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OPTIMIZATION OF SURGICAL TACTICS FOR CALLETHISTERIES COMPLICATED BY MIRIZZI SYNDROME

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Abstract: Mirizzi syndrome (SM) is one of the severe complications of cholelithiasis (GSD), resulting from acute or chronic fixation of gallstones in the neck of the gallbladder with impaired patency of the hepaticocholedochus and the formation of biliobiliary or biliodigestive fistulas. SM occurs in 0.2–5.7% of patients with cholelithiasis.

Key words: according to which in type IV they proposed their own classification located under the stone.

Mirizzi syndrome (SM) is one of the severe complications of cholelithiasis (GSD), resulting from acute or chronic fixation of gallstones in the neck of the gallbladder with impaired patency of the hepaticocholedochus and the formation of biliobiliary or biliodigestive fistulas. SM occurs in 0.2–5.7% of patients with cholelithiasis.

S.K. McSherry et al. in 1982, two types of Mirizzi syndrome were identified: compression of AKI by a stone of the gallbladder neck or cystic duct (type I) and vesicocholedochal fistula (type II). A. Csendes et al. in 1989, two more types were added to the above-mentioned types, taking as a basis the degree of destruction of the wall of the vesicocholedocheal fistula. Currently, the latter classification is the most common. T. Nagakawa et al. in 1997, they proposed their own classification, according to which in type IV, in addition to the fistula, there is an inflammatory narrowing of the AKI, which requires excision and hepaticojejunostomy (cited by F.G. Nazyrov et al.) [5].

Mirizzi syndrome is a difficult complication of gallstone disease to diagnose and treat [1,2]. Cholecystectomy for SM often results in intraoperative damage to the APP with the formation of a defect in its wall. Sometimes the narrow distal part of the common bile duct (CBD), located under the stone, is mistaken for the cystic duct, and the dilated part of the CBD is taken to be a continuation of Hartmann's pouch [3,4,6].

Purpose of the study

Improving treatment results for patients with Mirizzi syndrome by optimizing surgical tactics depending on its type.

Material and techniques

In a retrospective study conducted in the surgical department of the 1st clinic of SamGosMI in 2009-2021, SM was diagnosed in 72 (2.3%) of 3160 patients with cholelithiasis. The age of the patients ranged from 28 to 82 years, the average age was 57.8 ± 2.6 years. There were 20 men, 52 women. The duration of the disease before admission to the clinic was 3.6±0.2 years. The clinical picture of the disease was characteristic of acute and chronic cholecystitis, 41 (56.9%) patients had jaundice, 11 (15.3%) had cholangitis.

All patients underwent ultrasound. At the same time, attention was paid to the diameter of

the CBD, as well as possible signs of SM, such as the close location of the gallbladder neck containing the stone to the APP, the combination of dilated proximal APP and intrahepatic ducts with an undilated CBD, the presence of a wrinkled gallbladder.

Of the 41 patients with obstructive jaundice, 7 (17.1%) underwent RPCP, 22 (53.6%) underwent magnetic resonance cholangiopancreatography (MRCP). During the study, such signs as the presence of a vesicocholedocheal fistula, a short and wide cystic duct or its absence, the size of the gallbladder, the combination of dilated intrahepatic ducts with an undilated CBD, the presence of stones in the gallbladder and ducts were taken into account.

The patients were retrospectively, including data from the surgical reports, divided into 4 groups depending on the degree of change in the CBD (A. Csendes et al., 1989) [5]: type I stone impacted into the neck of the gallbladder or into the cystic duct, compressing the CBD or CBD 45 patients; Type II, between the neck of the gallbladder and the acute urinary tract or common bile duct, there is a fistula occupying less than one third of the circumference of the ducts, 14 patients; Type III fistula occupies two-thirds of the circumference in 8 patients; Type IV, the wall of the AKI or CBD was completely destroyed in 5 patients.

In 7 patients with obstructive jaundice and cholangitis, treatment began with ERCP, 1 patient underwent endoscopic papillosphincterotomy (EPST) with an unsuccessful attempt at endoscopic lithoextraction, which required conversion.

If SM was suspected during surgery, there was an infiltrate in the area of the gallbladder neck and the absence of the cystic duct, cholecystectomy was started from the fundus. The lumen of the gallbladder was opened, stones were removed and, using the Pribram technique, access was made to the neck of the gallbladder. Having pierced the wall of the gallbladder in the projection of the cystic artery, the latter was cut off at the level of its neck and then the vesicocholedocheal junction was inspected in order to protect the wall of the duct from damage.

