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Optimization of Surgical Treatment of Biliary Pancreatitis

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Abstract **Relevance of the study.** Pancreatitis of biliary genesis accounts for 26% to 60% of cases of acute pancreatic inflammation. **Purpose of the study.** Improving the results of surgical treatment of patients with biliary pancreatitis. **Materials and methods of research.** The study was based on the analysis of clinical data of 116 patients with acute and chronic biliary pancreatitis treated at the multidisciplinary clinic of Samarkand State Medical University from 2012 to 2023. **Results and their discussion.** Surgical treatment was performed in 94 (81.1%) patients. Determination of surgical tactics and choice of the type of surgical aid were based on the etiologic form of the disease. **Conclusions.** Differentiated stage application of modern minimally invasive surgical techniques allows to achieve satisfactory results in treatment of patients with chronic biliary pancreatitis in 71,1%. At acute biliary pancreatitis elimination of the leading factors of pathogenesis in 66,7% of cases is possible due to the use of endoscopic and endovideosurgical techniques (EPST, laparoscopic interventions). The use of urgent EPST is effective in 31.6% of cases.

Keywords Biliary pancreatitis, Surgical treatment, Minimally invasive methods

1. Relevance of the Study

Pancreatitis of biliary genesis accounts for 26% to 60% of cases of acute pancreatic inflammation [2,6,8,12]. Chronicization of acute biliary pancreatitis reaches 43% of cases. The leading factors of pathogenesis of biliary pancreatitis are outflow disturbance through extrahepatic biliary tracts and ductal system of pancreas, occurrence of biliary-pancreatic reflux with development of intraductal hypertension. There is no unanimity in the issues of verification of the above factors and morphologic causes of their formation at the early stage of disease development [3,4,7,10].

As a morphologic substrate of ductal hypertension, biliary concretions provoking acute pancreatitis by "transient" passage or by impingement in the greater duodenal papilla are most frequently diagnosed. With prolonged traumatization of the mucous membrane of the ducts, scar stricture of the distal part of the choledochus is formed, which is included in the pathogenesis of chronic biliary pancreatitis along with concretions [1,5,9,11].

Given the constant growth in the number of patients with cholelithiasis and pancreatitis of biliary genesis, the study of diagnosis and treatment of these diseases, as well as the role of endoscopic and open surgical interventions remain relevant and require further development. The use of highly informative diagnostic and minimally invasive surgical technologies has led to significant changes in the tactics of management of patients with pancreatitis of biliary genesis.

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2. Purpose of the Study

Improving the results of surgical treatment of patients with biliary pancreatitis.

3. Materials and Methods of Research

The study was based on the analysis of clinical data of 116 patients with acute and chronic biliary pancreatitis treated at the multidisciplinary clinic of Samarkand State Medical University from 2012 to 2023.

The criteria for inclusion of patients in the study were: the presence of clinico-instrumental confirmed acute pancreatitis combined with signs of biliary hypertension on the background of cholelithiasis, as well as secondary chronic changes of the pancreas with external secretory or endocrine insufficiency on the background of pancreatobiliary hypertension due to cholelithiasis, benign changes in the area of the large duodenal nipple.

Acute biliary pancreatitis was diagnosed in 21 (18.1%) and chronic pancreatitis in 95 (81.9%) patients. Surgical interventions were performed in 94 (81.1%) patients, conservative treatment was performed in 22 (18.9%) patients. In the acute phase of the disease 21 patients were operated on. Interventions for chronic pancreatitis were

performed in 73 patients.

The mean age of men was 52.1±14.4 years, women - 55.2±12.7 years (20-90 years), examined by conventional methods (clinical examination, laboratory diagnosis, ultrasonography, esophagogastroduodenoscopy, radiologic examination of esophagus, stomach, duodenum, magnetic resonance cholangiopancreaticography). According to the results of clinical examination of patients, supplemented by laboratory and instrumental methods, etiopathogenetic groups of patients were distinguished (Table 1).

Table 1. Etiopathogenetic groups of patients identified as a result of examination with the use of the diagnostic algorithm

Etiopathogenetic groups		Number of patients	
		abs.	relatively %
Biliary pancreatitis on the background of choledocholithiasis	Acute pancreatitis	21	18,1
	Chronic pancreatitis	52	44,8
Chronic biliary pancreatitis on the background of microcholedocholithiasis		17	14,6
Chronic biliary pancreatitis on the background of sphincter of Oddi dysfunction		26	22,4
Total		116	100

4. Results and Their Discussion

Surgical treatment was performed in 94 (81.1%) patients. Determination of surgical tactics and choice of the type of surgical aid were based on the etiologic form of the disease.

Surgical treatment in acute biliary pancreatitis was performed in 25 (11.3%) patients (Table 2).

Table 2. Surgical treatment of acute biliary pancreatitis in the presence of choledocholithiasis

Type of surgical intervention	Number of patients	
	abs.	relatively %
- EPST, Lithextraction	9	42,8
- EPST + LCE, litho-extraction, drainage of the common bile duct	1	4,8
- LCE, litho-extraction, drainage of the common bile duct	4	19,0
- ChE, litho-extraction, drainage of the common bile duct	7	33,3
Total	21	100

Endoscopic papillosphincterotomy (EPST) as a final method of surgical treatment was performed in 9 (42.8%) patients against the background of mechanical jaundice due to an embedded stone in the distal part of the common bile duct. EPST and cholecystectomy, drainage of the GI tract were performed simultaneously in 3 (4.8%) patients on the first day of hospitalization due to the presence of acute phlegmonous cholecystitis and mechanical jaundice due to obstruction of the stone in the Fater papilla. In all cases a good clinical effect of EPST within the first day was obtained. The cholecystectomy with external drainage of the common bile duct was performed in 7 (33,3%) patients for acute cholecystitis with cholangitis. This operation was performed by laparoscopic access in 4 (19,0%) patients. Surgical treatment in chronic biliary pancreatitis with cholelithiasis was performed in 52 (44,8%) patients (Table 3).

