

Improvement of Tactical and Technical Approaches to Surgical Treatment of Elderly and Senile Patients With Complicated Forms of Cholelithiasis

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Abstract: *The results of treatment of 171 elderly and senile patients with complicated forms of GI are presented. Factor analysis revealed that the highest percentage of mortality, purulent-septic and extra-abdominal complications (14.8%, 48.1% and 55.6%, respectively) in elderly and senile patients was observed after attempts of simultaneous radical surgical correction of acute destructive cholecystitis or obstructive cholangitis. Stage-by-stage surgical treatment, taking into account the developed criteria for assessing the severity of the patient's condition and the predicted risk of postoperative complications, using preliminary minimally invasive decompression interventions on the bile ducts performed in 42.2% of patients in the main group, allowed to stop purulent-cholemic intoxication and improve the results of subsequent radical operations. In 15.6% of patients, these interventions were the final method of treatment. Optimization of the tactical and technical aspects of surgical treatment of elderly and senile patients with complicated forms of GI, taking into account the severity of the patient's condition and the predicted risk of postoperative complications, significantly reduced mortality, postoperative purulent-septic and extra-abdominal complications (3.1%, 12.4% and 29.9%, respectively), while in the comparison group these indicators were 8.1%, 32.4% and 41.9%.*

Keywords: *Cholelithiasis, elderly and senile age.*

Introduction

The prevalence of cholelithiasis (GI) increases dramatically with age. According to WHO data, 15% of men and 24% of women aged 70 have gallstones; in 90 - year-olds, the incidence of GI increases to 24% and 40%, respectively. Every year, 4-5% of patients with GI develop complications such as acute cholecystitis, cholelithiasis, choledocholithiasis, and cholangitis (3,5,6). Patients with complicated forms of the disease account for 54-65% of those admitted to hospitals for cholelithiasis. Among

patients operated on with acute gallbladder inflammation, elderly and senile patients account for up to 30% [1, 10, 13].

The peculiarity of acute cholecystitis in old age is a severe, rapidly progressing course of the disease and a large number of complications that occur in 70-100% of patients. Destructive changes in the gallbladder wall in elderly and senile patients occur in 35-97%, pericubic infiltrates in 20-31,1%, biliary peritonitis in 9-15% , acute pancreatitis in 10-51%, and pericubic abscesses in 8-12% of patients (2,4,11,12,14).

Along with severe complications of acute inflammation of the gallbladder, patients of older age groups often have bile duct lesions (35-60%). In the structure of bile duct lesions, the main place is occupied by choledocholithiasis, accounting for 50-78% of all types of pathology.

In patients with acute cholecystitis older than 70 years, the severity of the underlying disease is aggravated by concomitant pathology. At the same time, in the acute period of the disease, the effect of mutual aggravation of the main and concomitant diseases is manifested. The latter often takes on a competitive character in terms of the severity of its course. By the age of 75, concomitant diseases occur in almost 100% of patients with acute cholecystitis. The main place among concomitant diseases is occupied by the pathology of the cardiovascular system. From 48% to 100% of patients suffer from respiratory diseases. Diabetes mellitus is observed in 41-56-% of patients. Patients with acute cholecystitis over 60 years of age in 28-62% of cases suffer from grade 3-4 obesity (7,8,9,15).

Methodological aspects of the diagnosis and treatment of complicated forms of cholelithiasis in elderly and senile patients are described in modern literature, but the authors' arguments are sometimes contradictory and poorly provable, especially when assessing the possibilities of minimally invasive methods. In numerous studies, the results of surgical treatment do not always satisfy specialists, in 40-65% of cases, patients develop septic conditions, as a result of which from 16.5% to 30.0% of cases end in death.

Objective: To improve the results of treatment of elderly and senile patients with complicated forms of cholelithiasis by optimizing the tactical and technical aspects of surgical correction with the priority use of minimally invasive interventions.

Material and methods. The article presents the results of treatment of 171 elderly and senile patients with complicated forms of cholelithiasis who were treated in the surgical departments of the Samarkand State Medical University clinic in the period from 2017 to 2024.

