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Complications of Laparoscopic Choledochotomy and Lithotomy for Primary Suture

Xiping Zhu*
Tianyou Hospital Affiliated to Wuhan University of Science & Technology, Wuchang, Wuhan, 430064, China

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ABSTRACT

Objective: To explore the non-placement of “T” tube after laparoscopic choledochotomy. feasibility and complication analysis of primary suture bile duct. Methods: Retrospective analysis of January 2013– December 2016, Laparoscopic choledocholithotomy for primary bile duct suture in 87 cases, Combined with literature, the indications, methods and complications of the operation were summarized and analyzed. Results: There was no operative death in the whole group, Postoperative complications occurred in 5 cases (5.7%), 1 case with jaundice, gradually subsided after 4 days of conservative treatment. Two cases had postoperative bile leakage, to prolong the drainage time of the peritoneal drainage tube and stop by itself. In 1 case, bile duct stenosis occurred. 1 case of residual common bile duct stones. The average postoperative hospitalization was 9 days. Conclusion: Select the right case strictly, Patient and delicate operation, Laparoscopic choledochotomy is safe and feasible.

1. Introduction

Since the first T tube drainage in Kehr 1889 years, A common surgical procedure is to place a T tube after choledochotomy, It is widely used in hospitals at all levels. There are many disadvantages in placing T tube, such as T tube prolapse, extubation difficulty, biliary tract infection, water and electrolyte imbalance, bile peritonitis after extubation, etc. Therefore, Many scholars began to try to suture the bile duct after choledochotomy. and the conclusion of feasibility is obtained. With the development of laparoscopic technique, The first-stage suture of common bile duct after laparoscopic choledochotomy has been carried out gradually. From January 2013– December 2016, In 87 cases of cholecystolithiasis secondary choledocholithiasis, cholecystectomy and choledocholotomy were performed. Postoperative complications occurred in 5 cases (5.7%). The treatment experience is summarized as follows.

2. Clinical data

2.1 General Information

87 patients in the whole group, 51 male and 36 female, aged 28–75 years, average 52.5 years old. They were all cholecystolithiasis with choledocholithiasis. Imaging data showed that the diameter of the common bile duct was 1.0–2.4 cm, mean 1.5 cm.. All patients had hypertension in 25 cases and diabetes in 14 cases.

*Corresponding Author:
Xiping Zhu,
Tianyou Hospital Affiliated to Wuhan University of Science and Technology, No. 9, T-Shaped Bridge, Wuhan, 430064, China;
Email: pjcps@126.com
2.2 Diagnostic Methods
The diagnosis of gallbladder and common bile duct stones was confirmed by B ultrasound and MRCP examination before operation. Intrahepatic bile duct stones, acute pancreatitis, acute cholangitis, common bile duct and duodenal tumors were excluded before operation. Intraoperative choledochoscopy further excluded bile duct stenosis and residual stones.

2.3 Surgical Methods
All patients were treated with laparoscopic surgery under general anesthesia. Three-hole puncture and insertion of laparoscopic instruments were used to dissect the gallbladder triangle, distinguish the relationship between the three tubes, and routinely remove the gallbladder on the right liver. The anterior wall of the common bile duct was cut from the inferior foramen of the xiphoid process and the right foramen of the abdominal wall. The anterior wall of the common bile duct was cut between the two leads about 1-1.5 cm (depending on the size of the preoperative magnetic resonance calculus). Bile was removed, choledochus into the choledochoscope through the puncture of the xiphoid process, the common bile duct stone was taken through the net basket, and the intrahepatic bile duct, left and right hepatic duct and common hepatic duct were carefully examined until oddis sphincter were examined. The common bile duct incision was sutured continuously with 4-0 absorbable suture mm, the needle distance was 1.5-2 mm. At the end of the suture, bile leakage was observed in the common bile duct incision, and 8 words were added to the incision. At the Winslow hole, the abdominal drainage tube was routinely placed, which was drawn from the right abdominal wall hole, fixed outside the skin, the gallbladder was removed, and the routine operation was completed.

2.4 Results
All 87 cases were successful. No transfusion, No surgical deaths. Operation time 95~156 min, min. average (115±26) ml.20-50 intraoperative blood loss. After the surgery, no bile leakage routine 7 days to perform color ultrasound examination. After no abnormality, the abdominal drainage tube was removed. Average d.9 Postoperative complications occurred in 5 cases (5.7%), 1 case with jaundice, After 4 days of intensive liver protection and antispasmodic treatment, it gradually subsided. In 2 cases, bile leakage occurred on 3-4 days after operation. Keep the peritoneal drainage tube unobstructed, Fasting gastric tube decompression, somatostatin inhibition of digestive fluid secretion, acid suppression and support treatment for about 1 week to stop bile leakage, Color Doppler ultrasound confirmed that there was no peritoneal effusion and then observed two days after the extraction of abdominal drainage tube. Healing and discharge; A case of residual choledocholithiasis was found by magnetic resonance reexamination 1 month after operation. remove the stone through the EST. All cases were followed up for 6~24 months. For an average of 15 months, A half - year postoperative MRCP examination indicated that the department of the bile duct was slightly narrow, Because the patient has no clinical symptoms, No special treatment.

