Laparoscopic excision of a type II choledochal cyst: A case report

Laparoskopowe wycięcie torbieli dróg żółciowych typu II: opis przypadku

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ABSTRACT

Introduction: Choledochal cysts are a relatively rare congenital anomaly. Most cases are type I cysts according to the classification of Todani et al. Type II cysts, which resemble the diverticulum of the common duct, are extremely rare. Simple excision by laparoscopy is one of the safe surgery options for this type of cyst.

We report the case of a 12-year-old boy with a type II choledochal cyst recognized during ultrasound investigation due to recurrent pain in the right upper abdomen. Magnetic resonance cholangiopancreatography (MRCP) confirmed the diagnosis and the cyst was excised laparoscopically. The postoperative course was uneventful, and the patient was discharged on the 3rd postoperative day. This report confirms the role of laparoscopic surgery in management of choledochal cysts in children and analyses the surgical options for type II choledochal cysts. Conclusions: Reports of type II choledochal cysts are very rare and standards of treatment are not yet clearly established. A simple excision may be sufficient and is associated with a low rate of complication. However, there is a risk of malignancy especially when any sign of metaplasia or dysplasia are observed in histopathological specimens.

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Introduction

The incidence of choledochal cysts is estimated at between 1:100 000 and 1:150 000 in Western countries, but incidence in Asians is much higher and is assessed at approximately 1:1300. Choledochal cysts are four times more common in females than males [1]. The most widely accepted classification was proposed by Todani and colleagues in 1977. They divided choledochal cysts into five major types; types I and IV are most common and are found in almost 90% of reported cases. Type II is the rarest form and incidence is estimated at...
2% of all cases [2, 3]. The clinical course of type II choledochal cysts is quite different, because integrity of biliary tract is preserved, and in uncomplicated cases simple excision without biliary tract reconstruction is recommended.

Case presentation

A 12-year-old boy was admitted to hospital with a choledochal cyst recognized by ultrasound examination of the abdomen due to recurrent pain in the upper abdomen. A magnetic resonance cholangiopancreatography (MRCP) investigation confirmed the diagnosis of type II choledochal cyst (Fig. 1). Liver function tests before surgery were in the normal range. Under general anesthesia, the patient was placed in the supine position, and a pneumoperitoneum was created by closed Veress needle technique through the umbilicus. A 30 degree 5 mm camera was inserted through the umbilical port and three 5 mm working ports were placed in on both sides of the upper abdomen. The choledochal cyst was unbound to the neck and protected with an endoloop (Fig. 2). The cyst was cut off and removed through the 5 mm port site. After excision the common duct was visible without any signs of narrowing. Closure of the side ports finished the procedure. The bilirubin level was elevated to 3 mg% in the first postoperative day, but normalized the next day. Control ultrasonography on the third postoperative day revealed a non-expanded common duct and the patient was discharged home. Histopathological examination confirmed the diagnosis of choledochal cyst. The wall of the cyst consisted of a large amount of connective tissue covered by normal cholangic epithelium. No delayed complications were observed over a two-year observation period. Informed consent was given by the patient for using his clinical data.

Discussion

Choledochal cyst is a rare congenital condition. Todani et al. classified cysts according to their location [1]. The most common are types I and IV where cystic dilatation of the common duct is present. In all reported series type I and IV cysts were found in 85–90% of cases [2, 3]. Type II choledochal cyst is the rarest form and is usually described as a diverticular malformation of the common duct. Such cysts occur in fewer than 2% of described cases [4]. The etiology of cyst formation is unknown. Both congenital and acquired factors are postulated. The most popular theory was proposed by Babbit in 1969. Known as 'common channel theory', it proposes the formation of a common channel. Reflux of the pancreatic enzymes into the bile duct cause inflammation, weakening and, in the end, fibrosis of the bile duct. This theory may explain the development of type I choledochal cysts but poorly explains the anatomy of the type II formation. Hayes et al. suggested that type II cysts may be a remnant associated with inappropriate development of the bile duct. Some authors have suggested that a large diverticulum might represent end-stage healing of prenatal rupture of the common duct [1, 5].

Laparoscopic surgery of the biliary tract is rarely performed in children. The most demanding procedure is excision of type I choledochal cysts where the biliary tract is reconstructed with a Roux-en-Y loop. There are many recent reports describing laparoscopic operations and their results. However, reports on laparoscopy for type II choledochal cysts are very scarce. In most reported cases simple excision of the cyst was recommended.

Extensive surgery with biliary tract reconstruction seems a radical approach but is necessary to avoid a risk of malignancy. The risk of malignancy is well established for type I cysts and the incidence of cholangiocarcinoma has
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