According to the classification adopted by the WHO Regional Office for Europe (2016), elderly patients (60-74 years) The total number of patients was 143 (83.6%), senile patients (75 years and older) – 28 (16.4%). The oldest patient in the study was 87 years old. Female patients prevailed – 104 (60.8%), men – 67 (39.2%). The average age is 64.7 ± 3.4 years, the ratio of women to men is 1.5: 1.

In 108 patients (63.1%), the duration of the medical history exceeded 5 years, and in 41 of them (23.9%), the first signs of the disease appeared more than 10 years ago. During the first day after the appearance of clinical signs of the disease, 15 patients (5.8%) were admitted, the rest were hospitalized later, including 79 patients (46.2%) - after three days. The main reason for late hospitalization of patients was untimely request for medical care, and in 29 patients - diagnostic errors made at the prehospital stage of medical care. Of these, 22 patients were mistakenly admitted to the therapeutic and infectious departments, and 7 were treated at home by doctors of the polyclinic and ambulance.

Of the 171 patients with complicated forms of GI, 130 (76.1%) were diagnosed with destructive forms of gallbladder inflammation , including 56 with gangrenous cholecystitis. In patients aged 60-74 years, destructive gallbladder damage was observed in 115 out of 143 patients (80.4%), and in the group older than 75 years - in 25 out of 28 patients (89.2%).

In 118 (69.1%) patients, extravascular spread of inflammation was observed. Among them, 39 (22.8%) patients had biliary peritonitis in the abdominal cavity, 15 due to perforation of the gallbladder, and 24 had purulent biliary peritonitis without perforation of the bladder wall. 17 (9.9%) patients had – perivesical abscess and 62 (36.3%) patients - had perivesical infiltrate. When analyzing the frequency of extravascular complications, it was found that there were no significant differences in the age groups.

In the structure of complications of bile duct lesions, mechanical jaundice took the main place, which was observed in 79 patients (44.4%), of which 51 contained a total bilirubin content in the blood serum exceeding 60 mmol/l.

The duration of jaundice from the moment of its occurrence to admission to a surgical clinic ranged from 1 to 14 days. The main cause of its occurrence in 66 patients was calculi in the extrahepatic bile ducts, which in 24 cases were combined with stenosis of the large duodenal papilla. In 13 patients, jaundice was caused by bile outflow disorders due to Mirizzi's syndrome.

Concomitant pathology was detected in all 171 patients. 135 of them had a combination of 2-3 or more systemic diseases. On average, 2.1 comorbidities per patient accounted for, while in the first age group (60-74 years) - 1.7, and in the second (over 75 years) - 2.4. From the anamnestic data, it was found that 51 patients who had previously been treated inpatient for cholelithiasis were refused surgery due to the following factors: due to the severity of the somatic condition caused by concomitant pathology.

Diagnosis was made on the basis of the clinical picture of the gastrointestinal tract ЖКБ, laboratory and instrumental research methods (sonography, RPHG, MR-cholangiography). The final diagnosis was based on characteristic changes in the walls of the gallbladder and bile ducts.

In accordance with the purpose and objectives of the study, patients were divided into 2 study groups. The comparison group consisted of 74 (43.3%) patients who underwent surgery for acute cholecystitis and bile duct damage for emergency and urgent indications in the period 2017-2020. The main group of the study consisted of 97 patients (56.7%), in whom the algorithm for conducting therapeutic and diagnostic measures according to indications was based on the principles of priority use of surgical treatment methods with the use of minimally invasive surgical interventions. The clinical implementation of the program was based on the recommendations of the Society of the European Association of Surgery - ERAS (Enhanced Recovery After Surgery). In the study, both groups of patients were identical both in age and in the severity of clinical manifestations and severity of the disease.

Results and their discussion. Of all 74 patients in the control group, acute destructive cholecystitis prevailed in 47 (63.5%) patients, and mechanical jaundice and cholangitis due to choledocholithiasis and BDS stenosis prevailed in 27 (36.5%) patients.

