

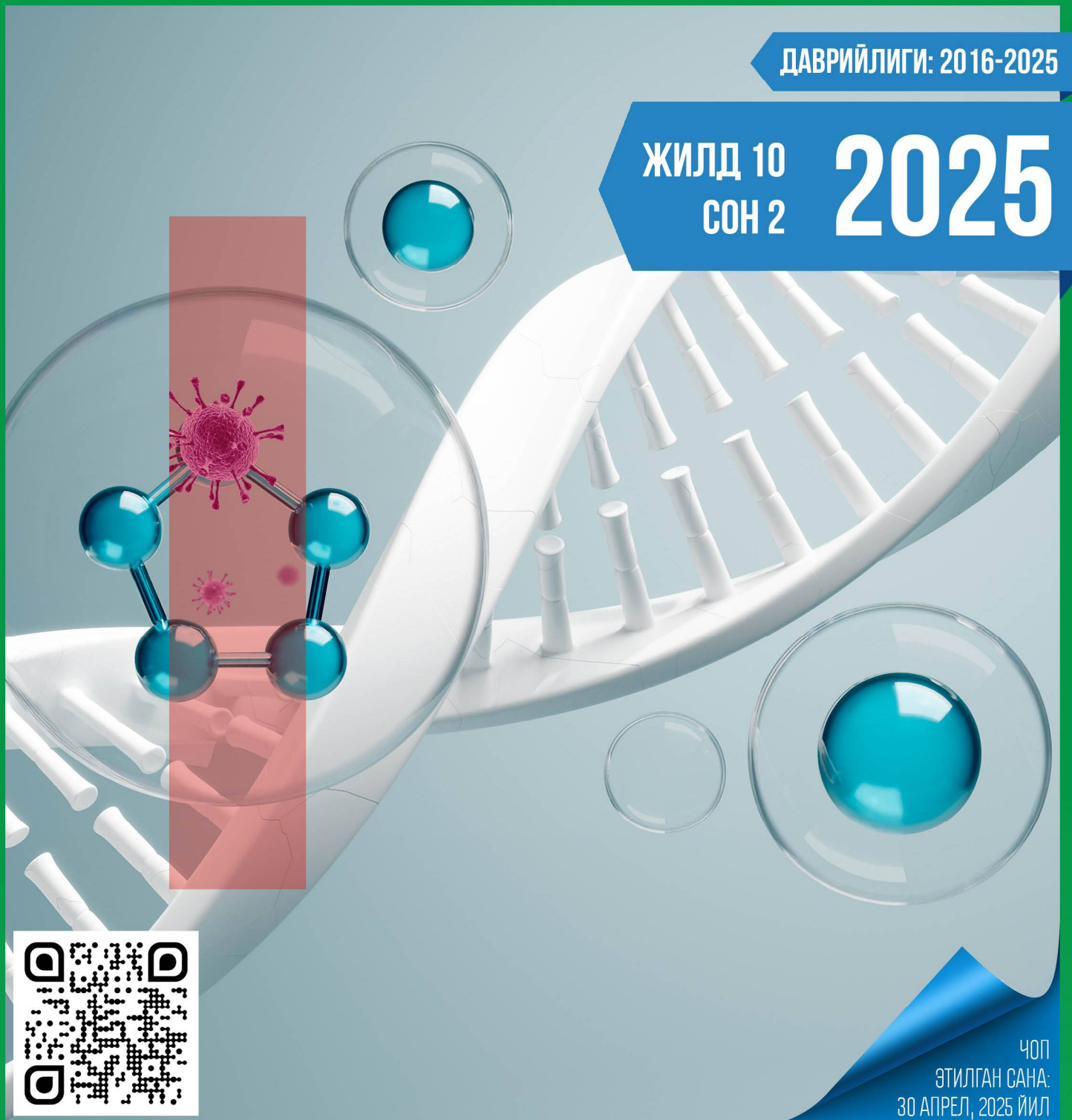
# БИОМЕДИЦИНА ВА АМАЛИЁТ ЖУРНАЛИ

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## EFFICIENCY OF USING MINIMALLY INVASIVE METHODS IN THE SURGICAL TREATMENT OF COMPLICATED ACUTE CHOLECYSTITIS

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### SUMMARY

The results of treatment of 82 patients with biliary peritonitis as a complication of acute destructive cholecystitis are presented. Biliary peritonitis as a complication of acute destructive cholecystitis was observed in 7.1% of patients. Prevalence of the perforative form of peritonitis was noted, which was observed in 67.1%, bile peritonitis due to perforation of the gallbladder wall was observed in 32.9% of patients. The priority use of minimally invasive surgical interventions (diaplectic, endoscopic and laparoscopic methods) in the treatment of local bile peritonitis as a complication of acute cholecystitis was successfully carried out in 67.3% of patients in the main group.

