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CHOICE OF SURGICAL TACTICS IN MULTIPLE CHOLEDOCHOLITHIASIS.

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Abstract:

For a long time, the number of patients with multiple choledocholithiasis caused by various reasons remains high. At the same time, if a child does not have a clinical picture of choledocholithiasis, the diagnosis sounds like gallstone disease, chronic cholecystitis, so patients most often undergo laparoscopic operations, during which revision of the common bile duct for choledocholithiasis is not performed. The choice of surgical tactics for multiple choledocholithiasis necessitates improving diagnostics, optimizing treatment and minimizing operations in patients with this disease.

Keywords: choledocholithiasis, surgery, treatment tactics

INTRODUCTION:

Cholelithiasis has been known since ancient times. It is widespread in countries with developed and developing economies in Europe, North America, and Russia. The incidence of cholelithiasis in Europe is 9–42%, in Russia – 14–21% [10, 1], in the USA – 9–26% [12]. Over the past 25 years, more than 5 million patients with cholelithiasis have been registered in Germany and more than 15 million in the USA. High incidence of this pathology is found in 11% of the middle class in China, who have a "European" high-calorie diet with low physical activity. Cholelithiasis is less common in Africans (4.2%) and Japanese (3.6%) [8]. With the increase in the incidence of cholelithiasis, the number of operations on the gallbladder and bile ducts has increased and amounted to about 1.5 million surgical interventions in recent years [11]. According to the WHO, 1 to 2 million cholecystectomies are performed annually worldwide, of which 250,000 to 300,000 are performed in Russia and over 500,000 in the USA [13]. In 8 to 45% of cases, the so-called postcholecystectomy syndrome is observed, one of the causes of which is the repeated formation of stones in the bile ducts [9]. One of the main causes of recurrent CDL (in 1 to 7% of cases) is increased lithogenicity of bile after cholecystectomy, especially in obese patients, against the background of concomitant diseases that were not eliminated during the first operation. Choledocholithiasis was first described by the Nuremberg physician V. Coiter in 1573. According to most researchers, the main causes of cholelithiasis are changes in the composition of bile, inflammation of the bile ducts, and bile stasis [11]. The main place where stones form is the gallbladder. Gallstones in 97% of cases are secondary in origin, migrating from the gallbladder [14]. The issues of determining the optimal timing, nature and sequence of treatment measures are still being discussed. This problem has not been finally solved, as evidenced by the variety of treatment measures used. When stones are detected in the bile ducts, the following treatment methods are possible:

1. Endoscopic papillosphincterotomy: a) with mechanical removal of stones using Dormia baskets, a Fogarty balloon catheter, a mechanical lithitripter; b) with the use of lithotripsy (mechanical, electrohydraulic and laser) and washing out fragments of stones in the duodenum.
2. Endoscopic balloon papillodilation with removal of stones, with or without lithotripsy.
3. One-stage laparoscopic choledocholithotomy with antegrade laparoscopic choledocholithotomy (through the cystic duct or by means of choledochotomy): a) using mechanical, laser or electrohydraulic lithotripsy; b) using papillosphincterotomy; c) using balloon papillodilation.