Emergency operations (within the next 6 hours after admission to the hospital) were performed in 35 (47.3%) patients, 16 of them due to acute destructive cholecystitis, and 10 with a complication of destructive cholecystitis with peritonitis. Also, 9 patients underwent emergency operations in the presence of acute choledochal obstruction clinic with increasing mechanical jaundice and cholangitis.

For urgent indications (within the next 24-72 hours), 39 (52.7%) patients were operated on in the absence of peritoneal symptoms and a pronounced progressive clinic of obstructive cholangitis.

In all 74 patients operated on in the comparison group, surgical intervention consisted of performing CE (in 47 patients), or CE with choledocholithotomy (in 27 patients) with external drainage of the choledochus, and the surgical intervention was performed from a wide laparotomy access in 33, from a mini – laparotomy access – 41.

Analysis of the frequency of mortality and postoperative complications depending on the urgency of operations in the comparison group showed that these indicators are worse after performing operations

for emergency indications: - mortality of 11.4%, abdominal purulent-septic complications of 42.8%, extra-abdominal complications of comorbid pathology of 48.5%. When performing operations for urgent indications, the mortality rate was 5.1%, the frequency of purulent-septic complications 23.2%, extraabdominal complications 35.9%.

Analysis of the mortality rate and postoperative complications in elderly and senile patients, depending on the clinic of acute cholecystitis or acute cholangitis in the comparison group, showed that the highest percentage of unsatisfactory results was observed after performing operations for obstructive cholangitis accompanied by acute cholecystitis: - mortality was 14.8%, the frequency of purulent-septic complications was 48.1%, extra-abdominal complications 55.6%. While after operations for acute destructive cholecystitis without a clinic for obstructive cholangitis, the mortality rate was 4.6%, purulent-septic postoperative complications were 23.4%, and extra-abdominal complications were 34.1% (Figure 1).

