

## OUTCOMES OF OPERATIVE INTERVENTION FOR RECENT MAJOR BILIARY TRACT INJURIES

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
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**Abstract:** The results of surgical treatment of 103 patients with intraoperative magistral bile ducts injuries have been analysed. The main operation in complete extrahepatic bile ducts transaction and excision is HepJA according to Roux that had been performed in 64 patients with a good follow– up result making 95,3%. Restorative operation is only indicated in partial injury of the duct. BBA formation in complete transaction of the duct in all cases resulted in stricture. HepDA also produced negative results of treatment. Complications in the near–by postoperative period made 22.3% and in the follow – up period 35.9%. Repeated operative interventions were performed in 32.3% of patients, lethal outcome made 5.8%. Keywords: bile ducts, cholangitis, stricture, biliodigestive anastomoses, treatment. Introduction. It is noted that during 2 recent decades in Uzbekistan as well as in many countries of the world the number of patients with bile – excreting tracts diseases increases. Thus, about 700.000 operations for cholecystectomy (ChE) are performed in the USA yearly, in Russia more than 100.000 and in Uzbekistan about 10.000 ChE [5; 7; 13; 20]. Together with this, significant increase of frequency of bile duct injuries in 2–4 times is noted that makes from 0.22 to 1.86% [2; 4; 7; 8; 9; 14; 16; 19]. The authors studying this problem, notice that introduction of laparoscopic cholecystectomy resulted in marked increase of frequency and severity of bile ducts injuries. If the average rate of magistral bile ducts traumas makes 0.5–1%, from 50 to 100 people suffer from such complications in Uzbekistan. In bile ducts traumas, treatment is particularly complicated, requiring long period, expensive therapeutic diagnostic manipulations, resulting in severe disability of patients. Lethal outcome makes 8–17%, complications in operations make almost 47%, development of bile ducts posttraumatic strictures to 35–55% [1; 3; 6; 10; 12; 15; 17]. The terms of revealing of EHBD injuries, taking into account the results of treatment are of great significance. Intraoperative injuries and posttraumatic cicatricial strictures of bile ducts and biliodigestive ducts are differentiated. Intraoperative injuries in their turn are divided into diagnosed on the operating table and revealed in early postoperative period [11; 18]. The findings of investigations, including those in Uzbekistan, reveal that only in 30% of observations iatrogenic injuries of bile ducts are diagnosed during the operation, about 50% of injuries are diagnosed in the postoperative period on the background of peritonitis development, rapidly developing mechanic jaundice or bile excreting along the drainage. More than 15% of patients die from progressing peritonitis, augmentation of jaundice or other undiagnosed in a due time postoperative complications. The analysis of frequency and causes of unfavorable results of operative interventions in bile excreting tracts is particularly urgent for Public Health of our Republic. It is very important for practical surgeon to develop the algorithm of activities in intraoperative injuries of bile ducts. The

aim of investigation. Improvement of surgical treatment of intraoperative magistral bile ducts injuries. Material of investigation. The results of surgical treatment of 103 patients with intraoperative magistral bile ducts (MBD) injuries during the period of 2007–2017 have been analysed. According to our findings MBD injuries were noted in 38 (0.58%) patients for 6521 cases of ChE, of them 27 after LChE, 6 after minilaparotomic ChE (MLChE), 5 after traditional Ch E. 65 patient were admitted from the other in – patient departments with intraoperative MBD injuries, of them 12 after LChE, 52 –TchE and 1 – MLChE. In 28 (27.2%) patients MBD injuries were revealed intraoperatively, in most of them – 75 (72.8%) patients the injuries were revealed in early postoperative period. There were 81 operated females (78.6%), 22 males (21.4%). The age of the patients was 19– 80 years. Evaluation of injuries was carried out according to E.I. Galperin’s classification (2009) and is given in (table 1). Marginal partial injury of bile ducts was revealed in 11 patients, clipping and ligating of the duct without its transaction and excision of bile ducts in 47, excision of the duct and ligating of its proximal stump in 31. In 24 patients the injury was revealed at “+2” level, in 38 – “+1”, in 18 – “0”, in 13 – “-1”, in 10 – “-2”. In 22 patients admitted from the other in – patient departments the character and the level of the injury was only revealed after performing laparotomy, as far as medical documentation did not include necessary information. In early postoperative period MBD injuries in 34 patients were manifested by augmentation of mechanic jaundice and 20 by bile peritonitis, in 10 by profuse bile excreting along the drainage from the abdominal cavity and in 11 patients by two or more complications.

