



**IMPROVING THE RESULTS OF TREATMENT OF PATIENTS WITH
CHOLEDOCHOLITHIASIS BY USING MINIMALLY INVASIVE METHODS
OF TREATMENT WITH THE USE OF NITROGLYCERIN AND
ELECTROACTIVATED SOLUTION**

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REZYUME

The treatment of patients with acute cholecystitis remains one of the most urgent problems of urgent surgery. The number of complicated forms of acute cholecystitis reaches 35% of cases and has no tendency to decrease.

The aim of this study is to improve the results of treatment of patients with acute calculous cholecystitis complicated by choledocholithiasis by using minimally invasive methods of treatment with the use of nitroglycerin and EAR.

The scientific work is based on the analysis of the results of surgical treatment of 160 patients with acute calculous cholecystitis complicated by choledocholithiasis who were treated in the surgical department of the clinical base of the Bukhara State Medical Institute for the period 2018-2023.

Key words

acute cholecystitis, laparotomy, drainage, choledocholithiasis, EAR, nitroglycerin.

Relevance.

Treatment of patients with acute cholecystitis (AC) remains one of the most urgent problems of urgent surgery. The number of complicated forms of OH reaches 35 % of cases and does not tend to decrease [1]. Currently, about half of patients admitted to a surgical hospital with acute cholecystitis undergo emergency or urgent operations, second only to acute appendicitis in this indicator [5, 8, 10]. Postoperative lethality in OC is 2-5% due to the high proportion of complicated forms and after traditional cholecystectomy [4].



The number of postoperative complications is particularly high in elderly and senile patients with concomitant diseases [2]. Numerous scientific forums discuss the tactics and timing of surgical treatment of patients with OH. The choice of surgical intervention method (video laparoscopy, mini-access, laparotomy) depends on the clinical situation, equipment and qualification of surgeons. The main method of treatment remains cholecystectomy from laparotomy access. The use of low-traumatic surgeries and the introduction of endoscopic technologies attract specialists to the problem of choosing the most rational method of treating OH [7]. This is especially relevant at present, given the insufficient number of comparative randomized trials in surgery for cholelithiasis and other nosological forms [6, 9]. Tactics and methods of treating patients with OH have undergone numerous changes in recent decades. Until now, there is no consensus on the choice of treatment for OH.

Research objective. Improving the results of treatment of patients with acute calculous cholecystitis complicated by choledocholithiasis by using minimally invasive methods of treatment with applications nitroglycerin and EAR.

Material and method.

The work is based on examinations and treatment of 160 patients with acute calculous cholecystitis complicated by choledocholithiasis, who were treated in the surgical department of the clinical base of the Bukhara State Medical Institute, for the period 2018-2023.

All patients, depending on the treatment method, were divided into 3 groups: Comparison group I consisted of 62 patients with acute calculous cholecystitis complicated by choledocholithiasis who used traditional surgical methods of treatment in 2018-2020. retrograde papillosphinctro-choledochotomy was performed according to the indication, the II-control group consisted of 52 patients with acute calculous cholecystitis who received inpatient treatment in 2020-2021. Unlike I - control cardy group and these patients in the complex treatment were used with nitroglycerin is a powerful relaxant of smooth muscles, dilation of the biliary tract. Group III – the main group included 46 patients with acute calculous cholecystitis complicated by choledocholithiasis, who were treated with the following method: II – in order to accelerate the time of relief of the cholangitis process, retrograde lavage choledoch lumen was supplemented with electroactivated EAR-A solution.

It should be noted that in order to obtain reliable research results and maintain the synchronicity of different groups of patients, we included patients with similar severity conditions in the studies. To this end, patients with severe concomitant diseases such as diabetes mellitus, cirrhosis of the liver and severe CHD are also

excluded from cholangiogenic liver abscess, as it has its own clinical form and requires special therapeutic conservative and surgical tactics.