Table 3. Surgical treatment of chronic biliary pancreatitis in the presence of choledocholithiasis

Type of surgical intervention	Number of patients	
	abs.	relatively %
Choledocholithiasis		
- EPST, lithoextraction 21 40.4	21	40,4
Choledocholithiasis + chronic cholecystitis		
- EPST + LCE, litho-extraction, drainage of the GI tract 3 5,8	3	5,8
- EPST, Lithextraction + LCE 11 21,2	11	21,2
- CPE, Lithextraction, drainage of the LS 9 17.3	9	17,3
- LCE, litho-extraction, drainage of the common bile duct 2 3,8	2	3,8
- CXE, drainage of LGE + EPST, Lithextraction 6 11,5	6	11,5
Total	52	100

EPST as a final method of surgical treatment was performed in 21 (40.4%) patients.

When concernments were diagnosed at the preoperative stage in patients with chronic pancreatitis both in the gallbladder and in the extrahepatic biliary tracts, the treatment was performed in the following variants. After EPST 14 (26,9%) patients had indications for repeated surgical intervention. Due to the presence of multiple large concrements or anatomical peculiarities, 3 (5.8%) patients underwent cholecystectomy, lithoextraction, and external drainage of the GI tract. Laparoscopic cholecystectomy without external drainage of the GI tract after EPST was performed in 11 (21,2%) patients. In 9 (17,3%) observations of chronic pancreatitis of biliary genesis on the background of cholelithiasis with cholangitis phenomena, combined treatment was started with cholecystectomy with cholangiography and external drainage of bile ducts. This operation was performed by laparoscopic access in 2 (3.8%) patients. The presence of residual concrements in the lumen of the hepaticocholedochal duct required additional surgical intervention in the volume of EPST and lithoextraction in 6 (11.5%) patients after cholecystectomy with external drainage. Microcholedocholithiasis was detected in 12 patients with chronic biliary pancreatitis after laparoscopic cholecystectomy with external drainage of the GI tract. The patients of this group were treated with ursodeoxycholic acid preparations during 4 weeks in daily dose of 500 mg. Before drainage removal control microscopy of bile was performed in all patients. Positive dynamics in the form of significant reduction in the number of crystals from 3-4th to 1-2nd degree of microlithiasis was observed. Therapy with

ursodeoxycholic acid according to the above scheme was performed in 5 more patients without surgical intervention.

In 7 patients with isolated stricture of the duodenum, EPST was performed as the final method of surgical treatment. Due to the presence of a long stricture, stenting of the common bile duct was performed in 2 patients.

In the group of 17 patients where the functional nature of sphincter apparatus disorders was established the correction of constrictions of distal common bile duct was not performed due to complete regression of biliary hypertension phenomena on the background of conservative therapy at the expense of inflammatory component suppression. The development of postoperative complications was noted in 15 patients out of 95 operated patients, which corresponded to 15,8%.

Table 4. Structure of complications of surgical interventions

Complications	abs.	relatively %
Complications of surgical treatment:		
– Bleeding from the PST area	3	3,1
– Transient amylasemia	5	5,3
– Postoperative pancreatitis	2	2,1
– Intra-abdominal bleeding	1	1,1
– Intra-abdominal biliary leakage.	2	2,1
– Intra-abdominal abscesses	1	1,1
– Purulent cholangitis	1	1,1
– Festering after operation wound	2	2,1
– Choledochal drainage migration	1	1,1
General medical complications:		
– GI bleeding	1	1,1
– TELA	1	1,1
– pneumonia	3	3,1
– Acute myocardial infarction	1	1,1
Total complications *	15	15,8

* Some patients had up to 2-3 complications
Lethality amounted to 3.1%.

In order to determine the effectiveness of surgical treatment, we analyzed the duration of hospitalization for different types of surgical interventions, as well as the incidence of postoperative complications.

The average treatment time of patients under minimally invasive treatment was the shortest and amounted to 10.0 (7.0÷16.0) bed-days. The duration of treatment at open interventions and combination of different techniques was comparable and amounted to 18.0 (13.0÷24.0) and 19.0 (9.0÷24.0) bed-days, respectively.

5. Conclusions

The following etiopathogenetic factors were revealed in the structure of the causes of biliary pancreatitis: choledocholithiasis in 62.9% of cases, sphincter of Oddi dysfunction in 22.4%, microcholedocholithiasis was the cause in 14.6% of cases. In case of chronic biliary pancreatitis, the use of minimally invasive technologies (EPST, MBD stenting, laparoscopic interventions) leads to a reduction in hospitalization time o treatment. Differentiated stage application of modern minimally invasive surgical techniques allows to achieve satisfactory results in treatment of patients with chronic biliary pancreatitis in 71,1%. At acute biliary pancreatitis elimination of the leading factors of pathogenesis in 66,7% of cases is possible due to the use of endoscopic and endovideosurgical techniques (EPST, laparoscopic interventions). The use of urgent EPST is effective in 31.6% of cases.

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