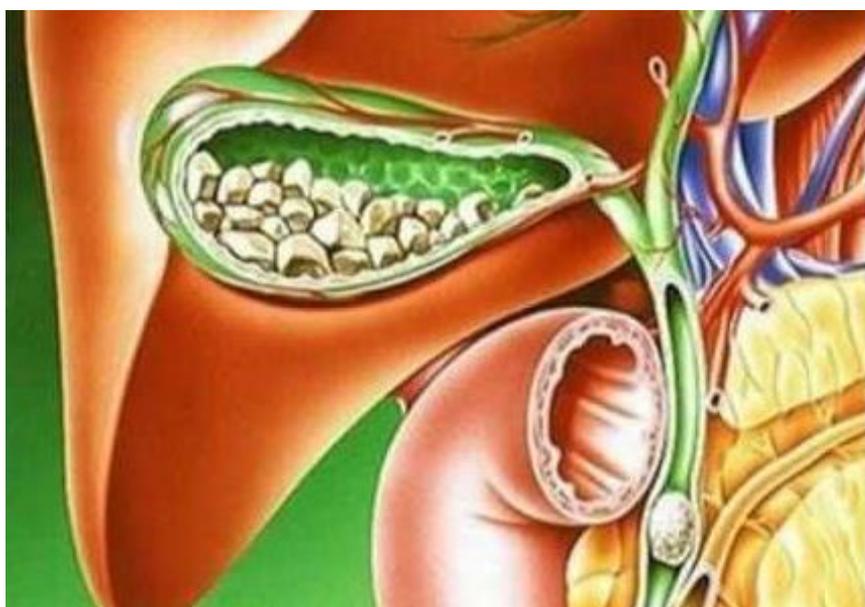


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SURGERY OF Cholelithiasis in Elderly Patients

MONOGRAPH



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The monograph is devoted to one of the most complex and urgent problems of modern medicine - cholelithiasis. It presents in detail modern approaches to the surgical treatment of calculous cholecystitis, including its complicated forms, using minimally invasive technologies. Issues of diagnostics, indications for surgical interventions using endosurgical technologies, minilaparotomy access and endoscopically assisted surgical aids are covered. The authors present their research materials obtained during minilaparotomic cholecystectomy with various techniques.

The monograph is illustrated with the data of radiation methods of diagnostics, endoscopy and intraoperative photographs.

The monograph was discussed and approved at a meeting of the Academic Council of the Samarkand State Medical Institute and recommended for publication.

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INTRODUCTION

According to the World Health Organization, "over the past decade, there has been a widespread increase in the number of patients with gallstone disease (GSD) and its complications. At the same time, damage to the bile ducts is one of the most formidable complications of biliary surgery and does not tend to decrease despite the constantly improving technique of surgical interventions. When performing operations on the abdominal organs, the frequency of intraoperative damage to the bile ducts is 0.09 - 3%. As a rule, "iatrogenic trauma to the extrahepatic bile ducts (JP) occurs during surgery on the biliary tract, most often cholecystectomy, less often during operations on the stomach, duodenum, pancreas." Currently, laparoscopic cholecystectomy is promoted as the "gold" standard in the treatment of cholelithiasis, although this type of surgical intervention has a much higher risk of damage to the gallbladder. A characteristic feature of the method is a new type of damage to the duct - a thermal burn of hepaticocholedochus. At the same time, the risk of mechanical injury to the bile ducts during clipping of the cystic duct cannot be ruled out. Another feature of laparoscopic cholecystectomy was an increase in the proportion of high lesions. "Injuries at the level of the common hepatic duct, bifurcation of the lobar ducts and isolated right and left lobar ducts account for 69%, with "traditional" cholecystectomy such injuries occur in 44.8%." In this regard, the prevention and surgical treatment of iatrogenic injury of the bile ducts is an urgent problem in hepatobiliary surgery.

In world practice, a number of studies are currently being carried out aimed at studying the anatomical and topographic heterogeneity of the external bile ducts, as one of the leading factors in their damage, as well as studying the morphological features of tissues in the area of the hepatoduodenal ligament in conditions of the inflammatory process of the gallbladder and, accordingly, pathological changes, forming paravesical infiltration with a violation of the normal ratio of the main structures in this zone. Research continues on the main predisposing factors, among which are highlighted not only destructive acute cholecystitis and other competing biliary pathology, but also anatomical anomalies, as well as the reasons associated with erroneous surgical tactics, incorrect orientation in anatomical data and technical errors of the surgeon's actions, including mechanical trauma. , laser or electrocoagulation, clipping, ischemia.

At present, large-scale targeted measures have been taken in our country to radically improve the quality and significantly expand the range of medical care provided to the population. In this direction, in particular, in improving the results of treatment of patients with iatrogenic lesions of the gallbladder, positive results have been achieved. "The action strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021" sets tasks to develop and improve the system of medical and social assistance to vulnerable categories of the population to ensure their full life. In accordance with this, increasing the effectiveness of surgical treatment of bile duct injuries through factor analysis and improving surgical tactics is one of the topical areas for research.

"The main reasons for failures in the treatment of injuries of the main bile ducts are the delay in diagnosis and the performance of reconstructive operations that are inadequate in volume by surgeons who do not have the proper experience in biliary surgery." There is no unity in the choice of the method

of operation for "fresh" injuries of the bile ducts, diagnosed intraoperatively or in the immediate postoperative period. There is still a desire for reconstructive operations, which give unsatisfactory results, due to the rapid development of cicatricial stricture or anastomotic failure. A number of surgeons resort to anastomoses with the duodenum, which leads to the development of a duodenal fistula or reflux cholangitis, anastomotic stricture. Factors that influence the choice of operation are decisive in the tactics of treating bile duct injury: the nature, localization of damage, the condition of the crossed duct, the time of damage diagnosis, and the presence of a surgeon with experience in reconstructive surgery of the bile ducts. The developed methods for the treatment of iatrogenic damage to the gallbladder, with their timely and correct use, allow most patients to achieve good results, although postoperative complications reach 48.7%.

The analysis of the literature indicates that at present, the treatment and diagnostic tactics for iatrogenic injuries of the gallbladder is one of the most urgent and unresolved problems of modern surgery. These data allow us to consider the search and development of an optimal diagnostic algorithm and surgical tactics to improve the results of treatment of iatrogenic damage to the main biliary tract as one of the urgent problems of abdominal surgery.

CHAPTER I

MODERN METHODS OF TREATMENT OF CHRONIC CALCULOUS CHOLECYSTITIS IN PERSONS WITH INCREASED OPERATIONAL RISK

Gallstone disease (GSD) is one of the most common pathologies, second only to atherosclerosis in frequency [14,29,56,137,195]. Thus, according to the 6th World Congress of Gastroenterology, about 10% of the world's population suffers from gallstone disease, and the number of patients increases by about 2 times every decade [46,123,167,191,219].

The frequency of cholelithiasis in different latitudes of the world is not the same [14,53,123,234,246]. The prevalence of cholelithiasis is noted in Western and Eastern Europe, North America, especially in their industrialized countries. Thus, in the UK, cholelithiasis affects about 39.5% of the population [4,34,75,123].

In general, up to 15% of the adult population in developed countries have cholecystolithiasis [8,17,32,196]. In the US alone, more than 20 million people suffer from cholecystolithiasis with an annual diagnosis of 1 million people, for which more than 600 thousand cholecystectomies are performed per year [7,27,63,82,164,231]. In Russia, the number of cholecystectomies exceeds more than 100 thousand per year [32,125,136].

The last decade was marked by certain achievements in the field of biliary surgery, due to the widespread introduction of minimally invasive and endoscopic technologies, the development of anesthesiology, improved diagnostics, increased operational activity and sanitation of patients at the preclinical stage of the disease [2,9,13,25,59,178].

To date, elective surgical treatment of uncomplicated cholelithiasis gives quite satisfactory results and provides minimal postoperative mortality (0.2–0.3%) [49,71,168,193].

The situation is much worse with the complicated course of cholelithiasis, especially in patients with increased operational risk (OR) [1,20,39,137,184,228]. The fact of this leaves the problem of treatment of cholelithiasis relevant, because it occurs more often in older age groups. Thus, according to WHO, gallbladder stones have a quarter of the population over 60 years old and a third of the population over 70 years old [1,16,59]. Of course, it should be noted that this problem has always remained.

So in the 80s - early 90s. of the last century, the average mortality after operations for calculous cholecystitis and its complications was 6–10%, reaching 15 and even 30% in the POR group [3,8,29,178].

Currently, according to a number of clinics specializing in this problem, mortality rarely exceeds 2% [3,15,98].

It seems that on average the situation today is developing quite well. However, upon in-depth analysis, it turns out that this indicator was achieved due to low operational activity. It is known that in order to assess the performance of a medical institution, it is important to take into account not only the indicators of postoperative mortality, but also surgical activity. The option is unacceptable when “light

patients” are operated on, and the rest are discharged after “muting” the acute attack, and very soon these patients are operated on in another hospital with severe complications [46,81,149]. As a result, despite a number of good indicators, the average mortality rate exceeds 5 and even 10%, and all this is “thanks” to the group of patients with POR [1,20,138].

Definition of a group of increased operational risk.

For a differentiated approach to choosing a method of treatment and predicting possible complications, it is important to assess risk factors, which makes it possible to identify risk groups, as well as to quantify the condition of patients [1,13,28,30,45]. As successful examples that have been widely used in practical medicine, one can cite the Apgar score scale for assessing the degree of the state of the newborn, the scale for assessing the operational risk of Gologorsky V.A. [13,28,62,156].

The problem of quantitative assessment of the severity of the condition of patients has become the most relevant in recent decades. This is due to the fact that the objectification of the condition of patients makes it possible to predict the probability of death, the terms of general hospitalization and stay in the department, and to evaluate the effectiveness of the therapy. Many researchers write about the need to objectify the assessment of the severity of the condition of patients [1,20,113].

Naturally, the risk of any surgical intervention in persons with POR is primarily due to the pathological state of the CVS, DS, and deep functional disorders [1,41,62,178].

An important factor is the age of the patient [30,45,139]. As is known, the patient's age has a significant impact on the outcome of the operation and is a risk factor for the development of postoperative complications [42,56,83].

Age - 60 years is not a random boundary for a surgical patient. Demographic statistics show that it is at the age of 60 that the second peak of sudden deaths occurs, because it is precisely at this age limit (60 ± 5 years) that a whole range of serious somatic diseases sometimes accumulate: coronary heart disease or myocardial infarction, which reduce life expectancy on average for 5-8 years, hypertension - for 7 years, COPD - for 5-10 years, morbid obesity, diabetes mellitus - for 4-8 years [1,20,56].

However, age is an indirect risk factor, since a significant impact on the outcome of surgery in patients over 60 years of age is not provided by their passport age per se, but by the presence of severe concomitant diseases [1,54,76]. All this has led to the need to differentiate ages into biological (functional, physiological, true, actual) and “clinical”, which is a fundamentally new concept in medicine [54,63,149,213].

Clinical age reflects the potential degree of limitation of individual life expectancy by the main and concomitant diseases affecting the functions of the main life-supporting systems of the body - the central nervous, cardiovascular, respiratory, neuro-endocrine, immune systems [1,54,61,167,196,234].

Another important risk factor is the "urgency of the intervention", it is this factor that seriously affects the results of treatment of elderly and old patients. Emergency operations in this group are accompanied by up to 7 times higher mortality and postoperative complications [54,63,167,224].

Many authors refer to the risk factors as the duration of the disease, the number of attacks, the time of admission to the hospital from the moment of the attack [35,67].

In anesthesiology practice, the evaluation of the final outcome of surgical intervention is a common procedure that is performed using various classifications, since there is no single, universally recognized for use in a wide range of surgical operations [13,28].

The variety of classifications of the degree of operational risk indicates that they still need to be improved and do not fully meet the practical needs of anesthesiology and surgery.

Their primary task is an in-depth and objective preoperative assessment of the patient's condition, which makes it possible to make a screening analysis of the patient's condition, especially in emergency situations, when it is necessary to make a quick and correct decision in the further tactics of treating patients [13,137].

The first systems for assessing the severity of the condition of patients were non-specific and were intended mainly to predict the likelihood of complications in surgical patients. So, according to the PNI index proposed in 1980 r. G. Buzby et al. could determine the likelihood of complications in patients with critical conditions. However, the correlation of PNI with outcome was not strong enough [193,218].

TISS (Therapeutic Intervention Scoring System) proposed in 1974 r. D. Cullen and et al. [196]. It assesses the severity of the patient's condition by the number and complexity of the research and treatment methods necessary for its management, and divides all diagnostic and therapeutic measures into 4 groups. Initially, the system was developed for an objective assessment of the severity of the condition, but with the advent of more specific systems in the 80s, it lost its significance. Currently, TISS is more commonly used to determine the workload and the required number of nursing staff in intensive care units, as well as the rational use of resources [196].

In 1996 r. M. Reis et al. [236] developed an abbreviated version of the system, called the Simplified Therapeutic Intervention Scoring System (TISS-28), where the number of criteria taken into account was reduced to 28. and rational distribution of resources of the intensive care unit.

A group of researchers led by W. Knaus, when developing a system for assessing the severity of the condition of patients, took the path of creating the APS scoring system. Subsequently, they came to the conclusion that when ranking patients according to the severity of the condition, it is necessary to take into account not only acute homeostasis disorders, but also the presence of chronic diseases. So appeared APACHE system (the Acute Physiology, Age, Chronic Health Evaluation) [28,197]. According to this technique, 34 clinical and laboratory parameters are analyzed, which are assigned values from 0 to 4 points, depending on how far they were removed from the average physiological values. The final severity score is determined by summing up all deviations.

In 1985 r. the same authors simplified the original system and proposed the APACHE II system [28] for use. It is based on a multicenter (13 clinics) study based on the analysis of 5815 patients in intensive care units. The system includes 12 criteria included in the first version, takes into account age and concomitant chronic diseases. As well as the first version of the APACHE II system, it is possible to calculate the probability of death by using a logistic regression model. Such a calculation requires

additional information. In addition to scores, APACHE II includes the urgency factor of hospitalization in a surgical hospital, as well as the number of principal diagnostic categories that led to admission to the intensive care unit.

After additions and changes, the ARACNE-II system in 1991 r. was transformed into the APACNE-III system [28,197]. The latter includes parameters for assessing the patient's condition from 5 main groups: a) age-related changes; b) the presence of chronic pathology; c) physiological indicators; d) data on the acid-base state (ACS) and blood gas composition; e) neurological status.

Although the APACNE-III system is highly reliable and predictive for practical use (especially for assessing the risk of mortality), there are some limitations for its widespread use, the main of which is determined by the fact that the scale does not make it possible to accurately determine the degree and nature of insufficiency of individual organs. and systems of a patient with sepsis.

The MODS (Multiple Organ Dysfunction Score) system was proposed in 1985 by J. Marshall, D. Cook and N. Cristou. It includes an assessment of the degree of dysfunction in the body's systems - it determines the severity of violations of the function of breathing, kidneys, liver, hemostasis, cardiovascular and nervous systems. The overall score on the MODS scale consists of the sum of points for each of the 6 homeostasis systems. The minimum amount is 0, the maximum is 26 points [189].

J.-R. Le Gall et al. (1984) identified the most informative indicators from the APACHE system, on the basis of which they developed the SAPS scale, built on the same principles of data assessment as the APACHE scale [13]. The maximum scores (one for each system) are summed up, the final result correlates quite well with the outcome of the treatment of patients in the intensive care unit. However, the principles for breaking down indicators into points are subjective, which greatly reduces the information content of this scale.

Further, J.-R. Le Gall et al. improved this scale (SAPS-II) and in 1995 proposed a fundamentally new LOG scale based on a multivariate analysis of a large number of signs and objectively allocating score ranges for assessing the severity of the condition of patients in the intensive care unit [28]. The principle of summing points to determine the final severity of the patient's condition remained the same.

The imperfection of the existing classifications leads to the fact that often the operational risk is predicted on the basis of the doctor's subjectivity, that is, there is an "operator-dependent" factor [17,78].

Thus, risk factors are in a complex relationship with each other, this relationship has yet to be determined. It became obvious that until now there is no effective, generally accepted classification of risk factors that determine the degree of operational risk. There is a need to objectify these factors, which can be achieved with the help of an effective, adequate, and hence scientific classification of operational risk criteria.

Evolution of views on the tactics of treatment of chronic calculous cholecystitis in patients with increased operational risk.

For more than 100 years after the first cholecystectomy performed by Langenbuch, surgical tactics for cholelithiasis has undergone significant changes and has gone through a number of periods in its development [51,58,156].

The first of them, covering the time approximately from the beginning of interventions on the biliary tract and until the mid-1930s, was characterized by a wait-and-see approach. Surgical activity at that time was 2% [51,68,125].

It was believed that surgery should be performed in severe, life-threatening complicated forms of cholelithiasis. In addition, they often resorted to opening the common bile duct for its revision. The results of treatment were disappointing, the mortality rate reached 50% [45,79,138,251].

The second period (1935–1956) was characterized by an increase in the number of supporters of active surgical tactics [51,97,138]. By this time, the negative aspects of waiting tactics had already become apparent. Severe complications that developed in a number of patients led to their death. It was difficult to predict the development of the inflammatory process in the gallbladder, surrounding organs and tissues. Already before the Great Patriotic War, and especially after it, the vast majority of surgeons (A. N. Bakulev, N. I. Blinov, V. R. Braitsev, B. A. Petrov, etc.) began to perform operations in the acute period of the disease [5,17,67,145,231]. Surgical activity in some clinics reached 80% [21,89,145,195,231]. Although the level of postoperative mortality was higher than in operations in the "cold" period (6-10%), the number of patients with advanced forms of acute cholecystitis significantly decreased, which generally improved the results of surgical treatment of acute inflammation of the gallbladder [5,31,156,187].

