

Case report

Aberrant Right Hepatic Duct in Laparoscopic Cholecystectomy: A Case Report

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Abstract

Anatomical variants of the biliary tree present a challenge to surgical management during laparoscopic cholecystectomy and affect the post-operative outcomes. An aberrant right hepatic duct is defined as a connection into the cystic duct is a practically important variation because of the susceptibility to serious post-operative refractory bile leakage and some other serious complications. We report a successful case of laparoscopic cholecystectomy in the presence of posterior aberrant right hepatic duct in a patient diagnosed with chronic calcular cholecystitis.

Keywords: Right Hepatic Duct, Laparoscopic, Cholecystectomy.

Introduction

Bile duct injury is an uncommon complication following cholecystectomy. With the increasing use of laparoscopic cholecystectomy, there has been an associated increase in the incidence of bile duct injuries. Early studies reported a decline in the injury rate which was attributed to the phenomenon referred to as “learning curve”. However, several subsequent studies suggest that the decline was not sustained. Anatomic variations of biliary tree were identified as one of the risk factors for bile duct injury following LC.

Case presentation

A 47-year-old man was referred to our department for surgical management of chronic cholecystitis. Preoperatively the basic investigations showed no abnormality as well as the physical examination. ultrasound study was done to the patient showing a picture of chronic calcular cholecystitis. Intra-operatively a tubular structure noted to be connected to the cystic duct. careful dissection of the porta-hepatis area to visualize the complete anatomy of the common bile duct as well as common hepatic duct. Aberrant posterior right hepatic duct was revealed. Retrograde Cholecystectomy performed, closure of the cystic duct with endo-loop suture above and adjacent to the aberrant right hepatic duct, ensuring the patency of the ARHD. Intra-operative cholangiography was not available at our facility.



Figure 1. Intra-operative picture showing the apparent right hepatic duct

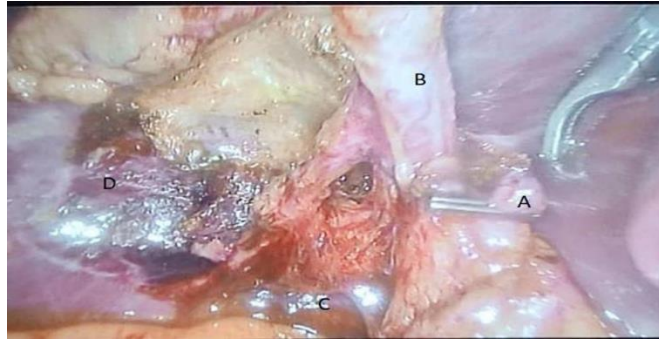


Figure 2. Intra-operative picture confirming the diagnosis of aberrant right hepatic duct (type iv), a: cystic duct; b: ARHD; c: CBD.



Figure 3. Post cystic duct ligation

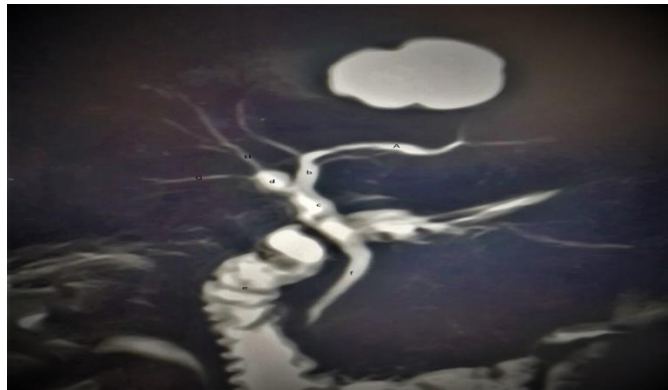


Figure 4. Postoperative MRCP confirmed the diagnosis of aberrant right hepatic duct (type iv)

Discussion

Aberrant right hepatic duct (ARHD) is branch providing biliary drainage to variable portion of right hepatic lobe and drains directly into the extra hepatic biliary tree. The operative injury to these ducts can result in bile leak if torn or obstruction of bile tract of the corresponding hepatic segments leading to segmental biliary cirrhosis. Furthermore, obstruction of biliary tree usually results in recurrent episodes of cholangitis in these patients [1-3].

Intra-operative cholangiogram during Laparoscopic cholecystectomy has been utilized to identify anatomic variants of biliary tract. But as in our case Intra operative cholangiogram wasn't available in our Facility [4].

Persistent bile leak may be an initial presentation of injury to the ARHD during cholecystectomy. These patients usually present with abdominal pain or fever if biloma becomes infected. Abdominal ultrasound or CT-scan may reveal peri-hepatic fluid collection. Such patients usually undergo ERCP and placement of biliary stents [5-7].

Usually, the initial management of patients presenting with a bile leak after LC is decompression of biliary tree by placing a stent with or without sphincterotomy or placement of biliary drain or percutaneous drain. If an aberrant bile duct is partially blocked, endoscopic treatment should be attempted to reopen the duct. However, these patients will need longer follow-up for potential subsequent complications particularly duct stenosis. Endotherapy for

obstructed aberrant bile ducts has been reported and the results were encouraging. Surgical therapy may be required for completely obstructed aberrant ducts [8,9].

The diagnosis of aberrant right hepatic duct draining into cystic duct can be incidental during ERCP or MRCP if performed before surgery. In these situations, the knowledge of aberrant anatomy of biliary track would be important for the surgeon to avoid any advertent complications [10-12].

Conclusion

In Cholecystectomy or any other biliary surgery. The safe approach to avoid injury to aberrant bile-ducts during is by adhering to the gallbladder itself, identifying the triangle of Calot and using the “critical view of safety (CVS)”, as described by Strasberg, before dividing the cystic structures. CVS involves 3 steps: Clearing triangle of Callot of fat and fibrous tissue. Separation of lowest part of GB from liver bed. Only 2 structures (cystic artery and cystic duct) should be seen entering GB.

Our presentation is for a relatively rare but clinically import anatomic variation of bile tree anatomy. We emphasis on the importance of sound knowledge and full awareness of variant anatomical presentation especially in the absence of Intra-operative cholangiogram. Aberrant bile-duct injury is often missed as subtle signs of injury remain unrecognized both by surgeons as well as by gastroenterologists. Aberrant bile duct injury after cholecystectomy should be strongly suspected in following situations: Paucity of intra-hepatic filling in a segment of liver on ERCP. Abnormal LFTs with segmental dilation of intra-hepaticbile ducts on abdominal CT scan or ultrasound.

Different congenital malformations of the biliary tree are common seen but mostly noticed accidentally during surgery unless full pre-operative investigations are performed.

Pre-operative preparation of the patient and total hematological and radiological investigations can give us a definite background about our surgery and the expected obstacles and the end result.

This case suggests that precise understanding of the normal anatomy and drainage of the biliary tree and the different normal anatomical variation can lead to safe cholecystectomy. We encountered a rare but clinically significant case during laparoscopic cholecystectomy.

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