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**ACUTE APPENDICITIS**

Educational-methodical recommendations

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The methodological recommendations summarize the literature data and perennial research of the Department’s staff of the Institute of Medicine, Hospital Surgery, ecology and physical culture of “Ulyanovsk State University”, dedicated to the clinic issues, diagnosis, treatment tactics, and the choice of the surgical treatment of acute appendicitis.  The stages and methods of diagnostic search, therapeutic tactics for various variants of development and course of acute appendicitis are described in detail and consistently. Methodical recommendations are intended for surgeons, gastroenterologists, senior courses of medical universities students.

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**Introduction.**

Acute appendicitis - nonspecific inflammation of the vermiform appendix. Incidence of acute appendicitis among urgent surgical diseases continues to occupy the first place and it’s 1-4 cases per 1000 people. According to various authors, this pathology occurs in 7% of the population, emergency surgery, performed for acute appendicitis in relation to all other operations from 40 to 85%.

Anatomy.

 The appendix extends from the posterior internal segment of the cecum at the site of the muscle bands fusion. Its length varies from 1-1,5 to 20-25 cm, averaging 7-8 cm. The thickness of the vermiform appendage varies from 5 to 8 mm. The clinic for acute appendicitis is largely determined by the position of the cecum and vermiform appendix. The cecum is most often located in the right ileal region, but with incomplete in ontogeny turning the colon may be in the mesogastric or in the hypochondrium on the right. At the reverse arrangement of organs and with the presence of a mesentery of the cecum location, can be left parts abdominal cavity. Finally, the cecum is located in the small pelvis. Location variants of the appendix: in the left iliac region (situs viscerum inversum, caecum mobile, medial location elongated vermiform appendage); low (pelvic) location (visceroenteroptosis, pelvic position of an elongated appendix); high (subhepatic) location (high location of the cecum, subheading of an elongated appendix, during pregnancy); retrocecal location (25-30%) with intraperitoneal, retroperitoneal and the intra-wall position of the appendix. The blood supply of the appendix is carried out from the arterial system iliac- of the superior mesenteric artery, venous outflow occurs on the same veins. Lymph outflow from the appendix is carried out in the lymph nodes of the ileocecal angle and the root of the mesentery. Sympathetic and parasympathetic innervation of the ileocecal angle intestine originates from the superior mesenteric plexus. Functional value of the appendix is small and includes a secretory, motor, lymphocyte, hormonal functions.

Etiopathogenesis.

1. Effects of the impaired motor function of the intestines: violation peristalsis with a narrow lumen of the process often leads to stagnation in it content, diverse bacterial flora.

2. Inflammation of the appendix influenced by the helminthic invasion.

3. Angionevrotic theory.

4. The greatest recognition was received by Aschoff's infectious theory (in modern variant - infectious-allergic): changes immunity, lead to an increase in the susceptibility of the mucous membrane of the process, to then a primary focus is formed, and the inflammation acquires a widespread character.

5. The reaction of the lymphoid system to inflammation in various parts of the body in general (after acute tonsillitis) and in the abdominal cavity, in particular (subclinical acute enteritis, gastritis, cholecystitis, etc.).

6. Alimentary factor: meat promotes putrefaction in the intestine.

**CLASSIFICATION OF ACUTE**

**APPENDICITE**

**Clinical and anatomical forms**

1. Catarrhal.

2. Phlegmonous (including the appendix empyema).

3. Gangrenous.

4. Perforated (perforated).

**Complications**

Complications of the abdominal cavity - peritonitis, pylephlebitis, intra-abdominal bleeding, inconsistency of the stitches of the stump of the appendix, intestinal fistulas, adhesions, retroperitoneal phlegmon, etc. Peritonitis, is divided into:

limited (periapendicular infiltrate, peri-pendicular abscess);

unlimited (local, distributed) with indication of the nature effusion, stage and subsequent complications (intertest, sub-diaphragmatic, sub-hepatic, pelvic, etc., abscesses, etc.).

Complications of wound - suppuration, infiltration, event, etc.

Common complications are pneumonia, sepsis, thromboembolic complications and other.

