ЛД-21 ИН

Federal State Budgetary Educational Institution of Higher Education

"North Ossetian State Medical Academy" of the Ministry of health of the Russian Federation

Department of surgical diseases No. 2

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Methodical recommendation
Practical skills in surgery

Vladikavkaz

2020

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Methodological recommendation for 4th year students by practical skills: teaching guide for students, studying at “General Medicine” - North Ossetian state medical academy. - Vladikavkaz, 2020. - 30 p.

Teaching guide “Methodological recommendation for 4th year students by practical skills” is made for production practicein accordance with requirements of FSES HE, and is intended for students from medical universities and faculties, studying for specialty 31.05.01 General medicine.

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Approved and recommended for printing by Central Coordinational educational and methodical board FSES HE NOSMA of Russian Ministry of health (protocol № 4 30.08.20.)

Symptoms of acute surgical diseases:

Symptom of Volkovich-Kocher (it is found out by anamnestic).
The appearance of pain at the onset of the disease in the epigastric region or throughout the abdomen, followed by a shift to the right iliac region.

- **Symptom of Resurrection - a symptom of acute pancreatitis.**
  Description of the symptom of Voskresensky - weakening of the pulsation of the aorta in the left costovertebral angle.
  The cause of the symptom of Resurrection: infiltration of the retroperitoneal space in this area
  Clinical significance: acute pancreatitis

- **Rovsing's symptom - a symptom of acute appendicitis**
  Description of Rovsing's symptom - pain in the right iliac region with jerky palpation movements in the left iliac region.
  The cause of Rovsing's symptom: there is a redistribution of intra-abdominal pressure and irritation of the interoreceptors of the inflamed appendix
  Clinical significance: a symptom of acute appendicitis

- **Symptom Sitkovsky - a symptom of acute appendicitis**
  Description of Sitkovsky's symptom - when the patient turns to the left side, pain occurs in the right iliac region.
  Cause of Sitkowski's symptom: irritation of interoreceptors as a result of pulling on the mesentery of the inflamed appendix
  Clinical significance: a symptom of acute appendicitis

- **Symptom of Bartemier - Michelson - a symptom of acute appendicitis**
  Description of the symptom of Bartemier - Michelson - increased pain on palpation in the position of the patient on the left side.
  The cause of the symptom of Bartemier - Michelson: tension of the mesentery of the appendix
  Clinical significance: a symptom of acute appendicitis

- **Obraztsov's symptom - a symptom of acute appendicitis**
  Description of Obraztsov's symptom - pain in the right iliac region when the patient raises the straightened right leg.
  The cause of Obraztsov's symptom: irritation of the receptors of the inflamed appendix with a voltage of m. psoas major and muscles of the anterior abdominal wall
  Clinical significance: a symptom of acute appendicitis

- **Shchetkin-Blumberg symptom - a symptom of peritoneal irritation**
  Description of the Shchetkin-Blumberg symptom - when the anterior abdominal wall is palpated, with a quick pull of the doctor's fingers, the patient experiences a sharp pain.

The cause of the Shchetkin-Blumberg symptom: irritation of the interoreceptors of the parietal peritoneum
Clinical significance: symptom of peritoneal irritation

- **Symptom of "falling drop" and bursting bubbles"** – pathological symptoms; determined by auscultation of the abdominal cavity using a phonendoscope.
  The symptom of a "falling drop" can be determined by palpation and auscultation: with slow pressure and slow release, the noise of a "falling drop" appears.

- **Val's symptom** – with deep palpation of the abdominal wall, you can feel the stretched bowel loop. In some cases, for example, in slender patients, swelling can be seen on examination.
  Val's symptom is characteristic of acute intestinal obstruction.

- **Symptom of Kivulya** – on percussion, a tympanic sound with a metallic tinge can be heard over a distended bowel loop. Kivul's symptom is characteristic of acute intestinal obstruction.

- **Symptom of the Obukhov hospital (symptom of Grekov**) – balloon-like expansion of the empty rectal ampulla and weakness of the rectal sphincter. The symptom of the Obukhov hospital (Grekov's symptom) is characteristic of acute intestinal obstruction.

- **Sklyarov's symptom** - splashing noise in the intestine with a slight concussion (symptom of acute intestinal obstruction)

- **Falling drop symptom** — the sound of a falling drop of liquid, determined by auscultation against the background of peristalsis noises with intestinal obstruction.

- **Ker's symptom** - increased pain at the height of inspiration during normal palpation in the right hypochondrium (acute cholecystitis)

- **Symptom Mayo-Robson - a symptom of acute pancreatitis**
  Description of the Mayo-Robson symptom - pain on palpation in the left costovertebral angle.
  Cause of Mayo-Robson symptom:
  Clinical significance: acute pancreatitis

- **Ortner's symptom - a symptom of acute cholecystitis**
  Description of Ortner's symptom - soreness when tapping along the right costal arch
  The cause of Ortner's symptom: irritation of the interoreceptors of the inflamed wall of the gallbladder
  Clinical significance: a symptom of acute cholecystitis

- **Symptom of Mussi-Georgievsky or phrenicus-symptom - a symptom of acute cholecystitis, perforated ulcer**
  Description of the Mussi-Georgievsky symptom (phrenicus symptom) - pain on palpation between the legs of the sternocleidomastoid muscle.
  The cause of the Mussi-Georgievsky symptom (phrenicus symptom): irritation of the interoreceptors of the diaphragmatic portion of the peritoneum
  Clinical significance: symptom of acute cholecystitis and perforated ulcer

Pleural puncture.

Pleural puncture - puncture of the chest wall and parietal pleura with a hollow needle or trocar for the purpose of diagnosis (diagnostic puncture) and (or) treatment (therapeutic puncture). Diagnostic tasks are often combined with therapeutic ones.

Indications for puncture of the pleural cavit: performed for the purpose of diagnosis, removal of fluid or air, administration of medicinal substances or air for therapeutic purposes.

Accessories for puncture of the pleural cavity: syringe 20 ml with a needle; a thick puncture needle with a thickness of at least 0.1 cm and a length of 8-15 cm with a short pointed end, with a rubber or PVC tube put on the cannula, which is tightly connected to the cannula of a 20 ml syringe; hemostatic clamp; novocaine solution 0.5% - 50 ml; alcohol; tampons; leuco plaster.

Technique of puncture of the pleural cavity: in the presence of air in the pleural cavity, the puncture is carried out in the 2nd intercostal space along the mid-clavicular line.

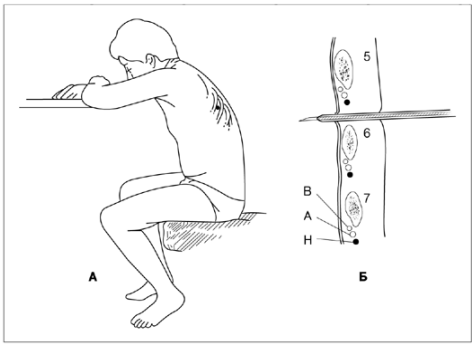
In the presence of fluid or for diagnostic purposes, a puncture is performed in the 7th intercostal space along the posterior axillary line. In surgical practice, one often encounters limited pneumo- and hemothorax, pleural empyema. In these cases, it is better to choose a point for puncture on the basis of clinical (place of shortening of percussion sound) and radiological data.

The position of the patient is sitting, with the arm placed behind the head on the side of the puncture. The rules of asepsis are strictly observed. The skin is treated with an antiseptic (iodine solution 3%, cutasept, sterilium). At the puncture site, local infiltration anesthesia with novocaine is performed with the creation of a lemon peel. A sterile puncture needle is taken and its cannula is connected to a rubber or PVC tube, which is clamped with a clamp. The needle is carried out at the level of the upper edge of the rib, because along its lower edge are the vessels and nerves of the intercostal space. Given the mobility of the chest, before inserting the needle, the skin is fixed to the upper edge of the rib with the index finger of the left hand. Perpendicular to the skin, the needle is carried in depth, anesthetizing the intercostal muscles along the way. If the needle rests against the rib, it is slightly pulled towards itself and, together with the skin, is lifted up to the upper edge of the rib. Sudden pain and at the same time a feeling of sinking indicate piercing of the parietal pleura. Further advancement of the needle is unacceptable. Then the free end of the tube is connected to the

cannula of the syringe (20 ml), the clamp is removed and the contents of the pleural cavity are aspirated. After the syringe is completely filled with contents, the connecting tube is clamped with a clamp, disconnected and the syringe is emptied. Connect the cannula of the syringe to the tube again, remove the clamp and aspirate the contents of the pleural cavity. This loop can be repeated as many times as necessary. At the same time, a single removal of more than 1000 ml of fluid from the pleural cavity is not recommended due to the displacement of the mediastinum and the development of collapse. The exception is blood, which must be removed completely. If there are indications, antiseptics and antibiotics can be introduced into the pleural cavity through a puncture needle. At the end of the puncture, the needle is removed. The puncture site is treated with an antiseptic and sealed with a small swab and adhesive tape.