Before 1956 r. in the USSR, patients with cholecystitis were treated in therapeutic clinics and were transferred to surgeons only in the advanced complicated stage of acute cholecystitis. The transfer of patients with cholelithiasis to the management of surgeons contributed to a significant improvement in treatment outcomes [5,67,145,195].

The third period of development of biliary surgery was characterized by an ambiguous approach to treatment tactics. The Leningrad (1956) and Kishinevsky (1976) plenums of the Board of the All-Union Society of Surgeons should be considered its boundaries [31,104].

Proponents of active tactics (A. M. Javadyan, V. I. Struchkov and others) considered the diagnosis of calculous cholecystitis to be an indication for surgery, regardless of its form, general condition and age of the patient [51,63,134]. In the future, the negative consequences of such an approach were revealed. Interventions were performed mainly in insufficiently examined patients. In view of the pronounced inflammatory changes, operations often proceeded with great technical difficulties, accompanied by damage to vital formations of the hepatoduodenal ligament and neighboring organs. In this case, often surgical intervention turned out to be non-radical [27,78,145]. In this regard, the problem of the so-called postcholecystectomy syndrome has become quite acute [74,90,121,136]. There was a surge in mortality and complications. Mortality was especially high again in patients with POR and patients with advanced forms of acute cholecystitis, reaching, according to V. I. Struchkov, up to 37.1% [1,37,49,78,103].

There were also diametrically opposed opinions. So, adherents of conservative tactics (V. V. Vinogradov, Malle-Guy, Doliotti, etc.) tried at all costs to stop an acute attack, transfer the disease to a “cold” period, examine the patient and only then operate on him. Mortality in this case was 2%. However, a significant proportion of patients in the POR group were denied surgery [9,30,49,78,91,186].

Thus, the initial periods of the development of surgical tactics in cholelithiasis led to the conclusion that when deciding on the extent of surgical intervention or refusal of surgery, it is necessary to avoid two extremes: the desire to perform a radical operation, cholecystectomy, at any cost, since mortality in the group of patients with POR is excessively high, and, conversely, a complete refusal of surgical treatment or the implementation of insufficient intervention in terms of volume [1,49,56,128]. Thus, the imposition of microcholecystostomy without sanitation of the gallbladder requires the obligatory implementation of a delayed cholecystectomy, while the risk may be too great [16,30,89]. At the same time, there are many cases when patients discharged from the hospital with the wording “surgical treatment is possible only for health reasons” suffered from attacks following one after another almost without interruption until these “life indications” in the form of diffuse peritonitis, severe jaundice or pancreatic necrosis did not occur. And the operation was performed in the most unfavorable period, when it was not necessary to expect good results [23,56,92,167].

The development of methods for surgical treatment of cholelithiasis went in parallel with the development of methods for conservative treatment, which in patients with POR would be a way out of the impasse [17,30,49,67,134,204].

The method of choleric therapy, which has been widespread since antiquity, not only did not justify itself, but also turned out to be harmful, since the migration of stones provoked by it is accompanied by obstructive cholecystitis, obstructive jaundice, and pancreatic necrosis [11,67,96,167,216].

Modern conservative methods include drug dissolution and extracorporeal shock wave lithotripsy (ESWL) [11,40,58,117].

In general, the idea of doing without surgery is certainly very tempting. However, drug treatment was always accompanied by a number of disadvantages:

Severe restrictions on the method of treatment. The best results were obtained in patients with floating cholesterol stones up to 5 mm. Experience shows that the number of such patients is not more than 15%.

Insufficient efficiency of the method. With the most careful selection, it is possible to dissolve stones in no more than 50-60% of patients.

High relapse rate. During the first 5 years after the course of drug dissolution, stones are formed annually in 10% of patients.

The duration of the course of treatment. The dissolution of stones larger than 1,5 cm may require more than 2 years.

Thus, many years of experience in the use of drugs to dissolve gallstones shows that treatment is most effective in patients with single stones, young and not obese [11,40,117]. This is in no way relevant to the POR group, which was the main indication for prescribing these drugs [30,57,189,216].

Since the mid-1980s, ESWL, a method of non-surgical treatment of cholelithiasis, has appeared in clinical practice. Initial rave reviews have given way to a more cautious assessment of treatment outcomes and, to date, the role of ESWL in the treatment of gallstone disease is rather modest [95, 202].

Indications for the use of ESWL are basically the same as for medical treatment, which are developed in detail by the works of domestic and foreign authors [93,117,171,234]. The number of patients suitable for this procedure does not exceed 30% of all those suffering from cholelithiasis, and complete fragmentation of stones occurs in no more than 70% of patients. In reality, the method is effective in subjects with soft single cholesterol stones 0.5 in diameter 1,5 cm[40,94,] and again, these are not patients with POR.

In the mid-1980s, contact dissolution of gallstones was also proposed. But this method has not become widespread either, since adherence to a strict diet is not always feasible, and the intake of scarce and expensive anti-relapse drugs (cheno- and ursodeoxycholic acids) must be continued indefinitely after the intervention.

Another direction in this regard was research aimed not only at the removal of calculi from the gallbladder, but also its subsequent obliteration. After all, one of the ways to prevent recurrence of the disease is the obliteration of the lumen of the gallbladder, turning it into a cicatricial band, which is achieved by eliminating the mucous membrane - mucoclasia [47,105,196,218].

To date, literature data on this problem are rather small and contradictory.

Various physical and chemical agents are used to carry out mucoclasia in the experiment [47,218]. J. _ P. _ McGahanetal ., ZLJi etal . , C. Offergeldetal ., B.K. Shurkalin et al., used electrocoagulation, CO₂ and YAG lasers, and UV radiation [105,196,218]. These authors believe that in patients who have previously suffered repeated attacks of acute cholecystitis, the wall is significantly thickened and electrocoagulation of the mucous membrane can be carried out without much risk.

Of the chemical agents, iodine tincture, aqueous solutions of silver, phenol, and ammonia were tested [40,107,223]. The most effective was the use of a 60% phenol emulsion with an exposure of 4 minutes, with complete desquamation of the epithelial lining by the 4th day [40,60,136]. In this direction, the work of Kholmatov Sh.T. was undertaken, where the good efficiency of sodium hypochlorite for this purpose was shown [40,117].

Before performing chemical mucoclasia of the gallbladder, a prerequisite is the creation of a block of the cystic duct, which prevents the chemical from entering the choledochus and intrahepatic ducts [16,38,145,191].

In order to disable the gallbladder, obliteration of the initial section of the cystic duct and the adjacent part of the neck is used by electrocoagulation or under the influence of a YAG laser [93,108,156,238]. The resulting edema of the wall in this case provides a stable block of the cystic duct [93].

At the same time, mucoclasia is not a completely harmless manipulation. Firstly, when using the electrocoagulation method, due to the inability to determine the true walls of the gallbladder, perforations of the walls and all the ensuing complications often occur, and secondly, the introducing chemical agent is certainly not harmless to the whole organism [93,103,238]. In addition, the flow of bile into the gallbladder when it is unblocked, as well as the stones in it, do not allow us to believe in the possibility of obliteration of the gallbladder [35,67,108,189].

Thus, the idea of "turning off" the gallbladder after the imposition of cholecystostomy, today, is encouraging and at the same time unlikely.

Unfortunately, as practice has shown, conservative methods have not justified the hopes placed on them. In acute cholecystitis, they are not applicable; in chronic cases, they are ineffective, accompanied by a high percentage of relapses, and in some cases cause complications that require urgent surgical correction [36,78,123,241]. Surgical treatment of patients undergoing lithotripsy attempt is associated with significant technical difficulties caused by cicatricial pericholecystitis. And in patients with POR, these methods are completely ineffective [1,93,215].

But even in cases where the use of conservative methods in the treatment of cholelithiasis gave positive results, they all turned out to be non-pathogenetic in relation to cholecystitis. Back in 1882 r. Langenbuch wrote: "The gallbladder must be removed not because it contains stones, but because it produces them" [51].

The modest results of surgical methods and some disappointment in conservative methods of treating cholelithiasis coincided with one of the bright pages of surgery at the end of the 20th century - the birth of endoscopic surgery [22,31,41,58,146,195,234]. The emergence of endosurgery, which conquered the whole world in a matter of years, was regarded as the second French revolution [41,54,156,186,231]. In terms of significance, this surgical technology is comparable to the spread of asepsis and antisepsis, the introduction of intubation anesthesia, the technique of extracorporeal circulation, or the development of operating microscopes [58,78,123,245].

The introduction of endosurgical technology, first of all, eliminated one of the most significant shortcomings of traditional abdominal surgery - the discrepancy between prolonged traumatic access to the operation object and minimal intervention on the organ itself [43,48,128,189,217].

Due to the identified advantages over open cholecystectomy (OCC), laparoscopic cholecystectomy (LCC) has become more widely implemented in clinical practice [2,4,21,95,178,256]. So its use contributed to the early activation of patients and, as a result, a decrease in the number of postoperative complications, a reduction in the postoperative period, early recovery, and a good cosmetic effect [21,46,81,123,178].

But the first euphoria from the results of the use of LCE has passed. Surgeons are faced with a number of completely new problems requiring mandatory resolution [30,39,71,154,213,235].

One of the characteristic features of laparoscopic operations is the need to create a pneumoperitoneum (PP) that provides optimal visualization of anatomical structures [21,81,134].

The most commonly used gas for insufflation is carbon dioxide. The combination of a prolonged increase in intra-abdominal pressure and the effects of the intra-abdominal presence of carbon dioxide has a complex set of effects on the patient's body, especially in the case of a decrease in the reserve capacity of the body [21,39,46,135,248]. In this regard, when violations in the CVS and DS are detected, which increase the risk of imposing PP, the performance of surgical intervention becomes not indifferent to the patient [39,42,56].

Another important problem of laparoscopic operations is anesthesia. When performing LCE, general anesthesia is used with tracheal intubation and the use of muscle relaxants [13,28,78,143]. LCE requires good muscle relaxation and an adequate level of anesthesia throughout the operation. Reducing the depth of the neuromuscular block and the level of anesthesia, the appearance of independent movements of the diaphragm, the restoration of peristalsis, etc. not only complicate visualization, but can also cause severe complications [13,67,145].

Thus, the hopes for performing LCE in patients with POR, in view of its low trauma, began to look much more modest.

In parallel with the development of video endoscopic interventions, the ideas laid down in 1903 began to develop and be implemented. Russian gynecologist D.O. Ott, who examined the abdominal organs through a small incision in the posterior vaginal fornix using long mirror hooks and a head reflector as a light source [27,99,142].

Already by 1907, he performed some operations on the pelvic organs using the described technique [27,99,140,216]. It is this principle - a small incision of the abdominal wall and the creation of a much larger area in the abdominal cavity, accessible to adequate examination and manipulation - that is the basis of the minilaparotomy technique with "elements of open laparoscopy" according to M.I. Prudkov [96,99,101].

To date, based on the operations performed to remove the gallbladder, its possibility and prospects have been shown [34,78,134]. Given the low-traumatic nature of this intervention and the prospects for its use in patients with POR, I would like to dwell on it in more detail.

Minilaparotomic cholecystectomy in the treatment of patients with cholelithiasis.

As noted above, in the last 10-15 years, in gallstone surgery with the introduction of laparoscopic surgery, there has been a critical rethinking of various aspects of surgical treatment. The high technical equipment required for laparoscopic cholecystectomy made it possible to make the latter a prestigious operation that has advantages over open cholecystectomy (cosmetics, duration of treatment, etc.). At the same time, as rightly noted, M.I. Prudkov [101], other alternative methods are not sufficiently advertised in the literature - operations from a minilaparotomy access, which do not require a tense pneumoperitoneum and expensive equipment. According to the authors, who improved the technique of "open" laparoscopy with the help of special instruments and under visual control, in which the incision of

the abdominal wall does not exceed 5 cm. - "Cosmetic" operation is not less than with laparoscopic cholecystectomy.

Speaking of minilaparotomy, this term should be defined. In most works, including the founders of this method (M.I. Prudkov and others), this is not given. I. _ Rozsosetal .[239], who has the largest number of described operations (1575), identifies several types of laparotomy, depending on the size of the incision: microlaparotomy (skin incision less than 4 cm), which he uses for most operations; modern minilaparotomy (cut length 4- 6 cm), used mainly for choledocholithiasis or biliary fistulas; classical minilaparotomy (incision 6-8 cm long) and traditional laparotomy (with a longer incision 8 cm).

Considering the methods of performing minilaparotomy by various authors, one can note their diversity : from the use of open laparoscopy (mainly for incisions smaller than 4 cm) using laparoscopic instruments or modified surgical instruments [219, 230, 239] to the use of various sleeve devices [192] and the use of different types retractors and various types of modified (elongated handles) surgical [101] .

For open laparoscopy, special instruments are required, including - a short laparoscope mounted on a retractor; retractors with illuminators, retractor and micro video cameras with monitor output.

A critical analysis of the literature data, taking into account the negative aspects of cholecystectomy from the traditional access, as well as experimental studies, allowed in 1992 M.I. Prudkov and co-authors and to introduce the technique of cholecystectomy from minilaparotomic access.

This was preceded by attempts by a number of scientists [154, 160, 190, 192, 230] without sufficient technical equipment to perform cholecystectomy from small incisions (up to 6- 8 cm), which in some cases was a desire to demonstrate their skills, not so much in front of colleagues, but in front of patients . However, a significant number of errors and complications caused by an inferior revision of the abdominal cavity did not pay off with the seemingly less traumatic operation.

At present, the situation has changed significantly, since with the help of special tools and devices in most patients it is possible to obtain adequate surgical access to the gallbladder and hepatoduodenal ligament and safely perform cholecystectomy from a laparotomic incision 3- 3,5 cm. Even in patients with an exacerbation of the inflammatory process, when ultrasound reveals thickening and bypass of the bladder wall, and modern methods of preoperative diagnostics make it possible to detect and, if possible, correct pathological changes in the bile ducts (choledocholithiasis, papillary stenosis) and other organs (polyposis of the stomach and etc.), which was positively assessed by a number of domestic surgeons [14, 112, 127, 144].

The main advantage of this technique, according to its supporters, is low trauma and the possibility of early activation of patients, which reduces the number of postoperative complications, shortens the length of stay of patients in the hospital and the recovery period, and a good cosmetic effect, approaching that of LCE. Moreover, the conversion rate of the minilaparotomic access to the laparotomic one (from 3.8% to 9.5%) does not exceed that of the laparoscopic technique, although the latter, as a rule, was used in patients with uncomplicated cholecystitis [170, 192].

Currently, many authors, having a large number of operations from minilaparotomic access, include the impossibility of a full revision of the abdominal organs to the disadvantages of the method,

and if pathological changes in surgical treatment are detected in them, the need to use special tools [89, 113, 143, 145, 219, 229, 240].

Various technical aspects of the minilaparotomy approach, its size and direction, the frequency of switching to traditional laparotomy, and others are discussed in the surgical press. The authors, who have significant experience in surgical interventions from the minilaparotomy approach, consider its size from 2 to 5 cm [116, 211, 230, 242] to be acceptable. The authors use both pararectal [96, 145, 219, 258] and right subcostal approaches; in addition, median laparotomy is also used [190, 244, 261].

From the above data, it can be seen that supporters of operations on the biliary tract from minilaparotomic access use incisions of the anterior abdominal wall of various sizes and directions, but the indications for them are most often determined subjectively, which requires further study and objectification. According to O. B. Milonov et al. (1990), various technical errors of the surgeon were most often due to incorrectly chosen surgical access, which often leads to unnecessary traumatization of organs and tissues and accidental damage to blood vessels and bile ducts, or other complications.

In the combined statistics (on the frequency of bile duct injuries; duration of operations and postoperative treatment; changes in homeostasis, etc.) are not always correct in the comparative assessment of the applied surgical approaches for cholecystectomy. So, according to D.L. Pikovsky et al. (1996) the results of cholecystectomy with uncomplicated and complicated ones (internal vesico-digestive fistulas, paracystic abscesses, exacerbation of cholecystitis, etc.) are not always critically evaluated, although the severity of surgical intervention in the latter and the conditions for its implementation are incomparable with uncomplicated cholecystitis is the main indication for LCE.

The issue of choosing a surgical approach (laparotomic, minilaparotomic or laparoscopic), indications for them and their impact on homeostasis and stress responses of the body remain debatable and insufficiently studied, although there are also studies in the literature evaluating the positive and negative aspects of cholecystectomy from minilaparotomic and traditional approaches [229, 230, 249], as well as laparoscopic mini-laparotomy approaches [19, 215, 234, 261].

OJO'Dwyer et al. [215] – supporters of access in the right hypochondrium with a length of no more than 5 cm, believe that open cholecystectomy, despite the fact that it is more traumatic than laparoscopic, but in terms of the impact on the function of external respiration, it is less dangerous than laparoscopic cholecystectomy.

Also, according to a number of authors, with minilaparotomy, both a decrease in the frequency of pulmonary complications (decrease in external respiration parameters, volemic disorders, pneumonia and atelectasis, etc.) , 170, 190].

