

CASE REPORT

Biliary injury after cholecystectomy in a patient with severe right liver atrophy

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We report a case of bile fistula after cholecystectomy in a patient with severe right liver atrophy, which was managed by endoscopic nasobiliary drainage and conservative treatment. The patient was a 76-year-old man with a sudden onset in the right flank and abdominal pain. Computed tomography revealed calculous cholecystitis and severely atrophied right lobe of the liver. Gallbladder was located in the superior-posterior portion of the liver as opposed to the normal position. The patient underwent cholecystectomy and showed massive bleeding and bile leakage at the gallbladder bed during operation. A bile fistula was detected three days after surgery, which was managed by interventional bile drainage. Right liver agenesis or severe atrophy is rare. Additionally, the report of combined bile duct injury after cholecystectomy in these settings is extremely rare.

Key Words: Biliary injury, Liver, Atrophy

INTRODUCTION

Agenesis or severe atrophy of right lobe of liver were rare condition with reported several cases [1-5]. Among them, most were revealed occasionally by radiologic evaluation such as computed tomography (CT) and ultrasonography. The imaging showed absence of the right hepatic lobe, various degrees of enlargement of the medial and lateral segments of the left lobe and caudate lobe of the liver, and retrohepatic or suprahepatic position of the gallbladder (GB), absence of the right hepatic artery and portal vein on angiography, and absence of the right intrahepatic ducts on percutaneous cholangiography [6]. Re-

cently the first case of biliary injury after cholecystectomy in agenesis of right liver was reported [1]. Herein, we reported similar clinical appearances with severe right liver atrophy combined biliary injury.

CASE REPORT

A 76-year-old man visited emergency room with right upper quadrant and flank pain. CT revealed calculous cholecystitis without common or intrahepatic bile duct stones. He had not viral hepatitis or previous abdominal pain history. He showed mild fever and normal limit of

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blood chemistry except leukocytosis with white blood cell count was 13,000. We decided the cholecystostomy for initial treatment of cholecystitis, after making patient stable and afebrile.

Initial CT scan showed small mass-like lesion of severely shrunken right hepatic lobe and hypertrophy of the left hepatic lobe (Fig. 1A, B). Right hepatic vein was normally drained to inferior vena cava (Fig. 1C), and intrahepatic duct was not dilated. Right hepatic artery and portal vein were not visualized distinctly in CT. GB was identified in a retrohepatic position, and located in beneath the diaphragm with wall thickening demonstrating cholecystitis (Fig. 1A, D). One week after cholecystostomy,

cholecystectomy was done. We tried laparoscopic approach with routine 4 port methods, however we could not approach the GB without liver mobilization and position change. Because of severe adhesion of GB with omentum and mesocolon, we decided the open conversion procedure. During the cholecystectomy, excessive bleeding and bile leakage occurred in GB bed requiring two pint of packed red blood cell transfusion. However we could not be sure of hepatic artery or portal vein bleeding. We did not perform liver resection due to absence of pathologic condition of liver parenchyma, and perform bleeding and leakage control by suture ligation. A drain was left in GB fossa and liver dome. On 3rd day after operation, 50