The fluid obtained from the pleural cavity is poured into a sterile test tube for further research - actoriological, cytological (atypical cells), biochemical, etc.

To control the completeness of the aspiration of the contents from the pleural cavity, along with the data of percussion and auscultation, an x-ray examination is mandatory. Pleural puncture is recommended to be performed on a dressing or operating table with devices for support and abduction of the shoulder on the side of the puncture.



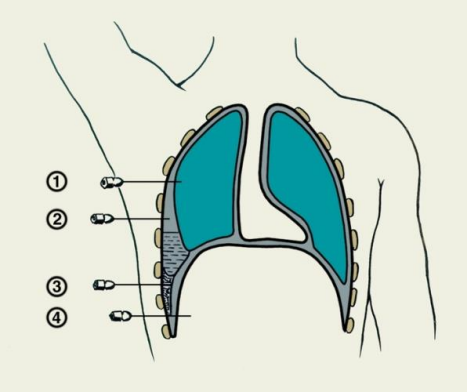
Contraindications for puncture of the pleural cavity: obliteration of the pleural cavity.

Possible complications after puncture of the pleural cavity: with a significant advance of the needle into the pleural cavity, damage to the lung or abdominal organs through the diaphragm is possible. The lung wound, as a rule, closes on its own without surgical intervention, but if intestinal contents are found in the lumen of the syringe during puncture and dynamic observation over the next period (2-4 hours), peritonitis is detected, laparotomy is indicated with suturing the defect in the intestinal wall. If, in case of lung injury, the phenomena of tension pneumothorax, confirmed by X-ray, are detected, drainage with active aspiration is shown in the second intercostal space along the midclavicular line.

Bleeding from the puncture canal, even if it is due to damage to the intercostal vessels, is easily stopped by simple pressure. If a hemothorax occurs, thoracocentesis with aspiration is indicated, and if it is ineffective, thoracotomy is indicated.

If during the puncture of the pleural cavity a continuous flow of blood through the needle is obtained, the puncture should be immediately stopped and the patient operated on. Cardiac puncture through the pericardium can cause hemopericardium and pericardial tamponade, which requires surgical treatment. Damage to the large vessels of the chest cavity leads to hemothorax, requiring X-

ray control and repeated thoracocentesis with aspiration of blood from the pleural cavity, and in some cases, surgical treatment.



Schematic representation of possible options for incorrect insertion of the needle during pleural puncture: 1 - the needle is inserted into the lung tissue; 2 - the needle is inserted into the pleural cavity above the fluid level; 3 — the needle is entered into unions between sheets of a pleura of a costal and phrenic sine; 4 - the needle is inserted through the costophrenic sinus and diaphragm into the abdominal cavity.

Bladder catheterization

Bladder catheterization is performed to empty it. Catheterization of the bladder is more common in men, since the anatomical structure of the female urethra very rarely leads to urinary retention. Elastic rubber or metal catheters can be inserted into the bladder.

Indications. Urinary retention.

Contraindications. Fresh injuries of the urethra, acute urethritis, acute prostatitis.

Technique. Before inserting an elastic catheter through the urethra into the bladder, it is necessary to treat the external opening of the urethra with a cotton ball moistened with a weak solution of furacilin or boric acid. Bladder catheterization in women is not difficult. When catheterizing the bladder in men, the penis is taken in the left hand, and in the right - with sterile tweezers - a catheter moistened with glycerin or liquid paraffin. The distal end of the catheter is placed between the IV and V fingers of the right hand, and the proximal end is slowly, without violence, introduced into the bladder with tweezers. Bladder catheterization in men with a metal catheter is a responsible manipulation and should be done with extreme caution.

The patient lies on his back, the doctor stands on the left. Having processed the external opening of the urethra, the penis is lifted with the left hand and slightly pulled, the metal catheter is inserted with the beak facing down with the right hand and carefully advanced inward to the external sphincter. Here there is usually an obstacle that can be overcome by placing the penis strictly in the middle line and gradually lowering it downwards.

Complications. With a rough conduct of this manipulation, it is possible to damage the wall of the urethra, cause bleeding from the urethra (urethrorrhagia), create a false passage.

Treatment for open pneumothorax.

With open pneumothorax, there is a gaping wound of the chest wall, accompanied by damage to the parietal pleura and communication of the pleural cavity with the external environment. At the same time, the lung collapses and turns off from breathing. With torn patchwork wounds, valvular prevothorax often develops: at the moment of inhalation, the wound expands and air enters the chest cavity, at the moment of exhalation, the edges of the wound collapse and the air does not have time to escape. All this leads to oscillations of the mediastinum, and with the development of high pressure in the pleural cavity - to the displacement of the mediastinum in a healthy direction. Bilateral open pneumothorax in the absence of assistance leads to death.

Urgent care.

- Giving an elevated position to the patient

- applying an occlusive dressing

- Giving oxygen, cardiac funds.

Apply an occlusive dressing. Treat the edges of the wound with 5% tincture of iodine and close the wound with several large sterile napkins, which are covered in a tile-like manner with strips of plaster. In the absence of a patch, a piece of oilcloth, food cellophane, which is attached to the chest with a bandage, is placed on top of the bandage.

It is necessary to drain the pleural cavity through the wound in case of valvular pneumothorax, transfusion of blood substitutes in case of shock.

Hospitalization in the trauma or thoracic department.

Drainage of the pleural cavity according to Bulau

Indications:

- removal of liquid contents from the pleural cavity / inflammatory exudate, pus, blood /;
- removal of air from the pleural cavity.

It is used after operations on the lungs and mediastinal organs to prevent air compression of the lungs and removal of wound exudate, spontaneous or traumatic pneumothorax, hydro- and hemothorax, purulent pleurisy.

The method is based on long-term drainage according to the siphon principle.

To remove air, drainage is installed at the highest point of the pleural cavity - in the 2nd intercostal space along the mid-clavicular line, with total pleural empyema - at the lowest point /5-7th intercostal space along the midaxillary line/. For drainage of limited cavities, drainage is introduced into its projection. Two drains can be installed at the same time - one for removing air, the other for liquid content. Or, through one drain, the flushing fluid is introduced, and through the other it flows out.

Drainage of the pleural cavity should be preceded by its puncture, which allows you to verify the presence of pleural contents and its nature.

Technique. The patient sits down on the dressing table, dangling his legs and placing them on a stand.

From the side opposite to the puncture, emphasis is placed on the body / lifting the head end of the table panel, or placing a stool covered with a pillow with a sheet, or supporting the patient /. The hand from the side of the chest to be drained is thrown onto a healthy shoulder girdle. The doctor, wearing sterile gloves and a mask, treats the drainage site as if it were an operation. The skin, subcutaneous tissue and intercostal muscles are anesthetized. After changing the needle, the pleural cavity is punctured with the same syringe slightly above the upper edge of the selected rib, so as not to injure the intercostal artery. Entering the pleural cavity is determined by the feeling of failure. By pulling the plunger of the syringe towards you, you are convinced of the presence of contents in the pleural cavity. After that, the needle is removed and a skin incision up to 1 cm long is made in this place.

Further introduction of the drainage tube into the pleural cavity can be carried out through a trocar or with a clamp.

If a trocar is used, it is inserted into the pleural cavity through a previously made incision with rotational movements / until a feeling of failure appears /. Then the stylet is removed and a drainage tube is inserted through the trocar sleeve into the pleural cavity, clamped with a clamp.

This is done quickly so that as little air as possible enters the pleural cavity, which leads to a collapse of the lung. Drainage is prepared in advance. The end of the drainage, intended for insertion into the pleural cavity, is cut obliquely. 2-3 cm away from it, 2-3 side holes are made. 4-10 cm above the upper lateral opening, which depends on the thickness of the chest and is determined by pleural puncture, a ligature is tightly tied around the drainage. This is done to control the position of the drain so that its last hole is in the pleural cavity and the drain is not bent. After removing the sleeve, the tube is carefully pulled out of the pleural cavity until a control ligature appears.

A U-shaped suture is placed around the tube to seal the pleural cavity. The seam is tied with a bow on the balls. The tube is fixed to the skin with 1-2 sutures. Pay attention to the tightness of the seams around the tube - it should be tightly covered by soft tissues, not letting air in when coughing and straining.

The insertion of the drainage tube with a clamp can be performed in several ways.