Table 1

Distribution of patients depending on the type of treatment measures (n-160)

Patient groups	Treatment method:
Comparis on Group I group (n=62)	Retrograde papillosphinctro-choledochotomy (RPT) without washing the choledochus and without taking nitroglycerin
Main group II group (n=52)	RPSHT with Nitroglycerin Applications
Main group III group (n=46)	RPSHT with Nitroglycerin + EAR Applications

All patients were divided by gender and age according to the classification of age groups adopted at the regional seminar of the World Health Organization in Kiev in 1963. Group I consisted of 45 (72%) men and 17 (27.4%) women aged 19 to 75 years (mean age was 48.4 ± 2.1 years old). In group II-36 (69.2%) men and 16 (30.7%) women aged 17 to 70 years (average age was 49.4 ± 1.8 years), i.e. the groups were comparable in gender and age. The majority of patients (80 %) were at the most able-bodied age (from 20 to 60 years).

Out of all 160 examined patients, 132 (82.5%) patients had cholangitis, which manifested itself due to increased body temperature, chills, deviations of laboratory parameters and blood intoxication from the norm. When measuring the wall thickness of the choledochus, thickening of the wall due to edema was noted.

Ultrasound examination was used to measure the size of the lumen of the choledochus and the thickness of the wall of the choledochus. The gallbladder is examined on an empty stomach, and before the procedure, the patient should also not drink coffee or smoke (factors that provoke bladder contraction).

All the examined patients underwent endoscopic retrograde cholangiopancreatography (ERPHG), which not only determines the presence of a calculus in the choledocha and accurately determines the location of the calculus,



but also provides sufficient information about the condition of the wall and lumen of the choledocha.

Retrograde cholangiopancreatography (RCPG) is a technique that combines endoscopy with simultaneous X-ray examination. The endoscope is inserted into the duodenum to the large duodenal papilla, the mouth of which opens into the lumen of the duodenum. Through the endoscope channel, a probe with an internal channel is stretched to supply a contrast agent at the end of which there is a cannula (made of denser plastic), which the doctor pushes into the mouth of the papilla, a radiopaque substance is introduced into the bile and pancreatic ducts. Then, using X-ray equipment, an image of the ducts is obtained.

PCP was performed if choledocholithiasis was suspected, to determine the nature of mechanical jaundice, and to study the anatomy of the ducts before surgery.

If a blockage or narrowing of the ducts is detected, additional procedures are performed:

- Insertion of a catheter to remove excess bile.
- Removal of gallstones of the bile ducts.
- Sphincterotomy: a small incision in the area of the external opening of the common bile duct, which ensures the normal outflow of bile and the release of small gallstones.

Endoscopic papillosphincterotomy was performed in an operating room equipped with modern radiographic equipment used for additional monitoring.

Normally, liver choledochus is defined as a hollow cylinder with smooth external and internal walls. The diameter of the bile duct varies from 2 mm (in the narrowest part) to 8 mm (the upper limit of the norm in the widest part). No extraneous formations should be detected in the lumen of the choledochus.

All surveys new ones illye as in control about and os about vnosj group operating system stupid but whether in satisfactory condition up to 30% and in the state of medium degree severity up to 70%. Most sluchev patients received and li with sting about bami: on the increase in body temperature, general weakness and lack of movement, sweating, lack of appetite, pain in the right hypochondrium.

A detailed analysis of the clinical picture and the results of studies of each group of patients will be presented in the corresponding chapters of the dissertation.

Results and their discussion. To everyone The examined patients had their body temperature and respiratory rate urgently measured on the day of admission, an objective examination of the liver (palpation, percussion), ultrasound examination, and, if necessary, MSCT or CT of the liver and abdominal cavities was

performed. Laboratory blood tests were performed. Conservative, restorative and symptomatic therapy and preparation of minimally invasive surgical interventions of RSCT were started.

When performing retrograde cholangiographic intervention, material for further study was taken from the contents of the biliary passages. Antibiotic therapy was carried out taking into account the sensitivity of the detected microflora.