A number of authors point to a lower incidence of pulmonary disorders during and after laparoscopic interventions [27, 134, 189, 217, 241]. At the same time, other researchers note significant changes in respiratory function during LCE, as a result of a tense carboxyperitoneum, which may require correction of the parameters of artificial lung ventilation [13,34,59,130,163]. A.E. Borisov et al. [23] revealed signs of pulmonary hypertension at different stages of laparoscopic cholecystectomy in 66.7%. Also , A. J. _ McMahanetal . [215], based on a randomized trial to assess postoperative pain syndrome,

including changes in respiratory function and blood oxygen saturation (67 patients after laparoscopic cholecystectomy and 65 with minilaparotomic access), noted a less severe pain syndrome with less postoperative reduction in lung function and better blood oxygen saturation in patients with laparoscopic cholecystectomy; supporters of the method consider the latter an alternative in reducing postoperative mortality.

V.E. Fedorov [129] studied a number of factors of surgical aggression for a comparative characterization of the factors of surgical aggression in cholecystectomy performed using laparoscopic (in 208) and minilaparotomic (in 112) approaches: pain syndrome from the wound (pain), blood and plasma loss, changes in hemodynamics, impaired function of external respiration, "severity" of anesthesia, exacerbation of concomitant diseases, changes in emotional spheres, and others. It should be noted that most of the factors of aggression listed above were assessed purely subjectively. The author, based on his own data, taking into account the function of the autonomic nervous system, came to the conclusion that the imposition of carboxyperitoneum (necessary for laparoscopic cholecystectomy) leads to undesirable consequences in patients with severe concomitant diseases (obesity, angina pectoris, hypertension, bronchial asthma, etc.), which requires in such patients, additional corrective drug therapy. When using a minilaparotomy access, they are quite comparable, but with concomitant diseases of the heart and respiratory organs, operations from a minilaparotomy access are preferred, in which there is no negative effect of pneumoperitoneum.

During laparoscopic cholecystectomy, changes in venous hemodynamics of the lower extremities [120] and renal function with a decrease in renal blood flow and glomerular filtration [216] can be in response to carboxyperitoneum.

Thus, in reducing the frequency of adverse results of surgical treatment of inflammatory diseases of the biliary tract, two directions are possible:

- 1 - improvement of the technique of laparoscopic assistance, with an improved technique for instrumental examination of the bile ducts and other organs;

- 2 - if it is impossible to perform a laparoscopic technique, minilaparotomy ("open laparoscopy") and laparotomic technique can be an alternative direction [99, 154, 235]. At the same time, in most published works, only laparoscopic and laparotomic methods of operation were alternatively used. In the literature studied by us, there were no generalizing studies devoted to the objective choice of the cholecystectomy method from the arsenal of three methods, taking into account the hormonal status of operational stress, although the experience of using each of them indicates inconsistent advantages and disadvantages.

The foregoing requires studying the possibility of minilaparotomy in the surgical treatment of inflammatory diseases of the biliary tract and objectively determine the indications and contraindications for surgery on the biliary tract from the minilaparotomy access.

Thus, if in the group of young patients with cholelithiasis who are not burdened by severe concomitant pathology, issues related to surgical tactics today do not cause controversy, then for patients with POR, the timing and nature of the intervention have not been determined.

Unfortunately, the conservative therapy that gave many hopes for cholelithiasis in patients with POR did not give the expected effect. As practice shows, in this category of patients, in the event of complications, we are still forced to resort to surgical treatment.

One of the methods of its implementation for many years was open cholecystectomy (OCE). However, high mortality rates do not allow, today, to nominate it as the main one. An alternative to this has been and remains the imposition of cholecystostomy by various methods. However, even in patients with POR with prolonged existence, according to a number of authors, it leads to rapid exhaustion. And the methods aimed at obliterating the gallbladder through cholecystostomy, today, are not effective enough.

Thus, the most optimal method of treating patients with cholelithiasis in order to get rid of possible complications remains the performance of a radical operation - cholecystectomy, which in patients with POR is preferably performed using a low-traumatic method.

In this regard, laparoscopic cholecystectomy (LC) has given great hopes, which today has rightfully taken the laurel of primacy in the treatment of cholelithiasis. The high technical equipment of the units and low traumatism, along with low rates of postoperative complications, shortening of the terms of hospitalization and rehabilitation, allowed LCE to be promoted to the “gold standard” for the treatment of patients with cholelithiasis.

At the same time, as practice shows, the possibilities of LCE are not unlimited. So one of the main contraindications to its implementation is the impossibility of imposing pneumoperitoneum, associated with severe concomitant diseases, that is, in patients with POR.

In this regard, in recent years, another variant of minimally invasive cholecystectomy, minilaparotomy, has occupied an increasing place in cholelithiasis surgery.

If today LCE, its possibilities, complications, indications and contraindications are given a significant place in the world medical press, then less attention is paid to operations for gallbladder diseases performed from a mini-access. Although the works of a number of authors have proved the same obvious advantages over OCE as in the case of LCE in chronic and acute calculous cholecystitis.

The limited performance of laparoscopic operations in such cases as adhesions in the upper abdominal cavity, the severity of functional disorders of the cardiovascular and respiratory systems, the detection of inflammatory infiltrate, according to a number of authors, determines the relevance of a wider use of mini- approaches for cholecystectomy. An important fact is the possibility of its implementation without general anesthesia. The above-mentioned advantages of minilaparotomic cholecystectomy would probably allow it to be recommended as a method of choice for cholecystectomy in patients with POR.

This research work is devoted to the study of this.

CHAPTER II . MATERIAL AND RESEARCH METHODS

Characteristics of clinical observations

Without detracting from the obvious advantages of laparoscopic cholecystectomy (LCE) in the treatment of patients with chronic calculous cholecystitis (CCC), in the clinic of the Samarkand State Medical Institute for the period from 2001 to 2020, according to specific indications, all three main methods of cholecystectomy are used: laparoscopic, open and minilaparotomy. Thus, the number of patients who underwent these surgical interventions during this period amounted to 1293 patients aged 17 to 84 years (Table 2.1.).

Table 2.1.

Performed surgical interventions in patients with HCC

№	Completed surgical interventions	Number of patients	
		Qty	AT %
1	LHE	890	68.8
2	OKHE	86	6.7
3	MLCE	317	24.5
Total:		1293	100.0

As can be seen from the table (2.1.), LCE occupied the largest share (68.8%). However, in a number of situations, we used other methods of cholecystectomy.

So, contraindications to LCE in CCC were:

1. violations in the CCC and DS, preventing the imposition of PP.

2. unresolved choledocholithiasis before surgery
3. the presence of concomitant diseases of the abdominal organs requiring surgical correction
4. severe cicatricial changes in the bladder neck and hepatoduodenal ligament
5. undergone operations on the upper floor of the abdominal cavity

In cases of the presence of concomitant pathologies of the abdominal organs requiring surgical correction, as well as, if necessary, the imposition of biliodigestive anastomoses, surgical intervention was performed through a laparotomic access. At the same time, it was always taken into account that any form of cholelithiasis that requires surgical treatment can serve as indications for performing an open intervention.

In case of unresolved choledocholithiasis before surgery, severe cicatricial changes in the bladder neck and hepatoduodenal ligament, in case of previous operations on the upper floor of the abdominal cavity, cholecystectomy was performed from a minilaparotomy access.

As for the patients who had disorders of the CVS and DS that prevented the imposition of PN, and these were mainly patients with POR, we refrained from performing both LCE and CCE due to the high postoperative mortality during their performance.

In order to choose the method of cholecystectomy in patients with CCC with POR, the results of treatment of 254 patients of this category were analyzed. In 17 cases, they underwent CCE, in 20 cases, LCE, and in 217 cases, MLC.

All these patients were distributed by sex and age according to the classification of age groups adopted in Kiev (1962 r.) at the WHO regional seminar (Table 2. 2.).

Table 2.2.

Distribution of patients by sex and age

Age	Women		Men	
	Qty	AT %	Qty	AT %
45-59 years old	51	20.1	sixteen	6.3
60-75 years old	91	35.8	37	14.6
75 and older	33	13	26	10.2
Total:	175	68.9	79	31.1

As Table 2.2 shows, 67 (22.4%) patients under the age of 60 were operated on. 187 (72.8%) patients were over 60 years of age. At the same time, the average age of the patients was 63.4±3.5 years, and their age ranged from 47 to 84 years. It is noteworthy that CCC was mainly observed in women - 175 (68.9%) patients, and men were 79 (31.1%). At the same time, as can be seen from the table, the ratio of men to women levels off with age.

The collection of anamnesis data revealed that the duration of cholelithiasis disease ranged from several months to 30 years (Fig. 2.1.).

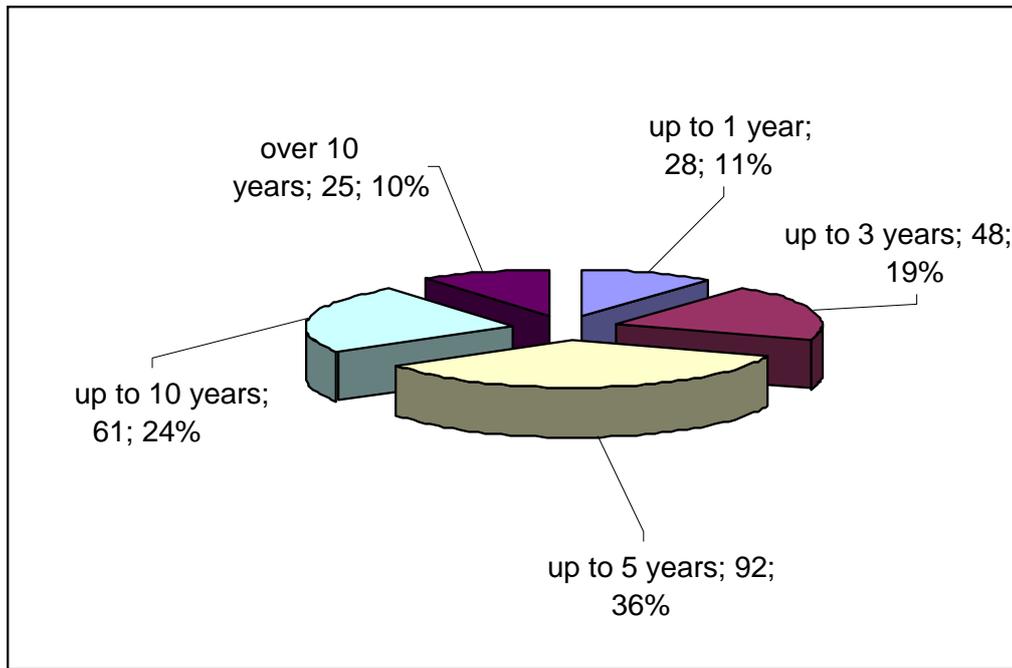
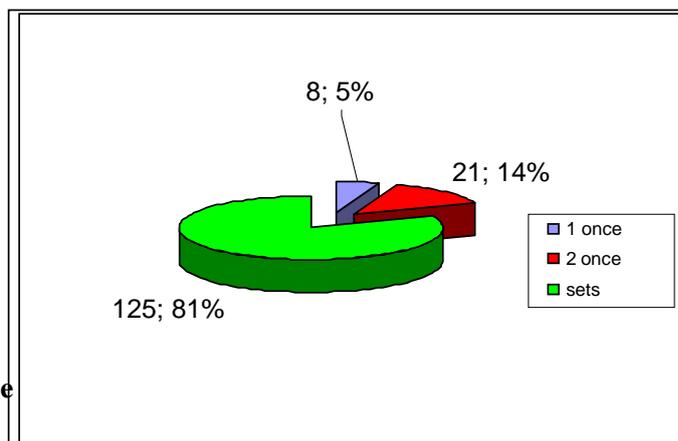


Fig 2.1. Duration of HCC in patients with POR

As can be seen from the presented diagram 2.1., patients with cholelithiasis with a disease duration of up to 5 years applied most often, which was observed in 92 (36%) patients. There were 86 (35%) patients with a disease duration of up to 10 years or more. That is, there is a fact of the duration of the cholelithiasis.

Naturally, attacks of pain in patients are often marked multiple. Their frequency is shown in Figure 2.2. It should be noted that one of the main factors that determined the indications for radical surgical correction in patients with POR was precisely the frequency of seizures. So 75% of patients were subject to surgical correction due to repeated bouts of pain in a short time period. 33 (15%) had obstructive jaundice, of which ERCP was performed in 26 (10.2%) cases. In the remaining 7 cases, the patients had a history of jaundice, and on ultrasound, the choledochus was within the normal range. He underwent MLCE, in which revision of the choledochus is possible.

Given the main goal of this study, it was studied what effect comorbidities had on the severity of the underlying pathology. In this regard, the structure and frequency of various concomitant diseases, reflected in Table 2.3, were studied.



Rice. 2.2. The

Table 2.3.**Concomitant pathology in patients with HCC**

№	<i>Accompanying illnesses</i>	n	%
1	Diseases of the cardiovascular system	250	98.4
2	Obesity	178	70.1
3	Diseases of the urinary system	123	48.4
4	Respiratory diseases	96	37.8
5	Liver disease	64	25.2
6	Diseases of the gastrointestinal tract	59	23.2
7	Diabetes	34	13.4
8	Systemic diseases	7	2.8

As can be seen from the presented table 2.3., CCC diseases occurred in almost every patient with POR. Respiratory diseases were noted in 96 (37.8%) patients, and diabetes mellitus in 34 (13.4%). No doubt the presence of so many diseases put them in the POR group.

The presence of comorbidities required special attention in this group of patients during preoperative preparation. The latter included, in addition to correction of CVS and DS disorders, correction of water-electrolyte and other types of metabolic disorders, and prevention of acute hepatic-renal failure.

Of the examined patients for a comparative assessment of the degree of trauma for each of the three types of access used and surgical interventions performed, in 57 patients we studied the state of stress hormones. As a rule, to study the body's hormonal response to stress and trauma, adrenocorticotrophic hormone is studied, which, according to some authors, does not fully reflect the entire spectrum of the body's neurohumoral response. Therefore, the study of various components of the neurohumoral response to stress (prolactin, cortisol, thyroid hormones) can more objectively show how the so-called minimally invasive interventions are actually less traumatic.

Thus, stress hormones were studied in 17 (29.73%) cases during the performance of CCE, in 20 (37.84%) - LCE and in 20 (32.43%) - MLC by M.I. Prudkov. At the same time, the implementation of any method of cholecystectomy was determined both by indications and at the request of the patient himself.

Methods of research of patients.

Preoperative examination of the patient is a very important step in the treatment of this group of patients, especially in small-access surgery (minilaparotomy). Given the diversity of the clinical picture of CCC, its frequent combination with other comorbidities, the severity of which was taken into account when choosing a surgical approach, the clinic used the entire arsenal of diagnostic and laboratory research methods to identify both underlying and concomitant diseases.

The leader in the diagnosis of this pathology, of course, was ultrasound scanning, which was performed in all operated patients.

Ultrasound examination was carried out using the AlokaSSD -630, Aloka - 500 and ToshibaSAL -38 AS "(manufactured in Japan). The following sensors were used in the work: linear scanning with a frequency of 3.5 and 5 MHz; convex sector scanning with a frequency of 3.5 MHz; duplex convex - 3.5 MHz and a scanning angle of 60° with a phased array for 128 channels, which provided high spatial resolution and high-quality image with color mapping of flows through the vessel under study in real time with a minimum ultrasonic flow.

When evaluating ultrasound data, attention was paid to: the number and size of calculi, their mobility and localization, thickening of the gallbladder wall, the possibility of visualizing the neck of the latter, the presence of paravesical effusion, the diameter and contents of the choledochus.

According to ultrasound data, reliable signs of technically complex cholecystectomy were:

- lack of free lumen of the gallbladder;
- thickened wall of the gallbladder and lack of visualization of the neck of the gallbladder;
- large immovable stones in the neck of the gallbladder;
- the density of the walls of the gallbladder and its small size

On the basis of ultrasound, already before the operation, it was possible to suggest possible technical difficulties in performing cholecystectomy - "normal" cholecystectomy or "difficult". The latter, when performing cholecystectomy in patients with CCC, as we know, happens with dropsy or empyema of the gallbladder, with scleroatrophic gallbladder, or with subsiding phenomena of acute cholecystitis.



Rice. 2.3. Ultrasound picture of a scleroatrophic gallbladder.



Rice. 2.4. Ultrasound picture of chronic empyema of the gallbladder.

Based on ultrasound data (expansion of the choledochus or the presence of inclusions in it), as well as laboratory data (bilirubinemia, fermentemia) and anamnestic data (obstructive jaundice in history), in 26 (10.2%) patients, ERCP was performed, as mentioned above.

ERCP was performed using duodenoscopes " GJF - B 3" and " GJF - B 6" of the company " Olympus " (made in Japan) and an X-ray television installation with an electron-optical converter of the company " Siemens " (made in Germany).

At the same time, during the study, endoscopic papillosphincterotomy was performed in 14 patients due to choledocholithiasis, and in 12 patients due to stenosing papillitis.

All patients in the preoperative period underwent esophagogastroduodenoscopy (EGDFS), which was performed by the apparatus " Olympus " (Japan).

Methodology for determining the degree of operational risk.

All patients were determined by the degree of operational risk according to the classification of Gologorsky V.A.

At the same time, the tactics of treating patients with cholelithiasis and the choice of the type of operation depend not only on the severity of the patient's physical condition, but also on the nature of the inflammatory process in the gallbladder. For its objective assessment and prediction of the outcome of the operation, various prognostic systems have been proposed. Many of them are difficult to use, require modern technical support and are not universal, and therefore have not found their wide application in practical surgery.