One of the methods involves finger control of penetration into the pleural cavity. To do this, under local anesthesia in the intercostal space /one rib below the intended location of the drainage/ make a skin incision up to 2 cm long. Long forceps with closed branches over the overlying rib penetrate into the pleural cavity. The jaws of the clamp are carefully opened, the subcutaneous canal is expanded. Then the clamp is removed and a finger in a sterile glove is inserted into the channel. The existing adhesions between the lung and the pleura are separated, if there are blood clots, they are removed. Ascertain the penetration into the pleural cavity by the sensation of the lung swelling during inhalation. A drainage tube is inserted into the pleural cavity. The pleural cavity is sealed, as when draining it with a trocar. This method is less dangerous than drainage of the pleural cavity with a trocar.

In another method, drainage is inserted blindly into the pleural cavity. However, the likelihood of damage to the lung is unlikely, since the drain is installed in a cavity in which there is no lung tissue (the lung is compressed). With this method, through the incision of the skin and subcutaneous tissue, a drainage tube is inserted into the pleural cavity with rotational movements, clamped with the tip of a clamp with sharp branches. After feeling a sense of failure, the clamp is slightly opened and the drain is pushed with the other hand to the required depth / reference mark /. Then the clamp is closed and carefully removed, holding the tube at the required level.

After the introduction and sealing of the drainage, pleural exudate is pumped out through it with a syringe. At the outer end of the drainage tube, a safety valve is fixed - a finger from a rubber glove with a slit 1.5-2 cm long.

This glove valve is completely immersed in a jar - a collection with an antiseptic solution /furatsilin, rivanol/. The tube is fixed to the jar so that the valve does not pop up and is always in solution. The valve prevents air and the contents of the collection jar from entering the pleural cavity. During inspiration, due to the negative pressure in the pleural cavity, the collapsed edges of the valve will prevent the solution from being sucked into it. When exhaling, the contents of the pleural cavity will freely flow through the valve into the container for collecting the discharge.

The outer part of the drainage system should be of sufficient length so that when the position of the patient's body changes, the drainage is not removed from the antiseptic bottle. Drainage works effectively if the collection jar is located 50 cm below the surface of the patient's body.

Before removing the drainage tube, a U-shaped suture is untied, the patient is asked to hold his breath, the tube is removed at this time and the U-shaped suture is tied again, but finally by 3 knots and without a ball.

When caring for pleural drainage according to Bulai, it is necessary to ensure that there is no violation of its tightness. The reasons for the depressurization of the pleural cavity can be: partial loss of the drainage tube until one of the side holes appears above the skin, violation of the integrity of the tube, pulling up the glove valve with its location above the level of the antiseptic solution in the vial, failure of the U-shaped seam.

With pneumothorax, the pleural cavity drains into the 2nd intercostal space along the midclavicular line. This is done with a thick needle, through the lumen of which a drainage tube with a diameter of 2-3 mm is inserted. With constantly accumulating air, a tube up to 5 mm in diameter is inserted through the trocar.

Passive drainage can be combined with periodic / fractional / washing of the pleural cavity. It is most effective to do this in the presence of two drainages: through a thinner one, the washing liquid is injected, through another, wider diameter, it flows out. Flushing can be done with a syringe or with an intravenous system connected. The amount of a single injected solution depends on the volume of the cavity.

Disadvantages of drainage of the pleural cavity according to Bulau

- slow emptying of the pleural cavity from exudate, since this drainage is passive;

- fibrin and thick pus often clog the lumen of the drainage tube; - with narrow intercostal spaces, the lumen of the tube can be significantly compressed;
- presence of an air plug in the lumen of the drainage tube
- stops the functioning of the drainage;
- prolonged presence of drainage in the pleural cavity can lead to the formation of chest wall phlegmon around the tube.
- The most effective method of drainage of the pleural cavity is aspiration. It is used to evacuate contents from large cavities or to rapidly accumulate exudate..

Tracheostomy.

Tracheotomy — This is an operation to cut the trachea to introduce a special metal cannula into the lumen of it. It is indicated for difficulty breathing due to narrowing of the lumen of the trachea or larynx (stenosis). There are upper, lower and middle tracheotomy in relation to the isthmus of the thyroid gland. In connection with the anatomical age features in children, the lower tracheotomy is preferable, and in adults - the upper tracheotomy.

Preparation for the operation. The patient is placed on his back with his head thrown back. A roller is placed under the shoulders so that the neck does not sink and access to the trachea is more convenient. Of the special instrumentation, single-pronged sharp tracheal hooks, blunt hooks, a tracheal dilator and tracheotomy cannulas are required (see Otorhinolaryngological Instrumentation).

Operation technique (Infiltration anesthesia is performed with 30 ml of 0.5-1% novocaine solution with the addition of 0.1% adrenaline solution (1 drop for each 1 ml of novocaine solution). The incision is strictly along the midline of the neck from the protrusion of the thyroid cartilage (Adam's apple) down by 4-6 cm. Cut the skin, subcutaneous tissue, aponeurosis, bluntly divide the white line between the sternohyoid muscles. The muscles are moved apart with blunt hooks. At the cricoid cartilage, along its lower edge, the fascia is cut with a transverse incision, the isthmus of the thyroid gland is pulled downward. Fix trachea with sharp single-toothed hooks on both sides and cut 2-3 tracheal rings with a scalpel upwards. A Trousseau dilator and then a cannula are inserted into the incision. The incision is sutured. Monitor the thoroughness of hemostasis.

Lower tracheotomy is more difficult and dangerous, because the trachea lies deeper and there is a dense network of venous vessels on it. A skin incision for a lower tracheotomy is made from the cricoid cartilage to the jugular notch. The isthmus of the thyroid gland is pulled upward.

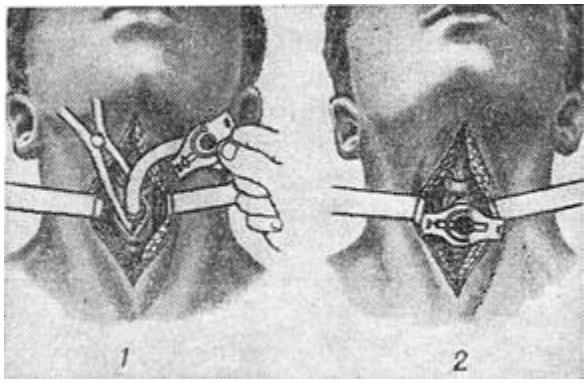
One of the options for the operation is a transverse tracheotomy: the trachea is opened with a transverse incision along the lower edge of the first ring and a cannula is inserted.

If during tracheotomy it is not possible to bypass the sharply enlarged thyroid gland, then its isthmus is crossed between two previously applied ligatures or hemostatic clamps. The dissection of the trachea at the level of the transected isthmus of the thyroid gland is called the middle tracheotomy.

If asphyxia occurs during tracheotomy, camphor or caffeine, lobelia are administered. In these cases, the trachea is first opened and only then artificial respiration is started. Complications of tracheotomy - bleeding, subcutaneous emphysema, aspiration pneumonia. Subcutaneous emphysema is recognized by the characteristic sensation of crunching on palpation of the skin, swelling. In this case, it is necessary to remove some of the sutures in the wound and loosen the bandage.

Restoration of the lumen of the trachea and larynx makes it possible to decannulate, i.e., remove the tube from the trachea, followed by wound healing. If it is necessary to keep the hole in the trachea permanently, a tracheostomy is done by suturing the skin along the edges of the hole in the trachea to the mucous membrane. Then, after the tube is removed, the hole in the trachea (tracheostomy) is preserved.

Care of a tracheotomy patient consists in monitoring the lumen of the tube and the condition of the skin around the cannula. Several times a day, the inner tube of the cannula is removed and its lumen is cleaned. To do this, a piece of gauze bandage is passed into the tube and moved to one side or the other. The tube is then boiled and re-inserted into the outer tube of the cannula in the trachea. The skin around the tube is wiped with alcohol, lubricated with fat (emulsion, oil), and a napkin is placed under the tube, consisting of 4-6 layers of gauze, having the shape of a rectangle, cut in half from top to bottom so that each of the two resulting strips of gauze can be placed both sides of the tracheotomy cannula. It is impossible to completely remove the cannula from the trachea earlier than after 5-7 days, since the opening of the trachea will immediately narrow and it will not be possible to insert the cannula back without a dilator.



Upper tracheotomy: 1 - introduction of a tracheotomy tube; 2 - tracheotomy tube inserted .