3. Discussion
T tube drainage is a classical method for the treatment of choledocholithiasis, and its therapeutic effect has been recognized by most surgeons. According to many scholars, T tube drainage is helpful for the decompression of common bile duct, the removal of residual stones after operation and the prevention of bile leakage[1-2], but we also need to be soberly aware of the related complications of T tube drainage, such as massive loss of bile leads to water electrolyte disorders, T tube slippage leads to biliary peritonitis, improper placement of T tube leads to bile leakage, biliary tract infection, etc. in addition, T tube drainage also has postoperative nursing difficulties, prolonged hospitalization time, increased patient suffering and financial burden and other shortcomings.

As a result, is there a common bile duct incision stone plus T tube drainage outside the treatment of common bile duct stones? The development of minimally invasive surgical techniques has provided us with a variety of options. At present, there are mainly [3]: (1) Laparoscopic cholecystectomy plus preoperative or postoperative EST lithotomy; (2) Laparoscopic cholecystectomy plus intraoperative EST lithotomy; (3) Laparoscopic cholecystectomy plus bile duct primary suture. Among them, EST is duodenal papilla incision stone, although the development has been 30 years, but it has many complications, such as recent acute pancreatitis, acute cholangitis, bleeding, duodenal perforation, and long-term complications such as repeated cholangitis, bile duct stones and even cancer, so the current clinical application should be careful.

Laparoscopic litho-biliary suture is a hot topic in recent years. From current clinical practice, The first stage of bile duct suture is clinically feasible. but case selection needs to be individualized. Combined with the experience of 87 cases and previous literature reports, We understand that the indications for the first stage of common bile duct suture are as follows: 1. Exclusion of...
intrahepatic bile duct stones; 2 The diameter of the common bile duct is more than 7 mm. To avoid postoperative biliary stricture; After exploration, cholecdochoscopy combined with cholangiography confirmed no residual stones, The nipples open and close, Distal patency; 4 Negative detection of common bile duct; 5 Common bile duct roundworm has been removed. As long as the lower end of the common bile duct is clear, Local anatomy is clear, Well - nourished, No bile leakage occurred during the first stage suture. The following cases should be considered as contraindication of primary suture: 1 intrahepatic cholelithiasis and residual cholelithiasis; Ciliary stenosis requiring T tube support; Suppurative cholangitis, Edema of bile duct wall is more serious. 4 Obstructive jaundice; Damage to liver function; 6 multiple probing, Severe papillary edema; 7 Poor general condition, With hypoproteinemia; 8 Gallstone pancreatitis.

Data from previous studies also indicate that there is still a similar incidence of complications in patients with primary bile duct suture after laparoscopic bile duct exploration as traditional T tube drainage. Its common complications are as follows:

1) Bile leakage: Bile leakage is a common and serious complication, Muzaffar and so on after exploration of common bile duct [4] The incidence of bile leakage was 5.5% in the first stage of common bile duct suture. The incidence of bile leakage was 2.3% in 87 patients with primary suture. Therefore, we believe that the main factor leading to bile leakage is the nutritional status of patients. Preoperative low plasma albumin levels are independent risk factors for biliary leakage [5] In addition, suture technique is also one of the causes of postoperative bile leakage, such as suture slippage, too wide spacing of common bile duct suture and excessive injury of bile duct wall during suture [6] Therefore, it is helpful to reduce the occurrence of bile leakage by strictly grasping the indication of the first stage bile duct suture and improving the operative experience. The postoperative bile leakage can be detected and treated early by keeping the peritoneal drainage tube unobstructed. The two cases of bile leakage were cured by unobstructed drainage and nutritional support.

2) Residual stones: With the popularization of routine MRCP examination before operation and the use of cholecdochoscopy during operation, the problem of residual stones of biliary tract has been avoided to the maximum extent. A case of bile duct residual stones occurred in only 1 case, the incidence rate was 1.1%, and the postoperative EST was removed smoothly. Analysis of the reasons, we think that may be the operation of choledochoscopy, cholelithiasis floating to the liver, not found in time, postoperative stones again fell into the common bile duct, but also because of the high ligation of the gallbladder duct, residual small stones in the gallbladder duct, after the operation to the common bile duct. therefore, we recommend routine exploration of intrahepatic bile duct, common bile duct, common bile duct, and even gallbladder duct stump before the end of lithotomy to ensure no residual stones. intrahepatic stone, bile duct mud sand like stone, especially wall stone, try to avoid the first stage of suture, take T tube drainage [7].

3) Stenosis of the biliary tract: The incidence of postoperative biliary stricture in the first stage of biliary tract suture is not high. A case of postoperative biliary stricture occurred in this study. The diameter of common bile duct was 1.0 cm.. In order to carry out this procedure, the patients were considered to be related to suture technique. therefore, we believe that non-expansion of the common bile duct (diameter <10 mm) or excessive suture are major factors contributing to bile duct stenosis. Patients with symptoms and signs of bile duct stricture may be treated with radiation intervention or endoscopic placement of stent and balloon dilation. [8].

Laparoscopic bile duct exploration after the first stage of bile duct suture method to avoid the placement of T tube caused by many drawbacks, reflects the advantages of minimally invasive surgery, the treatment of suitable cholelithiasis patients is safe and feasible. but also requires surgeons to combine the actual situation of the unit at the same time, the overall understanding of the patient’s situation, standardized selection of treatment strategies.

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