SURGICAL TREATMENT OF CONGENITAL CHOLEDOCHAL CYST

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ABSTRACT

20 cases of congenital choledochal cyst were operated by modified Lilly's method from 1980 to November 1985 in our Hospital. There were 4 males and 16 females. Their ages ranged from 50 days to 15 years with a mean of 5.1 years. All patients had preoperative ultrasonographic examination, barium meal radiography of the gastrointestinal tract or percutaneous transhepatic cholangiography. All had choledochal cystectomy with retention of the outer layer of the posterior wall of the cyst. We modified Lilly's method by injecting normal saline between the outer and inner layer of the choledochal cyst so that the outer layer could be isolated. Reconstruction of the biliary tract was then performed. 2 patients had choledochoduodenostomy and 18 patients had hepaticojejunostomy (1 end to end and 17 end to side). 19 patients had also had cholecystectomy. The post-operative course of the operation was found to be smooth and safe. Patients were followed up for a period from 6 months to 7 years. 3 patients had cirrhosis of liver, 2 of whom died within 8 months. The mortality rate in our series was 10%. The operative treatment and the problems of biliary reconstruction are discussed.

Keywords: Congenital choledochal cyst, Lilly's method, modified choledocho-duodenostomy, hepaticojejunostomy

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INTRODUCTION

More than 1000 cases of congenital choledochal cyst have been reported in the medical literature since Vater made his first report in 1923 (1, 2). In China, He (3) made the first report of congenital choledochal cyst in 1952 and by 1983, 1109 cases were noted (4, 5). Cyst-duodenostomy or cyst-jejunostomy produced unsatisfactory results (6). Post-operative complications such as abdominal pain, jaundice, stricture of the anastomosis or cholangitis were as high as 34-58% and 12.5-40% of the patients had to undergo another operation within 5 years. Other possible complications include malignant change of the residual cyst or stone formation.

Lilly (7), in 1979, introduced a surgical method for treatment of choledochal cyst. He advocated resection of the anterior wall as well as the inner layer of the posterior wall of the choledochal cyst while retaining the outer layer of the posterior wall of the cyst. We modified Lilly's method by injecting normal saline to separate the inner and outer layers of the cyst (Fig 1). We have treated 20 patients by this method since 1980.

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MATERIALS AND METHODS

20 patients, 4 males and 16 females were studied. Their ages ranged from 50 days to 15 years (mean = 5.1 years). All had classical symptoms and signs such as abdominal pain, jaundice, abdominal mass and fever. The palpable abdominal mass was confirmed by ultrasonography and barium meal study of the gastrointestinal tract. In addition, 4 cases had percutaneous transhepatic cholangiography. Some of the 15 jaundiced patients had icterus index reaching 150 IU and abnormal liver function tests. Antibiotics and vitamin K were administered before operation. The patients had either epidural or general anaesthesia. Transrectus incisions of the right upper abdomen or subcostal incisions were made. We found that all the choledochal cysts were of the cystic form of the extrahepatic type except one which was fusiform. The amount of bile contained in the cyst ranged from 60-4000 ml. All patients had choledochal cystectomy with retention of the outer layer of the posterior cyst wall and reconstruction of biliary tract (7, 8). The gall bladders of 19 of the patients were removed. The types of surgery performed are listed in Table I. The operation was safe and smooth and the time taken for the procedure was 3 to 5 1/3 hours (mean 3 1/2 hours). Blood loss was between 50-600 ml (mean 246 ml).

Pathological examination showed chronic cholecystitis, fibrous connective tissue proliferation of the choledochal cyst wall with chronic inflammation and bile pigment deposition. Others included acute inflammation and abscess of the cyst wall (2), cloudy swelling of liver cells, light proliferation of interstitial fibrous tissue suggestive of early liver cirrhosis (1), interstitial hepatitis with proliferation of fibrous tissue (1), liver cirrhosis (1), and lowly differentiated carcinoma of the choledochal cyst with lymph node metastasis (1).