**CLINIC**

 In the study of complaints it is important to clarify the location of pain, their character, localization and change in the location of pain during the time from the onset of the disease occurred. Data on the duration of the disease are important for choosing tactics of treatment, determining the timing of the operation. Information about localization and character of pain is necessary for conducting a differential diagnosis of acute appendicitis with other pathological conditions. Pain begins in the epigastric region or around the navel and gradually moves to the right iliac region (Kocher's symptom), is increased when the body position changes, walking. The syndrome of dyspeptic disorders with acute appendicitis manifests itself with nausea, and later with vomiting (as a rule, single and having a reflex character). The patient is concerned about dry mouth. Body temperature is often subfebrile, but can be normal, less often developed hectic fever.

Studying the history of life it is important to clarify whether there have been similar complaints before. After a detailed study of complaints and anamnesis, it is necessary to go to the examination of the patient.

The general condition of patients with acute appendicitis is more often satisfactory.

Severe condition of the patient is due to the prescription of pathological

process and its complicated course. Dryness, pallor and marbling of the skin, a decrease in its turgoras indicate the severity of intoxication, hypovolemia caused by purulent process or widespread peritonitis. A violation of consciousness also indicates severe intoxication. Respiratory organs do not affected.

Intoxication causes quickens breathing, wheezing in the lungs. The heart rate is normal, only with severe intoxication tachycardia can occur. Bradycardia, lowering of arterial pressure are found in common forms of appendicular peritonitis and characterize the severity of intoxication. The tongue is dry, often covered with bloom.

The abdomen not uniformly involved in breathing, limiting the mobility of the right half of the abdominal wall. In this case, the doctor recommends the patient actively belly breathe, inflate stomach, draw belly, as if in a tightening belt. For women who have a predominant chest type of breathing, excursions abdominal wall are unusual, therefore, putting a hand on the abdomen, ask the patient to lift her (hand) with her stomach. Possible minor lag in the breathing of the right iliac region - patients spare the stomach at breathing. Limitation of mobility of the anterior abdominal wall and its tension testify to the presence of the reaction of the parietal peritoneum. In order, the oreaction of peritonitis prevalence can be judged by the prevalence. Surface palpation is the next stage in the study. Putting his hand over the front abdominal wall with the entire palmar surface, the doctor  gently palpates the abdomen. In this case, the soreness and tension of the muscles of the anterior abdominal wall in the right ileal region are revealed. With deep palpation of the cecum, soreness appears in the right iliac region. The variability of the deviation and the location of the appendix may lead to the appearance of pain during palpation in the peri-ocular region, in the right sub-stage, the right mesohastrium, and above the genus. It should be noted that the tension of the anterior abdominal wall in the projection of the localization of the appendix is ​​the leading symptom in the recognition of acute appendicitis. The liver is not enlarged, with palpation painless. Hepatic dullness preserved. Absence of hepatic dullness with percussion of the stomach is possible with perforation of the appendix and requires a differential diagnosis with perforative ulcers of the stomach and duodenum. The gallbladder is not palpable. The enlargement of the liver and the appearance of soreness in her palpation may indicate the development of a rare but very dangerous complication of acute appendicitis-pileplebility. In this case, a comprehensive diagnosis of acute appendicitis with acute cholecystitis, acute hepatitis, fibrosis and cirrhosis, parasitic liver diseases is carried out on the basis of a set of complaints and anamnesis. Soreness in mesogastrium, nausea, vomiting, rapid fluid stool require differentiation of the medial location of the inflamed vermiform appendage with acute gastroenterocolitis and acute mesagenesis. Irradiation of pain in the lumbar region, pain in the Petit triangle, soreness with lumbar lumbar region on the right, the presence of dysuric disorders require differentiation of diagnoses of acute appendicitis, retroperitoneal arrangement of the appendix and right-sided renal colic. Peristaltic sounds are normal, they are heard evenly. A sharp weakening of the peristalsis of the small intestine serves as a sign of a toxic or terminal phase of appendicular peritonitis. In rectal examination, soreness in palpation of the right or posterior wall of the rectum may indicate acute appendicitis with a pelvic arrangement of the process. In this case, a frequent loose stool is possible. Differential diagnosis is conducted between acute appendicitis, acute enterocolitis and diseases of female internal genital organs. Objectively, the presence of acute appendicitis is indicated by symptoms. Begin the study from the less painful areas of the anterior abdominal wall and identify those symptoms that are defined in horizontal position of the patient. **Mendel’s symptom-** pain in the right iliac region when the finger is rubbed on the abdominal wall. **Schetkina-Blumberg’s symptom** – a sharp soreness caused by raising the hand, introduced into the right iliac region. **Rovzinga’s symptom** – when left hand pressed against the abdominal wall in the left iliac region according to the location of the descending part of the large intestine, the right jerky movements along the overlying segment of the large intestine (with acute appendicitis pain in the right iliac region should appear). In the same position, the **Voskresensky's symptom** slip is checked, carrying of fingertips over the shirt from the costal arch to inguinal fold in the right iliac region appears a sharp soreness. If the patient turned to the left side, there is an increase in pain in the right iliac region (**Sitkovsky’s symptom**), with palpation of the right iliac region in this position, tenderness will increase (**Bartome-Michelson’s symptom).** In the vertical position, with a sharp drop of the patient from the toe to the heel, pain in the right iliac region **(Marklei's symptom)** increases. **Krymov's symptom** is the appearance or strengthening of pain in the right iliac region when the finger of the outer opening of the right inguinal canal is examined. **The Kymmel’s point** –pain, 2 cm to the right and below the navel. **Lanza’s point** –pain on the line connecting the two upper-front awns of the ileum (5 cm from the right awn). **Lantz's symptom** is weakening or disappearance **Cremaster- reflex** on the right. **Triada Djelafua** pain, muscle’s tension and hyperesthesia of the skin in the right ileum. **Zhendrinsky’s symptom**- lay down position of the patient, click on the abdominal wall at the Kummel’s point (2 cm to the right and below the navel) with a finger, without removing it, offer the patient to stand up. Increased pain testifies to appendicitis, decrease – an acute salpingo-oophoritis. **Lenander’s symptom**-the difference between the axillary and rectal temperatures is greater than 1'C, is observed in acute destructive appendicitis. **Volkovicha’s symptom**-patients with chronic appendicitis is the abdomen on the right that is lean,with a greater depth of the right hypochondrium and right iliac region. The abdominal wall is softer and more pliable than on the left. In most cases, these symptoms are sufficient to determine the nature of the pathology and the diagnosis of acute appendicitis.