Stopping nose bleeding:

a) bleeding from the soft integument of the nose is stopped by the application of cosmetic sutures or a light pressure bandage; b) in case of fractures of the bones of the nose - set the bones, strengthen with a pellot and carry out an anterior tamponade, which is carried out with narrow gauze tampons; c) bleeding from the inner walls of the anterior part of the nasal cavity is stopped by anterior nasal tamponade; d) bleeding from the posterior sections of the nasal cavity is stopped by tamponade to the entire depth of the nasal passage, the tampon is inserted using a button probe or anteroposterior tamponade according to Belloc is performed (leave the tampon for 48 hours). Bleeding can be stopped if a rubber or PVC tube 7-8 mm in diameter and 12 cm

long (dochoan) is inserted into the lower nasal passage or inflatable tampons made of rubber or plastic film are inserted. The described methods stop bleeding from the paranasal sinuses..

There are many ways to stop nose bleeding**.**

1. Pressing the wing of the nose against the septum quickly stops bleeding from the locus Kiesselbachi.

2. Cauterization of the bleeding place. First, by examining the nasal cavity, it is necessary to establish the place of bleeding. A cotton swab soaked in a solution of cocaine-adrenaline or even adrenaline alone is applied to this place. After a minute or two, when the vessels constrict and the bleeding has stopped, you can already accurately determine the place of the bleeding vessel and cauterize it. Cauterization is carried out by one of three substances: sol. argenti nitrici 30%, acidum trichloraceticum, acidum chromicum. Chromic and trichloroacetic acids are crystalline substances that absorb moisture from the air and soon turn into a solution. A stick with a wound piece of cotton wool is wetted in one of the cauterizing solutions. This stick stews the bleeding place. After cauterization, a cotton wool with menthol ointment is applied to the scab, the same ointment is prescribed to the patient for injection into the nose on a cotton wool 2 times a day for 10 minutes for 5 days. If this is not done, then crusts then appear at the site of cauterization, which, if detached, can lead to new bleeding. Cauterization can also be done with a red-hot galvanic cautery, but we have never felt a particular need for such cauterization..

Packing of the nasal cavity is applicable whenever bleeding is profuse and it is not immediately possible to determine the place of bleeding. For plugging, you need: a nasal mirror, a nasal forceps or tweezers, a sterile turunda 1.5 cm wide. The end of the turunda is inserted deeper into the middle nasal passage, the turunda is intercepted with a forceps and inserted into the lower nasal passage, the next bend is again into the middle nasal passage, i.e. until the turunda fills the entire nasal cavity. The excess end of the turunda is cut off. A sling-like bandage is applied to the nose. Tamponation according to Mikulich (insertion of a gauze bag into the nose and stuffing it with turundas), the introduction of rubber tubes into the nasal cavity, in addition to turundas to maintain uniform pressure, according to the author, has neither special significance, nor special advantages over simple tamponing.

The tampon is removed from the nose after 1-2 days; if at the same time bleeding reappears, then a new tampon is introduced, but more loose.

Bellocovian tamponade is applicable almost exclusively after removal of the nasopharyngeal fibroma. The method consists in the fact that several napkins are rolled up into a voluminous tampon, approximately the size of the nasopharynx. The tampon is tied with a strong silk thread in the form of a bag, the long ends of the thread remain. A rubber catheter is inserted through the nose into the nasopharynx, its end is pulled out through the mouth. Swab threads are tied to the end of the catheter. By pulling on the catheter, the tampon threads are removed from the nose, and behind them it is drawn into the nasopharynx and the tampon. The introduction of the tampon is assisted by the finger of the other hand. The ends of the threads pulled out of the nose are tied over the second gauze pad. Thus, the nasal cavity is closed both in front and behind with tampons. The use of Belloc tamponade is dangerous in terms of frequent subsequent ear disease, technically difficult and has no advantages over simple nasal tamponade. That is why Bellocov's tamponade is almost never used by otolaryngologists, and Belloc's tube with a clock spring often serves only as an adornment of our

museums, eloquently speaking of how much ingenuity was shown by surgeons of the old time for the development of science.

In 1936, the author's clinical assistant, M. P. Mezrin, gave Belloc's tamponade a completely new form by offering his pneumatic tampon..

Pneumatic tampon MP Mezrin is made from a thin rubber catheter. At the end of it, a rubber fingertip is tied in two places. The second such fingertip is tied at a distance of 8-10 cm from the first (counting from the middle to the middle of the fingertip). At the site of tying the threads, pieces of a glass tube are inserted into the catheter so that the ties do not pinch the catheter. Inside the fingertips, small holes are cut in advance in the wall of the catheter. Ready swabs are sterilized by boiling and stored in a sterile container. When necessary, the tampon is removed, inserted through the nostril and pushed through the lower nasal passage to the nasopharynx. Air is blown into the free end of the catheter, which exits through the holes into the cavity of the fingertips and inflates them in the form of two bubbles. The posterior bladder tightly closes the choana from behind, and the anterior one closes the nostril. After inflation, the end of the catheter is clamped with a pean or in some other way. The cheapness and ease of manufacture of a tampon, its easy insertion through the nasal cavity (it slides through the blood), the safety of use and the reliability of its action - all this has a huge advantage over the Bellocov tamponade and makes the method especially valuable in the practice of first aid, in a field and combat situation. .

The method was tested in the author's clinic, on hundreds of patients, tampons were sometimes performed by sisters, and not a single failure or complication that could be attributed to the influence of the tampon was observed. To remove the tampon, it is enough to release the clamp and release the air, the bubbles subside, and the tampon slips out of the nose easily and without injury..

1. Diathermocoagulation is applicable for severe arterial bleeding, when a simple tamponade or the use of a pneumatic tampon does not stop the bleeding, in short, in extremely rare cases. The active electrode is in the form of a ball 0.5-0.75 cm in diameter. The second electrode in the form of a lead plate is bandaged to the shoulder or back of the neck. The current strength is 1-1.5 amperes. The gauze swab is quickly pulled out of the nose, an active electrode is inserted, and a current is passed. One holding the electrode over the bleeding surface is already enough for the blood in the vessel to coagulate. After diathermocoagulation, repeated bleeding is possible due to washing out of the thrombus. Diathermocoagulation is also applicable for reduced blood clotting.

Blood transfusion in small doses (75-100 cm3) sharply increases blood clotting, partially compensating for its loss. Therefore, blood transfusion is practiced in severe and persistent nosebleeds after all other measures have been taken.

Along with transfusion, other means are also applicable to increase blood clotting (subcutaneous administration of serum, gelatins, intravenous infusion of calcium chloride, administration of vitamin K, etc., see the chapter on tonsillectomy).

In addition to the above methods for stopping nosebleeds, many other methods and means have been proposed, for example, detachment of the perichondrium of the septum at the site of bleeding, injection of various drugs under it (quinine, etc.) and many others.

According to the author, these methods and means are at least redundant, not to mention the fact that cartilage necrosis sometimes occurs after injection under the perichondrium.

When bleeding, in addition to local remedies, we must not forget the causal treatment.

Puncture of the abdominal cavity with ascites

Abdominal Puncture - It is carried out to remove excessive accumulation of fluid (ascites), the introduction of oxygen during laparoscopy, the creation of pneumoperitoneum for diagnostic purposes.

There is no space containing air in the peritoneal cavity. Normally, there is a small amount of serous fluid between the abdominal organs and at the bottom of the small pelvis. The space between the costal arches and the edges of the ilium is occupied by hollow organs. Between the umbilicus and the pubic symphysis are located mainly the omentum and the small intestine, attached to the posterior abdominal wall by the mesentery. The small intestine almost always contains gases and liquid. The anterior abdominal wall, due to its contractility, exerts strong pressure on the contents of the abdominal cavity. Intraperitoneal pressure is usually positive, it rises even more with overflow of hollow organs or an increase in parenchymal ones, as well as with accumulation of fluid in the peritoneal cavity. This is accompanied by a violation of blood and lymph circulation, digestion, urination. With severe ascites, the abdomen is tense and protruding, especially below. In the vertical position of the patient, percussion of the abdomen allows you to establish a complete dullness with an upper horizontal level, and above it - tympanitis. In this position, the fluid is located directly behind the anterior abdominal wall. The loops of the small intestine and the greater omentum "float" in this fluid.

In the case of a touch of a piercing instrument, elastic, slippery and very mobile loops of the small intestine and the edge of the omentum, escaping, remain intact. However, wounding the intestinal loop with a stabbing instrument (stylet trocar) is quite possible when it is fused with the parietal peritoneum of the anterior abdominal wall. It should be remembered that very rapid extraction of a large amount of fluid from the peritoneum can lead to a sharp drop in intra-abdominal pressure with dilatation of blood vessels and collapse.

Contraindications: adhesive disease of the abdominal cavity due to previous operations, acute peritonitis, pregnanc.