In group II, in addition to the above-mentioned standard treatment measures, patients were treated with the following methods: about bathss in first about th group and RPSHT performed after application nitroglycerin 0,4 mg. sublingually in the form of tablets. CPSCT manipulation was started 2-3 minutes after administration of the nitroglycerin preparation.

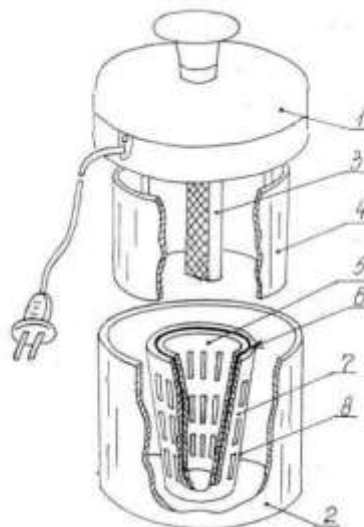
Main groupss (III) preoperative preparation and The conservative treatment method was similar to that of the previous group. The complex treatment tactics in patients of the main group differed from the previous group by applying retrograde lavage lumen of choledoch with EAR-A solution.

Method of preparation and application of electroactivated aqueous solution.

For cooking purposes for electroactivated water solution, we used the Device of NPF "Espero-1" developed in 1998 by an employee of Tashkent Institute of SredazNIIGaz S. A. Alyokhin. Bioelectric activators of the Espero type are approved by the Pharmaceutical Committee of the Republic of Uzbekistan for obtaining drugs used in medical and clinical practice and were widely used by employees of the Vakhidov Research Institute and Tashgosmi No. 2 clinics.

ESPERO Bioelectroactivator 1 - It is a medical portable submersible diaphragm electrolyzer.

DEVICE DESIGN



ESPERO-1 consists of a cover 1 with a power supply unit mounted in it, a container 2 for catholyte, in which the electrodes (anode 3 and cathode 4) are placed, and a container 8 for anolyte, consisting of two glasses 5 and 7, separated by a diaphragm 6. Base and body PSM-115 GOST 20282-86. Clip and insert - polyethylene N. D. GOST 16338-77. Diaphragm-natural paper tracing paper GOST 892-70. The anode 3 is made of high-quality chemically inert graphite MPG-7 TU 48-20-86-81.

Fig. 1. Schematic representation of the Espero-1 spacecraft

Cathode 4 is made of stainless steel 12X18N10T GOST 5632-72. As a diaphragm, tracing paper is used, wound on the inner glass in three layers, and glasses 5 and 7 rotate until the slots match. The power supply unit consists of a limit switch that disconnects the device from the mains when the cover 1 is lifted, a paper capacitor, a rectifier and a warning lamp. The "plus" of the rectifier is connected to the anode 3, the "minus" - to the cathode 4.

Control of parameters. The alkalinity of Electroactivated aqueous solution catholyte (EVR-K) and the acidity of Electroactivated solution anolyte (EVR-A) were monitored using a potentiometric method - an ionometer (pH meter) with a glass electrode with a hydrogen function. Monitoring of the degree of activity of the electroactivated solution can be carried out by changing the value of the redox potential (ORP) using devices. Due to the fact that not every patient has an expensive ionomer, device.

ESPERO-1" is calibrated in such a way that the parameters necessary for treatment are controlled by the time of water activation specified in each specific instruction. Redox potential (ORP) of the system electroactivated aqueous solution catholyte (EVR-K) has a minus sign (-), Redox potential (ORP) of the system, electroactivated solution anolyte (EVR-A) has a plus sign (+).

In addition, to treat certain diseases with an anolyte, it is necessary to measure the amount of "active" chlorine (hypochloride) according to the standard method. Electroactivated anolyte solution (EVR-A) retains its properties for 15-20 days. Electroactivated aqueous solution of catholyte (EVR-K) in an open container begins to lose its properties after 2-3 hours and completely loses them after 24 hours.

To prepare the electroactivated solution, we used a sterile 0.9% sodium chloride solution instead of water.

