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Diapeutic and Rentgenendobiliary Interventions in Correction of Complications after Cholecystectomy

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Abstract The results of the examination and treatment of 49 patients with bile peritonitis, which developed as a result of bile leakage into the abdominal cavity after operations on the bile ducts, are presented. The frequency of postoperative bile peritonitis was 0.8% and in 57.2% of cases the cause was "small" damage (incompetence of the stump of the cystic duct, damaged passages of Luschka, dislocation of the drainage from the hepaticocholedochus), and in 42.8% of cases intraoperative damage to the main bile duct. The use of puncture methods under ultrasound guidance, transduodenal endoscopic interventions and laparoscopy made it possible to avoid relaparotomy in 93.3% of patients of the main group with postoperative bile peritonitis due to "small" injuries of the bile ducts. When detecting damage to the main bile duct in the first 48 hours. The best results are obtained by superimposing a high precision Roux-en-Y GEA.

Keywords Cholelithiasis, Cholecystectomy, Postoperative biliary peritonitis

1. Introduction

Among the causes leading to the development of bile peritonitis, the main ones are bile leakage into the abdominal cavity after operations on the bile ducts from the accessory bile ducts, an incompetent stump of the cystic duct after cholecystectomy, dislocation of the drainage installed after choledochotomy, intraoperative damage to the common hepatic duct. According to the literature, the frequency of biliary peritonitis varies significantly: from 0.4% to 4% [2,5,7,11,13]. The complexity of early diagnosis of intra -abdominal bile leakage leads to a belated re-surgical intervention and, as a result, to an unfavorable treatment outcome. On the other hand, the difficulty of diagnosis also explains the unreasonable performance of relaparotomy in 0.6-17% of patients. Intensive therapy carried out in the postoperative period, the use of antibiotics and modern methods of anesthesia significantly change the picture of the developing complication, obscuring acute phenomena, erasing signs of a catastrophe in the abdominal cavity. Therefore, the classic picture of complications develops rarely and, as a rule, late, and relaparotomy accompany given a high mortality rate. Therefore, at the slightest suspicion of trouble, it is necessary to conduct a series of studies that can be the beginning of an active, purposeful dynamic observation [1,4,8,10,12]. Since the treatment of bile peritonitis is undoubtedly a complex task and requires the efforts of specialists in various fields, the outcome of surgical interventions largely depends on the choice and rational sequence of applying various techniques [3,6,9]. In this regard, further prospects for improving the results of surgical treatment to a certain extent depend on the use of sparing surgical interventions, performing operations at an earlier date.

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2. Material and Methods

The results of the examination and treatment of 49 patients with bile peritonitis, which developed as a result of bile leakage into the abdominal cavity after operations on the bile ducts, are presented. The source of postoperative bile leakage and peritonitis in 9 cases was additional (aberrant) bile ducts (Lushka's ducts) in the gallbladder bed, in 14 cases - failure of the cystic duct stump due to slipping of clips or ligatures, in 5 patients GI from a defect in the wall of hepaticocholedochus due to spontaneous fallout i.e. dislocation of the established drainage from hepaticocholedochus, in 21 - iatrogenic damage to the main bile ducts.

Taking into account current trends in the development of surgery, in order to solve the research problems aimed at developing a new treatment and diagnostic tactics for GB, the patients were divided into two groups. Group I (comparison group) included 22 patients (1.1% of 2048 patients) with postoperative biliary peritonitis as a complication of operations on the bile ducts operated in the period 2001-2010, in the complex treatment of which standard generally accepted approaches were used. In the second group (main group) - 27 (0.7% of 3801 patients)