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4. Percutaneous transhepatic access with antegrade lithotripsy and removal of stones or by means of papillodilation bringing down stones into the duodenum.
5. The "rendez vous" technology - the simultaneous use of antegrade (percutaneous-transhepatic) and retrograde (endoscopic) access and joint manipulations inside the bile ducts.
6. Laparotomic choledocholithotomy and its completion using known methods (external drainage, application of biliodigestive anastomosis, primary suturing of the common bile duct and transduodenal papillosphincterotomy; liver resection in case of intrahepatic lithiasis.
7. Non-surgical removal of stones through drainage or fistula: a) with special forceps or catheters; b) crushing stones with a laser; c) washing out small stones in the duodenum with a stream of liquid; d) with a urethral loop or Dormia basket, Fogarty balloon; d) with aspiration.
8. Use of dissolving drugs: a) through the mouth; b) through the common bile duct drainage; c) through a catheter inserted into the bile duct endoscopically; d) through percutaneous transhepatic drainage; d) through nasobiliary drainage; e) through laparoscopic cholecysto- or choledochostomy. It has also been noted that hepaticocholedochal stones can independently pass through the intestinal lumen or spontaneously dissolve [15,16]. Normally, bile is sterile and even has some bactericidal action, but in inflammatory diseases it is invaded by many microorganisms. Most researchers believe that purulent-septic complications after operations on the bile ducts are caused by microorganisms found in the bile [17,19]. The frequency of infectious complications and mortality is significantly higher among patients with infected bile than with sterile bile: bacteremia in these observations increases more than 40 times, wound suppuration - 3-20 times, mortality - more than 2 times. In choledocholithiasis, strictures of the common bile duct in 30-100% of observations, bile from the common bile duct is infected. In 63-89%, intrahepatic bile is infected with mechanical jaundice. Bacterial contamination of bile is very common during external drainage of the bile ducts. The most frequently isolated bacteria from bile are Escherichia coli, Staphylococcus aureus, Streptococcus, Clostridia, and Proteus. Currently, the issues of pathogenetic treatment and prevention of infectious complications in obstructive jaundice and cholangitis are insufficiently covered; specific indications for antibacterial therapy and methods of its administration have not been developed. A controversial and unresolved problem is the prophylactic administration of antibiotics in connection with surgery on the bile ducts. Prophylactic use of antibiotics is advisable only in patients with a high risk of postoperative complications; they should be prescribed in a dosage sufficient for the endogenous flora corresponding to the site of surgery; the period of optimal use of antibiotics is from 1 to 6 hours before surgery and no more than 24-48 hours after it. Preference is given to short courses of antibiotic administration, ranging from a single dose before surgery [22] to 24-72 hours after surgery [12]. Due to the increase in the number of patients with cholelithiasis and its complications, surgeries on extrahepatic bile ducts have become more frequent. Surgical interventions in such patients have to be performed under conditions of a high degree of surgical risk, with subcompensation and decompensation of concomitant diseases, which often implies an unfavorable prognosis. The current trend in the development of approaches to the treatment of CDL is the desire for a wider use of minimally invasive methods that allow achieving an optimal result with minimal surgical trauma.

Endoscopic retrograde papillosphincterotomy (ERPP) was first performed in 1973 in Germany by Demling L. and Classen M. [25], and has become widespread in the treatment of choledocholithiasis and diseases of the pancreatobiliary zone. ERPP has gradually replaced traditional interventions, especially transduodenal ones. The efficiency of Common bile duct (CBD) sanitation reaches 78-95.8% [19]. It has been noted that after papillotomy, stones with a diameter of 1 cm or less independently migrate into the duodenum. In 12-78% of patients, mechanical extraction of stones is performed using Dormia baskets, a Fogarty-type balloon catheter, and a mechanical lithotripter [20]. In 8-22% of cases, mechanical stone extraction failed (with large HDL, narrow intrapancreatic part of the CBD, ligature stones). The incidence of common bile duct injury ranges from 1-7%, lithotripter failure occurs in 3-15% of cases [19]. In 3-10%, ERPP cannot be performed due to cicatricial changes in the CBD, deformation of the duodenum, the presence of a parapapillary diverticulum. According to the literature, after ERPP, various complications (acute pancreatitis, bleeding, cholangitis, etc.) occur in 0.6-29% of patients, which are the causes of death in 0.7-2.8% of cases [7,16]. One of the possible measures to prevent complications is a dosed dissection of the papilla using bipolar current or laser. The best results are obtained by endoscopists who perform more than 50 ERPP s per