Technique. For puncture of the abdominal cavity, long puncture needles can be used, but more often trocars with a caliber of 4–6 mm are used, equipped with a stylet mandrin. The most convenient and safest are special abdominal trocars with a safety shield and a side valve. The puncture site is the hypogastric region along the midline of the abdomen in the middle of the distance between the navel and the pubis or outward from the middle of the distance between the navel and the left anterior superior spine (Monroe-Richter line). Before the puncture, the patient's bladder must be emptied. The day before, in order to maximize bowel emptying, a laxative is given.

The position of the patient - sitting with lowered legs with support for the arms and back. At the target point with a thin needle, local anesthesia of all layers of the abdomen with a 0.25% solution of novocaine is performed. The skin is treated as before the operation. To gradually tighten the abdomen as the fluid is evacuated, long towels are applied below and above the intended puncture point.

The operator sits opposite and to the right of the patient. After anesthesia with a scalpel, an incision of the skin 8-10 mm long is made. Then, a trocar is taken into the right hand with a rubber tube put on the side cannula. The stylet handle rests against the palm, the index finger rests on the trocar cannula at a distance from its end, corresponding to the estimated thickness of the anterior abdominal wall. The direction of the puncture is strictly perpendicular to the surface of the Skin. With a sharp movement, the trocar pierces the abdominal wall. The moment the instrument enters the abdominal cavity is felt by the sudden cessation of resistance. After that, with a slight rotational movement, the trocar is penetrated to the desired depth. Then, fixing the cannula with the finger of the left hand, the stylet is quickly removed with the right hand. In this case, the liquid from the abdominal cavity is poured out in a strong stream through a rubber tube into a vessel substituted in advance. The rate of fluid removal must be controlled by gradually tightening the towels applied around the abdomen. From time to time, the outflow of intra-abdominal fluid must be interrupted for 2-4 minutes. If the fluid flow spontaneously stops, you should change the position of the cannula, tilting it to one side or the other and moving it slightly deeper. They sang and after that the fluid flow does not resume, which is usually associated with suction of the intestinal loop or omentum to the inner hole of the trocar, you need to insert a bellied probe or rubber catheter through its outer hole. It is impossible to use a trocar stylet for this purpose because of the real danger of injuring the attached organ.

If the procedure runs smoothly and the patient's condition remains stable, then from 7 to 12 liters of fluid can be withdrawn at a time. With the appearance of tachycardia and arterial hypotension, the evacuation of the fluid should be interrupted. If within 2-5 minutes the patient's condition improves, the procedure can be extended.

In cases of collapse, the procedure is immediately stopped. The patient is placed in a horizontal position without a pillow. Cardiac agents and respiratory analeptics should be used. At the end of the procedure, towels squeezing the abdomen are removed, the trocar cannula is removed with a quick sharp movement. The wound for 1.5 - 2 million is strongly squeezed through a sterile gauze napkin, then treated with iodine tincture and covered with a sterile napkin fixed with glue or adhesive tape.

Complications. There may be punctures of hollow and parenchymal organs, bleeding from the vessels of the anterior abdominal wall. At the first, an immediate laparotomy is indicated with the restoration of the integrity of the wounded organs. Bleeding from the vessels of the anterior abdominal wall is usually stopped by compressing the wound channel with the fingers. If it continues, it is necessary to expose the bleeding vessel and ligate it.

Puncture of the urinary bladder suprapubic

Indications: inability to release urine from the bladder using a rubber or metal catheter.

There are no contraindications.

Technique. Suprapubic puncture can be performed with a trocart or an ordinary long needle. After determining the upper border of the bladder, distended with urine, layer-by-layer anesthesia with a 0.25% solution of novo-caine of the skin, subcutaneous tissue, muscle aponeurosis and pre-vesical tissue is performed 2 cm above the pubic symphysis. After anesthesia at an angle of 90, the tissues and the anterior wall of the bladder are punctured layer by layer. Urine from the bladder should be released fractionally to avoid complications (including bleeding) associated with a sharp change in intravesical pressure. When puncturing the bladder with a special trocar, drainage can be installed at the right time through it into the bladder for continuous urine diversion (puncture epicystostomy).

Complications: if the operation is carried out carelessly, a trocar or needle may pass into the abdominal cavity and damage the intestines.

Lavage of the stomach

Gastric lavage is a therapeutic technique based on the principle of communicating vessels. Produced to remove poor-quality food, poisons from the stomach. This procedure is especially important at the prehospital stage.

Necessary equipment for gastric lavage

• Wide (diameter 10–12 mm, 28-36F) gastric tube 1–1.5 m long. The gastric tube must fit the patient's physique. The most convenient reference point is the diameter of the nasal passage. Everything that enters the nose will easily pass into the esophagus.

• A funnel with a capacity of about 1 liter and a lumen of the tubular part of at least 8 mm for putting on a gastric tube;

• Bucket (mug) for pouring water into the funnel.

• A bucket of tap water at room temperature.

• Basin for draining wash water.

• Oilcloth apron (2 pcs.), towel, gloves.

All accessories for gastric lavage (tube, funnel, tip) are stored in a sealed plastic bag with the date of sterilization.

Gastric lavage technique

Gastric lavage is not technically difficult, but, like any medical manipulation, it requires attention and skill. Gastric lavage refers to nursing manipulations, however, during the procedure, the participation of a doctor or constant control on his part is necessary. In addition, gastric lavage is more convenient to do together.

In coma, the patient is placed on the right side and the trachea is intubated beforehand (prevention of aspiration).

The patient sits on a chair1, legs apart so that a pelvis can be placed between the legs. The dentures are removed. The patient's chest is covered with an oilcloth apron. The patient should not squeeze the lumen of the probe with his teeth.

Before starting the procedure, the end of the gastric tube should be lubricated with vaseline oil (in its absence, moistened with water), and put a funnel on the opposite end. With an increased pharyngeal reflex, the administration of atropine is useful.

The sister, also wearing an apron, stands to the right and somewhat behind the patient, who should open his mouth wide. With a quick movement, insert the probe at the root of the tongue. Next, the patient is asked to breathe through the nose and make swallowing movements, during which the probe is carefully advanced through the esophagus. The probe is inserted to a length equal to the distance from the navel to the patient's incisors plus 5–10 cm.

Standard marks on the gastric tube: 1st mark - 45-46 cm, 2nd mark - 55-56 cm, 3rd mark - 65-66 cm

With the introduction of the probe to the first mark2 on it (45-46 cm from the end), the funnel is lowered. The funnel should be held wide side up, not down. If the probe is in the stomach, then gastric contents enter the funnel. Otherwise, the probe is advanced further. The first portion must be collected for analysis in a separate bottle. After that, the actual gastric lavage begins.

When the funnel is empty, it is again smoothly lowered over the pelvis to the height of the patient's knees, holding the funnel with the wide side up (and not down, as is often depicted in the drawings), where the contents of the stomach pour out.

As soon as the liquid stops flowing out of the funnel, it is refilled with the solution. The procedure is repeated until clean wash water. On average, 10-20 liters of water are spent on gastric lavage.

After gastric lavage, it is recommended to introduce an enterosorbent (activated carbon, 1 g / kg) and a laxative (preference should be given to vaseline oil) through a probe to sorb the poison remaining in the stomach. The effectiveness of magnesium salts often offered as laxatives (for example, magnesium sulfate 25-30 g) is questionable, because they do not act quickly enough (after 5-6 hours), in addition, magnesium salts are contraindicated in renal failure. Vaseline oil (100-150 ml) is not absorbed in the intestines and actively binds fat-soluble toxic substances (for example, dichloroethane). The introduction of laxatives is contraindicated in case of poisoning with caustic liquids.

At the end of the gastric lavage, the funnel is disconnected, the probe is removed with a quick but smooth movement through a towel brought to the patient's mouth. Everything (including wash water) is disinfected. After disinfection, the gastric tube is sterilized (if the tube is used repeatedly) or disposed of (if a single-use tube is used).

Potential Problems

- Less fluid enters the funnel than was infused into the stomach. This means that part of the liquid managed to pass from the stomach into the intestines or remained in the stomach as a result of the fact that the gastric zones were introduced to an insufficient depth, or, conversely, to an excessive length, so that it bent upwards. In this case, it is necessary to insert the gastric tube a little deeper or slightly pull it out, and then lower the funnel again for control.
- The flow of fluid into the funnel stops. Probably, there was a blockage of the gastric tube in its lower openings with clots of mucus, blood, and food lumps. You should stop gastric lavage, remove the gastric tube to clean it.

Possible Complications

- introduction of the probe into the trachea with damage to the vocal cords (if the probe enters the larynx, the patient begins to cough, choke, turn blue);
- aspiration of lavage fluid, which can lead to acute respiratory failure and death;
- ruptures of the mucous membrane of the pharynx, esophagus, stomach or tongue injury, complicated by bleeding and aspiration of blood.