Table I
THE TYPES OF SURGERY PERFORMED IN 20 PATIENTS WITH RECONSTRUCTION OF BILIARY TRACT

Choledochoduodenostomy		2
Hepaticojejunostomy by Roux-en-Y type without cholecystectomy		1
Hepaticojejunostomy by Roux-en-Y type with cholecystectomy		13
(a) plus invagination valve	(9)	
(b) plus spur like valve	(4)	
Jejunal Interposition Hepaticoduodenostomy		4
(a) plus invagination valve	(3)	
(b) plus spur like valve	(1)	

Table II
MORTALITY AND MORBIDITY ASSOCIATED CONGENITAL CHOLEDOCHAL CYST

Abdominal pain with/without fever	2
Upper gastrointestinal tract bleeding including portal hypertension	1
Death from liver cirrhosis	1
Death from malignant change of choledochal cyst	1

(Mortality rate of 10%)

Clinical jaundice improved after operation in all patients and in 2, ascites disappeared. No patient had complications such as biliary leakage, pancreatic fistula and haemorrhage. All survived the operation and wound healing was good. Their hospital stay ranged from 9-32 days (mean 13.8 days).

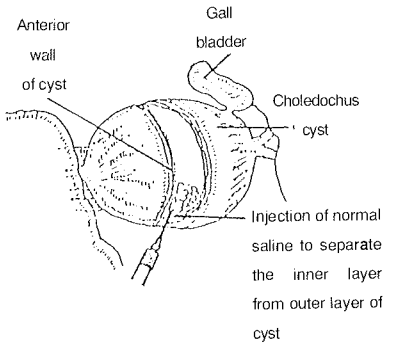
Patients were followed up for a period from 6 months to 7 years. The mortality and morbidity of congenital choledochal cyst are shown in Table II. 2 patients had postoperative cholangiography confirming a normal anastomosis and no rise in pressure in the non-functional segment of jejunum. 7 cases showed no reflux of the anastomosis stoma of the jejuno-jejunostomy.

DISCUSSION

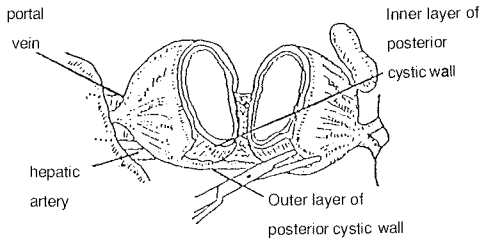
In Asia, choledochal cyst is a congenital disorder associated with high morbidity. One third of the cases reported in the medical literature come from Japan and 43.6% from China. This disorder is commonly seen in females (9) and 80% of our cases were females. Most authors considered the disorder an abnormality at the junction of the pancreatic duct and the biliary tract (10).

For urgent management of the febrile, toxic and seriously ill patients, external drainage is a simple surgical procedure. Since 1980, we have used the percutaneous cholangio-drainage and the results were satisfactory. Choledochal cystectomy would be performed only after the patient's condition had improved and infection controlled.

Internal drainage method has been abandoned because of stricture of the anastomosis causing biliary tract dilatation. Morever, the residual gall bladder and choledochal cyst may cause retrograde infection. Also, after



A. Incision of anterior wall of cyst



B. Excision of cyst and inner layer of posterior cystic wall, retaining outer layer of posterior cystic wall

Figure 1. Retaining the outer layer of posterior cystic wall and reconstruction of biliary tract

internal drainage the shrunken choledochal cyst would cause angulation or twisting of the anastomosis resulting in poor drainage of bile followed by infection. Stones could also conceivably be easily formed. There is a 3% chance of malignant change of the residual choledochal cyst. In recent years Ishida (11), Kasai (12) and Jones (13) advocated choledochal cystectomy and by doing so, a potential focus of infection and of malignant change would be removed. Our modified method allows a better cleavage and there is less bleeding or oozing. By retaining the posterior wall of the choledochal cyst, hepatic artery and portal vein injury will be avoided. Pancreatic and billary leakage can also be avoided by suturing the distal part of the choledochal cyst.

Though theoretically, choledocho-duodenostomy and hepaticocholedoduodenostomy are acceptable physiologically, in actual practice, retrograde infection can ensue. The morbidity involved with these procedures have been mentioned in Table II. It has been reported in recent years that hepaticojejunostomy and jejunojejunostomy (Roux-en Y type) may lead to gastric ulcers. Such complication rate is 1.7-22%.

We encountered 3 cases of cirrhosis of the liver (Table II). Congenital choledochal cyst is associated with cirrhosis of liver and malignant change and we recommend early surgery with resection of the choledochal cyst and reconstruction of the biliary tracts once the diagnosis is made.

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