With this in mind, in order to quantify the general condition of patients, to determine the quantitative criteria for the use of a particular treatment method, a scoring scale for assessing the severity

of the condition of patients with CCC with POR was developed, the parameters of which are shown in Table 2.4. At the same time, the score for each attribute is given on the basis of an expert assessment.

To do this, for a particular patient, the sum of points for the general physical condition is calculated. Then this sum of points is multiplied by the complexity coefficient of the performed cholecystectomy, which was developed in the work of U.B. Berkinov. So, according to this, the complexity of conventional cholecystectomy is taken as one (1), and the complexity coefficient of performing cholecystectomy with dropsy of the gallbladder is 1.3, with empyema of the gallbladder - 1.92, with scleroatrophic gallbladder - 2.25, with residual effects of acute cholecystitis - 2.46.

Table 2.4.

Scoring scale for assessing the severity of the condition of patients with CCC

Options	Points
Age 51-60 years	1
Age 61-70 years	2
Age over 70	3
Man	1
Obesity 2 degrees	1
Obesity 3 degrees	2
Obesity 4 degrees	3
ischemic heart disease	3
Arrhythmias	5
AMI or stroke in history (more than 1 year)	3
Repeated AMI or stroke in history	6
BP systolic above 180 mmHg	3
Systolic blood pressure from 140 to 180 mmHg	1
systolic blood pressure below 100 mmHg	3
Pulse from 90 to 100 beats. in 1 min	2
Pulse over 100 beats. in 1 min	3
Pulse less than 60 beats per minute	3
NK 1	2
NK 2	6
Presence of heart defects	3
Varicose disease, PTB of the lower extremities	2
COPD (chronic obst. bronchitis, chronic pneumonia, bronchiectasis, br. asthma)	5
On the radiograph, pneumosclerosis, emphysema	2
Shortness of breath with slight physical. load	6
Liver failure 1 degree	1
Liver failure 2 degrees	5
Diabetes	2

Depending on the scores obtained, 4 risk categories for surgical intervention in patients with CCC with POR were identified, which allows them to predict the course and outcome of the postoperative period (Table 2.5).

We do not claim the ideality of the developed scoring scale. In the future, perhaps, it will change due to additions regarding the further gradation of various diseases by stages or other signs. By this method of determining the risk category of surgery, we wanted to quantitatively show the severity of conditions in patients with various diseases they have.

Table 2.5.

Distribution of categories of severity of surgical intervention in patients with CCC with POR

Sum of points	Categories of severity
1-10	I
11-25	II
26-50	III
51 or more	IV

Patients of category I of the severity of the physical condition belong to the group with a relatively low operational risk, and patients of category IV are the group with the highest operational risk, among which the maximum postoperative mortality (more than 50%) is possible (Table 2.6.).

Table 2.6.

Distribution of patients depending on the category of severity

Categories of severity	Number of patients		
	OKHE	LHE	MLCE
I	14	20	40
II	3		98
III			69
IV			10
Total:	17	20	217

As can be seen from Table 2.6, 74 (29.1%) patients were operated on with category I severity. These were the patients in whom it was possible to apply PP. The largest number of patients were operated on with the second category of severity. At the same time, it should be noted that among them there were only 3 patients who underwent CCE, and it was impossible for them to perform LCE at all.

The use of this scale in everyday practice makes it possible to objectively assess the condition of a patient with CCC and to make a differentiated approach to choosing the method of surgery. It is an important tool in the hands of the surgeon, which makes it possible to objectively determine the timing of the necessary preoperative preparation and choose the adequate nature of the operation.

Methodology for the study of stress hormones.

The study of stress hormones was carried out in the laboratory "Euromedic" in Samarkand. The method is based on the reaction of antibody binding to the hormone under study, due to the presence of a radioactive label on the antibodies, it is possible to determine the amount of bound antibodies and, consequently, the concentration of the hormone. In this case, monoclonal antibodies specific to a particular hormone were used.

The set included standards containing the hormone in a strictly defined concentration range. Samples or standards were incubated in tubes with immobilized monoclonal antibody labeled with ^{125}I . After incubation, the contents of the tube were washed to remove unbound ^{125}I labeled antibody. The bound radioactivity was then determined in a gamma counter. Standards and samples were analyzed simultaneously. The hormone concentration was determined by the calibration curve, built in the analysis of the standards. The hormone concentration in the samples was directly proportional to the measured radioactivity.

The following hormones have been tested using standard test kits:

1. TSH - using the TSH kit IRMA by Immunotech (Czech Republic);
2. T4 - using the T4 LIBRE kit from Immunotech (Czech Republic);
3. Cortisol - with the help of the "rio-CORTISOL-PR" kit, produced by the JV "Beloris" (Republic of Belarus),
4. Prolactin - using the PROLAKT kit from Immunities (Czech Republic),

Such a number of hormones under study makes it possible to more objectively determine the change in the neurohumoral response in operated patients from different accesses. Other hormones studied by us (T_3 , calcitonin, parathyroid hormone and insulin) did not allow us to assess the degree of stress response, and therefore we do not analyze them.

Methods of statistical processing of material.

The data obtained were statistically processed on a personal computer Pentium - IV using the program " Microsoft Excel " , in addition, methods of traditional variational parametric and nonparametric statistics were used. To establish the reliability of the results obtained, the P -Student coefficient was used. Differences were considered significant if the frequency for the studied trait did not exceed 5% ($P < 0.05$).

**RESULTS OF OPEN AND LAPAROSCOPIC CHOLECYSTECTOMY FOR CHRONIC CALCULOUS
CHOLECYSTITIS IN PATIENTS WITH INCREASED OPERATIONAL RISK**

The need for a comparative analysis in order to choose a method for surgical correction of CCC in patients with POR, we analyzed the results of treatment of AChE and LChE in this category of patients.

Results of open cholecystectomy.

17 patients, as mentioned in Chapter II of the work, underwent AChE. During the preoperative examination in a hospital, all of them were diagnosed with the main diagnosis: cholelithiasis, cholelithiasis.

At the same time, the average age of patients with AChE was 62.5 ± 7.5 years.

Table 3.1.

Distribution of patients by sex and age of patients who underwent AChE

Age	Women		Men	
	<i>Qty</i>	AT %	<i>Qty</i>	AT %
45-59 years old	4	23.6	3	17.6
60-75 years old	7	41.2	3	17.6
75 and older	-	-	-	-
Total:	8	64.8	6	35.2

As Table 3.1 shows, there were no patients older than 75 among patients susceptible to CCE, the reason for which we saw in the traumatic nature of this access for this contingent.

The average duration of the disease was 5.2 ± 2.3 years, and the attacks were multiple.

When examining patients, a number of comorbidities were identified, which made it possible to determine a high risk of surgery in patients. Their frequency is reflected in table 3.2.

Table 3.2.

Concomitant pathology in patients with CCC who underwent CCE

№	<i>Accompanying illnesses</i>	N	%
1	Diseases of the cardiovascular system	15	88.2
2	Obesity	12	70.6
3	Diseases of the urinary system	Eleven	64.7
four	Respiratory diseases	8	47.1
five	Liver disease	3	17.6
6	Diseases of the gastrointestinal tract	3	17.6
7	Diabetes	2	11.7

As can be seen from Table 3.2., almost every patient suffered from CVS diseases, DS diseases were noted no less rarely. However, the quantitative assessment of the patient's condition does not fully characterize the severity of the patient's condition. In this regard, we determined the degree of operational risk according to the scale we developed.

Determination of the degree of risk of the operation according to the scale developed by us showed that in 14 it was the first category, and only in 3 - the second. It should be noted that the average score in patients who underwent CCE was 8.8 ± 1.5 .

As a rule, a contingent of patients suitable for the 1st risk category for cholecystectomy was selected for CCE according to the scale developed by us. The inclusion of 3 patients in the 2nd risk category is associated with changes in the gallbladder, regarded in 2 cases as empyema and in 1 as dropsy of the gallbladder.

In all cases, access was made by upper median laparotomy under general anesthesia with tracheal intubation for mechanical ventilation.

In 14 patients, cholecystectomy was performed "from the neck". 3 patients due to technical difficulties performed "from the bottom".

No serious intraoperative complications that affected the further fate of the patient were observed during CCE.

The duration of the surgical intervention was from 50 to 90 minutes (average $66.8 - 8.2 \pm$ minutes). During the operation, blood loss ranged from 100 to 300 ml (average 159.9 ± 5.6 ml).

The early postoperative period necessarily took place in the intensive care unit. In connection with the pain syndrome, all patients in the early postoperative period received narcotic drugs (omnopon 2 % - 1 ml) and analgesics (baralgin 5 ml, novalgin 5 ml, analgin 50 % - 4 ml), usually up to 5-6 days. Activation of patients occurred 2-3 days after their transfer to general wards.

In the early postoperative period, we noted the following complications (Table 3.3):

Table 3.3.

Early general postoperative complications after AChE

Complications	Quantity
Right-sided bronchopneumonia	1(5.8%)
Bilateral bronchopneumonia	1(5.8%)
Acute myocardial infarction	2(11.7%)
TOTAL	4(23.5%)

We noted complications from the respiratory organs in 2 (11.6%) cases. They included: right-sided hilar pneumonia - in 1 patient, bilateral bronchopneumonia - in one patient. All of these patients already had a history of respiratory pathology. The cause of such complications was associated with the hypostatic state of patients. Patients had hyperthermia, cough with sputum, some had shortness of breath of varying degrees. All this lengthened the period of stay of patients in the hospital, contributed to the

appearance of abdominal hernias. This complication also required additional prescription of antibacterial drugs, expectorants, respiratory analeptics.

Example 1. Patient B, aged 61, IB No. 9314, applied to a surgical hospital for recurrent pain in the right hypochondrium for 4 years. From the anamnesis, the last attack was 2 months ago, multiple attacks without signs of obstructive jaundice. During the last 12 years she suffers from bronchial asthma of an allergic form, of moderate severity, does not take hormones. Over the past 3-4 years, there have been episodes of increased blood pressure up to 150/100 mm Hg. Art.. An objective examination of the patient increased nutrition (obesity 2 degrees). Ultrasound revealed signs of HCC (a lot of stones from 0.4 to 1.3 cm, the walls of the gallbladder were thickened to 3 mm, thickened, the choledochus was not expanded, no stones were found in it). With EGDFS - the phenomena of moderate superficial gastritis, reflux esophagitis. ECG - sinus rhythm, EOS is not rejected, diffuse changes in the myocardium. R-scopy of the chest: no pathology was found. The rest of the clinical and laboratory parameters were within the normal range. The patient is prepared for the operation. Preoperative diagnosis: Main: cholelithiasis, chronic cholecystitis; Associated: Arterial hypertension. Bronchial asthma, obesity of the 2nd degree. The score is 8, the risk category is 1. On July 7, 2001, cholecystectomy "from the neck" was performed by upper-median laparotomy under general intubation anesthesia. The duration of the operation was 60 minutes, the blood loss was 200 ml. In the postoperative period, cough with sputum production, fever up to 38.5 °C, R-scopy of the chest showed right-sided bronchopneumonia. She received ceftriaxone 1.0 x 3 times, gentamicin 80.0 x 3 times, expectorants, heparin 2500 IU, sulfakamphokain 10% -2 ml, morphine 1% -1.0 3 times, baralgin 5.0, analgin 50% -4 ml during 6 days of the postoperative period. Activation 48 hours after surgery. The drainage tube was removed on the 3rd day. The patient was discharged on the 13th day in a satisfactory condition. Recovery of working capacity at 4 months of the postoperative period.

Complications from the cardiovascular system developed in 2 (11.7%) cases. In both cases, acute myocardial infarction developed on the 2nd day of the postoperative period.

A lethal outcome was noted in one (5.8%) case, the direct cause of which was acute myocardial infarction.

It should be noted that out of 4 cases of complications, 3 (75%) of them occurred in patients assigned to the 2nd category of surgery risk. A lethal outcome also developed in a patient with the 2nd risk category.

The average postoperative bed-day in patients who underwent CCE was 12 ± 1.3 days.

Thus, performing AChE in patients with CCC is accompanied by the development of a number of complications, even at a not so high risk of surgery. So, according to the scale of severity of the operation that we developed, out of 17 patients with CCC, 14 (82.4%) had 1 risk category. Exceeding the indications for CCE in almost all cases is accompanied by complications leading to death. Thus, out of 3 cases, which we referred to the 2nd risk category, the performance of CCE in all cases was accompanied by complications, and in one case, a fatal outcome occurred. Apparently, the development of such formidable complications is associated with the traumatic nature of the operation performed in this group of patients.

Results of laparoscopic cholecystectomy.

LCE in CCC with POR was performed by us in 20 cases. The average age of patients with LCE was 59.6 ± 5.5 years. Their distribution by sex and age is presented in Table. 3.4.

Table 3.4.

**Distribution of patients by sex and age of patients,
who have undergone AChE**

Age	Women		Men	
	<i>Qty</i>	AT %	<i>Qty</i>	AT %
45-59 years old	6	thirty	four	20
60-75 years old	7	35	3	15
75 and older	-	-	-	-
Total:	13	65	7	35

As Table 3.1 shows, there were no patients older than 75 among patients susceptible to LCE, as among patients who underwent AChE. We saw the reason for this in the impossibility of imposing PN in patients aged 75 and older due to diseases of the cardiovascular system and DS.

The average duration of the disease in patients undergoing LCE was 7.2 ± 2.2 years, and the attacks were also mostly multiple.

Among the comorbidities, CVS pathologies were most often identified, while the pathology of DS in patients who had undergone LCE was minimal. Considering that LCE is an alternative method of cholecystectomy for diabetic patients, the frequency of patients with this disease in this group was 25%. In general, the frequency of comorbidity is shown in Table 3.5.

Determining the degree of risk of the operation according to the scale developed by us, it was revealed that in all 20 it was the first category. At the same time, it should be noted that the average score in patients who underwent LCE was 7.8 ± 1.8 .

Table 3.5.

Concomitant pathology in patients with CCC who underwent LCE

No.	<i>Accompanying illnesses</i>	N	%
1	Diseases of the cardiovascular system	19	95
2	Obesity	18	90
3	Diseases of the urinary system	16	80
4	Respiratory diseases	2	10
5	Liver disease	2	10
6	Diseases of the gastrointestinal tract	3	15
7	Diabetes	5	25

For LCE, a contingent of patients suitable only for category 1 risk of cholecystectomy was also suitable.

LCE was performed according to the standard technique for general anesthesia with tracheal intubation for mechanical ventilation.

No serious intraoperative complications were observed during LCE . Intraoperatively, as well as before the operation, CCH was installed without complications. There were no conversions.

The duration of the surgical intervention was from 30 to 70 minutes (mean 56.3-7.1 ±minutes). During the operation, blood loss was minimal.

The early postoperative period also took place in the intensive care unit. In contrast to the patients who underwent AChE, this group of patients did not particularly need analgesics. Only occasionally did they receive non-narcotic analgesics. Patients were activated on the 1st day after their transfer to general wards.

In the early postoperative period, we noted the following complications (Table 3.6):

As can be seen from the presented table 3.4., in 2 cases we noted AMI, in one case a hypertensive crisis was noted. The development of pneumonia, in contrast to patients who underwent AChE, was not accompanied by a history of the presence of DS diseases.

Table 3.6.

Early general postoperative complications after LCE

Complications	Quantity
Acute myocardial infarction	2(10%)
Right sided pneumonia	15%)
TOTAL	3(15%)

***Example 2.** Patient B, aged 58, IB No. 1314, applied to a surgical hospital for recurrent pain in the right hypochondrium for 6 years. From the anamnesis, the last attack was 3 months ago, multiple attacks without signs of obstructive jaundice. An objective examination of the patient increased nutrition (obesity 3 degrees). Ultrasound revealed signs of HCC (many calculi from 0.5 to 1 cm, the walls of the gallbladder are thickened to 3 mm, thickened, the choledochus is not expanded, no calculi were found in it). With EGDFS - the phenomena of moderate superficial gastritis, reflux esophagitis. ECG - sinus rhythm, EOS is not rejected, diffuse changes in the myocardium. R-scopy of the chest: no pathology was found. The rest of the clinical and laboratory parameters were within the normal range. The patient is prepared for the operation. Preoperative diagnosis: Main: cholelithiasis, chronic cholecystitis; Associated: coronary artery disease. Arterial hypertension. obesity 3 degrees. The total score is 6, risk category 1. 02.07.02 LCE was performed. The duration of the operation was 55 minutes, the blood loss was 10 ml. In the postoperative period, cough with sputum production, fever up to 38.5 °C, R-scopy of the chest showed right-sided bronchopneumonia. She received oxacillin 1 million x 4 times, gentamicin 80.0 x 3 times, expectorants, digoxin 1 tab, heparin 2500 IU, sulfakamphokain 10 % -2 ml, morphine 1 % -1.0 3 times, baralgin 5.0 each, analgin 50 % -4 ml during 6 days of the postoperative period. Activation 24 hours after surgery. The drainage tube was removed on the 3rd day. The patient was discharged on the 7th day in a satisfactory condition.*

Apparently, the development of pneumonia in this example in the postoperative period was negatively affected by PP.

Thus, complications in patients with CCC with POR who underwent LCE amounted to 3 (15%) cases, and no deaths were noted.

The average postoperative bed-day was 3.8 ± 1.9 days.