Thus, we conducted a study in III groups of patients with comparative analysis of their treatment results by I and II The groups identified the following features that are of practical importance: (Table 2)

Table 2

Comparative results of the main indicators

I-, II -, and III - patient groups

№	Indicators	Patient groups		
		I (n=62)	II (n=52)	III (N=46)
1	Failed to remove the stone by T	30 (48,3%)	6 (11.5%)	5 (10,8%)
2	The most successful RSHT	24 (38,7%)	43 (82,6%)	41 (89,1%)
3	Bleeding from choledochus	9 (14,5%)	3 (5,7%)	1(2,1%)
4	Forced single-stage cystectomy with choledochotomy	39 (62.9%)	9 (17,3%)	5(10,8 %)
5	Contraindications to laparoscopic cholecystectomy	2 (3,2%)	2 (3,8%)	1(2,1%)
6	Average duration for successful RSHT	60,2+2,8 min	32.8+2.4	25,4±1.9 min
7	Number of open cystectomy operations at the stage	2 (3,2%)	2,(3,8%)	1(2,1%)
8	Number of laparoscopic cystectomies	22 (35,4%)	41 (78,8%)	40 () 86,9%
9	Average duration of the operation when the method is used	67+3,3	66+2,9	65+3.1 min
10	Timing of removal of drainage tubes from the abdominal cavity.	9-10 days	7 days	5-6 days
11	Average duration of surgery laparoscopic method	57,6+3,4	54,1+2,6	32.3+2.7 min
12	Long-term cholangitis	11 (17,7%)	5 (9,6%)	-
13	Terms of normalization of bilirubin	8-9 days	6-7 days	3-day period
14	Terms of normalization of bilirubin intoxication	7-8 days	5-6	3-4 days
15	Average bed-day duration	12,6+1,8	10+1,2	8,4+1,7

- When using nitroglycerin 0.5 mlgr under the tongue with RPSHT , the % less successful removal of stones from the choledochus decreases from 48.3% of cases to 10.8%.

- When using nitroglycerin 0.5 mgr under the tongue before performing CPSHT, the number of successful stone removal increases from 38.7% to 89.1%.

- Performing CPSCT on the background of relief of spasm of the common bile duct wall with the use of nitroglycerin under the tongue 0.5 mgr reduces the technical difficulty of performing stone removal thereby reducing bleeding complications from 14% to 2.1%, the duration of CPSCT from 60.2+2.8 min to 25.4+1.9 min.



- When using our method of performing forced single-stage cholecystectomy with antegrade choledocholithotomy on the background of acute cholecystitis, it decreases from 62.9% of patients to 10.8%.

- With successful RSCT from 2.1% to 3.2% of patients, contraindications to laparoscopic operations in the second stage are noted.

- The use of nitroglycerin before CPSCT in patients with choledocholithiasis contributes up to 86.9% of cases to performing cholecystectomy as the second stage of surgery in the cold period.

- Performing surgery for acute cholecystitis with complicated choledocholithiasis in two stages and eats-the first stage in an emergency order of CPSHT and the second stage of cholecystectomy by a mini-invasive method after stopping acute cholecystitis for 4-5 days reduces the average duration of the operation from 57.6 to 32.3+2.7 minutes.

- After the removal of the stone from the choledochus and during 3-4 days after RPSHT, the use of retrograde sanitation and lavage of the common bile duct with EAR-A reduces the complications of long-term cholangitis by 17.7%, accelerates the normalization of total bilirubin indicators, and intoxication of the body from 8 to 3-4 days.

- In the treatment of patients with cholecystitis complicated by choledocholithiasis, the use of nitroglycerin and retrograde sanitation and lavage of choledochus with an electroactivation solution or EAR-A solution helps to improve treatment results and reduces the duration of inpatient treatment of these patients from 12.6 to 8.4 days. All this allows us to widely recommend our proposed treatment method in clinical practice and has a cost-effective approach.

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