Contraindications for gastric lavage

• Stenosis of the pharynx and esophagus.

• Convulsions or convulsive readiness.

• Circulatory and respiratory insufficiency in the stage of decompensation (gastric lavage is postponed until the situation improves).

• Soporous or unconscious state of the patient when it is impossible to intubate the trachea (gastric lavage is postponed until the hospital).

• Resistance of the patient (forcible insertion of the probe into a resisting and agitated patient is unacceptable).

The presence of blood in the wash water is not a contraindication to continue the procedure!

Solutions for gastric lavage:

• A solution of potassium permanganate (potassium permanganate) pale pink. It must be filtered through a paper filter or simply four-layer gauze, since small crystals of potassium permanganate that do not dissolve in water can cause burns to the mucous membrane of the esophagus or stomach. The lack of a solution of potassium permanganate - it irritates the gastric mucosa, so its use is undesirable in acute digestive disorders.

• Salt solution is water with the addition of table salt (2-3 tablespoons per 5-10 liters of liquid). The saline solution causes a spasm (narrowing) of the exit from the stomach and prevents the passage of poison or toxins from the stomach into the intestines.

• For children under 3 years of age, to prevent disturbances in water and electrolyte metabolism, gastric lavage is performed with isotonic sodium chloride solution (it can be purchased at a pharmacy).

• The solution with the use of sorbents is the most effective. Sorbents are substances that tend to bind and remove toxins, poisons, microbes, food and bacterial allergens from the body. These include activated charcoal. For the gastric lavage solution, powder 5 to 10 charcoal tablets and mix them with boiled water.

• The following enterosorbents work very effectively: enterosgel or polysorb in the form of a 1-2% aqueous suspension (1 hour spoonful of the drug with a top of 100 ml of boiled water).

• In case of poisoning with acids, a 2% solution of soda is used, in case of poisoning with alkalis, a solution of citric acid.

Cardiopulmonary resuscitation

Cardiopulmonary resuscitation (CPR), cardiopulmonary resuscitation (CPR), cardiopulmonary resuscitation is a system of measures aimed at restoring the body's vital functions and removing it from the state of clinical death. Includes artificial ventilation of the lungs (artificial respiration) and indirect heart massage. The decision to start CPR is made if there is no response to stimuli and no visible breathing within 10 seconds

Stage A. Restoration of airway patency

In emergencies, airway patency is often impaired due to retraction of the tongue, which covers the entrance to the larynx and air cannot enter the lungs. In addition, in an unconscious patient, there is always a risk of aspiration and blockage of the airways by foreign bodies and vomit [S. V. Vasiliev et al., 1987].

To restore airway patency, it is necessary to perform a “triple airway intake” [R. J. F. Baskett et al., 1996]. With this manipulation, the anterior muscles of the neck are stretched, due to which the root of the tongue rises above the back wall of the pharynx.

The technique for performing a triple reception (Fig. H):

1) tilting the head);

2) advancement of the lower jaw forward;

3) mouth opening.

II-V fingers of both hands grab the ascending branch of the patient's lower jaw near the auricle and push it forward (upward) with force, displacing the lower jaw so that the lower teeth protrude ahead of the upper teeth.

In case of obstruction of the respiratory tract by a foreign body, the victim should be placed in a lying position on his side and in the interscapular region, make 3-5 sharp blows with the lower part of the palm. The oropharynx is cleaned with a finger, trying to remove the foreign body, then artificial respiration is attempted. If there is no effect, press on the abdomen. In this case, the palm of one hand is applied to the stomach along the midline between the navel and the xiphoid process. The second hand is placed on top of the first and pressure is applied to the abdomen with quick movements up the midline.

Due to the risk of infection of the resuscitator through direct contact with the mucous membrane of the mouth and nose of the victim, it is advisable to carry out artificial respiration using special devices. The simplest of them include air ducts, a device for artificial ventilation UDR, “life-key” (“key of life”), face masks, etc.

Intubation tubes and tracheal intubation

Every emergency physician should be able to perfectly carry out tracheal intubation, as it remains the “gold standard” for providing reliable airway protection and ventilation control in resuscitation practice [I. P. Latto, M. Rosen, 1989]. Tracheal intubation allows you to isolate the airways, maintain their patency, prevent aspiration, carry out ventilation, oxygenation and sanitation of the tracheobronchial tree. It can be done through the mouth or nose. Orotracheal intubation is preferred in emergency situations as it can be performed more quickly.

The essence of the method is the introduction of an elastic air duct (endotracheal tube) into the trachea under the control of a laryngoscope. Tracheal intubation can be done blindly (on the finger). There is a large selection of endotracheal tubes of different lengths and diameters.

The method of orotracheal intubation with a curved Mackintosh blade [according to A. A. Bunyatyan, 1984]:

1) open the patient's mouth with the right hand;

2) place the laryngoscope in the left hand and insert the blade into the right corner of the patient's mouth, moving his tongue to the left so that the patient's oral cavity can be examined;

3) hold the laryngoscope blade forward along the midline (making traction along the axis of the laryngoscope handle), examine the patient's mouth, tongue, pharynx and epiglottis;

4) examine the arytenoid cartilages, the entrance to the larynx and the vocal cords, lifting the epiglottis with the laryngoscope blade;

5) insert the endotracheal tube with the conductor with the right hand through the right corner of the patient's mouth under visual control so that the cuff is located behind the vocal cords;

6) remove the conductor and start ventilation of the lungs;

7) remove the laryngoscope, inflate the cuff to achieve tightness, fix the tube with a tie or adhesive tape.

To prevent regurgitation of gastric contents, it is necessary to use the Sellick maneuver, which consists in compressing the esophagus by pressing on the cricoid cartilage.

Intubation, if necessary, can be successfully performed blindly (on the finger). At the same time, the epiglottis is raised with the ring finger, and the index finger is inserted into the esophagus. An endotracheal tube is passed between them into the glottis.

Conicotomy

Conicotomy (cricothyrotomy) consists in opening (puncture) of the cricothyroid membrane if tracheal intubation is impossible or there is an obstruction in the larynx. The main advantages of this method are the simplicity of technical implementation and the speed of execution (compared to tracheostomy).

The cricothyroid membrane is located between the lower edge of the thyroid and the upper edge of the cricoid cartilage of the larynx. There are no large vessels and nerves in this area. Conicotomy is performed in the position of maximum extension of the head back. It is better to put a small roller in the subscapular region. With the thumb and middle finger, it is necessary to fix the larynx on the lateral surfaces of the thyroid cartilage. A transverse skin incision is made above the cricothyroid membrane. The membrane itself is perforated along the nail of the index finger with a scalpel, after which a plastic or metal cannula is passed through the hole into the trachea.

To facilitate conicotomy, special devices have been created - conicotomes. Disposable “Partex” conicotomy kits consist of a skin incision knife, trocar and cannula.

TRACHEOSTOMY

Tracheostomy is called the creation of an anastomosis of the trachea with the environment by introducing a cannula or endotracheal tube through the dissected tracheal rings (tracheotomy - dissection of the tracheal rings) [R. J. F. Baskett et al., 1996]. Tracheostomy is performed with obstruction of the airways in the upper sections, the impossibility of tracheal intubation, the need for prolonged artificial ventilation, etc. Depending on the level of dissection of the tracheal rings, there are upper, middle and lower tracheostomy (in relation to the isthmus of the thyroid gland). Adults usually produce an upper tracheostomy.

To facilitate the imposition of a tracheostomy, it is necessary to bring the larynx and trachea as close as possible to the anterior surface of the neck. The patient at the same time lies on his back, his head is thrown back, a small roller is placed under his shoulders. Usually, the manipulation is carried out under local anesthesia with novocaine or lidocaine. In emergency conditions, a tracheostomy is performed without anesthesia. An incision is made along the midline of the skin, subcutaneous tissue and superficial fascia from the lower edge of the thyroid cartilage to the jugular fossa. Muscles are pushed apart in a blunt way. The fascia that attaches the thyroid gland capsule to the cricoid cartilage is dissected with a transverse incision. Having exposed the tracheal rings above the isthmus, they are opened with a longitudinal incision (between the first-second or second-third). The edges of the incision are diluted with a dilator and a cannula or endotracheal tube is inserted.

Stage B. Artificial respiration

Artificial respiration is the blowing of air or an oxygen-enriched mixture into the lungs of a patient, performed without or with the use of special devices, that is, a temporary replacement of the function of external respiration [D. Benson et al., 1996]. The air exhaled by a person contains from 16 to 18% oxygen, which allows it to be used for artificial respiration during resuscitation.