Summarizing the above, we can say that in patients with CCC with POR, both open and laparoscopic cholecystectomy is possible only with 1 degree of operational risk according to the scale we developed. At the same time, even in such situations, their implementation is accompanied by a number of complications, reaching 23.5% when performing CCE, and 15% when performing LCE. Well, carrying out operations related to higher degrees of the risk category of the operation, as a rule, is inevitably accompanied by complications leading to death.

Considering this and the need for a radical correction of CCC, it is necessary to search for another minimally invasive method of cholecystectomy, which allows combining the advantages of an open technique (no need to apply a PP) and laparoscopic - a minimally invasive technique. Such a method of cholecystectomy, in our opinion, is MLCE, which, according to a number of researchers, is successfully performed in CCC.

For a comparative assessment of the traumatism of various approaches for cholecystectomy (laparoscopic, minilaparotomic, laparotomic), we studied the state of stress hormones, reflected in Chapter 4.

CHAPTER IV .

COMPARATIVE ASSESSMENT OF THE LEVEL OF STRESS HORMONES DURING CHOLECYSTECTOMY FROM VARIOUS SURGICAL APPROACHES

Studied hormonal indicators of stress in patients with chronic calculous cholecystitis

For a comparative assessment of the traumatism of various approaches for cholecystectomy (laparoscopic, minilaparotomic, laparotomic), we studied the state of stress hormones. When studying the hormonal response to stress, as a rule, adrenocorticotrophic hormone is studied, which does not fully reflect the entire spectrum of the neurohumoral response, and therefore the study of various components of the neurohumoral response to stress (prolactin, cortisol, thyroid hormones) can more objectively show how the so-called minimally invasive interventions are actually less traumatic.

Surgical trauma - "stress" according to Selye (1935), is the sum of all non-specific phenomena that occur in the body under the action of various extreme stimuli-stressogens, triggering a systemic endocrine metabolic response aimed at restoring disturbed homeostasis. At the same time, it was noted that the urgent adaptation of the body to the effects of any stress factors, including surgical intervention, is carried out by many hypothalamic-pituitary hormones and various endogenous biologically active substances, such as catecholamines, cyclic nucleotides, and others that have a direct or indirect effect on vascular tone, myocardial contractility, tissue metabolism. The main role in the compensatory-adaptive reactions of the body is played by the hypothalamic-adrenal system, while the tropic hormones of the

anterior pituitary gland stimulate the secretion of hormones of the adrenal cortex and other interested structures (thyroid and parathyroid glands and others).

In connection with the above, we set as our goal to determine the quantitative nature of the functional activity of some systems of endocrine regulation of the body, as indicators of the degree of operational and postoperative stress in patients with various surgical approaches during operations on the biliary tract.

To obtain objective data, we examined 57 patients with CCC, who, for various reasons, underwent three options for cholecystectomy (Table 4.1) - laparoscopic, from minilaparotomic and laparotomic accesses.

Table 4.1

Characteristics of patients in whom hormonal indicators of stress were studied

Comparable indicators	Group of operated patients:		
	LHE	MLCE	OKHE
Number Observations	20	20	17
Average age (years)	59.6±5.5	66.9±3.3	62.5±7.5
Weight kg, (M ± m)	68.8±3.47	75.6±3.11	71.5±3.12
Average duration of illness (years)	7.2±2.2	5.1±1.4	5.2±2.3
Average operation time (min)	56.3 ±7.1	55±4.5	66.8± 8.2

The studied groups were identical ($p < 0.05$) in a number of parameters (by age, duration of the main lesion and the frequency of concomitant diseases), which made it possible to obtain reliable information about the studied stress hormones, taking into account the compared groups of patients.

In view of the significant scatter of literature data on the norms of the studied hormones and the impossibility of applying them to each specific observation, we considered it possible to abandon this parameter, and compared the results obtained with the original data.

Premedication. The night before at 2200, diazepam 0.15 mg/kg was administered orally in combination with diphenhydramine (0.2 mg/kg); 30-40 minutes before the operation, diazepam 0.15 mg/kg, diphenhydramine 0.2 mg/kg and atropine 0.01 mg/kg were administered intramuscularly.

Diazepam 2.5 mg, Nozepam 5 mg were additionally administered orally at in patients with concomitant pathology on the day of surgery .

Anesthesia technique was carried out in the following way:

- combined intravenous anesthesia based on ketamine (1.5-2 mg/kg) with benzodiazepine drugs (diazepam - 0.14 mg/kg) and fentalin (2.8 µg/kg).

Table 4.2

Staged hemodynamic parameters during surgery (M ± m) on the biliary tract from various surgical approaches

Unit indicators:	HE	Research phase
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	type:	Exodus:	During cholecystectomy:	After the end of IVL
Systolic blood pressure, mm Hg:	1	115.5±3.43	108.0±3.23	117.8±4.15
	2	121.1±3.33	110.9±2.37	113.8±2.17
	3	117.9±3.73	107.3±2.43	111.3±3.21
BP dias., mm Hg:	1	68.2±2.8	65.4±1.48	70.0±2.47
	2	73.9±2.93	66.7±2.01	69.1±1.98
	3	72.1±2.93	64.7±2.37	67.3±2.54
BP average, mm Hg:	1	84.7±2.77	78.2±1.95	85.5±3.01
	2	89.1±2.88	81.5±2.09	83.1±1.79
	3	87.3±3.02	78.3±2.29	81.5±9.38
Heart rate, beat / min:	1	75.7±3.67	72.9±1.87	77.2±1.39
	2	80.7±2.25	74.1±1.69	76.0±1.7
	3	76.3±2.59	72.4±2.13	74.1±2.53

Note: 1 - LCE; 2 – MLCE; 3 - OKHE.

Control over the adequacy of anesthesia was carried out according to generally accepted criteria: indicators of hemodynamics and gas exchange, acid-base state of capillary blood, hemoglobin and hematocrit levels, ECG.

When analyzing the results, it should be noted a high degree of comparability of hemodynamic parameters of all three study groups (Table 3.2) . The phased hemodynamic profile was similar, which proved the adequacy of the anesthesia, as evidenced by the parameters of the acid-base state and blood gases at all stages of the study.

An objective confirmation of the adequacy of the anesthesia technique with ketamine is the stability of maintaining the level of one of the main stress hormones, cortisol, in the blood plasma at all traumatic stages of the operation. The constancy of the concentration in the blood of thyroid-stimulating and thyroid hormones, which are involved in the regulation of metabolic processes in stressful conditions, also indicates the adequacy of anesthesia. Preservation of the functional activity of the pituitary-thyroid gland system within normal physiological values is of undoubted clinical significance for surgical patients in the light of the available data on the relationship between these hormones and the traumatic nature of the operation.

However, in the literature there is no information on the assessment of the stress factor by studying the above-mentioned hormonal parameters during various surgical approaches for operations on the biliary tract and during certain stages of the surgical intervention.

These studies, according to our data, are necessary for the correct interpretation of the advantages and disadvantages of various surgical approaches, the choice of which should maximize the safety of the course of the intra- and postoperative period, especially in patients with various concomitant cardiovascular and other diseases.

To solve the questions raised, we gradually studied the change in the indicators of "stress" hormones in patients operated on from various surgical approaches at various stages of treatment:

- 1) Baseline (3 days before surgery);
- 2) During the main stage of the operation;
- 3) In the immediate postoperative period (2-3 days after surgery).

The state of stress hormones during operations for cholelithiasis from different approaches.

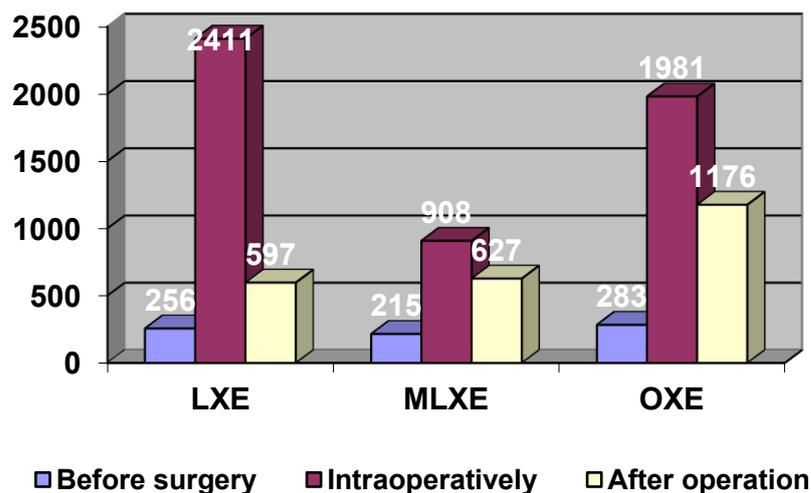
Considering that the stress hormones studied by us have a different mechanism of impact on homeostasis during surgery even with adequate anesthesia, we considered it necessary to analyze the results of the study separately for each hormone studied at various stages of treatment from the three surgical approaches indicated above.

When evaluating the results of our studies on changes in the level of "stress" hormones, all intra- and postoperative indicators were compared with the initial data, and not with the norm, the parameters of which fluctuate widely. Therefore, for greater objectivity in assessing the severity of surgical stress, we compared not the absolute averages, but their variability in percentage during and after the operation compared with the baseline data.

When choosing the studied hormones, we proceeded from the fact that one of the most important organizers of the adaptive syndrome during surgical stress is the hypothalamic-pituitary-adrenal system, which ensures a rapid and adequate increase in the secretion of glucocorticoids under any traumatic effects on the body; this is preceded by increased secretion of the hypothalamus and ACTH by the pituitary gland. Based on the foregoing, in order to assess changes in the neuroendocrine response to cholecystectomy from different surgical approaches, we studied changes in a number of so-called "stress" hormones before, during surgery and on the third day after it (Table 4.3, Fig. 4.1-4.4) .

1. Prolactin, which is one of the most revealing hormones responsive to surgical stress, was studied in 57 patients. We found that before the operation, the average prolactin values ranged from 215.2 ± 21.6 to 283.0 ± 113 Mm/ml, which was within the average norms.

The conducted studies showed that during the operation, when the gallbladder was isolated, the variability of the average amount of prolactin showed that when the gallbladder was isolated, it was 1.5 times higher with the laparoscopic technique (+832.2%) than with cholecystectomy from the minilaparotomy (+315 %) and laparotomy (+623.1%) approaches (Fig. 4.1) .



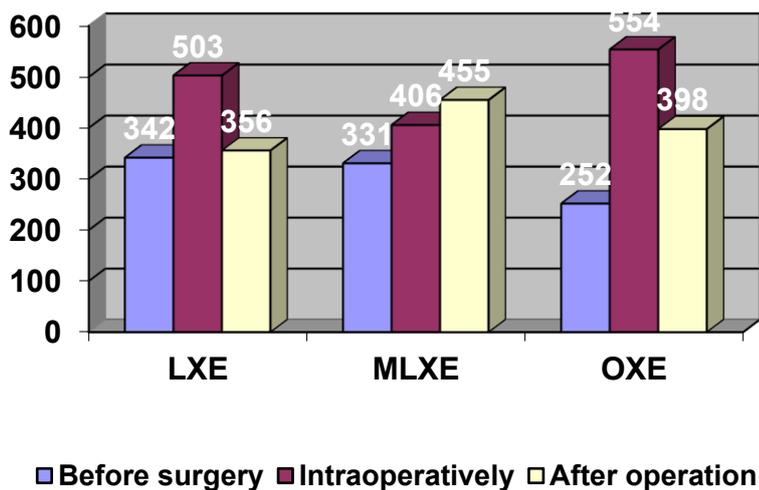
Rice. 4.1. Prolactin level at all stages of the study

On the 3rd day after the operation, it was noted that the trend towards normalization of prolactin was most noticeable after laparoscopic cholecystectomy - the deviation from the initial data was + 123%, while this was less pronounced with the laparotomy technique (+286%).

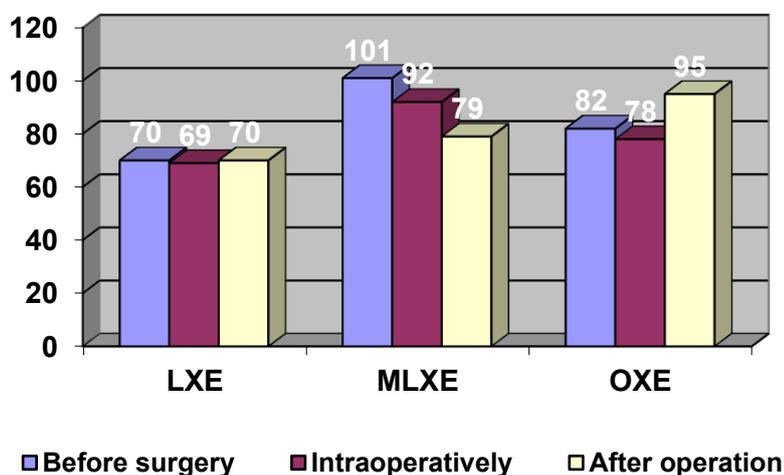
Therefore, according to our data, a significant increase in prolactin occurred during LCE compared with operations from laparotomy and minilaparotomy approaches. According to the variability of the level of prolactin during the operation and on the 3rd day after it, surgical interventions from the minilaparotomic access are intermediate between laparoscopic and laparotomic operations.

2. Cortisol - in the patients examined by us, its initial level ranged from 252.1 ± 42.6 to 342.1 ± 48.2 nmol/l, which was within normal limits. The maximum increase in cortisol levels was noted at the stage of removal of the gallbladder by laparotomy (+106.5%) than with other methods, laparoscopic (+56.1%) and minilaparotomic cholecystectomy (+19.6%). On the 3rd day after the operation, the most pronounced tendencies towards normalization of the cortisol content were noted in patients after laparoscopic and minilaparotomic cholecystectomy, in which the variability of the average amount of hormones compared to the initial one was +4.5% and 37.6%, respectively, and with laparotomy +59, 2% (Fig.4.2) .

3. Thyroid hormones (T4, TSH) are functionally associated with the pituitary gland and change during various surgical interventions. During the operation, the level of T4 in different types of cholecystectomy was lower than the baseline. Postoperative changes in T4 with laparoscopic and minilaparotomic techniques corresponded to intraoperative ones, and only with laparotomic cholecystectomy a significant increase in the hormone content (12.9%) was revealed (Fig. 4.3)



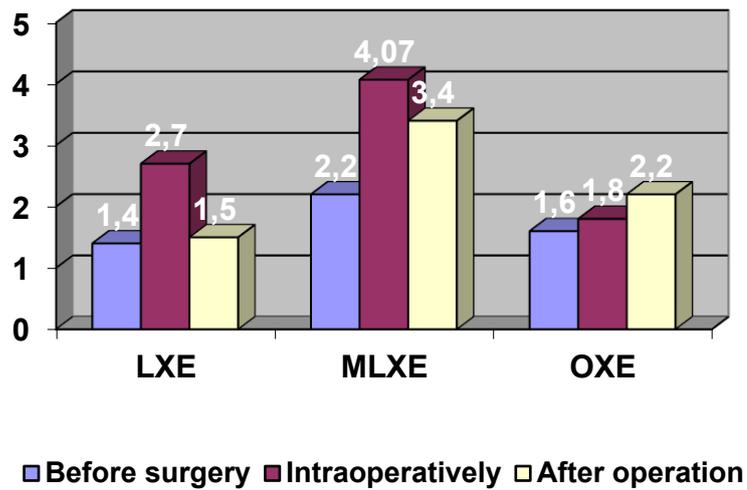
Rice. 4.2 Cortisol levels at all stages of the study



Rice. 4.3 Level T₄ at all stages of the study

Changes in TSH concentration, the level of its deviation compared to the initial data are significantly higher in laparoscopic (+91.2%) and minilaparotomic operations (+71.6%) than in laparotomic (+15.2%) cholecystectomy. After laparoscopic cholecystectomy, the percentage of deviation of the obtained data from the initial ones was significantly less (+11.2%) than in operations from minilaparotomy (+52.2%) approaches. After operations from the laparotomic approach, there was a tendency to increase TSH (Fig.4.4) and the degree of its deviation from the initial data was higher (+48.1%) than during the removal of the gallbladder (+15%).

		Average amount of hormones (M ± m)
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Rice. 4.4 TSH level at all stages of the study.

Table 4.3. Distribution of indicators of blood	Hormone:	Group:	Before surgery	With the release of the gallbladder	3 days after surgery
	1	2	3	four	Five
	Prolactin (Mme/ml)	1	256.4 ± 54.6	2411.7 ± 86.3	597.5 ± 248.7
		2	215.2 ± 21.6	908.3 ± 248.7	627.6 ± 54.7
		3	282.0 ± 113	1981.6 ± 218.4	1176.7 ± 197.6
	Cortisol (nmol/l)	2	Variability of the average number of hormones in% compared with the initial level:		
			During the operation:		On the third day after the operation
			331.9 ± 26.4	406.8 ± 56.4	455.7 ± 38.8
	1	2	3	Four	
		3	252.1 ± 42.6	554.9 ± 23.6	398.1 ± 25.2
	Prolactin (Mme/ml)	1	+832.2	+123.0	
		1	70.8 ± 8.86	69.3 ± 2.4	70.1 ± 12.7
		2	+315.0	+187.2	
	T 4	2	101.4 ± 13.1	92.8 ± 10.8	79.4 ± 9.92
		3	+623.1	+286	
		3	82.4 ± 5.7	78.9 ± 5.7	95.7 ± 4.6
hormones by groups N	The CIA	1	1.41 ± 0.71	2.70 ± 0.78	1.53 ± 0.41
		2	2.21 ± 0.51	4.07 ± 0.41	3.4 ± 1.5
		3	1.68 ± 0.4	1.89 ± 0.89	2.24 ± 0.8

ote: 1 -

laparoscopic cholecystectomy;

2 - cholecystectomy from minilaparotomic access,

3 - cholecystectomy from a wide laparotomy access.