operated on in the period 2011-2020, in which the algorithm for conducting diagnostic and treatment measures was based on the principles of FTS - the accelerated recovery program (APC) and in minimally invasive surgical interventions were used as priority methods of surgical treatment. With bile leakage into the abdominal cavity and local bile peritonitis with a volume of up to 100 ml, according to ultrasound in gr. comparison (6 patients) 3 patients underwent recanalization counteropening with drainage of the subhepatic region. 3 patients underwent relaparotomy: the source of bile leakage in 1 observation was the dislocation of the drainage from the hepaticocholedochus, which was re-fixed. In another 2 cases, the source of bile leakage was the failure of the stump of the cystic duct, which was re- ligated. The subhepatic area was sanitized and drained. In case of bile leakage into the abdominal cavity and local bile peritonitis with a volume of up to 500 ml occupying the subhepatic region and the right lateral canal, according to ultrasound data, in the comparison group (6 patients) due to failure of the cystic duct stump, 2 patients underwent relaparotomy with repeated ligation of the cystic duct. At the same time, in 2 patients, the cause of the failure of the stump of the cystic duct was choledocholit and biliary hypertension, they underwent relaparotomy with choledocholithotomy and drainage of the choledochus. 2 patients with spontaneous loss of drainage from the GC also underwent relaparotomy with repeated drainage of the common bile duct. The operations were completed with sanitation of the abdominal cavity and drainage of the subhepatic space, the right lateral canal and the pelvic cavity. Damage to the main bile ducts was the cause of bile leakage and diffuse bile peritonitis in 10 patients of the comparison group. Restorative operations were performed in 5 cases, of which, with marginal damage to hepaticocholedochus, 2 patients underwent suturing of the defect on the T -shaped drainage. With complete intersection of hepaticocholedochus biliary anastomosis imposed on 3 patients. 5 patients underwent reconstructive surgery: 2 hepaticoduodenoanastomosis was imposed, 3 - the first stage, due to peritonitis, external drainage of the proximal stump of the common hepatic duct was performed, then after 3 months hepaticojejunoanastomosis was imposed on transhepatic frame drainage. In the main study group (7 patients), with biloma due to bile leakage from aberrant ducts in the gallbladder bed with a volume of up to 100 ml, according to ultrasound data, 3 patients required punctures under echographic control in order to evacuate fluid accumulation in the subhepatic space. Another 2 patients were taken relaparoscopy with clipping of Luschka 's tracts. In 1 patient, the cause of bile leakage was the failure of the stump of the cystic duct due to displacement of the clip; he underwent relaparoscopic re- clipping. Also, in one observation with external bile leakage through the drainage and accumulation of bile in the subhepatic space due to loss of choledochostomy drainage, RPCG with EPST and nasobiliary drainage was the final method for stopping bile leakage. In case of bile leakage and local bile peritonitis with a volume of up to 500 ml according to ultrasound data in the comparison group (9 patients) with incompetence of the cystic duct stump (7 patients) due to choledocholithiasis and biliary hypertension, RPCH with EPST and nasobiliary drainage and relaparoscopy with clipping were performed in 2 patients failed cult. Another 5 patients underwent sanitation of the abdominal cavity and repeated clipping of the cystic duct as a cause of postoperative bile peritonitis. Relaparotomy, choledocholithotomy with drainage of the common bile duct and sanitation of the abdominal cavity were performed in 1 patient with diffuse biliary peritonitis. In another 1 patient, the cause of limited bile peritonitis was bile leakage from the aberrant bile duct of the bladder bed, the biloma was evacuated by repeated punctures. With damage to the main bile ducts, bile leakage into the abdominal cavity and diffuse bile peritonitis in the main group was observed in 11 patients. Of these, 3 HEAs were superimposed according to RU with TPCD, and in 1 case a high precision HEA was performed without scaffold drainage. In our observations, in 2 patients with complete intersection of HCh, detected on the first day after surgery, a high HEA according to Roux without scaffold was also superimposed. In 1 patient with bile peritonitis, the first stage was sanitation of the abdominal cavity and drainage of the hepatic duct. Reconstructive surgery was performed 3 months later - GEA with TPCD. Restorative operations were performed in 3 patients. BBA was applied to 1 patient with GC transection. In 3 patients with a marginal injury of no more than ½ of the duct diameter, the duct was sutured in 2 cases; stent in GC.

3. Results and Its Discussion

A comparative analysis of the results of treatment of patients with postoperative biliary peritonitis as a complication after cholecystectomy showed that in case of bile leakage with the development of local bile peritonitis with a volume of fluid up to 100 ml under the liver in the comparison group, all 6 patients underwent repeated surgical interventions - 3 patients underwent recanalization counteropening with drainage of the subhepatic region, 3 patients underwent relaparotomy. Directly opposite results were obtained in the main group, where special endoscopic and diapeutical methods made it possible to avoid a second surgical operation - relaparotomy in all 7 patients - 3 patients underwent puncture of the biloma under ultrasound control, in 3 more patients correction of bile leakage into the abdominal cavity and sanitation of the subhepatic region were performed with relaparoscopy, in one observation, dislocation of drainage from the choledochus and bile leakage corrected during EPST and nasobiliary drainage. Correction of bile leakage with the development of bile peritonitis with a volume of up to 500 ml in the comparison group (6 patients) in 100% of cases was carried out through repeated surgical intervention - relaparotomy: - in 2 patients, sanitation of the abdominal cavity was supplemented by ligation of the incompetent stump of the cystic duct; - In 2