### Keywords:

Acute cholecystitis, bile peritonitis, surgical treatment.

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## ЭФФЕКТИВНОСТЬ ИСПОЛЬЗОВАНИЯ МИНИИНВАЗИВНЫХ МЕТОДОВ ПРИ ХИРУРГИЧЕСКОМ ЛЕЧЕНИИ ОСЛОЖНЕННОГО ОСТРОГО ХОЛЕЦИСТИТА

### РЕЗЮМЕ

Представлены результаты лечения 82 больных с желчным перитонитом как осложнение острого деструктивного холецистита. Желчный перитонит, как осложнения острого деструктивного холецистита наблюдался у 7,1% больных. Отмечено превалирование прототной формы перитонита, наблюдавшийся в 67,1%, желчный перитонит вследствие

перфорации стенки желчного пузыря наблюдался у 32,9% больных. Приоритетное использование миниинвазивных хирургических вмешательств (диапевтические, эндоскопические и лапароскопические методы) в лечении местного желчного перитонита, как осложнения острого холецистита успешно осуществлено у 67,3% больных основной группы.

**Ключевые слова:** Острый холецистит, желчный перитонит, хирургическое лечение.

Biliary peritonitis is a serious complication of acute cholecystitis. At the same time,..."despite the seriousness of this problem, although the mortality rate from this complication, according to various authors, ranges from 6.2 to 24%, little attention is paid to biliary peritonitis..." (2,5,11,16).

For the treatment of biliary peritonitis, laparotomy or relaparotomy is usually used, which is a highly traumatic intervention in itself, with postoperative mortality reaching 9.1-22.5% (1,4,8,9,14). The outcome of the surgical intervention largely depends on the choice and sequence of surgical correction methods used (7,13,15).

At the same time, a characteristic feature of biliary peritonitis, unlike bacterial peritonitis, is the weakness of the clinical picture, which often leads to a delayed diagnosis. Depending on the sterility of bile,..."choleperitoneoma often develops, and this is often observed as a result of bile leakage without perforation of the gallbladder wall...."

Further prospects for improving the results of surgical treatment of patients with biliary peritonitis currently depend on the use of cost-effective minimally invasive surgical interventions - puncture drainage and endoscopic operations, prevention of the development of a systemic inflammatory reaction of the body and intra-abdominal sepsis (3,6,10,12,17).

Purpose of the research. Improvement of treatment outcomes using minimally invasive methods of diagnosis and surgical correction in patients with biliary peritonitis as a complication of acute cholecystitis.

Materials and methods. The results of treatment of 82 patients with biliary peritonitis complicated by acute cholecystitis are presented, which constituted 7.1% of all 5,849 operated patients with cholelithiasis.

Among patients with peritonitis, there were 24 (29.7%) men and 58 (70.3%) women, the sex ratio was 1:2.5. In all operated patients with cholelithiasis, this ratio was 1:6, which confirms the literature data on the complex course of cholelithiasis in these men. Patients aged 60-74 years - 35.2% and 45-59 years - 28.2% of patients. 8.3% of patients were over 75 years old, the average age of patients was  $55.2 \pm 1.3$  years. Comorbidities were detected in 62.6% of patients. Cholangitis was identified as a complication of the underlying pathological process in 51.1%. Chronic concomitant pathology of two systems was noted in 41% of patients, of three or more systems in 26%.

In the study, aimed at solving the problems of developing new tactics for the treatment and diagnosis of biliary peritonitis, taking into account current trends in the development of surgery, patients were divided into two groups.

Group I (comparison group) included 33 patients with peritonitis as a complication of acute destructive cholecystitis, operated on in 2001-2010, who used standard generally accepted approaches in complex treatment. The second group (main group) included 49 patients operated on in 2011-2020, in whom the algorithm for conducting therapeutic and diagnostic measures was based on the principles of the FTS - accelerated recovery program (ERP), and minimally invasive surgical interventions were used as priority methods of surgical treatment.