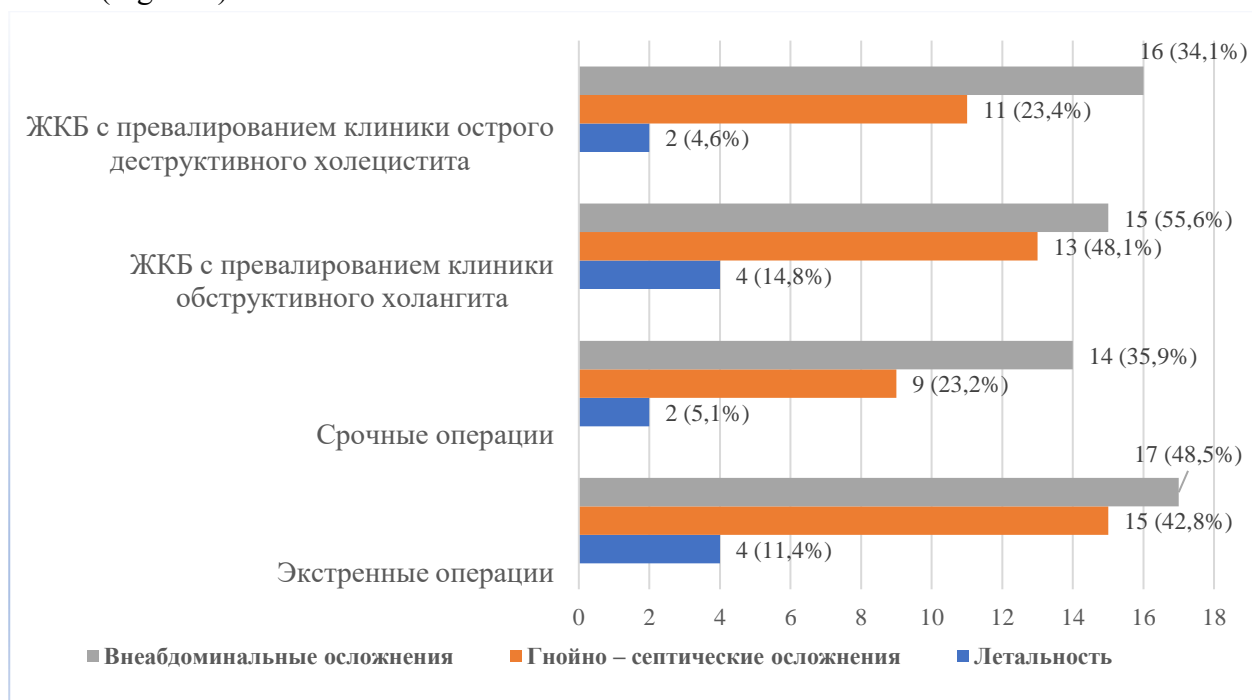


Figure 1. Mortality rate and postoperative complications depending on the urgency of operations and complicated GI clinic in comparison groups in elderly and senile patients

In the main group of 97 больных elderly and senile patients operated on in 2021-2024-2024 rfor complicated forms of GI, treatment was carried out not only taking into account the severity of acute cholecystitis and cholangitis according to the classification adopted in Tokyo 2018 (Tokyo Guidelines, 2018, TG18), but also according to the criteria developed by us for predicting the risk of developing postoperative diseases. complications.

In accordance with these criteria, 42 (43.3%) elderly and senile patients with a complicated course of GI in the main group were assigned to the group with moderate severity of the condition and a relatively low predicted risk of postoperative complications. 55 (56.7%) patients of this cohort were assigned to the group with a severe clinical course of the disease and a predicted high risk of postoperative complications.

Patients were operated on taking into account the proposed criteria for the severity of the condition and the clinic of the complicated course of GI (Table 1,2).

Table 1.

Surgical interventions in elderly and senile patients with severe condition and predicted high risk of postoperative complications (n=64)

Clinical picture of the disease	Type of operation		Number of patients	
with GI with prevalence of acute destructive cholecystitis clinic (n=39)	HCHMHS →	LHE	6	17
	HCHMHS →	MLHE	2	
	HCHMHS + biloma puncture →	MLHE	6	
	only HCHMHS		3	
	MLHE		14	22
	MLHE, opening of the perivesical abscess		3	
	Laparotomy, CE and sanitation of the abdominal cavity		5	
GI with prevalence of the clinic obstructive cholangitis (n=25)	EPST and NBD →	LHE	4	20
	EPST and NBD →	MLHE	7	
	EPST only		5	
	EPST and HCHMHS →	MLHE	2	
	EPST and HCHMHS only		2	
	MLHE and choledocholithotomy (if EPST is unsuccessful)		5	5

With the prevalence of acute destructive cholecystitis in the main group of 58 patients, 39 were assigned to the group with a severe clinical course of the disease and a predicted high risk of postoperative complications. Biliary peritonitis was detected in 11 of them (diffuse in 5, delineated in 6 in the form of a formed biloma).

Table 2.

Surgical interventions in elderly and senile patients with moderate severity of the condition and a predicted low risk of postoperative complications (n=33)

Clinical picture of the disease	Type of surgery		Number of patients	
with GI with prevalence of acute destructive cholecystitis (n=19)	HCHMHS →	LHE	2	4
	HCHMHS →	MLCE	2	
	LCE		7	15
	MLCE		8	
GI with prevalence of obstructive cholangitis clinic (n=14)	MLCE and choledocholithotomy		14	14

Due to the severity of the condition, 17 patients underwent stage 1 percutaneous-transhepatic microcholecystostomy (CHMHS), of which 6 also had punctured and sanitized bilomas bordered in the subhepatic space. Stage 2 of treatment on days 10-14 was followed by cholecystectomy in 14 patients, including 6 LHE, 8 CE from minilaparotomy access. 3 patients were discharged without CE with a functioning cholecystostomy.

22 patients were operated on in one stage. 17 patients with acute destructive cholecystitis underwent MLCE, of which 3 had the result of melting of the wall of the gangrenously altered gallbladder (essentially an autopsy of the perivesical abscess was performed). 5 patients with the clinic of diffuse

biliary peritonitis underwent CE with rehabilitation of the abdominal cavity from a wide laparotomy access.

