plane, strictly along the posterior midline.
C. The needle is advanced to a depth of 3-5 cm
D. The needle is advanced in the thoracic region - perpendicular to the spinal column
E. The needle is advanced in the lumbar region - at an angle, slightly deviating the needle downward, in accordance with the direction of the spinous processes.

QUESTION 36
Blockade of the round ligament of the liver. Technique
A. 2 cm up and 1 cm to the right from the navel
B. 2 cm up and 1 cm to the left from the navel
C. 2 cm down from the navel and 1 cm to the left
D. advance the needle perpendicular to the skin

E. advance the needle at an angle of 45o to the skin

QUESTION 37
Blockade of the round ligament of the liver. Indications:
A. acute cholecystitis
B. hepatic colic
C. Mallory-Weiss syndrome
D. renal colic
E. everything is correct

QUESTION 38
Indications for celiac plexus blockade:
A. chronic pain due to so-called surgical adhesions in the abdominal cavity
B. pain in chronic pancreatitis and Crohn's disease
C. chronic pain in malignant tumors in the upper abdominal cavity
D. in pancreatic cancer
E. all right

QUESTION 39
Puncture site during laparocentesis
A. along the midline 2-3 cm below the navel
B. in the lower 1/3 of the line connecting the upper anterior spine of the ilium to the navel on the left, less often on the right
C. along the midline 2-3 cm above the womb
D. along the midline 2-3 cm above the navel and 1 cm to the right
E. along the midline 2-3 cm above the navel and 1 cm to the left

QUESTION 40
The most common complication of bladder catheterization is
A. urinary incontinence
B. urinary tract infection
C. urinary retention
D. damage to the mucous membrane of the urethra
E. perforation of the bladder

QUESTION 41

The indication for venesection is:
A. the need for long-term administration of drugs intravenously
B. clinical death

C. the need for blood transfusion
D. the technical impossibility of venipuncture
E. the presence of keloid scars on the upper extremities

QUESTION 42
Venesection. Possible complications:
A. Phlebitis, thrombophlebitis
B. Cannula blockage
C. acute ischemia
D. plegia
E. everything is correct

QUESTION 43
Anoscopy is usually used to diagnose:
1) hemorrhoids,
2) anal fissures,
3) cryptitis,
4) ulcerative proctitis,
5) rectal neoplasms

A. correct answers 1,2 and 3
B. correct answers 1 and 3
C. correct answers 2 and 4
D. correct answer 4
E. correct answers 1,2,3,4 and 5

QUESTION 44
Anoscopy

A. a diagnostic technique that allows you to assess the state of the rectum at a distance of 12 cm from the anus
B. diagnostic technique that allows you to assess the condition of the rectum and sigmoid colon
C. diagnostic technique that allows you to assess the condition of the rectum at a distance of 5-8 cm from the anus
D. diagnostic technique that allows you to assess the condition of the colon at a distance of 20-25 cm from the anus

QUESTION 45
Case blockade of extremities according to Vishnevsky.INDICATIONS:
A. traumatic shock, open and closed injuries of the extremities
B. burns, frostbite
C. prolonged crush syndrome, syndrome of positional tissue compression

D. bites of poisonous snakes, inflammatory processes of the limbs
E. everything is correct

QUESTION 46
When performing the case blockade:

A. The lower limb is placed on a table or on a stretcher in an extension position
B. The upper limb is taken away from the body and placed on a special stand or an extension table
C. The lower limb is placed on a table or on a stretcher in a flexion position
D. The upper limb is brought to the body or laid on a special stand or side table
E. All right

QUESTION 47
When performing a blockade of the site of fractures of long bones
A. the hematoma is punctured with a needle, as evidenced by the flow of blood into the syringe during the reverse stroke of the piston
B. 100-150 ml of 0.5-1% anesthetic solution is injected
C. the analgesic effect can be prolonged by using the mixture " alcohol-anesthetic”
D. in case of multiple fractures, each segment is anesthetized separately, taking into account the total amount of anesthetic, increasing its concentration accordingly
E. everything is correct

QUESTION 48
When performing blockade of rib fracture sites
A. position of the patient sitting or lying on a healthy side.
B. after treating the skin with a solution of antiseptics, palpate the most painful point and the place of crepitus of bone fragments
C. inject 2-5 ml of 0.25-0.5% anesthetic solution,
D. tilting the tip of the needle caudally to the upper edge of the rib, inject another 3- 5 ml of a mixture of anesthetic and alcohol in a 1: 2 ratio.
E. All right

QUESTION 49
Intraosseous blockade.INDICATIONS:
A. operative interventions on the distal parts of the extremities, fractures, dislocations,
B. the long-term crush syndrome,
C. osteomyelitis, post-traumatic neurotrophic disorders.
D. everything is correct

QUESTION 50

Brachial plexus block according to Pashchuk

A. The patient is in the supine position, the head is in a neutral position
B. A tourniquet is applied at the level of attachment to the humerus of the pectoralis major muscle and the vastus dorsi muscle.
C. The place where the needle is inserted in the axillary fossa corresponds to the place of pulsation of the axillary artery, directly above the head of the humerus.
D. After an aspiration test, inject 50-80 ml of a 2% solution of anesthetic.
E. everything is correct

Test answers.

1 – A,C,D	26 – A
2 - E	27 – A,B
3 – E	28 – A, B
4 - B	29 – A,B
5 – A,B,C	30 – A,C
6 – D	31 – A,C
7 - A	32 – B,E
8 - A	33 – A,B
9 – A,B,C	34 – A
10 - D	35 – A,B
11 – C	36 – A,D
12 – E	37 – A,B
13 – A,B	38 – E
14 – E	39 – A,B
15 – D	40 – B
16 – A,B	41 – A
17 – A,B	42 – A,B
18 – A	43 – A
19 – A	44 – A
20 – A	45 – E
21 – B	46 – A,B
22 – A,B,C	47 – A,C,E
23 – A,B	48 – A,B
24 – A,B,C	49 – E
25 – A,B	50 – B,C

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