Table 4.4.

Variability of the average amount of hormones in% compared with the original level

Cortisol (nmol/l)	1	+56.1	+4.5
	2	+19.6	+37.6
	3	+106.5	+59.2
T₄	1	-3.1	-3.3
	2	-10.7	-21.7
	3	-10.7	+ 12.9
TSH	1	+91.2	+ 11.2
	2	+71.6	+52.2
	3	+15.2%	+48.1

Note :
1 -
laparoscopic
cholecystectomy;
2

cholecystectomy from minilaparotomic access,
3 - cholecystectomy from a wide laparotomy access.

The data of our studies allow us to conclude that during cholecystectomy from minilaparotomy access, an increase in the level of hormones during surgical intervention is observed, in its severity, located between laparoscopic and laparotomic cholecystectomy. A sharper rise in the level of some hormones during laparoscopic cholecystectomy can be explained by the influence of tense carboxyperitoneum, which in itself is a rather stressful factor associated with stretching of the peritoneum, rich in nerve endings. However, with laparoscopic cholecystectomy, the return to the initial level of stress hormones occurs faster, which is apparently associated with less trauma to muscle tissue during this operation.

At the same time, the study of the level of blood hormones revealed another feature. So it is noted that the longer the operation, the greater the fluctuations from the norm. So if we take as a unit the performance of cholecystectomy from laparotomic access, then with prolonged laparoscopic or minilaparotomic cholecystectomy, the indicator of the severity of the operation is equal. This dependence on the example of the level of prolactin is reflected in table 4.5.

Table 4.5.

Dependence of the level of prolactin on the duration of cholecystectomy

	LHE		MLCE		OKHE	
	1	2	1	2	1	2
With the duration of the operation equal to the average	2411	597	908	627	1981	1176
With the duration of the operation exceeding 2 times the average	5214	918	2110	1012	4605	2856

Note: 1 - intraoperatively; 2 - after surgery

As can be seen from the table 4.5, with the duration of LCE, the prolactin level after surgery exceeding the average value by 2 times exceeds its average value in the postoperative period, but at the same time approaches the prolactin level in the postoperative period after laparotomic cholecystectomy.

The conducted studies showed that the most pronounced variability of most of the studied hormones in the direction of their increase took place during laparoscopic cholecystectomy compared to

the traditional one, but by the third day after the operation after the laparoscopic operation, there was a faster return to the initial level compared to the minilaparotomic and traditional methods ($p < 0.05$). In general, the comparison of the data obtained during the isolation and removal of the gallbladder with the minilaparotomic and laparoscopic methods were almost identical, but on the third day after the operation, the advantage was on the side of laparoscopic cholecystectomy, a faster return to the initial level.

Thus, a comparative assessment of the level of stress syndrome during operations on the biliary tract showed that operations from a minilaparotomy access can be classified as minimally invasive in terms of the degree of surgical aggression. However, with the duration of surgery, the level of stress hormones increases in parallel.

Therefore, the optimal method of surgical intervention in patients with inflammatory diseases of the biliary tract with severe concomitant diseases (diseases of the cardiovascular system and chronic lung diseases, etc.), when laparoscopic cholecystectomy is contraindicated, is an operation from a minilaparotomy access, which, according to our study, is less traumatic than the laparotomy method with an average duration of the operation.

CHAPTER 5

RESULTS OF MINILAPAROTOMIC CHOLECYSTECTOMY IN PATIENTS WITH CHRONIC CALCULOUS CHOLECYSTITIS WITH INCREASED OPERATIONAL RISK

The analysis of the results of AChE and LChE in patients with CCC with POR showed that, despite their relatively low risk of surgery (according to the scale developed by us, most of these patients are classified as risk category 1), the results of their treatment are not entirely satisfactory. In addition, due to the traumatic nature of CCE and the impossibility of performing LCE due to the need to apply PN,

many patients with CCC with POR would have had to postpone surgical correction of the pathology until an emergency occurred (according to the developed scale, these are patients with 2, 3, and 4 degrees of risk of surgery).

Taking into account the availability of MLCE in the arsenal of surgical treatment of cholelithiasis, we analyzed the possibility of using this technique in patients with CCC with POR, since this category of patients requires a minimally invasive technique.

For this purpose, a comparative assessment of the level of stress hormones during operations on the biliary tract using various approaches was carried out. At the same time, it was proved that the operation from the minilaparotomic approach can be classified as minimally invasive in terms of the degree of surgical aggression. At the same time, it has been proven that any minimally invasive intervention, with its longer duration, can have indicators of a conventional open intervention.

Therefore, the optimal method of surgical intervention in patients with CCC with POR, when LCE is contraindicated as a minimally invasive technique, is surgery from a minilaparotomy approach, which, according to our study, is less traumatic than the laparotomy method.

Considering the above, we analyzed the results of treatment of 217 patients with CCC with POR, who underwent MLC.

At the same time, we would like to note that we divided the use of this technique in this contingent of patients into 2 stages: stage 1 (subgroup "A"), when the standard MLCE was applied according to the method of M.I. Prudkov with the use of equipment "Miniassistant" in 112 patients from 2001 to 2004; Stage 2 (subgroup "B"), when the MLCE technique improved by us was applied in 105 patients from 2004 to 2007.

The distribution of patients who underwent MLCE by sex and age is shown in Table 5.1.

Table 5.1.

Distribution of patients by sex and age who underwent MLCE

Age	MLCE according to M.I. Prudkov		Improvement-bathroom MLCE		Total
	Husband (%)	Women (%)	Husband (%)	women (%)	
45-59 years old	5(2.3%)	21(9.7%)	4(1.8%)	20(9.2%)	50(23%)
60-75 years old	17(7.8%)	40(18.4%)	14(6.5%)	37(17.1%)	108(49.8%)
75 and older	13(6%)	16(7.4%)	13(6%)	17(7.8%)	59(27.2%)
Total	35(16.1%)	77(35.5%)	31(14.3%)	74(34.1%)	217 (100%)

As shown in Table 5.1, about half of all patients undergoing MLCE were between 60 and 75 years of age. Patients older than 75 years were 59 (27.2%). At the same time, both in subgroup "A" and in subgroup "B", the ratio by sex and age was almost identical. It should also be noted that among the patients who underwent AChE and LChE, as described in Chapter 3 of the work, there were no patients older than 75 years.

Concomitant diseases in patients undergoing MLCE are presented in Table. 5.2. As expected, the most frequent were CCC diseases observed in 216 (99.5%) patients. It should be emphasized that diseases of the cardiovascular system organs, DS and obesity more often prevailed in patients of subgroup B.

The distribution of these patients according to the degree of risk of surgery is reflected in Table. 5.3.

Table 5.2.

Concomitant pathology in patients with CCC after MLCE

№	<i>Accompanying illnesses</i>	Subgroup "A"	Subgroup "B"	Total
1	Diseases of the cardiovascular system	111	105	216
2	Obesity	56	92	148
3	Diseases of the urinary system	54	42	96
4	Respiratory diseases	40	46	86
5	Liver disease	22	27	59
6	Diseases of the gastrointestinal tract	22	21	53
7	Diabetes	13	14	27
8	Systemic diseases	3	4	7

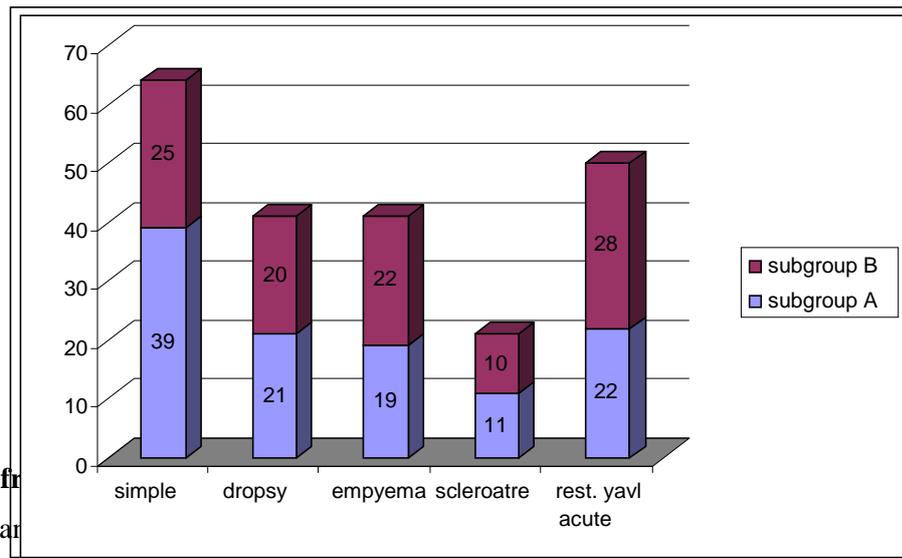
Table 5.3.

Distribution of patients depending on the category of severity

Categories of gravity	Number of patients		
	subgroup "A"	subgroup "B"	Total
I	25(11.5%)	15(6.9%)	40(18.4%)
II	50(23.1%)	48(22.1%)	98(45.2%)
III	33(15.2%)	36(16.6%)	69(31.8%)
IV	4(1.8%)	6(2.8%)	10(4.6%)
Total:	112(51.6%)	105(48.4%)	217(100%)

As can be seen from the presented table 5.3., in contrast to patients who underwent CCE and LCE, who were mainly in the 1st category of surgery risk, in the group of patients who underwent MLC, there were categories of patients with all degrees of risk of surgery. At the same time, patients with the second and third degrees of risk of surgery made up the main lot. It should be noted that the improved MLCE technique was applied in a larger number of patients with higher severity categories. Thus, 42 (19.4%) patients with 3 and 4 risk degrees were operated on using this technique, while 37 (17%) patients were operated on using the standard technique.

An important factor in increasing the risk of surgery was changes in the gallbladder itself. Their frequency is shown in Figure 5.1.



Rice. 5.1. The fr
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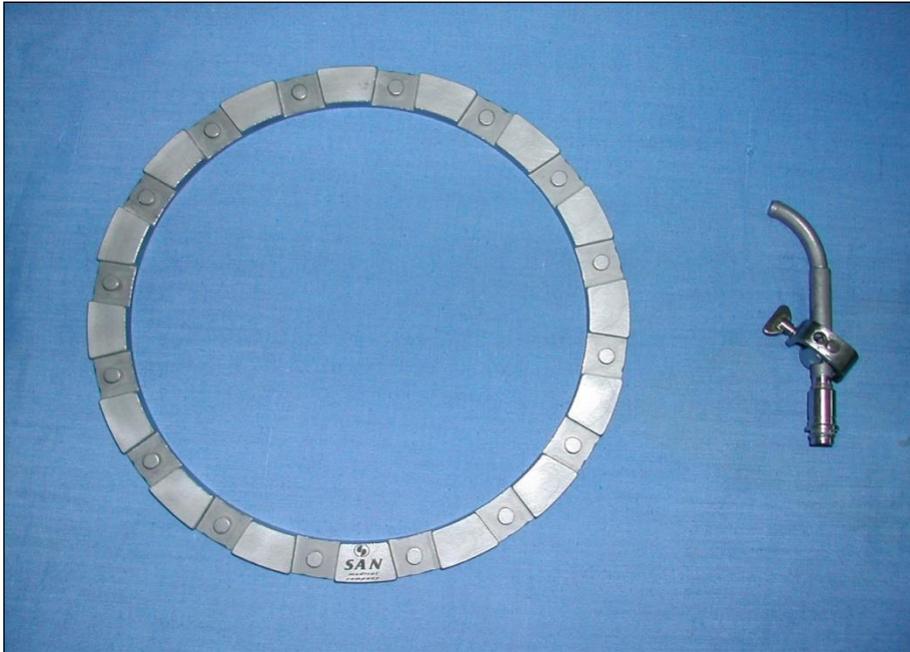
g MLCE
d LCE, MLC

was performed more with the so-called "difficult" cholecystectomy, which, of course, translates patients into higher degrees of severity of the operation. Thus, 41 MLCs were performed for hydrocele and empyema of the gallbladder, 21 for scleroatrophic bladder, 50 for subsiding acute cholecystitis. At the same time, again, the proportion of "difficult" cholecystectomy in subgroup "B" is higher than in subgroup "A".

As described in chapter 2 of the work, 7 patients had a history of obstructive jaundice. Ultrasound showed no pathology. Due to anamnestic jaundice during the MLCE, a revision of the choledochus was performed - no pathology was found. The postoperative period was uneventful.

All operations from minilaparotomy were performed using a set of surgical instruments "mini-assistant" developed by M.I. Prudkov, produced by the medical company "SAN" (Russia).

A set of instruments for minilaparotomy included: a circle - a support for attaching mirrors - retractors (retractor); mobile narrow mirrors, one of which is equipped with a point light source connected to an illuminator using a fiber-optic light guide (Fig. 5.2, 5.3).



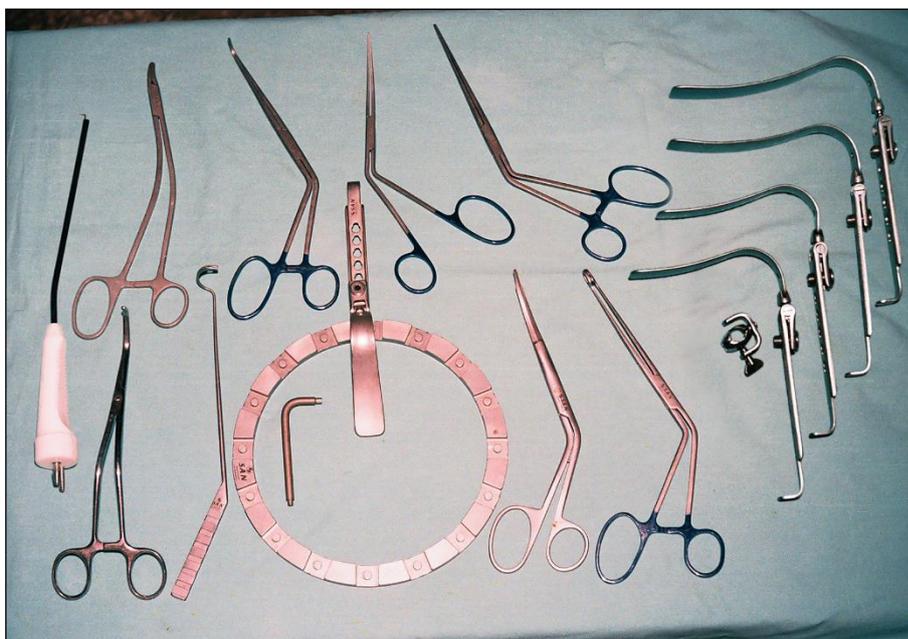
Rice. 5.2. Ring-shaped retractor with a light guide.

The ability to change the angle of inclination of the submersible part of the retractor and fix it in a predetermined position allows, with the length of a small laparotomy incision, to obtain a zone accessible for manipulation in the subhepatic space.

During the operation, special instruments included in the "Mini Assistant" kit were used (Fig. 5.4.)



Rice. 5.3. Retractors with different lengths of working parts.



Rice. 5.4. Set of tools "Mini Assistant".

To perform MLCE in all 217 patients with CCC, we used two variants of minilaparotomy, in which the length of the incision was from 3 to 6 cm: pararectal and oblique subcostal.

The pararectal incision was used almost 7 times (in 189 - 87.1%) more often than the oblique incision parallel to the right costal arch (in 28-12.9%), which is statistically significant ($p < 0.05$).

The choice of the direction of the abdominal wall incision was determined individually and depended on: the constitution of the patient, the nature of the lesion of the biliary tract, concomitant diseases and previous operations. In situations where the expansion of access was not ruled out ("difficult" cholecystectomy, internal bile-digestive fistulas, choledocholithiasis, etc.), as well as when switching from the laparoscopic method of operation, the right pararectal approach was used (in 189-87.1%). This access made it possible to conduct an adequate revision of the abdominal cavity and perform the required amount of surgical intervention. On the contrary, right oblique access was used in the remaining 28 (12.9%) patients, usually with uncomplicated chronic calculous cholecystitis.

Oblique access in the right hypochondrium was carried out 3 - 4 cm below the right costal arch and 2 - to the 3 cm right of the midline at the level of the angle of the costal arch (Fig. 5.5.).

The skin, subcutaneous tissue, and anterior leaf of the sheath of the right rectus abdominis muscle were dissected in layers. Careful hemostasis was performed along the incision by means of electro-surgical treatment. After that, the fibers of the rectus abdominis muscle were moved apart and the posterior leaf of the vagina with the peritoneum was opened.

With pararectal access, the incision was made from the angle of the right costal arch vertically down, retreating approximately 4-5 cm from the midline of the abdomen (Fig. 5.6). After dissection of the skin and subcutaneous tissue, the anterior wall of the vagina of the rectus muscle was opened vertically, then the fibers of the rectus abdominis muscle were stratified to the left and right, after which the

posterior wall of the vagina of the latter and the peritoneum were cut. We always tried to penetrate into the abdominal cavity to the right of the round ligament of the liver, which facilitated further surgical manipulations. To reduce the depth of the wound, the peritoneum was fixed to the skin of the abdomen with four separate interrupted sutures in the middle of the edges and corners of the wound.