19 elderly and senile patients with a clinic of acute destructive cholecystitis with moderate severity of the condition and a relatively low predicted risk of postoperative complications 15 underwent cholecystectomy (7-LHE, 8-CE from mini-access). Two-stage treatment with pre-cholecystostomy (BCHMHS) was performed in 4 patients, 2 of them with puncture rehabilitation of delimited perivesical biloma. These 2 patients subsequently underwent CE from mini-access. 2 more patients underwent LCE after microcholecystostomy.

Thus, two-stage surgical treatment of acute destructive cholecystitis in elderly and senile patients was performed in 21 (36.2%) patients out of 58 patients. One-stage radical surgery was performed in 37 patients (63.8%).

Cholecystectomy was mostly performed from minilaparotomy access – 35 observations (60,3%). 15 (25,9%) patients underwent LHE, 5 (8.6%) patients underwent CE from a wide laparotomy access, 3 (5.2%) patients were discharged with cholecystostoma.

In the main group of elderly and senile patients with a complicated course of GI and the prevalence of the clinic of mechanical jaundice and obstructive cholangitis due to choledocholithiasis (n=39), with a severe clinical course of the disease and a predicted high risk of postoperative complications, 25 patients were assigned.

Due to the severity of the condition, 16 (64%) patients underwent stage 1 endoscopic papillosphincterotomy (EPST) followed by nasobiliary drainage (NBD). In 5 (20%) patients, attempts to perform EPST and install NBD were unsuccessful. These 5 patients with a progressive clinic of mechanical jaundice and cholangitis underwent CE and choledocholithotomy from a minilaparotomy approach in the right hypochondrium.

Of the 16 patients who successfully underwent stage 2 EPST after improving the condition and stopping the cholangiogenic intoxication clinic, 11 underwent CE, 4 of them underwent LCE, and 7 patients underwent CE from minilaparotomy access. 5 patients after successful EPST refrained from radical surgery and were also discharged from the hospital.

In combination of obstructive cholangitis and acute cholecystitis, 4 patients underwent minimally invasive decompressive transduodenal interventions (EPST with lithoextraction). These patients also underwent HCHMHS. In the future, 2 of them underwent MLHE. 2 were discharged from the hospital with a significant improvement in their condition.

14 patients with moderate severity of the condition underwent simultaneous surgical interventions in the volume of CE and choledocholithotomy with external drainage of the choledochus from the mini-access in the right hypochondrium.

Thus, 20 patients (51.3%) underwent 2-stage surgical treatment in the group of elderly and senile patients with a predominance of the clinic of obstructive jaundice and obstructive cholangitis. At the first stage, they successfully performed EPST with NBD, and 2 in combination with HCHMHS. After stopping cholangiogenic intoxication, 13 of them underwent stage 2 CE (LHE-4, MLHE-9). 7 (17.9%) patients with a significant improvement in their condition after EPST were discharged home for outpatient observation.

19 (48.7%) patients underwent surgical intervention simultaneously – CE with choledocholithotomy and drainage of the choledochus was performed. Of these, 5 performed this operation when EPST was unsuccessful.

Thus, two-stage surgical treatment was performed in 27 (42.2%) patients with severe severity of the condition and a high risk of postoperative complications. 10 (15.6%) patients were limited to minimally invasive decompression surgery on the biliary tract. One-stage radical surgery was

performed in 27 (42.2%) patients, and in 13 (20.3%) it was forced in the presence of a clinic of peritonitis (5 patients) or perivesical abscess (3 patients) or in the absence of EPST.

Two-stage x surgical interventions in elderly and senile patients with moderate severity of the condition and a predicted low risk of postoperative complications (n=33) were performed in 4 (12.1%) patients, one-stage radical surgery was performed in 29 (87.9%) patients.

Thus, a 2-stage surgical treatment was performed in 31 patients of the main group, which was 31.9%. After preliminary minimally invasive decompression of the biliary tract, these patients underwent CE at the second stage on 14 days 7-14, with 12 –LHE, 19 – MLHE.