**A typical clinic for acute appendicitis**

With the left-sided location of the cecum and vermiform appendix there is a "left-sided" clinic for acute appendicitis. The location of the cecum and vermiform appendix determines and features of the clinical picture. So, from the front abdominal wall, the local manifestations are extremely poorly expressed; reactive proctitis, which is manifested by tenesmus, liquid stool, sometimes with mucus. It should be borne in mind that in the pelvic position of the vermiform the clinic imitating diseases of female internal genital organs. In conducting a differential diagnosis, rectal and vaginal examination will help: with acute appendicitis on the right, soreness will be determined. Clinical manifestations with the medial location of the appendix are: early onset of peritoneal symptoms, rapid flow, frequent loose stools is possible. The **Sternberg's symptom**- pain during palpation along the root of the mesentery, along the oblique line of Sternberg, coming from the right iliac region in left hypochondrium. Determined for mesenenitis, serves for differential diagnosis between appendicitis and mesadenitis. Acute appendicitis with retro-vascular and retroperitoneal position of the appendix is ​​especially difficult to recognize. The pain in the right ileum is insignificant, radiates into the lumbar region, sometimes downwards, into the thigh. In the right ileal region with deep palpation, only mild tenderness is determined, the peritoneal syndrome is weak or absent. Diagnosis that can help: **Gabaya’s symptoms** (soreness in the Petit triangle), **Obraztsova** (soreness in palpation of the right iliac region is enhanced when the patient is lifted by the right lower extremity at an angle of 45 °), erythrocytes may appear in the urine analysis. **Yaure-Rozanov’s symptom**-pain appears by pressing a finger in the region of the inguinal triangle, observed with retro-calcal appendicitis. **Suppolt-Seine’s symptom**, a deep breath causes the patient pain over the bladder, observed with inflammation located in the pelvis process. **Lorin-Epstein’s symptom** for differential diagnosis of acute appendicitis and renal colic is the sipping of the testicle. Increased pain confirms renal colic.

