Laparoscopic excision and redo hepaticojejunostomy for remnant choledochal cyst with anastomotic stricture in an adult: A case report

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INTRODUCTION

Choledochal cysts (CDCs) are rare congenital cystic dilatations of the biliary tree with a male:female ratio of 1:3–1:8 with up to 74% of all patients now reported being adults. It is a known risk factor for the development of biliary tract malignancy and has a high prevalence in Asian countries. The established mode of treatment is the total excision of cyst followed by a bilioenteric reconstruction. Totally, laparoscopic cyst excision and Roux-en-Y hepaticojejunostomy (HJ) are a safe, efficacious and minimally invasive procedure for the most instances of adult CDC. Surgery should be performed early as outcomes are better in paediatric age as compared to that of adults. Various complications within the remnant CDC after a subtotal excision have been reported in the literature, including recurrent cholangitis, recurrent pancreatitis, malignancy and cystolithiasis. The reoperation and completion CDC excision for remnant CDC have been associated with excellent outcome. The laparoscopic management of hepatobiliary pathology is now an accepted mode of treatment. An extensive search of PUBMED, EMBASE, MEDLINE and GOOGLE SCHOLAR with following keywords laparoscopic surgery, CDC, adult, revision HJ did not yield any result. Total laparoscopic excision of remnant CDC and revision HJ

Abstract

The laparoscopic management of hepatobiliary pathology is an established mode of treatment. Incomplete excision of choledochal cyst with the resultant complications is a distinct surgical pathology, the treatment of which can be rendered based on the philosophy of minimally invasive approach which is now an acceptable treatment for the primary condition itself. We describe a case of hepaticojejunostomy site stricture associated with incomplete cyst excision managed laparoscopically. A redo procedure is technically demanding considering the presence of adhesions and a difficult to discern anatomy, but resulted in an excellent outcome. At centres with significant experience in laparoscopic surgery, redo procedures with a favourable impression on pre-operative work-up can be effectively treated with laparoscopy.

Keywords: Adult, choledochal cyst, hepaticojejunostomy, laparoscopic surgery

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for adults as has been performed in this case has not been reported in the literature earlier as per the search mentioned above.

**CASE REPORT**

A 21-year-old female presented to our centre with features of obstructive jaundice and subclinical cholangitis of 6-month duration. She had a history of laparoscopic CDC (Type Ia) excision with Roux-en-Y HJ performed 3-year back at another centre. On evaluation, she had features of cholangitis, obstructive jaundice and mild hepatocellular dysfunction (Total leucocyte count (TLC) = 13,000, total bilirubin = 6.8 mg/dl, direct bilirubin = 3.9 mg/dl, alkaline phosphatase = 250 U/L, Aspartate aminotransferase (SGOT) = 710 U/L and Alanine aminotransferase (SGPT) = 737 U/L). Ultrasonography revealed mild intrahepatic biliary radicles dilatation and calculus in the common hepatic duct (CHD). To further delineate the biliary anatomy, a magnetic resonance imaging with magnetic resonance cholangiopancreatogram was done which showed stricture at the level of HJ with calculus in the proximal-dilated segment [Figure 1]. Taking into account the corroborative nature of clinical, biochemical and imaging findings, a diagnosis of remnant CDC with HJ site stricture was made, and the patient underwent a laparoscopic procedure for the same [Figure 2]. Initial laparoscopic evaluation revealed a dilated remnant CHD (3-cm wide) till the biliary confluence and beyond involving the right and left systems and a Roux limb of 45-cm length adhered to the anterior abdominal wall. After adhesiolysis, prior HJ was dismantled and the calculi removed. The remnant CDC was excised and a ductal septoplasty was performed. The roux limb was distalised and a revision HJ was performed with 4–0 PDS in an interrupted manner. The patient had an uneventful post-operative convalescence with the removal of drain on the post-operative day 3. Histopathology confirmed the excised biliary segment as CDC. On follow-up at 1, 3, 6 and 18 months, the patient is asymptomatic with no clinical or biochemical evidence of jaundice or cholangitis.

**DISCUSSION**

Laparoscopic CDC excision is an operation which requires extreme proficiency as the total cyst excision with a wide bilio-enteric anastomosis as near to the hilum as possible are the sine qua non for this procedure. The consequence of a remnant cyst includes malignant change, a nidus for calculi formation and repeated inflammation leading to anastomotic stricture prompting a 6%-10% re-operation rate. Sheng et al. recently reported their experience of re-operation after CDC excision.[4] Of 263 patients, 18 required revisional surgery (6.8%), of which five patients had anastomotic stricture. Three of these patients had associated calculi proximal to the HJ. These patients were treated with revision HJ through an open approach with good results. Xia et al. reported similar good results after revision surgery for remnant intra-pancreatic CDC.[5]

Redo laparoscopic surgery is technically challenging considering the presence of adhesions and difficult anatomy, but following the basic principles for biliary reconstruction, namely, a high anastomosis as near to hilum preserving the blood supply, creating a wide tension-free anastomosis with an adequate length of roux loop, excellent

![Figure 1: MRCP showing the remnant choledochal cyst (black arrow, black) containing calculi (white arrow) with the strictured hepaticojejunostomy site (black arrow)](image_url)

![Figure 2: Intra-operative pictures in sequence depicting the findings and procedure. (a) performing the adhesionolysis. (b) dismantling the previous hepaticojejunostomy with the remnant choledochal cysts (black star). (c) the stricture site (black arrowhead) is seen after dismantling the hepaticojejunostomy. (d) cystolithiasis seen in the remnant choledochal cysts (black arrow). (e) excision of the remnant cyst. (f) performing the redo hepaticojejunostomy)](image_url)
outcomes can be achieved. To circumvent the problem of a narrow anastomosis, technical manoeuvres such as incising longitudinally along the anterior wall of CHD, incising the wall of the left hepatic duct or performing a septoplasty can assure of a wide anastomosis. The magnification offered in laparoscopy allows for meticulous dissection and precision in performing the anastomosis.

CONCLUSION

The understanding of the pathophysiology of CDC has demonstrated the potential complications of an incomplete cyst excision. The application of the laparoscopic approach along with the basic surgical principles, which has proven to be advantageous in treating the primary condition, can also provide an optimal treatment in case of revision surgery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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