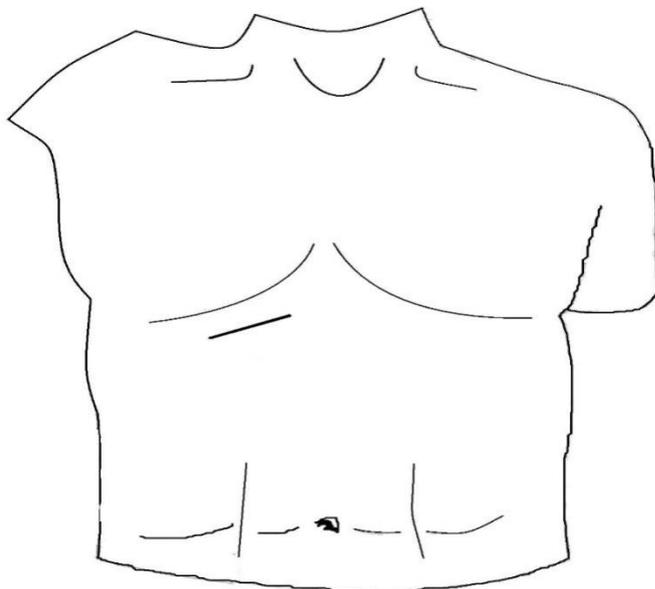


Figure 5.5. Scheme of an oblique incision for cholecystectomy from a minilaparotomy access

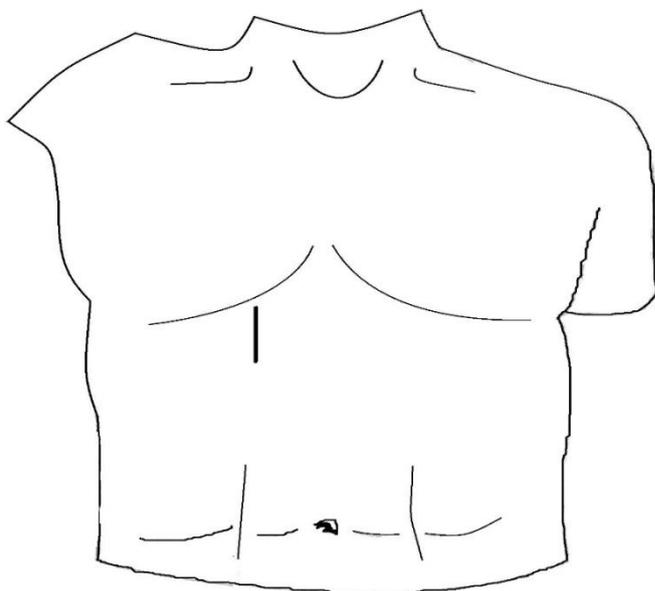


Figure 5.6. Scheme of pararectal incision for cholecystectomy from minilaparotomy access

In general, according to our data, when evaluating the immediate results of operations from the minilaparotomic access, it was found that they are quite favorable: intraoperative complications were observed in 2 patients. Postoperative complications occurred in 12 (5.5%).

In the immediate postoperative period, 198 (91.24%) of the discharged patients recovered, 19 (8.75%) had a significant improvement (cessation of pain attacks while maintaining severity in the right hypochondrium) (Table 5.4).

Table 5.4.

Immediate outcomes of operations on the biliary tract from minilaparotomic access

Immediate Outcomes:	Qty	%
Operated patients	217	100%
Conversions	7	3.2%
of which had complications	14	6.45%
Including:		
Intraoperative	2	0.9%
Postoperative	12	5.5%
Died	0	0%

As indicated in Table 5.4, complications were observed in 2 patients during the MLCE.

In the first case, the common bile duct was crossed, resulting in a laparotomy and reconstructive surgery. In the second case, after clipping of the cystic artery, the clip slipped and bleeding occurred. Also made a conversion to laparotomy and ligation of the cystic artery. These patients had no complications in the postoperative period.

In the postoperative period, we noted various complications in 12 (5.5%) cases (Table 5.5).

To the specific complications identified in 2 (0.9%) patients, we attributed those that are directly related to the implementation of MLCE: bile leakage through drainage from the subhepatic space and exacerbation of chronic pancreatitis. However, none of these cases required relaparotomy.

Non-specific or general complications observed in all surgical interventions (pneumonia, acute cardiovascular insufficiency, etc.) were noted much more often (5.5%) than specific ones. They required long-term conservative treatment, lengthened the length of stay of patients in the hospital after surgery. At the same time, I would like to note that in patients who underwent AChE and LChE, the number of postoperative complications was 23.5% and 15%, respectively, and in general, these patients belonged to category 1 of the severity of the operation.

Table 5.5.

The frequency and nature of postoperative complications, in patients undergoing MLCE

The nature of the complications	Number	%
Specific :	2	0.9%
Bile leakage from the subhepatic space	1	0.45%
Exacerbation of chronic pancreatitis	1	0.45%
Non-specific:	12	5.5%
Pneumonia	5	2.3%
exacerbation of chronic bronchitis	1	0.45%
Acute myocardial infarction	5	2.3%
Segmental pulmonary embolism	1	0.45%

Total Complications	14	6.4%
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An analysis of postoperative complications in cases of MLCE performed showed that, as a rule, they were observed during standard MLCE, and the reason, as a rule, is the performance of "difficult" cholecystectomy in patients with 3 and 4 degrees of surgery risk. In addition, the same factor influenced the number of conversions when performing the standard MLCE according to M.I. Prudkov. So the cause of conversions in all cases was scleroatrophic gallbladder and subsiding phenomena of acute cholecystitis.

The implementation of the standard MLCE according to M.I. Prudkov in such situations was accompanied by a longer duration of the operation.

Thus, the duration of MLCE in patients of subgroup "A" averaged 55 ± 4.5 minutes. At the same time, it took an average of 41 ± 5.0 minutes to perform a "simple" cholecystectomy, and 75 ± 6.5 minutes to perform a "difficult" cholecystectomy. The longest duration of MLCE was observed with subsiding phenomena of acute cholecystitis, reaching up to 120 minutes. The duration of MLCE and, as a consequence, greater trauma, contributed to the occurrence of a number of the above complications in patients with POR. On the contrary, in patients with a shorter duration of MLCE, complications were practically not observed. These data confirm the results obtained in the study of the level of stress hormones during minimally invasive cholecystectomy - the longer the operation, the less invasive it becomes.

Table 5.6.

Dependence of the frequency of postoperative complications during MLCE on the severity of the operation

Operation severity category	Number of complications
I	0
II	1
III	7
IV	4
Total	12 (5.5%)

Example 3. Patient D, aged 71, IB No. 124, applied to a surgical hospital for recurrent pain in the right hypochondrium for 5 years. From the anamnesis, the last attack 22 days ago, multiple attacks without signs of obstructive jaundice. For the last 2 months the patient has had constant dull pain. History of AMI. An objective examination of the patient increased nutrition (obesity 2 degrees). Ultrasound revealed signs of HCC, dropsy of the gallbladder (calculus in size 2 cm in the cervical region, bladder size 100 mm on 36 mm, compacted, choledochus is not expanded, no stones were found in it). With EGDFS - the phenomena of moderate superficial gastritis, reflux esophagitis. ECG - sinus rhythm, single ventricular extrasystoles, EOS deviated to the left. R-scopy of the chest: no pathology was found. The rest of the clinical and laboratory parameters were within the normal range. The patient is prepared for the operation. Preoperative diagnosis: Main: cholelithiasis, chronic cholecystitis; Associated: coronary artery disease. Arterial hypertension, NK 2. obesity of the 2nd degree. The total score for the general condition is 22, taking into account changes in the gallbladder characteristic of hydrocele of the gallbladder, this amount is multiplied by 1.3, while the total score is 28.7, risk category III . On

November 9, 2002, MLCE was performed according to M.I. Prudkov. The duration of the operation was 40 minutes, blood loss was 20 ml. The postoperative course was uneventful, no complications were observed. The patient was discharged for outpatient treatment on the 5th day.

Example 4. Patient K, 68 years old, IB No. 654, applied to a surgical hospital for recurrent pain in the right hypochondrium for 7 years. From the anamnesis, the last attack was 20 days ago, multiple attacks without signs of obstructive jaundice. Over the past 4-5 months, the patient has had repeated bouts of pain. An objective examination of the patient increased nutrition (obesity 3 degrees). Ultrasound revealed signs of HCC (many calculi from 0.5 to 1 cm, the walls of the gallbladder are thickened to 1 cm, stratified, the choledochus is not expanded, no calculi were found in it). With EGDFS - the phenomena of moderate superficial gastritis, reflux esophagitis. ECG - sinus rhythm, left bundle branch block, EOS deviated to the left, heart rate 100. R-scopy of the chest: no pathology was found. The rest of the clinical and laboratory parameters were within the normal range. The patient is prepared for the operation. Preoperative diagnosis: Main: cholelithiasis, chronic cholecystitis; Associated: coronary artery disease. blockade of the PNPG. Arterial hypertension, NK 1 tbsp. obesity 3 degrees. The total score for the general condition is 21, taking into account changes in the gallbladder characteristic of the residual phenomenon of acute cholecystitis, this amount is multiplied by 2.46, while the total score is 51.7, risk category IV. On December 12, 2002, MLCE was performed according to M.I. Prudkov. The duration of the operation was 110 minutes, blood loss was 50 ml. In the postoperative period, shortness of breath and weakness were noted. On the ECG - an acute violation of the coronary circulation in the basin of the left coronary artery. She received the necessary drugs to treat the developed AMI. The patient was transferred on the 3rd day to the cardiology department, from where the patient was discharged for outpatient treatment.

With these two examples, we wanted to show how the duration and, consequently, the invasiveness of the operation play a role in the occurrence of postoperative complications. Thus, in example 3, although the patient had a higher score in general condition compared to example 4, the patient did not develop any complications in the postoperative period. Apparently, as the analysis of other cases of complications shows, this was influenced by the duration of the operation. This is also proved by studies conducted to determine the level of "stress" hormones.

We saw one of the ways to solve this problem in improving the technical capabilities of MLCE, which would reduce the time spent on performing the so-called "difficult" cholecystectomy.

Analysis of the results of improved MLCE in the treatment of patients with CCC with POR

The MLCE was divided into separate stages. At the same time, the main point, like any other operation, is a full-fledged exposure and adequate visualization of the elements of the Kahlo triangle. When performing the same standard MLCE according to M.I. Prudkov, traction behind the bottom of the gallbladder and its removal into the wound (as in laparotomic CE) significantly worsened the visualization of the gallbladder neck and hepatoduodenal ligament, which led to a prolongation of the operation, especially when performing "difficult" cholecystectomy.

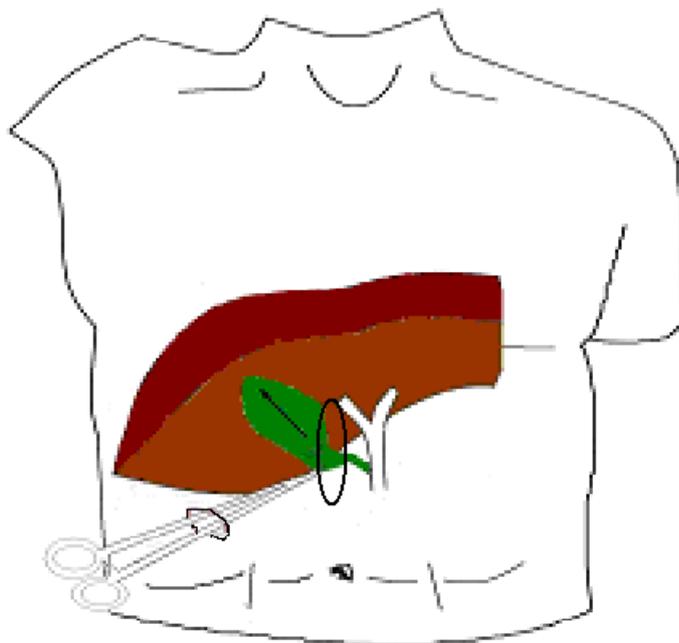
Therefore, when performing MLCE in patients in subgroup "B", a new technique developed by us was used, which greatly facilitates the operation - visualization of the elements of the Calot triangle.

So, after performing a minilaparotomy, a soft clamp with long branches is inserted through an additional puncture on the anterior abdominal wall lateral to the minilaparotomic wound at the site of the proposed counter-opening to install the drainage tube. The clamp captures the neck of the gallbladder and traction is carried out laterally upwards. At the same time, the surgeon clearly sees the region of the

gallbladder neck, the hepatoduodenal ligament and the duodenum, which is especially necessary when performing a “difficult” cholecystectomy(Fig. 5.7.).

Manipulations to cross the cystic duct and artery do not interfere with other instruments (usually 2 Luer-type clamps, which capture the bottom and neck of the gallbladder).

After crossing the cystic duct and artery, the gallbladder is removed from the minilaparotomic wound. The drainage tube is installed in the subhepatic region and is brought out of the previously imposed puncture on the anterior abdominal wall.



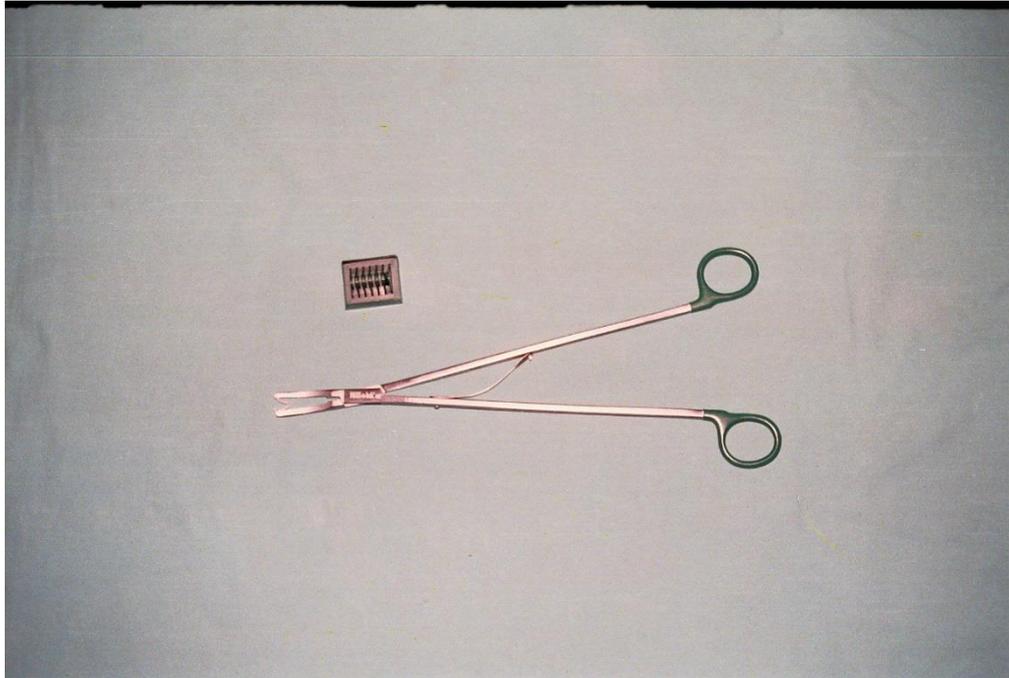
Rice. 5.7. Scheme of the method of cholecystectomy from minilaparotomy access (a patent for the invention is issued).

Such a tactic makes it possible to clearly differentiate anatomical formations in the area of the hepatoduodenal ligament and avoid unforeseen damage to the HPT. One of the proofs of this is the fact that when performing 105 MLCE according to the technique improved by us, we did not observe any serious intraoperative complications that affected the further fate of the patient. In addition, there was not a single case of transition to open intervention.

In addition, in order to reduce the duration and trauma of the operation, as well as to reduce the number of intraoperative complications, we have made another improvement to the MLCE technique.

As we know, another technically difficult moment in MLCE according to the standard technique is the ligation of the cystic duct and artery. The knot is tied outside the abdominal cavity, then with the help of a “fork”, the thread is lowered into the abdominal cavity and tied.

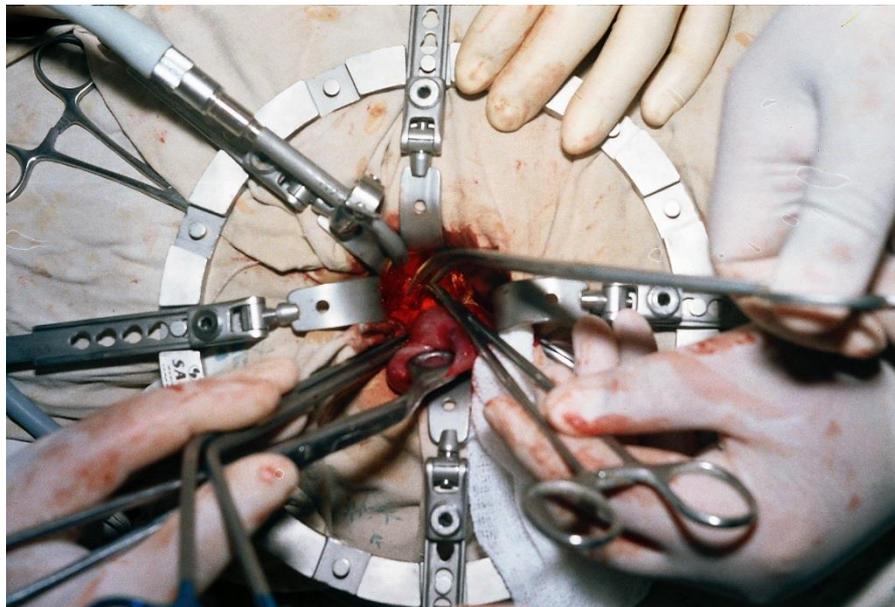
We have significantly simplified this stage of the operation by using a clipper of our own design (Fig. 5.8.). 2 clips are placed on the proximal part of the cystic duct and it is crossed between them.



