

SURGICAL TACTICS FOR MECHANICAL JARCUS SYNDROME

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Abstract: The experience of treating 247 patients with obstructive jaundice admitted to the 1st clinic of SamMI in the period from 2010 to 2020 was analyzed. For the differential diagnosis of obstructive jaundice, non-invasive and invasive research methods were used. The efficiency of mechanical lithotripsy reached 86%. The main method for completing percutaneous transhepatic endobiliary interventions, if it is impossible to perform traditional surgical intervention, is endoprosthetics of the bile ducts. When choosing a method of bile removal, it is necessary to take into account the level of obstruction of the biliary tract, the spread of the pathological process and the patient's condition. The two-stage method of treating obstructive jaundice syndrome allowed to reduce the number of postoperative complications by 17%, and the mortality rate to 2.8%.

Keywords: Minimally invasive surgical techniques, the effectiveness of mechanical lithotripsy, percutaneous transhepatic endobiliary interventions, traditional surgical interventions, endoprosthetics of the bile duct, decompression of the biliary tract, method of bile diversion, obstruction of the biliary tract, two-stage method of treatment, postoperative complications, mortality.

ХИРУРГИЧЕСКАЯ ТАКТИКА ПРИ СИНДРОМЕ МЕХАНИЧЕСКОГО ДЖАРКУСА

Аннотация: Проанализирован опыт лечения 247 больных механической желтухой, поступивших в 1-ю клинику СамМИ в период с 2010 по 2020 годы. Для дифференциальной диагностики механической желтухи использовали неинвазивные и инвазивные методы исследования. Эффективность механической литотрипсии достигла 86%. Основным методом завершения чрескожных чреспеченочных эндобилиарных вмешательств при невозможности выполнения традиционного хирургического вмешательства является эндопротезирование желчных протоков. При выборе метода удаления желчи необходимо учитывать уровень обструкции желчевыводящих путей, распространение патологического процесса и состояние больного. Двухэтапный метод лечения синдрома механической желтухи позволил снизить количество послеоперационных осложнений на 17%, а смертность - на 2,8%.

Ключевые слова: Малоинвазивные хирургические методы, эффективность механической литотрипсии, чрескожные чреспеченочные эндобилиарные вмешательства, традиционные хирургические вмешательства, эндопротезирование желчных протоков, декомпрессия желчевыводящих путей, метод отведения желчи, обструкция желчевыводящих путей, двухэтапный метод лечения, послеоперационные осложнения, летальность.

INTRODUCTION

The problem of treating jaundice of mechanical etiology (obstructive, obstructive, subhepatic) remains one of the most intractable problems of clinical surgery so far [2, 3, 4, 13, 15].

Despite the vast arsenal of modern research methods, differential diagnosis of obstructive jaundice is difficult, and late identification of its true cause leads to a significant delay in performing the necessary surgical intervention. Certain achievements in the treatment of this severe category of patients are associated, first of all, with the introduction of modern (laparoscopic, endoscopic, ultrasound, X-ray television) minimally invasive technologies into clinical practice in medical institutions [1, 3, 4, 10, 17, 18].

MATERIALS AND METHODS

The experience of diagnostics and treatment of 247 patients with obstructive jaundice, admitted to the 1st clinic of SamMI in the period from 2010 to 2020, was analyzed. The patients were between 17 and 81 years old, including 114 women and 133 men.

Traditional surgical treatment of patients with obstructive jaundice complicated by purulent cholangitis, hepatic failure, thrombohemorrhagic syndrome, etc., is very risky and is accompanied by high mortality [5, 8, 9]. Postoperative mortality in patients with non-neoplastic jaundice is 10.4–25.2%, and in patients with neoplastic jaundice it can reach 40% [3, 6, 12]. The high mortality rate after traditional operations performed against the background of prolonged obstructive jaundice required to divide the treatment process in this severe category of patients into two main stages: at the first stage, decompression of the biliary tract using minimally invasive technologies (percutaneous, endoscopic). After a slow elimination of biliary hypertension (rapid decompression is undesirable, as it can lead to worsening liver failure, hemobilia), elimination of endogenous intoxication (by infusion therapy, hemodilution, according to plasmapheresis indications), improvement of the functional state of the liver proceeded to the final second stage of treatment. In recent years, this two-stage approach to the treatment of this severe category of patients has found an increasing number of supporters [7, 9, 11, 14, 16]. In recent years, our widespread introduction into clinical practice of new tactical and technological schemes for treating patients with obstructive jaundice through the use of sparing methods of decompression of the biliary tract and methods of sanitation of the ducts has significantly improved the results of treatment. Indications for the use of one or another method of decompression of the biliary tract using modern minimally invasive technologies (endoscopic, laparoscopic operations, operations from a mini-access,

The most appropriate was the use of endoscopic methods of biliary excretion in cholangiolithiasis (especially choledocholithiasis), lesions of the terminal section of the common bile duct (non-extended strictures, stenosis of BSDK, papillitis, etc.)