In 61 (62.9%) patients of the main study group, one-stage radical surgery-cholecystectomy-was performed both from a wide laparotomy approach in 5 patients with complications of peritonitis, 49 from a minilaparotomy approach (and in combination with choledocholithotomy in 19 patients), LCE was performed in 7 patients.

Staged surgical treatment with preliminary priority use of minimally invasive decompression interventions was used in 42.2% of elderly and senile patients with severe condition and a predicted high risk of postoperative complications. Only minimally invasive diapaetical and endoscopic transduodenal interventions were performed in 15.6% of patients. The developed therapeutic and diagnostic algorithm of staged surgical treatment, depending on the prevalence of the clinic of destructive cholecystitis or obstructive cholangitis using HCHMHS under ultrasound guidance, EPST, or a combination of them, allowed performing cholecystectomy by laparoscopic method in 19.6% and from minilaparotomy access in 64.9% at the subsequent stage of treatment.

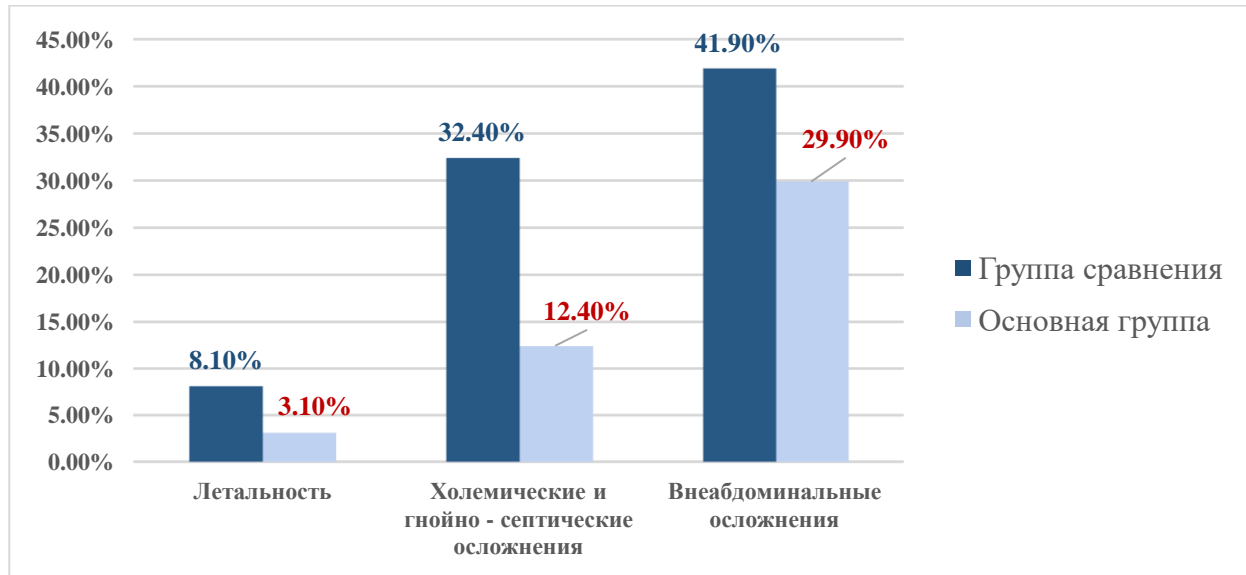
A comparative analysis of treatment results in the study groups showed a significant reduction in mortality in the main study group of patients (Figure 2). The most serious complications in the control group of patients were cholangiogenic liver abscesses and biliary sepsis, which caused fatal outcomes in 2 patients. Continuing peritonitis in another 1 follow-up also led to an unfavorable outcome. At the same time, in 3 patients, the cause of death was complications from the existing competing comorbid pathology. Acute myocardial infarction was found to be the cause of death in 2 cases. In 1 case – pulmonary embolism on the background of postoperative pneumonia. Thus, the mortality rate in the control group of patients (n=74) was 8.1% - 6 patients died. Of these, 3 were caused by abdominal complications – biliary sepsis in 2, abdominal sepsis in 3. The fatal outcome was due to cardiovascular and pulmonary complications from the existing comorbid pathology.