It should be noted that in patients with respiratory and cardiac arrest, lung tissue collapses, which is largely facilitated by chest compressions [P. E. Pele, 1994]. Therefore, it is necessary to carry out adequate ventilation of the lungs during heart massage. Each breath should take 1-2 seconds, because with a longer forced breath, air can enter the stomach. Blowing should be done abruptly and until the patient's chest begins to noticeably rise. The figures show the method of artificial ventilation mouth-to-mouth and mouth-to-nose.

In this case, the victim exhales passively, due to the increased pressure in the lungs, their elasticity and the mass of the chest [A. Gilston, 1987]. Passive exhalation should be complete. The frequency of respiratory movements should be 12-16 per minute. The adequacy of artificial respiration is assessed by periodic expansion of the chest and passive exhalation of air.

It should be noted that since 1988 these methods of expiratory artificial respiration are not recommended by the World Association of Anesthesiologists due to the risk of infection of the resuscitator through direct contact with the mucous membrane of the mouth and nose of the victim (the use of the “key of life”, UDR, face masks, air ducts, etc. is shown .) [European Resuscitation Council, 1992].

Assisted ventilation is used against the background of preserved independent, but inadequate breathing in the patient. Simultaneously with the inhalation of the patient through 1-3 respiratory

movements, additional air is blown. Inhalation should be smooth and in time correspond to the inhalation of the patient.

It should be noted that the restoration of spontaneous breathing quickly restores all other functions. This is due to the fact that the respiratory center is the pacemaker for the brain.

Stage C. Maintaining circulation

After circulatory arrest for 20-30 minutes, automatism and conduction functions are preserved in the heart, which allows it to "start". Regardless of the mechanism of cardiac arrest, cardiopulmonary resuscitation should be started immediately to prevent the development of irreversible damage to body tissues (brain, liver, heart, etc.) and the onset of biological death [S. V. Vasiliev et al., 1987]. The main purpose of heart massage is to create artificial blood flow. However, cardiac output and blood flow created by external cardiac massage is no more than 30% of the norm [P. Safar, 1997] and only 5% of normal cerebral blood flow [P. Marino, 1996]. As a rule, this is enough to maintain the viability of the central nervous system during cardiopulmonary and cerebral resuscitation, provided that sufficient oxygenation of the body is achieved for several tens of minutes.

Biophysics of artificial blood flow during heart massage during cardiopulmonary resuscitation,

It is generally accepted that the basis of indirect heart massage is compression of the heart in front of the sternum, behind - the spinal column, as a result of which blood from the heart cavities enters the vessels of the body. This is the so-called heart pump [N.C. Chandra, 1993]. But during chest compressions, not only the heart is compressed, but also other intrathoracic structures (the most important is the compression of the lungs, which contain a significant amount of blood and are easily compressed) [J. Peters, P. Ihle., 1990]. This mechanism is called the breast pump.

Since the beginning of the eighties, the question has been considered, what moves the blood during a closed (indirect) heart massage - a heart pump or a chest pump? Ultrasound scanning and other research methods in experiment and clinical conditions have shown that both mechanisms work with closed massage, but the chest pump predominates in a person, when, when the chest is compressed, the movement of blood into the aorta is ensured by the compression of all vascular capacities. The main capacity is the lungs with their pulmonary circulation [A. P. Zilber, 1997].

With an open heart massage, only the heart pump works. This understanding of the biophysics of artificial blood flow requires adjustments in cardiopulmonary resuscitation [N. Bircher et al „ 1996].

Stop the bleeding

Stopping bleeding also applies to stage I, since against the background of ongoing and unreplenished blood loss, resuscitation will simply be ineffective.

To temporarily stop arterial external bleeding at the prehospital stage, pressing the artery above the injury site to the bone protrusion or maximum flexion of the limb, followed by the application of a hemostatic tourniquet, is used. Bleeding from the great vessels in traumatic limb amputations can be stopped by applying hemostatic clamps. Venous and capillary bleeding is stopped by applying a tight pressure bandage.

Bleeding in the pelvis and extremities can be successfully controlled by the use of pneumatic anti-shock clothing ("anti-shock trousers", "anti-shock suit", LOD device, "bracelet"). This method can be used to tamponade bleeding vessels, pneumatic splinting of fractures and expel up to 500-1000 ml of blood from the vessels of the lower extremities and pelvis into the central circulationцию.

Step F. Electrical Defibrillation

Electrical defibrillation of the heart has taken a strong place in cardiopulmonary resuscitation. It should be remembered that even against the background of a heart massage, the conditions for oxygenation of the fibrillating myocardium are unfavorable and myocardial hypoxia progresses, therefore, the earlier defibrillation is performed, the greater the chances for successful restoration of independent cardiac activity [N. L. Gurvich, 1975]. It is known that today electrical defibrillation is the only effective method of restoring cardiac activity in myocardial fibrillation. Considering that ventricular fibrillation occurs in most cases of circulatory arrest, and the application of an electrical shock from a defibrillator has little or no harm in asystole or terminal bradyarrhythmias, an attempt at electrical defibrillation can be made before specifying the type of hemodynamic catastrophe (asystole or fibrillation) [R. Martens, Y. Vandekerck-hove, 1996].

For electrical defibrillation, both direct and alternating current defibrillators are used. The former are more effective and safer.

When conducting external defibrillation, one of the electrodes is placed on the anterior surface of the chest below the collarbone at the right edge of the sternum, and the other in the area of the apex of the heart. The electrodes should be lubricated with a special paste or wrapped with several layers of gauze moistened with physiological or hypertonic saline to reduce transthoracic resistance. The electrodes must be pressed tightly against the patient's body. It is very important to apply strong pressure to the chest with the electrodes before defibrillation to reduce chest resistance. For the same purpose, defibrillation should be carried out in the expiratory phase, so that the size of the chest is minimal (this reduces transthoracic tension by 15-20%). The magnitude of the current must be of sufficient strength to suppress ectopic foci of excitation in the myocardium. During external defibrillation, the initial discharge is 3-3.5 thousand volts (about 200 J). If the first attempt failed, then it must be repeated, increasing the voltage each time by 0.5 thousand volts (limit 5-6 thousand volts or 360 J). When conducting open defibrillation, the initial value of the defibrillating voltage is 1.5-1.75 thousand volts, and the maximum voltage is 2.5-3 thousand volts.

After the rhythm is restored, repeated ventricular fibrillation may develop due to electrical instability of the myocardium due to acute coronary insufficiency and secondary metabolic disorders. To stabilize the effect, it is recommended to normalize the acid-base state, correct metabolic acidosis. In some cases, repeated electrical defibrillation is ineffective, usually with low-amplitude ventricular fibrillation and unresolved oxygen debt. In this case, the introduction of adrenaline, sodium bicarbonate, additional efforts to oxygenate the body, and after a short period of heart massage, conduct electrical defibrillation again are indicated.

Recently, some authors have revised the principles of resuscitation during the primary arrest of systemic blood flow in favor of stages C and D. Thus, M. X. Weil [1996] believes that if the main cause of circulatory arrest is ectopic arrhythmias in occlusive coronary artery diseases in the absence of asphyxia , then during cardiopulmonary resuscitation, priority is given to defibrillation, cardiac massage and drug therapy.

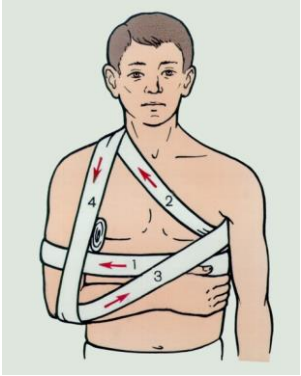
Bandage Deso

- **Bandage Deso** superimposed after reduction of dislocation of the shoulder, with a fracture of the shoulder and collarbone. Before applying the dressing, it is necessary to examine the armpit, powder it with talcum powder and put a cotton-gauze roller to absorb sweat and prevent skin maceration.

Equipment: 2-3 wide standard bandages, cotton-gauze roller, pin.

Sequencing:

- stand facing the patient;
- put a cotton-gauze roller in the armpit and bend the arm at the elbow joint at an angle of 90°;
- make the first fixing circular tour through the chest with the capture of the diseased shoulder, repeating it twice;
- conduct the second round from the back from the armpit of the healthy side to the diseased shoulder girdle;
- the third round (continuation of the second) lower from the shoulder girdle along the back surface of the shoulder, grasp the bottom of the forearm of the diseased arm and, going through the healthy armpit, lead along the back to the diseased shoulder girdle;
- lower the fourth round down the front surface of the shoulder and, covering the elbow of the diseased arm, lead along the back, returning to the front surface of the chest from under the healthy armpit;
- repeat all rounds, starting from the second, 3 times. The dressing is finished with a circular tour around the chest and fixed with a pin. Cut off excess bandage.