RESULTS

The high diagnostic efficacy of ERCP in 192 (77.73%) patients was favorably combined with the possibility of performing therapeutic procedures (papillosphincterotomy, litextraction and lithotripsy, nasobiliary drainage, sanitation of bile ducts, implantation of endoprotheses, etc.) (Table 1).

Tab. 1. Kind of minimally invasive technologies in the treatment of obstructive jaundice (stage I - decompression of the bile ducts)

See operations	Number of patients	
	abc.	%
I. Endoscopic methods		
RCPH with temporary retrograde nasobiliary drainage	66	23.4
RCPG with endoscopic dosed papillosphincterotomy	47	16.67

RCPG with stenting	21	7.45
RCPG with mechanical litextraction	58	20.57
II. Puncture methods		
External cholecystostomy under ultrasound control	41	14.54
Percutaneous transhepatic antegrade cholangiostomy (PTS) under the control of ultrasound and X-ray EOP (electro-optical converter on the X-ray endovascular complex "Integris V-3000") with stent arthroplasty	29	10.28
III. Laparoscopic methods		
Laparoscopic cholecystostomy with drainage of the abdominal cavity and omental bursa	14	4.96
Laparoscopic cholecystectomy with external drainage of the common bile duct	6	2.13
Total	282	100

Therapeutic tactics for choledocholithiasis has now become more active in connection with the development of various methods of litextraction and lithotripsy. Litextraction is indicated for patients with a burdened anamnesis, when it is undesirable to conduct repeated X-ray contrast studies, with the danger of concretions in the terminal section of the CBD, with multiple small stones. The procedure is contraindicated when the diameter of the calculus exceeds the diameter of the CBD and the size of the papillotomy opening. The need for literacy arose in 20.57% of patients. The efficiency of mechanical lithotripsy reached 86%. Nasobiliary drainage with a thin catheter, as a rule, became the final stage of endoscopic interventions. The wide possibilities of nasobiliary drainage have made it possible to increase the efficiency of endoscopic treatment methods and reduce the number of possible complications. Nasobiliary drainage in 66 (23.4%) patients was of great importance for endoprosthesis in 21, treatment of external biliary fistula in 3, cholangiogenic abscesses in 7, aspiration of bile for biochemical, cytological and bacteriological studies, temporary drainage of bile ducts in case of impossibility of arthroplasty in 45 patients. In 47 patients with tumor obstruction of the biliary tract, after a contrast study, PST was performed, and in 21 patients - nasobiliary drainage with endoprosthetics (stenting) of the extrahepatic ducts and separate endoprosthetics of the hepatic ducts. Endoscopic retrograde drainage greatly facilitated patient preparation, without worsening their condition, to subsequent operations on the biliary tract, and arthroplasty was the final stage of treatment in 16 inoperable patients. If it was impossible to use or inexpedient endoscopic methods of decompression and drainage of the bile ducts ("high block" of the bile ducts), percutaneous transhepatic cholangiostomy (PTS) was used in 29 patients under the control of ultrasound and X-ray television. External-internal drainage is the most physiological. The intervention was ended with dosed decompression of the biliary tract under conditions of CChS, followed by the final restoration of the outflow of bile in an operative manner. Dosed decompression of the bile ducts was carried out by adjusting the lumen of the draining catheter. The high level of occlusion in all patients was due to the oncological process and dictated the only possible method of decompression - CChS. In all cases, the aim was to recanalize the tumor with external-internal drainage for subsequent prosthetics or stenting of the CBD. When the lobar hepatic ducts were disconnected, their separate drainage was performed, which was performed in 8 patients. In conditions of purulent cholangitis, preference was given to external drainage until complete sanitation of the bile ducts and antibacterial therapy, taking into