patients, sanitation of the abdominal cavity was supplemented by choledocholithotomy and 2 more by repeated drainage of hepaticocholedochus. Improving the treatment and diagnostic tactics of managing patients in the main group (9 patients) using endoscopic transduodenal interventions - EPST and nasobiliary drainage made it possible to stop bile leakage into the abdominal cavity in 2 patients. Relaparoscopy made it possible to eliminate the cause of bile leakage in 6 cases, repeated clipping of the cystic duct and aberrant bile duct in the gallbladder bed was performed, and only 1 patient required relaparotomy with sanitation of the abdominal cavity, choledocholithotomy due to residual choledocholithiasis.

Thus, the introduction of minimally invasive methods for correcting bile leakage into the abdominal cavity, such as transduodenal endoscopic interventions, punctures of the abdominal cavity under ultrasound control, laparoscopy, allowed patients with “small” bile duct injuries to refuse from repeated laparotomy in 93.3% of patients. Relaparatomy was performed in only 1 patient.

Thus, the introduction of minimally invasive methods for correcting bile leakage into the abdominal cavity, such as transduodenal endoscopic interventions, punctures of the abdominal cavity under ultrasound control, laparoscopy, allowed patients with “small” bile duct injuries to refuse from repeated laparotomy in 93.3% of patients. Relaparatomy was performed in only 1 patient. In case of damage to the main bile ducts, which led to the development of diffuse bile peritonitis, the cause of which was damage to the main bile ducts, the effectiveness of a high GEA according to Roux using precision equipment in detecting bile peritonitis in the next 48 hours was proved. All 3 patients had good results in the immediate and late postoperative periods. Performing GEA on TPCD (performed in 2 patients of the main group and 2 patients of the comparison group) is certainly justified when applying a biliodigestive anastomosis in conditions of infiltrative changes in the duct wall with bile peritonitis detected later than 48 hours. n after HE. Replaceable transhepatic drainage, on which HEA is formed, is essential in the above situations. However, in 2 patients of the main group and 6 gr. Comparisons in bile peritonitis due to HC damage at the first stage in patients with drained proximal stump of the common hepatic duct. Reconstructive surgeries were performed 3 months later. BBA (applied in 5 patients in the comparison group and 1 in the main group) and GDA (in 3 patients in the comparison group) in all cases ended with strictures of HCh and BDA. They underwent repeated reconstructive surgeries. Suturing of a GC defect covering less than ½ of the duct diameter is indicated only when using a precision technique. Purulent-septic complications after repeated interventions for bile leakage and postoperative biliary peritonitis after CE in the comparison group were observed in 8 patients (36.4%): - ongoing biliary peritonitis (2 patients); - formation of subhepatic and subdiaphragmatic abscess (2 patients); - suppuration of the postoperative wound (4 patients). Of these, 1 patient (4.5%) died. The cause of death was acute renal - hepatic failure on the background of abdominal sepsis. In the main group, after surgical correction of bile leakage and peritonitis after CE, complications were observed in 3 patients (11.1%). In 2 cases, there were purulent-septic complications, in 1 case, acute pancreatitis after endoscopic papillosphincterotomy. Mortality in the main group was not observed.

4. Conclusions

1. The frequency of postoperative biliary peritonitis was 0.8% and in 57.2% of cases the cause was "small" damage (incompetence of the stump of the cystic duct, damaged passages of Luschka, dislocation of the drainage from the hepaticocholedochus), and in 42.8% of cases intraoperative damage main bile duct.
2. The use of puncture methods under ultrasound guidance, transduodenal endoscopic interventions and laparoscopy made it possible to avoid relaparotomy in 93.3% of patients of the main group with postoperative bile peritonitis due to "small" injuries of the bile ducts. When detecting damage to the main bile duct in the first 48 hours. The best results are obtained by superimposing a high precision Roux-en-Y GEA.
3. Optimization of tactics of surgical treatment of patients with postoperative biliary peritonitis, based on the principles of differentiated priority use of minimally invasive surgical interventions, improved the results of treatment of the main group of patients, where purulent-septic complications amounted to 11.1%, while in the comparison group - 36.4% with lethality 4.5%.

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