Table 1. Character and localization of MBD injuries (n = 103)

	 Marginal injury	 Transection	 Excision	 Excision and ligating	 Clipping or ligating without transection	Total
 +2	8	5	1	4	6	24
 +1	2	4	12	17	3	38
 0	1	-	8	4	5	18
 -1	-	-	10	3	-	13
 -2	-	-	7	3	-	10
Total	11	9	38	31	14	103

**Results.** In intraoperative revealing of bile ducts injuries of 28 patients, 18 patients had complete duct transaction, 10 – marginal injury. In 25 patients the operations for rehabilitation of bile ducts anatomy were performed at once and in 3 patients during two stages. In transaction and excision of the duct hepaticojejunoanastomosis (HepJA) according to Roux was performed in 5 patients, of them in 3 patients on transhepatic carcass drainage (THCD) and in 2 without carcass drainage. In intrahepatic MBD injuries with confluence disturbance (4 patients) in one case bihepaticojejunoanastomosis (BiHepJA) according to Roux is performed on THCD immediately after revealing the

duct trauma. Drainage of hepatic ducts was performed in 3 patients at the first stage due to their narrow diameter, in 3 months BiHepJA according to Roux on THCD was performed. Of these patient anastomosis stricture developed in 18 months after elimination of carcass drainage, which was removed by antegrade bougienage. Hepaticoduodenoanastomosis (HepDA) was applied to 2 patients. In these patients cholangitis and anastomosis stenosis were observed in the follow-up period. One of the patient underwent the course of balloon dilatation and diatermodilatation and HepJA was applied to the second patient (who developed hemobilia in the postoperative period, controlled by conservative treatment. Biliobiliary anastomosis (BBA) was applied to 7 patients with transaction of the common bile duct (CBD). All of them developed duct stricture and needed the repeated intervention. HepJA was performed in 5 patients (4 on THCD and one without carcass drainage). HepDA was applied to one patient with satisfactory follow – up result (according to anamnesis this female patient underwent resection of the stomach on Bilrot – II). One patient underwent endoscopic stentation of the duct. In marginal partial injury of the hepaticocholedochus (HCh) the injured wall was sutured in 10 patients (prolen 5/0) on Kehr’s drainage. The results of treatment were satisfactory. In revealing bile ducts injuries in early postoperative period (n = 75) one or two stages interventions were performed, depending on presence of infiltrative – inflammatory changes in subhepatic area. 34 patients with mechanic jaundice without inflammatory – infiltrative process underwent one – stage operative intervention. Of 14 patients with clipping or bandaging of the bile duct without its transaction 12 patients underwent removal of ligature or clip with external drainage of the bile duct. Satisfactory follow – up result is observed in 7 of them. In 5 patients duct stricture developed and reconstructive operations according to Roux were performed. BBA was applied to 2 patients after removal of ligature. In a year they developed duct stricture and endoscopic stentation with satisfactory follow-up result of treatment. Of 20 patients with HCh excision and bandaging of proximal duct stump, reconstructive operations were performed in 8 patients, HepJA according to Roux on THCD in 4 patients, HepJA without carcass drainage was applied to 2 patients. Satisfactory result was noted in 5 patients, in one case (after HepJA without carcass drainage) there was bile excreting along the control drainage, that stopped itself on the 15th day after the operation. Transcutaneous transhepatic cholangiostoma was applied to 2 patients with hepatic insufficiency at the first stage and HepJA according to Roux on THCD according to Pradery – Smith at the second stage. Of these patients in 1 patient anastomosis stricture developed in a year after carcass drainage removal. HepDA was applied to 2 patients with anastomosis stenosis and in one case repeated reconstructive operation was performed (HepJA without carcass drainage was applied), in the second case endoscopic dissection of stricture. BBA was performed in 10 patients, 8 of them needed repeated operative interventions due to the duct stricture (HepJA was applied to 5 patients, HepDA to 3 patients). Of 20 patients with peritonitis with marked infiltrative changes in the subhepatic area in 12 patients (with HCh dissection) external drainage of proximal duct stump was performed at the first stage, of them 2 patients died from severe neglected peritonitis. HepJA was applied to 7 patients at the second stage. Of them in 1 patient biloma drainage was performed in the postoperative period under US control. After carcass drainage removal this patient was