account the association of aerobic and anaerobic microbial flora in 70.1% of cases. In 5 cases of unresectable tumors, external drainage was transferred to external-internal drainage, followed by endoprosthesis. External cholecystostomy is most acceptable in the complex therapy of acute pancreatitis, complicated by obstructive jaundice. Laparoscopic cholecystostomy was performed in 14 patients, percutaneous transhepatic cholecystostomy under ultrasound control - 29. Bile excretion through cholecystostomy with tumor lesion is limited due to possible tumor stenosis of the cystic duct orifice. The main method for completing percutaneous transhepatic endobiliary interventions, if it is impossible to perform traditional surgical intervention, is endoprosthesis of the bile ducts. Endoprosthesis was performed, as a rule, at the second stage (after stabilization of the patient's condition), and in uncomplicated cases it was performed simultaneously with drainage of the bile ducts. Transhepatic endoprosthesis of the bile ducts in 29 patients with obstructive jaundice, caused by unresectable tumors of the hepatopancreatoduodenal zone, was an effective method of internal drainage, representing one of the options for modern minimally invasive technologies, and was considered by us as an alternative to surgical operations in 12 patients. Out of 164 (66.40%) patients with diseases causing acute obstruction of the bile ducts, with the syndrome of painful obstructive jaundice, after stage I - decompression of the biliary system, 137 (83.54%) were subsequently operated on. Treatment of 27 (16.46%) patients was limited to stage I endoscopic surgical interventions (PST - 20 (14.6%), temporary stenting - 7 (5.11%). Stage II operations (radical - 124 (90.51%)), palliative - 13 (9.49%) in this group of patients (Table 2) representing one of the options for modern minimally invasive technologies, and was considered by us as an alternative to surgical operations in 12 patients. Out of 164 (66.40%) patients with diseases causing acute obstruction of the bile ducts, with the syndrome of painful obstructive jaundice, after stage I - decompression of the biliary system, 137 (83.54%) were subsequently operated on. Treatment of 27 (16.46%) patients was limited to stage I endoscopic surgical interventions (PST - 20 (14.6%), temporary stenting - 7 (5.11%). Stage II operations (radical - 124 (90.51%)), palliative - 13 (9.49%) in this group of patients (Table 2) representing one of the options for modern minimally invasive technologies, and was considered by us as an alternative to surgical operations in 12 patients. Out of 164 (66.40%) patients with diseases causing acute obstruction of the bile ducts, with the syndrome of painful obstructive jaundice, after stage I - decompression of the biliary system, 137 (83.54%) were subsequently operated on. Treatment of 27 (16.46%) patients was limited to stage I endoscopic surgical interventions (PST - 20 (14.6%), temporary stenting - 7 (5.11%). Stage II operations (radical - 124 (90.51%)), palliative - 13 (9.49%) in this group of patients (Table 2) with the syndrome of painful obstructive jaundice, after stage I - decompression of the biliary system, 137 (83.54%) were subsequently operated on. Treatment of 27 (16.46%) patients was limited to stage I endoscopic surgical interventions (PST - 20 (14.6%), temporary stenting - 7 (5.11%). Stage II operations (radical - 124 (90.51%)), palliative - 13 (9.49%) in this group of patients (Table 2) with the syndrome of painful obstructive jaundice, after stage I - decompression of the biliary system, 137 (83.54%) were subsequently operated on. Treatment of 27 (16.46%) patients was limited to stage I endoscopic surgical interventions (PST - 20 (14.6%), temporary stenting - 7 (5.11%). Stage II operations (radical - 124 (90.51%)), palliative - 13 (9.49%) in this group of patients (Table 2)

Tab. 2. The nature of surgical interventions for diseases of the pancreatobiliary zone, complicated by obstructive jaundice, after decompression of the bile ducts and relief of jaundice (stage II - radical and palliative traditional surgical operations)

The nature of the operation	Number of patients	
	%	%
I. Radical surgery for cholelithiasis		
Laparoscopic cholecystomy after PST, cholelite extraction	63	28.64
Traditional cholecystectomy, choledocholithotomy, external choledochostomy (according to Keru, Vishnevsky, Halstead)	17	7.72
Traditional cholecystectomy, supraduodenal choledochoduodenostomy (according to Yurash)	27	12.27
II. Radical surgical interventions for tumor and non-tumor diseases of the bile ducts		
Resection of the common bile duct with the formation of hepaticoenteroanastomosis	3	1.36
Pancreatoduodenal resection	4	1.82
Dissection of the stricture of the common bile duct with the formation of choledochojejunostomy		
III. Radical surgical interventions for other diseases of the pancreatobiliary zone		
Pancreatoduodenal resection	14	6.36
Longitudinal pancreatojejunostomy with choledochoduodenostomy (according to Yurash)	2	0.91
Cystoduodeno-, cystojejunostomy on the off loop (Ru)	13	5.91
Extended cholecystectomy with resection of the IV liver segment	2	0.91
IV. Palliative operations		
Cholecystojejunostomy with entero-enteroanastomosis (according to Monastyrsky Shalimov)	17	7.73
Choledochojejunostomy with enteroenteroanastomosis (according to Herzen-Ru)	12	5.46
Cholecystojejunostomy, gastrojejunostomy with entero-enteroanastomosis	14	6.36
Diagnostic laparoscopy (removal of ascites, tissue biopsy)	9	4.1
Total	220	100