According to the mechanism of bile leakage into the abdominal cavity as a complication of acute destructive cholecystitis, we observed two forms of biliary peritonitis: due to perforation of the gallbladder wall and due to bile leakage without perforation. Biliary peritonitis due to perforation of the gallbladder was observed in 27 (32.9%) patients (12 in the comparison group, 15 in the main group), which manifested as an acute accident in the abdominal cavity against the background of destruction and perforation of the gallbladder wall. Biliary peritonitis, caused by bile leakage against the background of destructive cholecystitis without perforation of the gallbladder wall, proceeded with insignificant symptoms as a result of the gradual flow of bile into the free abdominal cavity. Only with the accumulation of a large amount of bile in the abdominal cavity did signs characteristic

of peritonitis appear, which led to their late admission to the surgical hospital. According to our observations, bile peritonitis due to leakage was observed in 55 (67.1%) patients (21 in the comparison group, 34 in the main group). Thus, in our observations, a significant predominance (more than 2 times) of biliary peritonitis as a result of leakage was observed.

Among 82 patients with destructive cholecystitis complicated by biliary peritonitis, according to the nature of the pathological process, in 55 (67.1%) patients with perforated peritonitis, a generalized form was observed in 9 (16.4%) and a localized form in 46 (83.6%). Perforative bile peritonitis was observed in 27 (32.9%) patients, of which disseminated - in 10 (37.1%) and localized - in 17 (62.9%) patients. In patients with biliary peritonitis upon admission to the hospital, an acute onset of the disease was noted in 27 (32.9%) and a gradual progression in 55 (67.1%) patients. Severe form - diffuse biliary peritonitis was observed in 23.2% of patients, i.e., in 1/4 of patients.

On the first day of illness, 31 (37.8%) patients were hospitalized, on the second day - 22 (26.8%), on the third day - 18 (21.9%), from four to seven days - 6 (7.3%), and after seven days - 5 (6.1%) patients. Thus, a significant share of late hospitalization of patients can be noted, which is explained by their late appeal for medical care as a result of underestimating their condition.

Upon admission, the general condition was relatively satisfactory in 17 (20.7%) patients, moderately severe in 31 (37.8%), severe in 24 (29.3%), and extremely severe in 10 (12.2%) patients.

Based on the criteria for diagnosing sepsis, systemic inflammatory response syndrome (SIRS) was observed in 114 (87%) patients, 10 of whom were in a septic state.

Of the 82 patients hospitalized with biliary peritonitis, 31 (37.8%) underwent surgery within the first 6 hours. From 6 to 24 hours, i.e., on the first day, 43 (52.4%) patients underwent surgery. One day after admission to the clinic, surgery was performed in 8 (9.8%) patients.

Depending on the volume, the performed operations in patients of the comparison group were divided into 3 types: - CE, sanitation and drainage of the subhepatic space in 19 patients; - CE, sanitation and drainage of the abdominal cavity in 9 patients; - 5 patients underwent CE, choledocholithotomy, sanitation and drainage of the subhepatic space. In all cases, extensive upper-middle laparotomy was used.

In the main group of patients, the following types of operations were performed: - microcholecystostomy and biloma puncture under ultrasound examination - in 11 patients; LC, sanitation and drainage of the subhepatic space - in 9 patients; - LC, sanitation and drainage of the abdominal cavity (right lateral canal and pelvic cavity) - in 4 patients; - LC, sanitation and drainage of the subhepatic cavity, EPST - in 3 patients; - minilaparotomy CE and choledocholithotomy, drainage of the common bile ducts and sanitation and drainage of the subhepatic cavity - in 6 patients; - laparotomy, CE, sanitation and drainage of the abdominal cavity - in 16 patients.

In the main study group, 11 patients with acute destructive cholecystitis and severe general condition with accumulation of bile in the subhepatic cavity underwent decompression of the gallbladder using percutaneous microcholecystostomy (PCPC) and puncture of bilomas under ultrasound control. After microcholecystostomy, these patients under ultrasound guidance underwent puncture of the bilomas to evacuate the limited accumulation of fluid in the abdominal cavity.