In type I SM, attempts were made to remove the gallbladder. In type II, the gallbladder was removed, the hole in the wall of the duct was sutured with separate interrupted sutures (Prolene 5/0 on an atraumatic needle), or the duct was plasticized using the wall of the gallbladder neck. In all cases, the stones were first removed and a Kera drain was inserted into the CBD distal to the sutured fistula opening.

In types III and IV SM, the CBD was first opened, the stones were removed, and only after a thorough assessment of the situation, the question of the nature of the fistula repair, that is, a defect in the wall of the CBD or CBD, was decided. For plastic surgery, the wall of the gallbladder neck was used or the neck was sutured, thus closing the cholecystocholedocheal fistula. Ker's drainage was inserted distal to the fistula opening or through the sutured neck of the gallbladder and the fistula opening in the duct (3). In patients with severe destruction of AKI (type IV SM), as well as with iatrogenic intersection of AKI, hepaticojejunostomy was performed (6). The immediate and long-term results of treatment were assessed.

Research results

We did not find any dependence of the development of various types of SM on the age of patients and the duration of the disease. The diagnostic sensitivity of ultrasound was low and amounted to 9.6%.

The diagnostic sensitivity of RCCP for SM was 14.3%; in 1 case, a vesicocholedocheal fistula was detected. However, the RCP conclusions did not take into account the combination of such existing signs as the expansion of the proximal part of the CBD over the stone with its non-expanded distal section or the non-expanded CBD. Taking into account such signs would increase the diagnostic sensitivity of the method to 68%. Thus, according to ultrasound and RCCP, SM was detected before surgery in 16 out of 72 (22.2%) patients, that is, the level of preoperative diagnosis was extremely

low. In this regard, for calculous cholecystitis complicated by obstructive jaundice, we added MRCP to the diagnostic methods, which was performed in 22 patients. The diagnostic sensitivity of this research method was higher and amounted to 54.5%. During surgery before removal of the gallbladder, SM was suspected in 45 (62.5%) patients; when a defect was detected in the wall of the gallbladder after cholecystectomy, in 9 (12.5%) patients. During cholecystectomy "from the neck," damage to the duct occurred in 4 patients. During cholecystectomy "from the bottom," traumatic damage occurred in four patients with type IV SM, when the extended AKI was mistaken for Hartmann's pouch.

In type I SM, tangential injury to the AKI occurred in 4 (in 2 – during laparoscopic cholecystectomy, in 2 – during cholecystectomy from a mini-access). In these patients, the CBD was not dilated by ultrasound, so MRCP was not performed. In none of these cases was SM diagnosed either before surgery or before gallbladder removal.

19 out of 20 patients with types II and III SM had vesicocholedochal fistula and choledocholithiasis with a significant dilation of the CBD to 1.5 ± 0.14 cm ($p < 0.05$) and increased to 107.6 ± 17.7 mmol/ l bilirubinemia. SM was suspected during surgery in 5 patients. However, the presence of a dense infiltrate in the area of the cervical duct forced the surgeon to perform cholecystectomy "from the bottom" using the Pribram method in 11 patients, but there was no damage to the duct. However, in 2 patients, the discovery of a lateral defect in the CBD wall after cholecystectomy was regarded by the surgeon as an iatrogenic injury. In fact, the vesicocholedocheal fistula probably separated.

All 5 patients with type IV SM had obstructive jaundice (the level of total serum bilirubin was 137.7±33.8 mmol/l). The diameter of the CBD according to ultrasound was 1.2±0.07 cm with a significant dilation of the intrahepatic bile ducts and the presence of a wrinkled gallbladder (4 out of 5). In 2 of them, as a result of ultrasound, a Klatskin tumor was diagnosed, which was excluded by MRCP. In 4 patients during surgery, the widened part of the CBD was taken to be a continuation of the wrinkled GB, and the narrow part was taken to be the cystic duct. As a result, the CBD was excised along with the gallbladder.

Data analysis shows that there are no reliable methods for diagnosing SM during surgery. Its presence may be indicated by such signs as adhesions between the neck of the gallbladder and the CBD, a dense infiltrate in the area of the neck of the gallbladder, a combination of a wrinkled gallbladder and a wide CBD, a combination of a wide bladder with a narrow CBD in patients with choledocholithiasis, more often with significant destruction of the duct wall.

In case of damage to the ducts in patients with type I SM, the following operations were used: in 2 patients with a small lateral tangential wound of the CBD, several interrupted sutures were placed on the wall defect, the operation was completed with external drainage of the duct according to Keru (1) or according to Vishnevsky (1). 2 others underwent hepaticojejunostomy with the jejunal loop turned off according to Roux. There were no ductal injuries in types II and III SM. Of the 5 patients with type IV SM, AKI was excised in 4. The operations were completed by hepaticojejunostomy.