**The clinical course features of acute appendicitis of pregnant women**

Gradual increase in the pregnant uterus changes the topographic ratio in the abdominal cavity. The cecum and the appendix shift up and are behind the pregnant uterus. Concerning the clinical picture of acute appendicitis in pregnant women varies. Pain and tenderness zones in palpation is localized in the right mesogastric or right subcostal area. Muscle tension is indistinct, peritoneal symptoms are mild. **Mikhelson's symptom** - tenderness in the right iliac region increases when the woman lies on the right side, when the uterus presses on the inflamed focus, is typical for the destructive forms of appendicitis in pregnant women.

**Complications of acute appendicitis**

Appendicular (periapendicular) infiltration.  This is a kind of local bordered peritonitis.The leading sign of this complication is the appearance in the abdominal cavity of a moderately pain, and its localization roughly corresponds to the location vermiform appendix. At first, this is relatively mild, painful, has fuzzy edges. Then, the infiltration decreases, becomes denser and less painful. During this period, he can easily be mistaken for a tumor of the cecum. Further in a significant part of patients appendicular infiltration gradually dissolves and ceases to be determined. Diagnostics periapendicular infiltrate is based on the detection of symptoms -acute appendicitis at the onset of the disease, which gradually subside, and revealing a palpable infiltrate. It should be remembered that some patientsinfiltrate may not be located in the right ileal region, but under liver with a sub-hepatic location of the appendage; appendicular Infiltration in the small pelvis is often found only when rectal or vaginal examination. After the resorption of complete restoration of the vermiform function, the process does not occur. In most cases in the appendage some sclerotic changes remain, periapendicular cords. It is customary to combine these changes the term "residual chronic appendicitis". Chronic appendicitis it is accepted to subdivide into three forms: 1) chronic residual (residual) appendicitis; 2) chronic recurrent appendicitis; 3) Primarily chronic appendicitis. Chronic residual appendicitis characterized by the presence of pain, defined in the projection vermiform appendage, which is associated, as a rule, with the previously transferred fit. Chronic recurrent appendicitis is characterized by the presence of frequent attacks of the disease. Primary chronic appendicitis, In contrast to residual, does not have a typical episode at the beginning of the disease. Sufficiently controversial from the theoretical standpoint is the selection primary of chronic appendicitis. It should be noted here that the majority researchers deny the possibility of a primary occurrence in the appendage chronic inflammation. However, experience shows that the typical morphological changes in patients who did not have a single history, even the easiest attack of appendicitis. Therefore, from the point of view of the clinician, the division of this form is justified.  Diagnosis of all forms of chronic appendicitis is based on the history. With the primary chronic appendicitis, it can be difficult. And here it is necessary to make a differential diagnosis with tuberculosis of the appendage, tumors of the appendix, and, possibly,diverticulum of appendix. In some cases, the statement diagnosis of chronic appendicitis can be obtained with a contrast examination of the intestine with barium. Presence of stable contrasting process within a few days and even weeks after taking the barium and emptying it from the intestine testifies to the presence of the chronic appendicitis patient.

Appendicular (peria-pendicular) abscess

Appendicular abscess is a variant of delimited peritonitis. Unlike the appendicular infiltrate, there is a cavity with pus between the inflamed process and the surrounding organs that form the fusion. For this complication, the presence of symptoms of irritation of the peritoneum, the tension of the muscles of the abdominal wall, and other typical manifestations of acute appendicitis are also uncharacteristic. Fluctuation typical for purulent processes is rarely observed. Abscessing of appendicular infiltrate can be suspected if there is no effect of conservative therapy, the resumption or intensification soreness, the appearance signs of purulent intoxication (fever, chills, tachycardia, progression signs of inflammation according to laboratory methods research).