Ri c . 5.8. Clipper used in MLCE

The next step is the isolation and clipping of the cystic artery (Fig. 5.9.), after which it is also crossed.

MLCE ended with obligatory drainage of the subhepatic space with a drain brought out through a puncture of the anterior abdominal wall on the right, from where a clamp was inserted for traction of the gallbladder.



Rice. 5.9. Isolation and clipping of the cystic artery

The proposed technique greatly facilitates the operation of the operating surgeon and reduces the duration of the operation. The proposed technical improvements have been patented .

Thus, the average duration of MLCE according to the improved technique, performed in patients of subgroup "B", was 36 ± 3.1 minutes, and in most patients (79.4%) it did not exceed 40 minutes (Table 5.7.).

Table 5.7.

Comparative evaluation of the duration of various variants of MLCE

MLCE options	Duration of MLCE during "normal" cholecystectomy, min	duration of MLCE in "difficult" cholecystectomy, min	Average duration, min
Subgroup "A"	41±5.0	75±6.5	55±4.5
Subgroup "B"	24±3.2	46 ± 3.4	36±3.1

Due to the reduction in the duration of the intervention, the improved technical aspects of the operation, the number of complications during the MLCE has decreased, and no lethal outcomes have been noted in our observations.

Table 5.8.

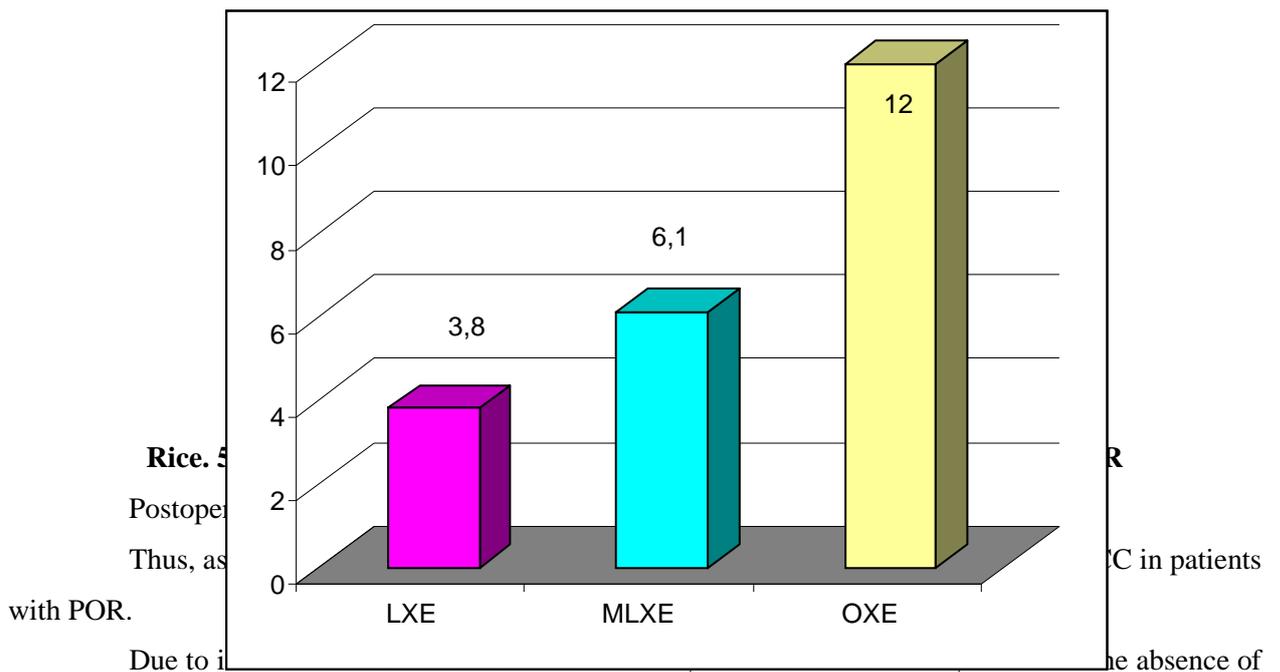
Comparative assessment of the frequency of complications in the performance of various variants of MLCE (n = 217)

Severity category operations	MLCE according to the standard methodology	MLCE according to an improved technique	Total
I	0	0	0
II	1(0.5%)	0	1(0.5%)
III	7(3.2%)	0	7(3.2%)
IV	3(1.3%)	1(0.5%)	4(1.8%)
Total	11(5%)	1(0.5%)	12(5.5%)

Example 5. Patient T, 75 years old, IB No. 065, went to the surgical hospital because of the severity in the right hypochondrium with periodic amplification. Over the past 5 months, the patient has had repeated bouts of pain with hospitalization for acute calculous cholecystitis. Attacks of pain without jaundice. In history, the patient suffered AMI, suffers from diabetes mellitus, grade 3 obesity, blood pressure at the level of 160/100 mm Hg. Art. with periodic rises up to 220/110 mm Hg. Art. Ultrasound revealed signs of CCC with acute symptoms (many calculi from 0.5 to 1 cm, filling the entire volume of the bladder, the walls of the gallbladder are thickened to 1 cm, thickened, the choledochus is not expanded, no calculi were found in it). With EGDFS - the phenomena of moderate superficial gastritis, reflux esophagitis. ECG - sinus rhythm, left bundle branch block, EOS deviated to the left, heart rate 100. R-scopy of the chest: no pathology was found. The rest of the clinical and laboratory parameters were within the normal range. The patient is prepared for the operation. Preoperative diagnosis: Main: cholelithiasis, chronic cholecystitis; Associated: coronary artery disease. blockade of the PNPG. Arterial hypertension. Diabetes mellitus, obesity of the 3rd degree, NC of the 2nd degree. The total score for the general condition is 35, taking into account changes in the gallbladder characteristic of the residual phenomenon of acute cholecystitis, this amount is multiplied by 2.46, while the total score is 86.1, risk category IV. March 15, 2005. Performed by MLCE according to an improved technique. The duration of the operation was 40 minutes, the blood loss was 50 ml. In the postoperative period received anticoagulants, antibiotics, symptomatic and restorative therapy. The patient was discharged for outpatient treatment on the 6th day.

By this example, we wanted to show that, despite the severity of the condition, the patient underwent MLCE according to an improved technique, while the duration of the operation was 40 minutes and we did not observe any complications in the postoperative period.

The duration of postoperative hospitalization of patients who underwent surgery through a minilaparotomy approach averaged 6.1 ± 1.4 days (from 4 to 10 days). In all cases, the terms of hospitalization of patients after cholecystectomy from minilaparotomic access were significantly ($p < 0.05$) less than after CCE, in which it was 12 ± 1.3 bed-days on average (Fig. 5.10).



Due to the absence of the need to apply PP, MLC with very effective results was performed in 217 patients with CCC with POR. It should be noted that not only patients with the 1st category of surgery risk, as was the case in patients who underwent AChE and LCE, but also those with 2nd, 3rd, and even 4th degree of surgery risk were subjected to MLCE.

At the same time, its use contributed to a significant reduction in the number of postoperative complications to 12 (5.5%) cases, and we did not note any lethal outcomes.

A detailed analysis of the developed intra- and postoperative complications, conversions showed the need for technical improvement of individual stages of performing MLCE according to M.I. ChE) significantly worsened the visualization of the gallbladder neck and hepatoduodenal ligament, which led to a prolongation of the operation time. In this regard, after performing a minilaparotomy, a soft clamp with long branches is inserted through an additional puncture on the anterior abdominal wall lateral to the minilaparotomic wound at the site of the proposed counter-opening to install the drainage tube. The clamp captures the neck of the gallbladder and traction is carried out laterally upwards. At the same time, the surgeon clearly sees the region of the gallbladder neck, the hepatoduodenal ligament and the duodenum, which is especially necessary when performing a “difficult” cholecystectomy.

In addition, for the ligation of the cystic duct and the artery, which, when performing the standard MLCE according to Prudkov M.I. is a rather laborious stage, an original clipper of its own design was developed. Thanks to its use outside the wound, it is possible without technical difficulties and time-consuming to clip and cut off the cystic artery and duct.

The improved technical points of the MLCE are issued in the form of a copyright certificate.

In general, the implementation of an improved version of MLCE made it possible to reduce the duration of the operation from an average of 55 ± 4.5 minutes to 36 ± 3.1 minutes, and in the case of "difficult" cholecystectomy, from 75 ± 6.5 minutes to 46 ± 3.4 minutes. And this, in turn, contributed to a decrease in the number of postoperative complications from 11 (5%) to 1 (0.5%) cases and, at the same time, to avoid deaths. An important fact is that when performing the improved MLCE, in no case did we have to proceed to the conversion.

Thus, MLCE is an alternative method of radical correction of pathology in patients with CCC with POR, which means that it is also effective in the rest of the contingent of patients with cholelithiasis. At the same time, its implementation does not present any particular difficulties for mastering this technique by surgeons who have some experience in performing operations on the biliary tract.

AFTERWORD

The last decade was marked by certain achievements in the field of biliary surgery, due to the widespread introduction of minimally invasive and endoscopic technologies, the development of anesthesiology, improved diagnostics, increased operational activity and sanitation of patients at the preclinical stage of the disease [2,9,13,25,59,178].

To date, at this level, in the surgical treatment of CCC, the conduction of CCE has long ceased to be "traditional" and has given way to the championship of LCE. The high technical equipment of the units and low trauma, along with low rates of postoperative complications, made LCE a prestigious operation, contributing to the shortening of treatment time, early activation of patients, reduction in the number of postoperative complications, etc. [14,56,147,218]. Thus, according to numerous publications, surgical treatment of uncomplicated cholelithiasis, to date, gives quite satisfactory results and provides minimal postoperative mortality, reaching 0.2–0.3% [49,71,168,193].

At the same time, with a complicated course of cholelithiasis, especially in patients with increased operational risk (OR), the average mortality rate exceeds 5 and even 10% of cases [1,20,138].

The fact of this leaves the problem of treatment of cholelithiasis relevant, because it occurs more often in older age groups. Thus, according to WHO, a quarter of the population over 60 and a third of the population over 70 have gallbladder stones, and life expectancy is increasing from year to year [16,59,127].

Unfortunately, the conservative therapy that gave many hopes for cholelithiasis in patients with POR did not give the expected effect. As practice shows, in this category of patients, in the event of complications, we are still forced to resort to surgical treatment.

An alternative to surgical treatment of cholelithiasis has been and remains the imposition of cholecystostomy by various methods. However, even in patients with POR with prolonged existence, according to a number of authors, it leads to rapid exhaustion. And the methods aimed at obliterating the gallbladder through cholecystostomy, today, are not effective enough.

Thus, the most optimal method of treating patients with cholelithiasis in order to get rid of possible complications remains the performance of a radical operation - cholecystectomy, which in patients with POR is preferably performed using a low-traumatic method. The use of LCE in these cases becomes impossible, as a rule, due to the need to impose a pneumoperitoneum, despite its low trauma.

In this regard, in recent years, another variant of minimally invasive cholecystectomy, minilaparotomy, has occupied an increasing place in cholelithiasis surgery. To date, as is known, the works of a number of authors have proved the same obvious advantages over CCE as in the case of LCE in chronic and acute calculous cholecystitis.

The limited performance of laparoscopic operations in such cases as adhesions in the upper abdominal cavity, with the severity of functional disorders of the CVS and DS, with the detection of an inflammatory infiltrate, according to a number of authors, determines the relevance of a wider use of mini-approaches for cholecystectomy. An important fact is the possibility of its implementation without general anesthesia. The above-mentioned advantages of minilaparotomic cholecystectomy would probably allow it to be recommended as a method of choice for cholecystectomy in patients with POR.

In this regard, this research work has been undertaken, in which presents our experience in the treatment of 217 patients with CCC with POR.

It should be noted that in our clinic, according to specific indications, all three main methods of cholecystectomy are used: laparoscopic, open and minilaparotomy. Thus, the number of patients who underwent these surgical interventions during this period amounted to 1293 patients aged 17 to 84 years.

As well as according to a number of clinics where all types of cholecystectomy are used, in our clinic the largest share was occupied by LCE, which accounted for 68.8% of all cases of cholecystectomy.

The main indications for MLCE were patients with CVS and DS disorders that prevented the application of PN, and these were mainly patients with POR.

In order to choose the method of cholecystectomy in patients with CCC with POR, the results of treatment of 254 patients were analyzed. In 17 cases, they underwent CCE, in 20 cases, LCE, and in 217 cases, MLC.

The main contingent of patients was over 60 years old - 187 (72.8%) patients, and 67 (22.4%) patients under the age of 60 years were operated on. The mean age of the patients was 63.4 ± 3.5 years.

It is noteworthy that CCC was mainly observed in women - 175 (68.9%) patients, and men were 79 (31.1%). At the same time, as well as according to the literature, the ratio of men to women levels off with age.

The collection of anamnesis data revealed that the duration of cholelithiasis disease ranged from several months to 30 years. At the same time, patients with cholelithiasis with a disease duration of 3 to 5 years applied most often, observed in 92 (36%) patients.

Naturally, attacks of pain in patients are often marked multiple. It should be noted that one of the main factors that determined the indications for radical surgical correction in patients with POR was precisely the frequency of seizures. So 75% of patients were subject to surgical correction due to repeated bouts of pain in a short time period.

The study of the structure of concomitant pathology showed that CCC diseases occurred in almost every patient with POR. Respiratory diseases were noted in 96 (37.8%) patients, and diabetes mellitus in 34 (13.4%). At the same time, 2/3 of the patients were obese. No doubt the presence of so many diseases put them in the POR group.

The presence of comorbidities required special attention in this group of patients during preoperative preparation.

All patients were determined by the degree of operational risk according to the classification of Gologorsky V.A. Well, for a differentiated approach, there was a need for further gradation of the condition of these patients. In addition, the tactics of treating patients with cholelithiasis and the choice of the type of operation depends not only on the severity of the patient's physical condition, but also on the nature of the inflammatory process in the gallbladder.

For its objective assessment and prediction of the outcome of the operation, various prognostic systems have been proposed. Many of them are difficult to use, require modern technical support and are not universal, and therefore have not found their wide application in practical surgery.

With this in mind, in order to quantify the general condition of patients, to determine the quantitative criteria for the use of a particular treatment method, we developed a scoring scale for assessing the severity of the condition of patients with CCC with POR. At the same time, the score for each attribute is given on the basis of an expert assessment.

To do this, for a particular patient, the sum of points for the general physical condition was calculated. Then this sum of points was multiplied by the coefficient of complexity of the cholecystectomy performed, which were determined in the work of U.B. Berkinov. So, according to this, the complexity of conventional cholecystectomy is taken as one (1), and the coefficient of complexity of performing cholecystectomy with dropsy of the gallbladder is 1.3, with empyema of the gallbladder - 1.92, with scleroatrophic gallbladder - 2.25, with residual effects of acute cholecystitis - 2.46.

Depending on the points obtained, we identified 4 risk categories for surgical intervention in patients with CCC with POR, which allowed them to predict the course and outcome of the postoperative period.

We do not claim the ideality of the developed scoring scale. In the future, perhaps, it will change due to additions regarding the further gradation of various diseases by stages or other signs. By this method of determining the risk category of surgery, we wanted to quantitatively show the severity of conditions in patients with various diseases they have.

Patients of category I of the severity of the physical condition belong to the group with a relatively low operational risk, and patients of category IV are the group with the highest operational risk, among which the maximum postoperative mortality is possible (more than 50%).

We operated on 74 (29.1%) patients with category I severity. These were the patients in whom it was possible to apply PP. The largest number of patients were operated on with the second category of severity - 170 (67%) patients. At the same time, it should be noted that among them there were only 3 patients who underwent CCE, and it was impossible for them to perform LCE at all.

Of the examined patients for a comparative assessment of the degree of trauma for each of the three types of access used and surgical interventions performed, in 57 patients we studied the state of stress hormones. As a rule, to study the body's hormonal response to stress and trauma, adrenocorticotrophic hormone is studied, which, according to some authors, does not fully reflect the entire spectrum of the body's neurohumoral response. Therefore, the study of various components of the neurohumoral response to stress (prolactin, cortisol, thyroid hormones) can more objectively show how the so-called minimally invasive interventions are actually less traumatic.

Thus, stress hormones were studied in 17 (29.73%) cases during the performance of CCE, in 20 (37.84%) - LCE and in 20 (32.43%) - MLC by M.I.

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LIST OF SYMBOLS

ACTH - adrenocorticotropic hormone

DS - Respiratory system

cholelithiasis - cholelithiasis

LCE - Laparoscopic cholecystectomy

MLCE - Minilaparotomic Cholecystectomy

MF- Mechanical jaundice

OCE- Open cholecystectomy

POR-Increased Operational Risk

PP- Pneumoperitoneum

CCC - Cardiovascular system

TSH - thyroid stimulating hormone

T4-thyroxine

T3-Triiodothyronine

Ultrasound-ultrasound examination

CDA-Choledochoduodenoanastomosis

CCC - Chronic calculous cholecystitis

CE-Cholecystectomy

EGDFS- Esophagogastroduodenofibrosopy

ERCP-Endoscopic retrograde cholangiopancreatography

ESWL - Extracorporeal shock wave lithotripsy

TCE - Conventional cholecystectomy

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