



Laparoscopic choledochal cyst excision and Roux-en-Y hepaticojejunostomy

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ABSTRACT

Congenital choledochal cysts are rare in adults. Due to the risk of developing cholangiocarcinoma, the current standard of care is complete excision of the cyst and reconstruction with hepaticojejunostomy. So far, more than 200 laparoscopic resections have been reported in adults, the majority being from Far Eastern countries over the last five years. Herein, the technique of laparoscopic type I choledochal cyst excision and hepaticojejunostomy is presented in a 37-year-old male with an accompanying video. The advantages of laparoscopic surgery are applicable for choledochal cyst excision as well. We believe that teamwork, expertise on intracorporeal suturing and hepatobiliary surgery are central issues for this operation.

Keywords: Choledochal cyst, laparoscopy, hepaticojejunostomy

INTRODUCTION

Congenital bile duct cysts, although a pediatric disease, can be detected in adults. It is more common in Far Eastern countries such as China, Korea, Japan, and Vietnam. Although there are various classifications, the most common type (78%) is fusiform dilatation of the extrahepatic bile ducts (Todani Type 1) (1). The most common symptom is right upper quadrant pain, which sometimes can be accompanied by jaundice and a mass (2). The current accepted standard treatment is complete excision of the cyst and hepaticojejunostomy due to its serious complications, particularly the risk of cholangiocarcinoma in the long-term (1, 3). Laparoscopic surgery is the usually performed method in pediatric patients. In adults, until today, more than 200 laparoscopic resections have been reported (Table 1), the majority within the last five years from Far Eastern countries (4-14). Herein, laparoscopic excision of a type 1 common bile duct cyst and Roux-en-Y hepaticojejunostomy technique in a 37-year-old male patient is presented with an accompanying video-clip. The patient had right upper quadrant pain for several months and has been referred to our center for the bile duct dilatation detected on ultrasound. His past medical and family histories were uneventful, as well as normal physical examination and laboratory findings. A cystic dilatation of the common bile duct 65 x 57 x 49 mm in size was detected in the computed tomography and magnetic resonance imaging. The patient was informed on the surgical treatment and laparoscopy, and an informed consent was obtained.

Surgical Technique (Video presentation-www.ulusalcerrahidergisi.org)

The patient was taken to the operating table in the supine position. A 12 mm infraumbilical trocar was inserted for the camera and 14 mm-Hg pneumoperitoneum was achieved with carbon dioxide. A 12 mm port was inserted in the subxyphoid area and two additional trocars of 5 mm and 12 mm in the right hypochondrium. After observing the common bile duct cyst at the liver hilum, the cystic duct and artery were transected and the gallbladder was separated from the cyst but was not removed from the liver bed. The gallbladder was sutured with 2/0 silk from the fundus to the right diaphragmatic area to achieve liver retraction. The cyst was separated from the duodenum, the narrowed retroduodenal bile duct was reached and was transected with a 60 mm endoscopic stapler. The free distal end of the cyst was retracted laterally and towards the abdominal wall, and was separated from other structures in the liver hilum (right hepatic artery and portal vein). The cyst was dissected up to the highest level that can be technically achieved, was removed at this level with a 60 mm endoscopic stapler, and was extracted out of the epigastric trocar site. When the bile duct was opened at the stapler line in the hilum, it was observed that the biliary bifurcation has been reached. The jejunum was transected with an endoscopic stapler 25 cm away from the ligament of Treitz for hepaticojejunostomy. The distal end was advanced in a retrocolic manner, and the Roux loop was brought to the liver hilum. The anastomosis was created following an enterotomy with interrupted Vicryl 3/0 sutures. Two internal 5F catheters were placed in the left and right bile ducts. The anterior wall anastomosis was performed with interrupted Vicryl 3/0 sutures. Finally, a side-to-side enteroenterostomy was created by a 60 mm endoscopic stapler

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Table 1. Studies on laparoscopic common bile duct cyst excision in adults

Author	Publication year	Country	Case Number
Shimura (4)	1998	Japan	1
Chowbey (5)	2002	India	1
Abbas (6)	2006	England	1
Sun (7)	2009	China	5
Tian (8)	2010	China	45
Jang (9)	2013	Korea	82
Lü (10)	2013	China	34
Shimizu (11)	2013	Japan	1
Khiangte (12)	2013	India	1
Duan (13)	2014	China	31
Chang (14)*	2014	USA	1

*Robotic

between the loop 60 cm distal from the Roux loop and the afferent loop from the Treitz ligament (this part of the surgery is not available in the video due to the limitation in saving time). A drain was placed posterior to the hepaticojejunostomy after completion of cholecystectomy. The operative time was 8 hours, and the total blood loss was <100 ml. The patient's postoperative course was uneventful. There was no bile leakage or bleeding. The patient was discharged on postoperative day 3 after removal of the drain. The pathology result did not show malignancy. The patient is still being followed-up at 24 months with no additional problems.

CONCLUSION

The advantages of laparoscopic surgery also apply to common bile duct cyst resection. We think, teamwork, intracorporeal suturing and hepatobiliary surgery experience are important points for this operation.

Video: Laparoscopic common bile duct excision and Roux-en-Y hepaticojejunostomy

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Laparoskopik Koledok Kist Eksizyonu ve Roux-en-Y Hepatikojejunostomi



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