“Unrestricted” peritonitis

It is one of the most formidable complications of appendicitis. Local Peritonitis is limited to one or two anatomical areas (right iliac fossa and small pelvis), has a local character and almost not reflected in the state of patients and clinical manifestations of the disease. When a widespread peritonitis inflammatory process strikes the right iliac region, small pelvis and left iliac region, it extends to the whole floor of the abdominal cavity. Characterized by an earthy complexion, dyspnea, tachycardia, dry, coated tongue, palpation according to the distribution of peritonitis, muscle tension is determined, soreness and symptoms of irritation of the peritoneum.

**DIAGNOSTICS LABORATORY AND INSTRUMENTAL METHODS**

Emergency laboratory examination for acute appendicitis is the analysis of peripheral blood on the number of leukocytes, erythrocytes and hemoglobin level. A typical laboratory picture characterized by normal indices of erythrocytes and hemoglobin and an increase in the level of leukocytes. In severe appendicular peritonitis, it is possible to increase the number of erythrocytes and hemoglobin level in the blood at the expense of development of hypovolemia, followed by a decrease in these indicators due to progressive toxemia. If there is a clinic for appendicular peri- It is advisable to obtain an expanded leukocyte formula for assessment of severity of intoxication. It is mandatory to investigate also a precipitate of urine. In the usual course of acute appendicitis, deviations in the analysis of urine is not norm. An increase in the number of leukocytes, the appearance of leached erythrocytes and flat epithelium in the urine sediment requires differential diagnosis of acute pyelonephritis and renal colic with retroperitoneal arrangement of the appendix in acute appendicitis. From the biochemical parameters of patient’s blood with acute appendicitis, the level of bilirubin, amylase, urea and sugar is determined. These analyzes are based on indications in the case of differential diagnosis and if the patient has a clinic of acute appendicitis with the phenomena of peritonitis. An increase in the level of bilirubin is possible with the development of pilephlebitis, severe peritoneal intoxication, and requires differential diagnosis with mechanical and parenchymal jaundice on the background of choledocholithiasis, hepatitis, destructive cholecystitis. In this case, an additional laboratory study is to determine the level of transaminases (ALT- Alanine aminotransferase, AST- aspartate aminotransferase). With an increase in the level of amylase in the blood, it is necessary to differentiate the diagnosis acute appendicitis and destructive pancreatitis with development enzymatic peritonitis. The level of blood clots with acute appendicitis within normal limits. Increased blood urea levels and creatinine is possible only with advanced forms of appendicular peritonitis and the development of acute renal failure. Chronic renal failure in patients with severe kidney disease may lead to the development of uremia, the appearance of abdominal pain and dynamic intestinal obstruction. Hyperglycemia and development of ketoacidosis in patients with diabetes mellitus can also lead to the appearance of belly pain, which requires a more precise diagnosis. In this case, acute appendicitis patients with diabetes mellitus can cause decompensation carbohydrate metabolism. Surgery recommended to carry out with endotracheal anesthesia. X-ray the chest is necessary for patients with pathology respiratory system. Ultrasound examination of abdominal organs, the cavity allows to reveal signs of cholelithiasis, mechanical jaundice, hepatitis, cirrhosis of the liver, acute cholecystitis, destructive pancreatitis, the presence of free fluid, infiltrates and abscesses in abdominal cavity. Ultrasound of the pelvic organs, it is possible to detect inflammatory and tumor formations of the uterine appendages in women, pelvic abscesses. Ultrasound of the retroperiton will help to identify signs of urolithiasis and acute occlusion of ureters, pyelonephritis and hydronephrosis transformation of the kidneys. Today, the resolving power of ultrasound diagnostic equipment and accumulated experience allow us to reveal with high reliability the signs of destructive inflammation in the appendix. With Kocher’s symptom, it is necessary to exclude the pathology of the upper sections of the gastrointestinal tract. On fibrogas groduodenoscopy it is possible to identify acute and chronic diseases of the stomach and duodenum, which cause pain syndrome and simulate acute appendicitis. Patients with the presence of chronic diseases cardiovascular system must do an electrocardiographic study before the operation.