At the same time, 3 out of 97 patients operated on died in the main group, the mortality rate was 3.1%. The unfavorable outcome was caused by acute pancreatitis as a complication of transduodenal endoscopic intervention in 1 patient and ongoing peritonitis in 1 follow-up. Also, in 1 case, the cause of death was acute cardiovascular insufficiency due to myocardial infarction

Various cholemic and purulent – septic complications were observed in 24 patients of the comparison group, which was 32.4%. At the same time, 3 (4.1%) patients developed bilomas in the subhepatic region, which were isolated by recanalization of contra-perturbs. 5 (6.7%) patients experienced bile discharge from the drainage tubes installed in the subhepatic space, 5 (6.7%) patients underwent repeated operations to open and drain subhepatic and/or subphragmatic abscesses, 2 (2.7%) underwent relaparotomy due to biliary peritonitis. Also, 4 (5.4%) patients underwent repeated surgery for cholemic intra-abdominal bleeding. Postoperative wound suppuration was observed in 12 (16.2%) patients.

In the main study group, postoperative complications developed in 12 patients, which was 12.4%. At the same time, bilomas of the subhepatic region were formed in 3 (3.1%) patients who were successfully sanitized by ultrasound-guided punctures.

In 3 (3.1%) patients, cholemic bleeding from the liver was observed from the area of transhepatic puncture of the gallbladder. Externally, bile flow was observed in 3 patients, relaparoscopy in 1 case revealed the failure of the stump of the cystic duct, which was repeatedly clipped, and in 2 more cases, coagulation of the gallbladder bed as a source of bile flow into the abdominal cavity was performed. Duodenal bleeding was observed in 1 patient after EPST, the bleeding was stopped by conservative hemostatic therapy. 2 patients developed a subphragmatic abscess sanitized by repeated punctures under ultrasound control. Postoperative wound suppuration was observed in 4 (4.1%) patients.



2. Results of surgical treatment of elderly and senile patients with complicated forms of GI in the comparison groups

Thus, optimization of the tactical and technical aspects of surgical treatment of elderly and senile patients, taking into account the severity of the patient's condition and the predicted risk of postoperative complications, with priority use of preliminary minimally invasive decompression interventions, contributed to early relief of the infectious process, prevention of biliary and abdominal sepsis, prevention of the development of cardiovascular and pulmonary complications due to competing comorbid pathology. Mortality was reduced from 8.10% to 3.10%, purulent – septic complications from 32.40% to 12.40%, and cardiovascular and pulmonary complications from 41.90% to 29.90%.

Conclusions. 1. Factor analysis revealed that the highest percentage of mortality, purulent-septic and extra-abdominal complications (14.8%, 48.1% and 55.6%, respectively) in elderly and senile patients was observed after attempts of simultaneous radical surgical correction of acute destructive cholecystitis or obstructive cholangitis. The cause of mortality was biliary and abdominal sepsis, as well as cardiovascular and pulmonary complications.

2. Stage-by-stage surgical treatment, taking into account the developed criteria for assessing the severity of the patient's condition and the predicted risk of postoperative complications, using preliminary minimally invasive decompression interventions on the bile ducts performed in 42.2% of patients in the main group, allowed to stop purulent-cholemic intoxication and improve the results of subsequent radical operations. In 15.6% of patients, these interventions were the final method of treatment.
3. The developed tactics of stage-by-stage surgical treatment, depending on the prevalence of the clinic of destructive cholecystitis or obstructive cholangitis with the use of HCHMHS under ultrasound guidance, EPST, or a combination of them, allowed performing

cholecystectomy by laparoscopic method in 19.6% and from minilaparotomy access in 64.9% at the subsequent stage of treatment.

Optimization of the tactical and technical aspects of surgical treatment of elderly and senile patients with complicated forms of gastrointestinal diseases, taking into account the severity of the patient's condition and the predicted risk of postoperative complications, with priority staged use of minimally invasive interventions, significantly reduced mortality, postoperative purulent-septic and extra-abdominal complications (3.1%, 12.4% and 29.9%, respectively), while in the comparison group, these indicators were 8.1%, 32.4% and 41.9%.

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