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year [25]. The use of ERPP also leads to a violation of the tight closure of the sphincter of Oddi, the development of its insufficiency and does not guarantee complete removal of stones. In the long-term period, the most significant are restenosis and relapse of HDL - 0.3-3% [13,14]. Reducing the use of EPST allows preserving the sphincter apparatus of the large duodenal papilla (MDP) in patients, avoiding the negative aspects of removing large and multiple stones, the "summation" of possible complications after ERPP and LCE, a long stay in hospital, radiation exposure to the patient and medical personnel, and a relatively high cost of treatment [13,15]. Through nasobiliary drainage, infusion of drugs (antiseptics, litholytics) into the bile ducts and dynamic cholangiography are possible [16]. Endoscopic papillodilation was proposed in 1983 by Statitz M., it is an alternative method of endoscopic intervention without damaging the sphincter apparatus of the MDP. Therefore, the percentage of complications in the remote period is reduced. But this method has a number of limitations: the size of the calculus should be no more than 1 cm, single CDL, no stenosis of the sphincter of Oddi according to manometric data. In case of large or multiple stones, lithotripsy, repeated interventions or ERPP should be used. As an independent method, EPD is used in limited cases. It is usually used in those patients when EPST cannot be performed or it is dangerous. The effectiveness of EPD ranges from 85 to 100%. However, its disadvantages are: occurrence of complications (acute pancreatitis - in 5-7% of cases, cholangitis - in 4%, cholecystitis - in 1%, pneumoretroperitoneum - in 1%, herniation of the Dormia basket - in 0.4%. Laparoscopic surgeries in patients with cholecystocholedocholithiasis have a number of known advantages over traditional surgical interventions. Transvesical extraction of stones is attractive due to its low trauma, but it cannot be performed with large or multiple stones, a narrow or abnormally draining cystic duct, cicatricial infiltrative process in the area of the hepatoduodenal ligament. Large stones are removed only after supraduodenal laparoscopic choledochotomy or lithotripsy. According to Tang C.N. et al., recovery after laparoscopic intervention in CDL occurred in 92% of patients, complications occurred in 20%, and recurrence of CDL occurred in 4%. After laparoscopic methods of treating CDL, various complications were observed in 7% of patients, mortality was 0.19%, and after two-stage treatment (EPS followed by laparoscopic cholecystectomy (LCE)) - in 13.6 and 0.5%, respectively. LCE with removal of stones from the common bile duct is comparable in effectiveness to ERPP, but is characterized by a shorter hospital stay for the patient and lower mortality. No differences were found in the number of complications, relapses, or duration of hospital stay when performing LCE with intraoperative ERCP and ERPP or LCE with intraoperative FCS and removal of stones. One-stage laparoscopic intervention for CDL is associated with lower economic costs than a two-stage one. Laparoscopic transduodenal sphincteroplasty is an alternative to EPST if it cannot be performed. Laparoscopic or transhepatic stenting may be an alternative to T-shaped drainage of the CBD or EPST. With this treatment, complications were 7%, mortality - 1.4%. Nasobiliary drainage may be a substitute for T-shaped drainage after laparoscopic choledocholithotomy.

CONCLUSION:

The choice of the most rational method of surgical treatment of CDL should be determined by the nature of pathological changes in the bile ducts, periampullary zone, the size of the stones, the degree of surgical and anesthetic risk according to the risk scale developed by us, and the results of computer forecasting. The method of laparoscopic cholecystectomy in combination with intraoperative choledochoscopy and contact laser (holmium laser) lithotripsy turned out to be the most effective minimally invasive method of treating cholecystocholedocholithiasis, with a minimum number of complications (10.8%) and no mortality. Conclusion: The choice of the most rational method of surgical treatment of CDL should be determined by the nature of pathological changes in the bile ducts, periampullary zone, the size of the stones, the degree of surgical and anesthetic risk according to the risk scale developed by us, and the results of computer forecasting. The method of laparoscopic cholecystectomy in combination with intraoperative choledochoscop**y** and contact laser (holmium laser) lithotripsy turned out to be the most effective minimally invasive method of treating cholecystocholedocholithiasis, with a minimum number of complications (10.8%) and no mortality.

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