**SURGICAL TACTICS**

1. If there is a suspicion of acute appendicitis, the patient should be sent to a surgical hospital providing emergency surgical care.

2. Observation and examination the patient in the receiving room,surgical hospital, should not exceed two hours. During this period, the presence of acute appendicitis should be excluded, otherwise the patient should be hospitalized.

3. Additional examination and monitoring in a hospital can be continued, but not more than 2-4 hours.

4. Appendicitis should be excluded clinically (with appropriate record in the medical history) or surgically (diagnostic laparoscopy, diagnostic laparotomy -Volkovich-Dyakonov).

**PREPARATION FOR THE OPERATION**

In the waiting room before the operation, the patient must pass a partial sanitization. It is advisable to take a shower. Operational field shaves from the nipples to the upper third of the thighs (in men around the penis and scrotum). In the case of varicose veins of the lower extremities always have to elastic bandaging the feet. With a high risk of thromboembolic complications, heparin prophylaxis is performed prior to surgery.If the patient ate less than 6 hours before surgery, it is necessary to withdraw it from the stomach. The bladder before the operation should be emptied. Patients suffering from chronic constipation, in order to prevent postoperative paresis of the intestine, it is desirable to make a cleansing enema (except for cases of suspected perforation of the appendix). All these activities are conducted after the end of the survey and should be completed within two hours.

**SELECTION OF THE APPENDECTOMY METHOD**

The most sparing, but at the same time, the most complicated bargaining process is laparoscopic appendectomy. There is no absolute contraindications to laparoscopy. Relative contraindications are, Common: 1. the presence of diseases of the cardiovascular and respiratory system, obstructing the superposition of pneumoperitoneum; 2. Pregnancy, the 2-3rd trimesters; 3. pronounced violations of the coagulation system. Local: 1.Multitude operations on the organs of the abdominal cavity; 2. giant ventral hernia; 3. Multiple abscesses and fistulas of the anterior abdominal wall. The simplest, most reliable, but the most traumatic variant of the operation - Traditional appendectomy -McBurney. Laparoscopically supplemented appendectomy from mini-access (with laparoscopic support or without it) on the traumatic position is in the middle position between these interventions, approaching in simplicity and reliability to open operation. With uncomplicated appendicitis and with acute appendicitis with local unrestricted peritonitis is shown appendectomy (McBurney, video laparoscopic appendectomy or appendectomy from mini-access with laparoscopic support). If there is a local peritoneal response, intervention complete with sanation of the right iliac fossa, small pelvis and introduction micro-irrigator for antibiotics in the right iliac fossa. When acute appendicitis with diffuse peritonitis shows abdominal sanitation (laparoscopic without video support, laparoscopic video support or laparotomic), draining the right flank and small pelvis and appendectomy (video laparoscopic, from McBurney access or appendectomy from mini-access with laparoscopic support). Mini-access appendectomy with laparoscopic support is the most justified in the presence of local favorable conditions (absence of rough inflammatory fusion of the appendix with the surrounding organs and tissues). Traditional appendectomy “McBurney “ is advisable in the presence of circumstances that complicate the less invasive methods of operating, as well as in the absence of special equipment and trained staff. Acute appendicitis with diffuse peritonitis Appendectomy (laparoscopic with video support or laparotomic), sanitization of the abdominal cavity and drainage of all its departments respectively, the phase of peritonitis, its shape and severity (laparoscopic video support or laparotomic). General abdominal methods appendectomy is possible in all forms of acute appendicitis and its complications, but are most justified if a broad audit is needed and sanation of the abdominal cavity. Laparoscopic appendectomy video is not performed in a dense infiltrate. Appendectomy is indicated in the most difficult situations, and also in specially trained personnel and equipment. The operation starts from middle access: the lower middle laparotomy is performed, which continue upwards with the defeat of the upper abdominal cavity. When the diffuse peritonitis is additionally washed with an abdominal cavity of 8-10 L solution of an antiseptic (furacillin, aqueous chlorhexidine) or physiological sodium chloride solution and establish drainages for outflow of inflammatory exudate.