Dezo dressing is used for fractures of the clavicle and humerus and is performed in a certain sequence. Insert a cotton-gauze roller into the axillary region, fix it with bandage moves through the opposite shoulder girdle. Bend the limb at the elbow joint at an angle of 90 °, take the elbow slightly backward; press the shoulder to the chest, place the forearm and hand on the stomach with the front surface.

Apply several circular moves of a wide bandage to the chest and middle third of the shoulder (in women, raise the mammary glands and conduct rounds under them); in case of damage on the left, apply tours from left to right, and in case of damage to the right side, from right to left. Conduct

circular moves in the direction from top to bottom, fixing and at the same time, as it were, raising the shoulder.

Apply a cotton-gauze pad to the fracture area. Direct the course of the bandage from the opposite (healthy) armpit along the front surface of the chest obliquely to the shoulder girdle of the diseased side, fixing the pad, then from behind along the shoulder downwards under the elbow, lifting the shoulder up, along the back surface of the forearm, partly the hand, onto the front surface of the chest and into the opposite armpit; at the same time, it is very important to pull the vertical parts of the bandage, at the same time slightly raising the elbow up.

From the armpit, move the bandage along the back obliquely on the shoulder girdle, along the front surface, under the elbow. Then again along the back, obliquely into the armpit of the healthy side, on the shoulder girdle of the diseased side, etc. As a result, two triangles are formed on the chest and back, with the base on the shoulder of the diseased side. If it is necessary to fix the limb for a long time after the bandaging is completed, it is possible to additionally impose circular passages of a plaster bandage around the torso.

Blackmore's probe

The Blackmore probe is a double-cuffed probe used to stop bleeding from esophageal varices.

The Blackmore probe is a three-lumen rubber tube. At the end of this tube there is a round cylinder, a cylindrical cylinder is located a little higher. Two channels of the Blackmore probe are used to inflate the balloons, the third lumen is used to aspirate gastric contents and control the effectiveness of hemostasis**.**

Blackmore Probe Placement Technique:

The Blackmore probe is inserted through the nose. After the probe has reached the stomach, the distal balloon is inflated by inflating about 60 ml of air with a syringe. After that, the probe is pulled up to the stop. Thanks to this, the Blackmore probe is in the correct position, and the second balloon is located exactly in the esophagus. Then the second (proximal) balloon is inflated, forcing 100-140 ml of air.

If the Blackmore probe is installed correctly, it stops bleeding. After a couple of hours, it is necessary to deflate the esophageal (proximal) balloon to avoid the formation of pressure ulcers of the esophagus and to control hemostasis. If bleeding from esophageal varices (esophageal varices) continues, the proximal balloon is re-inflated. If, after the esophageal balloon has been deflated, bleeding from the esophageal RVV has not resumed, then the Blackmore probe is not removed, but

left in the stomach to control hemostasis, so that in case of recurrence of bleeding, the proximal (esophageal) balloon again.

Burns of the esophagus

Thermal burns of the upper food tract are rare. They are due to the careless intake of too hot tea, soup or other liquid. In this case, the mucous membrane of the oral cavity, lips, less often the pharynx or esophagus suffers, since the hot liquid is spit out. Superficial mucosal damage and within a few days heal without a trace.

Chemical burns of the esophagus are caused mainly by caustic alkalis, less often acids and other substances. Recently, the number of burns from caustic soda has decreased, and the number of burns from acetic acid and silicate glue has increased. Most affected children are aged 1-4 years. Adult oversight allows inquisitive children to "try" the contents of a bottle or vessel. The predominance of affected boys aged 3-6 years depends on their activity. First aid consists in neutralizing chemical agents. In case of burns with alkalis, washing is carried out with a weak solution of acetic acid, and in case of burns with acids, with a solution of baking soda. Be sure to wash the stomach with large amounts of liquid, achieving complete removal of the chemical agent that caused the burn.

First aid for burns of the esophagus. An effective measure is the immediate emptying of the contents of the stomach, followed by washing it. The introduction of a soft rubber probe is safe at this time. In order to neutralize caustic alkalis, a little hydrochloric acid is added to warm water for washing, acetic or tartaric acid is less effective. Acid poisoning should be limited to washing with warm water. The addition of sodium bicarbonate or calcium carbonate leads to the formation of carbonic acid, which stretches the stomach and promotes mucosal secretion. Vomiting is useful because it removes part of the swallowed caustic substance. It can be caused by irritation of the palate and pharynx (by inserting a finger, etc.). It should be noted that vomit may contain a caustic substance and cause additional damage to the oral mucosa and skin around the mouth. From home remedies, it is recommended to drink plenty of water, take milk, give egg white, oatmeal, vegetable oil. Treatment in the acute stage is reduced to counteracting inflammation of the oral cavity, esophagus and stomach, to the prevention and treatment of shock, laryngeal edema, etc.

Repeated gastric lavages with a soft rubber probe are indicated not only in the first hours, but also after 12-24 hours, in order to remove and neutralize possible remnants of a caustic substance. Wet wraps and compresses according to Prisnitz bring subjective and objective relief. Of the medicines, painkillers, antispasmodics, and also neutralizing are shown. Special attention deserves the prevention and control of shock. Antibiotics and sulfonamides are shown to prevent infection. At an early stage, it is also advisable to use drugs from the adrenal cortex, however, with sufficient caution

Bougienage should begin after the acute phenomena subside, i.e. at the end of the first or at the beginning of the second week. When bougienage, traumatization with exacerbation of inflammation, the appearance of pain and fever should be avoided. With burns of moderate severity, they begin to bougie no later than the 6-10th day.

Methodology and technique of bougienage. Bougienage is performed with elastic bougie to expand the esophagus, made of a special fabric impregnated with a special resinous mass and coated with a special varnish, and finally with plastic bougie.

The bougie is dipped in warm water or saline before insertion to make it more pliable, and lubricated with oil to facilitate insertion. The child is covered with a diaper or a sheet, the nurse, sitting, takes him, presses him to her with one hand, and holds his head with the other. The child opens his mouth by himself or opens with a spatula. He is asked to breathe calmly and deeply.

The doctor holds the bougie with his right hand, like a writing pen, with the index finger (with a metal protector on) of the left hand slightly presses on the root of the tongue. The child is forced to swallow and at this point the bougie easily slips down the midline through the pharynx into the esophagus. Then the bougie is inserted without any effort - with a “light hand”. It is left in the esophagus for 3-5 minutes. Bougienage is repeated every other day.

Leaving the bougie for a longer time, as recommended by adults, as well as bougienage daily or even 2 times a day for children is not advisable, since in these cases periesophagitis and spasms of the esophagus may develop.

The effectiveness of bougienage is very good if it is started immediately after the subsidence of acute phenomena and is carried out systematically in the future.

The purpose of bougienage is to prevent the development of cicatricial narrowing of the esophagus. Scarring processes begin early, therefore, in the early period of treatment, it is advisable to use adenocorticotropic hormone and corticosteroids that delay scarring.

Over time, scarring can cause serious problems with the esophagus. The narrowing resulting from the development of scars can be tubular, annular, usually in places of physiological narrowing of the esophagus, more often at the level of the bifurcation. The hole may be located centrally or eccentrically. An expansion of the esophagus may occur over the narrowing, and pockets may form. This makes bougienage difficult and increases the risk of perforation with it.

In cases with a significant narrowing of the esophagus, with an eccentric opening and a tortuous course of the cicatricial narrowing, "blind" bougienage is difficult, even impossible.

The esophagoscope is used to examine the esophagus in order to clarify existing changes, as well as for bougienage under the control of the eye, mainly with an eccentric location of the stenosis opening.

In cases of impossible or difficult bougienage, bougienage "on a string" through the mouth is indicated.

Continuous bougienage is carried out with special olives or bougie, which are pulled by a thread through the gastric fistula. The effectiveness of such bougienage is good.

In some cases, holding a bougie or thread from above is not possible. Then retrograde bougienage from below is shown.

A children's rectoscope is inserted into the stomach through the fistula, air is blown through it. The stomach swells, the cardia and the opening of the esophagus become visible. Through the latter, a ureteral catheter or a thin bougie is inserted from the bottom upwards, and behind the latter, a thread is inserted for subsequent continuous retrograde bougienage**.**

Late bougienage, the beginning of bougienage already with developed cicatricial narrowing, after a shorter or longer burn time, has a much more difficult task. However, in these cases, systematic treatment usually achieves restoration of the patency of the esophagus.

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All the illustrated materials are taken from «Manipal Manual of Surgery. CBS Publishers & Distributors. Fourth Edition. Edited by K Rajgopal Shenoy, Anitha Shenoy».