under our observation and anastomosis stricture did not develop. HepDA was applied to 3 patients and all of them developed recurrent cholangitis and anastomosis stenosis and so repeated endoscopic balloon dilatations and diathermodilatations were performed. 3 patients were admitted from the other in – patient departments after external drainage of the duct proximal stump: HepJA was applied to 2 of them. One patient refused from the second stage of the operation. 5 patients were admitted from the other in – patient departments after rehabilitation – reconstructive operations with insolvent sutures and peritonitis (1 patient after HepJA and 4 after BBA). Of them two-stage operative interventions were performed and high HepJA was applied in 4 patients. One patient died due to neglected peritonitis. In early postoperative period MBD injuries in 11 patients resulted in peritonitis and mechanic jaundice. These patients underwent two-stage operative interventions. The first stage of external drainage of the duct proximal stump was performed in all 11 patients (of them 3 patients were operated in other in–patient departments). The second stage of the operation was performed in 2–3 months after remission of inflammatory – infiltrative process of subhepatic area. HepJA was applied to 9 patients (7 on THCD, 2 –without carcass drainage). Satisfactory result is noted in 8 cases, in 1 case bile excreting along the control drainage was observed, which stopped itself on the 11th day after the operation. HepDA was applied to 2 patients, of them 1 patient died from cardiac insufficiency. Of 10 patients with profuse bile excreting from the abdominal cavity in 1 female patient in the repeated operation, marginal injury of the bile duct is revealed and suturing of the defect on Kehr drainage is performed. In HCh excision at the first stage external drainage of the duct proximal stump was applied and HepJA at the second stage. 1 patient was admitted after external drainage of the duct proximal stump, HepJA according to Roux on THCD was applied to her, 2 patients were admitted with BBA insolvent sutures performed in other in – patient departments. These patients also underwent repeated two-stage operative interventions with HepJA application in the first and HepDA in the second observations. In 2 patients with bile excreting from the abdominal cavity without marked infiltrative process in the porta of liver area, HepJA according to Roux was applied by single stage. Complications in the near–by postoperative period were observed in 23(22.3%) patients, of them in 6(5.8%) with lethal outcome. In the follow–up period unfavorable result was observed in 37(35.9%) patients, moreover 3(4.7%) patients with Hep JA stenosis, 12(85.7%) with Hep DA stenosis, 17 (89.5%) with BBA. 33(32.03%) patients needed repeated operative interventions. Discussion. In recent years the number of performed operations for cholecystectomy has significantly increased and most of them are performed by means of laparoscopic method (more than 80% according to our findings). MBD injuries have considerably increased after introduction of laparoscopic cholecystectomy, particularly at the period of mastering the use of this method. These injuries are of special severity as far as in addition to high bifurcated mechanical trauma there is marked thermic effect on the duct wall. The best results were achieved in the group of patients where the operations were performed in intraoperative revealing of MBD traumas. Of 28 patients good near – by and follow – up results of treatment were received in 84.3% of patients. However MBD injuries (according to our findings) were revealed intraoperatively only in 27.2% of patients. In most patients bile ducts injuries are diagnosed lately (in 72.8% according

to our findings) after development of peritonitis or mechanical jaundice. So in most patients external drainage of bile ducts is performed instead of bile outflow normalization immediately after getting trauma. In revealing MBD injuries in the nearest postoperative period on the background of peritonitis, subhepatic abscess, bile excreting, it is reasonable to perform only external drainage of the bile tracts. It is desirable to perform reconstructive operation after remission of inflammatory – infiltrative process in 2–3 months as a second stage of treatment. This tactics proved to be correct in 30(73.1%) patients of this group. In 7(17.1%) patients rehabilitation – reconstructive operations on the background of peritonitis resulted in insolvency of anastomosis sutures. The main operation in complete MBD transaction and excision is HepJA according to Roux that was only performed in 64 patients with good follow – up result in 95.3%. HepJA without carcass drainage shortens considerably the terms of patients treatment, however this method (Hepp-Couinaud) was only performed in 11 patients of this group. According to E. Itala (2006) the main feature of this operation is in isolation of the left hepatic duct in the place of its confluence with the right duct under the portal lamina. It gives opportunity to isolate the ducts out of cicatricial tissues and to apply anastomosis 2–3 sm wide, mainly on the account of the left hepatic duct, escaping burdensome, long (1.5–2 years) drainage of anastomosis area. Rehabilitative operation is only indicated in partial marginal duct injury. In 11 patients of this group suturing of the duct defect on Kehr's drainage had satisfactory result. In the duct injury unlike its complete transaction receiving of good results takes place because preservation of narrow posterior duct wall provides its sufficient blood supply. BBA formation in transaction and excision in all 19 observation was completed by development of cicatricial stricture. Of them 16 patients underwent reconstructive operations, 3 – endoscopic stentation. Some experience in endobiliar stentation permits us to estimate positively this method. Performance of operations for formation of anastomosis of the injured duct and duodenum had unfavourable results. These patients had chronic cholangitis and biliodigestivanastomosis stenosis that required repeated reconstructive operations in 2 and endoscopic interventions in 9 patients. The cause of failure in treatment of intraoperative MBD injuries are unpunctual diagnosis and performance of inadequate in volume operations directed to restoration of bile outflow by formation of biliobiliary and bilioduodenal anastomoses.

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