In 9 patients with acute destructive cholecystitis and local peritonitis, laparoscopic cholecystectomy was performed, followed by sanitation and drainage of the subhepatic space. In 4 patients with diffuse biliary peritonitis, LCHE was supplemented with abdominal sanitation and additional drainage of the right iliac canal and pelvic cavity. In 3 patients with combined choledocholithiasis, EPST was performed after LC, and in 6 patients, CE and choledocholithotomy were performed through open minilaparotomy. At the same time, in 16 patients with diffuse biliary-purulent peritonitis, CE and sanitation of the abdominal cavity were performed by wide laparotomy access.

Thus, in the main study group, 33 (67.3%) patients with acute destructive cholecystitis complicated by various forms of biliary peritonitis were operated on according to the principles of minimally invasive interventions.

### **Results and their discussion.**

In 11 patients of the comparison group, various purulent-septic complications were observed after operations for biliary peritonitis due to acute destructive cholecystitis, which amounted to 33.3%. At the same time, in 2 patients (6.1%), bilomas were re-formed in the subhepatic region, which were drained by recanalization of the contraptures. In 2 (6.1%) patients, bile leakage from drainage tubes installed in the subhepatic space was observed for a period of 2 to 4 weeks, in 4 (12.1%) patients, repeated relaparotomy operations with repeated sanitation of the abdominal cavity were performed due to ongoing peritonitis, in 1 patient, subhepatic and subdiaphragmatic abscesses were opened and drained. Also, 1 patient underwent repeat surgery for cholemic bleeding into the abdominal cavity. Suppuration of the postoperative wound was observed in 9 (27.3%) patients.

In the study group of patients, the most severe complication of biliary peritonitis was abdominal sepsis, which led to the death of 2 patients, with a mortality rate of 6.1%.

In the main group of patients with biliary peritonitis as a complication of acute destructive cholecystitis (49 patients), according to the principles of FTS, minimally invasive interventions were used in 33 patients (67.3%).

Of these, 16 patients (32.6%) underwent the following operations using videoendoscopic technology: in 9 patients with acute destructive cholecystitis complicated by local biliary peritonitis, LCHA and drainage of the subhepatic space; in 4 patients with acute destructive cholecystitis complicated by diffuse biliary peritonitis, LCHA and drainage of the abdominal cavity (right iliac canal and pelvic cavity); in 3 patients with acute destructive cholecystitis combined with choledocholithiasis, LCHA and drainage of the subhepatic space, EPST. In these patients, EPST was performed in 2 stages. In 11 (22.4%) patients, diapeutic technologies were used - microcholecystostomy and puncture of bilomas under ultrasound control.

In the main study group, postoperative complications in 8 patients were 16.3%. At the same time, in 2 (4.1%) patients, biliomas of the subhepatic region were successfully sanitized by puncture under ultrasound control. In one patient, cholemic bleeding from the liver from the area of transhepatic puncture of the gallbladder was observed. In 1 patient, external bile leakage was observed, insufficiency of the cystic duct stump was detected during relaparoscopy and repeated clipping was performed. In 1 patient, after EPSP, bleeding from the duodenum was noted, which was stopped by conservative measures. In 1 patient, the diaphragmatic abscess was sanitized by 3 repeated punctures under ultrasound control. Relaparotomy was performed in 1 patient with persistent peritonitis, and suppuration of the postoperative wound was observed in 5 patients.

At the same time, out of 49 operated patients in the main group, 2 died, the mortality rate was 4.1%. The cause of the fatal outcome was acute pancreatitis as a complication of transduodenal endoscopic intervention in 1 patient and ongoing peritonitis in 1 patient.

### **Conclusion**

1. Bile peritonitis as a complication of acute destructive cholecystitis was observed in 7.1% of patients. Perforative peritonitis was more frequently observed, in 67.1% of cases, and in 32.9% of patients, the development of biliary peritonitis was observed as a result of perforation of the gallbladder wall.
2. The priority use of minimally invasive surgical interventions (diapeutic and laparoscopic methods) in the treatment of local biliary peritonitis as a complication of acute cholecystitis was successfully performed in 67.3% of patients in the main group. In 32.7% of cases of diffuse biliary-purulent peritonitis, CE and sanitation of the abdominal cavity through a wide laparotomy incision were required.
3. Optimization of the tactics of surgical treatment of patients with biliary peritonitis based on the principles of selective use of minimally invasive surgical interventions made it possible to improve treatment outcomes in the main group, where purulent-septic complications were 16.5%, mortality was 4.1%, and in the comparison group 33.3% and 6.1%, respectively.

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