In the early postoperative period, 1 patient died from pulmonary embolism due to varicose veins of the lower extremities and atrial fibrillation.

Postoperative complications developed in 15 (20.8%) patients: bile leakage through drainage in 5, subhepatic biloma in 3, biliary peritonitis requiring relaparotomy in 3, wound suppuration in

Long-term results were monitored in 59 patients. Of the 6 patients who underwent hepaticojejunostomy for excision of the duct, stricture of the anastomosis occurred in 1. Repeated Roux-en-Y hepaticojejunostomy was performed on a frame drainage. In another 1 patient with type

IV SM without damage to the duct, a year after removal of the T-shaped drainage, a stricture of the lower part of the CBD developed; the patient underwent a high Roux-en-Y hepaticojejunostomy with a good long-term result. In the remaining 57 patients the result was satisfactory. Follow-up periods ranged from 9 months to 10 years.

Conclusion

SM is not a common complication of cholelithiasis. The experience of surgeons [7,11] often does not exceed 20-30 observations. The largest number of patients with SM (91) was represented by V.I. Revyakin [8], who mainly considers the endoscopic aspects of this syndrome. Prevention of iatrogenic damage to the bile ducts in SM is the main task of the surgeon. Preoperative diagnosis plays an important role in this regard. According to the literature [10], making a correct diagnosis before surgery is difficult and is possible only in 21.9% (according to our data, before the use of MRCP in 22.2%, after the use of MRCP in 54.5% of cases), which significantly complicates the problem surgical treatment.

Ultrasound for SM is not very informative. According to our data, only 2 signs, the combination of a shriveled gallbladder with biliary hypertension and the combination of dilated intrahepatic bile ducts with a narrow CBD in choledocholithiasis, can help the surgeon suspect SM.

The information content of RCCP is higher than that of ultrasound. However, the increase in intraductal pressure with the introduction of a contrast agent is likely to often cause the absence of images of cholecystocholedocheal fistula and GB. When conducting research R.E. England, D.F. Martin [9] in 4 out of 25 patients after endoscopic interventions for SM noted the development of acute cholecystitis, bronchopneumonia, and liver abscesses. It is possible that repeated contrasting of the ducts after stone extraction would increase the frequency of detection of anastomosis between AKI and GB. The effectiveness of MRCP in diagnosing SM was higher and amounted to 54.5%. MRCP is a method that has greater resolution in the diagnosis of Mirizzi syndrome and allows one to determine the morphological type of this pathology with high diagnostic sensitivity.

Intraoperative diagnosis of SM is also difficult. Infiltration or adhesions in the area of the gallbladder neck, absence of the cystic duct, and a combination of a shriveled gallbladder with a wide AKI or CBD may alert the surgeon and force him to change the standard cholecystectomy plan. We also cannot neglect the rule of mandatory identification of the elements of Calot's triangle and the comparison of the diameters of the AKI and CBD.

One of the main issues in the treatment of SM is the choice of surgical method. First of all, it must be emphasized that suspicion of SM before surgery is a contraindication to laparoscopic cholecystectomy, and identification of signs of the syndrome during surgery is an indication for conversion to open surgery.

If SM is suspected, the best results are obtained by removing the gallbladder "from the bottom" using the Pribram method, which allows one to assess the situation "from within" the neck of the gallbladder. In this case, depending on the type of SM, complete removal of the gallbladder (type I), removal of the bladder with suturing of the duct wall with separate sutures (more often with type II SM), plastic surgery of the defect of the duct wall with the wall of the neck of the gallbladder, suturing of the neck of the gallbladder over the fistulous passage can be performed. - house (with types II and III). After stone removal, a T-shaped drain should be left inserted distal to the fistula opening. Finally, in type IV SM, especially with extensive AKI, the operation should be completed with a hepaticojejunostomy. The main provisions of this tactic are supported in their research by L.W. Johnson et al. [10], as well as O.J. Shah et al. [12].

In case of injuries to the AKI or CBD, surgical tactics largely depended on the size of the defect in the duct wall. For small tangential wounds of a non-dilated duct, as a rule, with type I

SM, a precision suture was applied on a Kera T-shaped drainage, which gave good long-term results. However, if the duct wall defect was significant and drainage repair was performed with tension, hepaticojejunostomy was preferred. In types II and III, the fistula was sutured by leaving the wall of the gallbladder neck, a choledocholithotomy was performed distally, and the duct was drained with a Kera T-shaped drainage. In type IV (with a large diameter of AKI), good results were obtained after applying hepaticojejunostomosis.

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