**EARLY POST-OOPERATIVE PERIOD AND PERFORMANCE EXPERTISE**

The patient is allowed to get out of bed in 6-8 hours after the operation on uncomplicated appendicitis. After minimally invasive operations, patients are activated earlier. Drinking is allowed in 2-3 hours, with the second day, 1 (according to Pevzner) can be assigned with a gradual extension diet to the "general". Stitches is removed on the 6th-7th day. Control drainage after laparoscopic appendectomy is removed on the second day, the irrigator is on the third day. Patients are discharged of hospital on the third day after minimally invasive operations and on the 7th-10th after the traditional operations. Early discharge from hospital requires the patient’s attendance in the clinic for the next day. When complications are widely used in the postoperative period additional methods of research - ultrasound, etc. Time of temporary disability for intellectuals is 3-4 weeks after traditional interventions and 1-2 weeks after minimally invasive. To manual worker, after issuing a job, a certificate is issued through MAC(Medical Advisory Commission) polyclinics, transfer to easy work for a 1.5-2 months period after traditional operations. After minimally invasive interventions, patients can begin work in 4 weeks.

**Control tasks**

1. When the abdominal cavity is opened in the right ileal region, the surgeon does not

find a cecum and a vermiform appendage. What should the surgeon do?

2. When the abdomen is opened, dark blood is released in a significant quantity. What should the surgeon do?

3. During surgery for acute appendicitis, no wound the dome of the cecum, nor the vermicular appendix. What should the surgeon do?

4. Before the operation, a diagnosis of diffuse peritonitis was made. By autopsy cavity of the appendix was changed again. In the abdominal cavity is turbid exudate, confirming the presence of peritonitis. What should the surgeon do?

5. Should appendectomy be performed in case of salpingitis during surgery?

6. During laparotomy, large appendicular infiltrate was found. What should the surgeon do?

7. Revision of ileocecal angle revealed infiltration and hyperemia dome of the cecum and terminal section of the small intestine. In this case: a) the process is not changed, b) the process is changed. What should the surgeon do?

8. Patient with an appendicular infiltration on the 7th-8th day of treatment, lifting temperature, tachycardia, dyspnea, abdominal pain. Borders of infiltration of steel less clear, peritoneal symptoms are positive. Diagnosis? What should the surgeon do?

9. By the end of the first day after the appendectomy performed, the patient has a sharp weakness, tachycardia, a drop in blood pressure. The presence of fluid in the sloping places of the abdominal cavity. Diagnosis? What should the surgeon do?

10. During the operation, an appendage and diffused purulent peritonitis were perforated. How should the operation be completed?

**Reference replies**

1. Anesthesia should be given, after which the wound should be expanded and more detailed revision of the right side of the abdominal cavity.

2. Women should, first of all, make an audit of the pelvic organs.Men should audit first the ileum, and then all the organs of abdominal cavity, which is preferably performed after the median laparotomy.

3. If the process is still found, retrograde removal is shown. If the latter is not found, the wound should be widened.

4. It should, exclude Meckel's diverticulum, while women have inflammatory diseases of the pelvic organs. Then, it is necessary to make median laparotomy for more thorough revision of the abdominal organs cavity.

5. If the secondary changes in the appendage are sufficiently pronounced, then yes. Doubtful cases of appendectomy may not be performed. The patient should be informed about it in the future.

6. The abdominal cavity is drained without attempting to isolate process from the infiltrate. If the infiltrate is loose, then it should be highlighted from infiltration and removed.

7. If the process is not changed, it is not removed. In the abdominal cavity introduces antibiotics. In this case, the diagnosis of ileothyphitis is justified. If the process is changed, then the inflammatory process extends to dome of the cecum and small intestine. The process should be removed, and the operation terminate by leaving the micro-irrigator in the abdominal cavity.

8. The patient has abscessed infiltration. An autopsy and drainage of abscess. It can be produced in two ways: if it is located high, then oblique access from the right iliac region extraperitoneal according to Pirogov, if it is located low, then through a straight line gut.

9. A large bleeding into the abdominal cavity, apparently due to slip ligatures from the stump of the mesentery. Relaparotomy is indicated.

10. The abdominal cavity should be drained through the medial laparotomy wound. The right iliac region is drained.

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