was performed after stopping the phenomena of liver failure and normalizing the level of bilirubin in the blood (mean 4.8 days). Laparoscopic cholecystectomies were performed in 63 (28.64%) patients after performing PST, cholelitoextraction. After unsuccessful attempts at endoscopic cholelithotripsy and "fixed" large concretions of the CBD, 44 (32.12%) patients underwent traditional cholecystectomy with intraoperative choledochoscopy, cholelithotomy, and drainage of the CBD in 17 (12.41%), with choledochoduodenostomy in 27 (19.71%) of patients. This group of patients was characterized by the largest number of performed radical surgical interventions, of which more than 50% - by the endovideosurgical method. It should be noted that jaundice in these patients quickly gave in to relief as a result of stage I surgical procedures, and the phenomena of hepatic-renal failure were noted only in 17.4% of cases with SVR syndrome (acute pancreatitis, cholangitis, biliary sepsis). Out of 83 (33.60%) patients with diseases causing chronic (tumor) obstruction of the spruce ducts, with the syndrome of painless

obstructive jaundice, 63 (75.90%) were operated on after the first "decompression" stage. Treatment of 20 (24.10%) patients with locally advanced tumors and the fourth stage of the oncological process was limited to performing stage I operations (endoscopic permanent stenting - 19 (22.89%), internal intrahepatic stenting after PChS - 8 (9.64%). causing chronic (tumor) obstruction of the spruce ducts, with a syndrome of painless obstructive jaundice, after the first "decompression" stage 63 (75.90%) were operated on. Treatment of 20 (24.10%) patients with locally advanced tumors and the fourth stage of the oncological process was limited to performing stage I operations (endoscopic permanent stenting - 19 (22.89%), internal intrahepatic stenting after PChS - 8 (9.64%). causing chronic (tumor) obstruction of the spruce ducts, with a syndrome of painless obstructive jaundice, after the first "decompression" stage 63 (75.90%) were operated on. Treatment of 20 (24.10%) patients with locally advanced tumors and the fourth stage of the oncological process was limited to performing stage I operations (endoscopic permanent stenting - 19 (22.89%), internal intrahepatic stenting after PChS - 8 (9.64%).

Purulent septic complications (suppuration of postoperative wounds - 28 (11.34%), pneumonia - 7 (2.83%), biliary sepsis - 6 (2.43%)) were most often manifested in the postoperative period in patients with tumors of the CBD, OBD, choledocholithiasis, accompanied by purulent cholangitis, cholangiogenic abscesses of the liver. Insolvency of pancreatojeuno-, biliodigestive anastomoses, accompanied by bile leakage and pancreatic fistulas - 7 (2.83%), progression of hepatic renal failure and hemorrhagic disorders - 13 (5.26%), myocardial infarction - 2 (0.81%) - developed in a group of patients over 60 years of age with malignant genesis of obstructive jaundice (after PDD for cancer of the pancreatic head, CBD resection for adenocarcinoma, extended cholecystectomy for signet ring cancer,

CONCLUSION

When choosing bile duct, it is necessary to take into account the level of obstruction of the biliary tract (proximal or distal), the spread of the pathological process to the surrounding organs and tissues and the patient's condition (is it planned to perform radical surgery after drainage of the bile ducts and decompression), the projected life time after minimally invasive intervention, if radical the operation is not indicated, the likelihood of possible complications, material and technical support and the level of preparedness of the surgeon for one or another type of operation.

Tab. 3. Postoperative complications and causes of death patients with obstructive jaundice

The nature of postoperative complications complications	Number of complications		Deaths	
	abc.	%	abc.	%
Insolvency of pancreatojejun-, biliodhistivny anastomoses, bile leakage, pancreatic fistulas	7	2.83	1	0,4
Early acute postoperative pancreatitis	20	8.1	1	0,4
Intra-abdominal bleeding (arrosive)	3	1.21	1	0,4
Acute gastrointestinal ulcers complicated by bleeding	24	9.72		
Progression of hepatic renal failure and hemorrhagic disorders	13	5.26	2	0.81
Biliary sepsis	6	2.43	2	0.81
Hemobilia	1	0,4		
Suppuration of a postoperative wound	28	11.34		

Pneumonia	7	2.83		
Acute myocardial infarction	2	0.81		
Total	111	44.93	7	2.82

A two-stage method of treating obstructive jaundice syndrome, complicating the course of benign and malignant diseases of the biliary-pancreatoduodenal zone (the first stage is decompression of the bile ducts, the second stage is the implementation of radical and palliative traditional surgical interventions), made it possible to reduce the number of postoperative complications by 17%, and the mortality rate to 2, 8%.

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