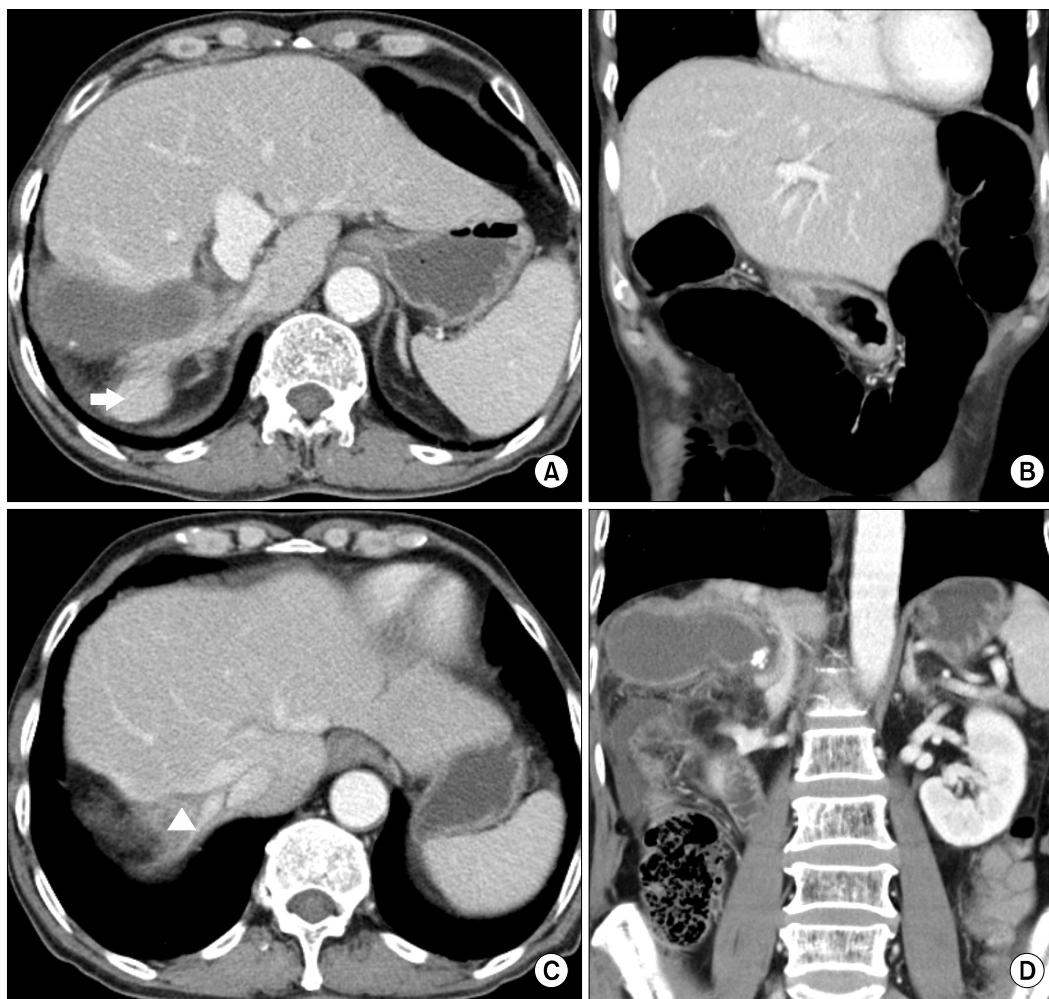


Fig. 1. (A) Severe atrophy of right liver lobe. It looks like mass or nodular lesion (white arrow). (B) Hypertrophied left lateral and medial segments. (C) Arrowhead indicates right hepatic vein, which is draining into vena cava. (D) Suprahepatic location of gallbladder with inflammation.

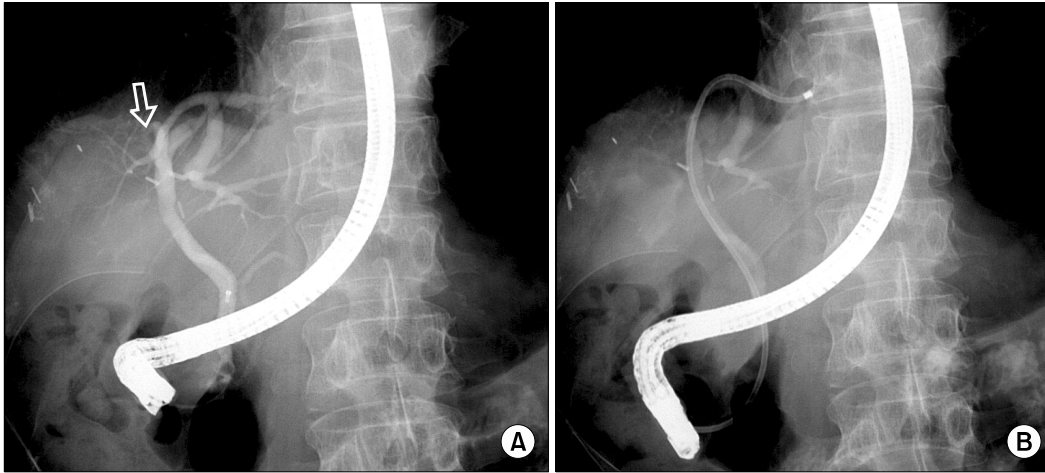


Fig. 2. (A) Bile leakage (arrow) from bile duct suspicious of right hepatic duct or segment 4 branch revealed by endoscopic retrograde cholangiopancreatography. (B) Endoscopic nasobiliary drainage into the left hepatic duct.

to 100 mL/day of bile drainage was detected in Jackson-Pratt drain. We decided conservative management for bile fistula. CT showed small amount of biloma in GB fossa. Ten day after surgery, the amount of bile drainage increased up to 200 mL/day, and so we decided to perform endoscopic retrograde cholangiopancreatography for therapeutic biliary drainage. The cholangiography revealed nonvisualization of right hepatic duct. The suspicious leakage point was right posterior duct root or branch of segment 4 (Fig. 2A). Endoscopic nasobiliary drainage (ENBD) was left in left hepatic duct (Fig. 2B). Amount of bile drainage was markedly decreased after procedure and ENBD was removed on 29 day after surgery. He was discharged 36 day after surgery.

DISCUSSION

We can meet the anomalous change of liver in a condition requiring cholecystectomy. Because most patients with agenesis of the right hepatic lobe or severe atrophy usually remain clinically asymptomatic, the vast majority of cases are found incidentally. Rarely, some patients have had symptoms due to atypical cholecystitis, choledocholithiasis, or portal hypertension. Chou et al. [6] described the criteria for diagnosis of agenesis of the right hepatic lobe on a CT as the absence of the right hepatic vein, right

portal vein and its branches, as well as dilated right intra-hepatic ducts.

Moreover, the diagnosis of agenesis of the right hepatic lobe of the liver is easily established with cross-sectional imaging when no liver parenchyma is found to the right of the GB fossa; however, the differential diagnosis includes severe right hepatic lobe atrophy secondary to liver cirrhosis, cholangiocarcinoma, choledocholithiasis, idiopathic portal hypertension, prior fulminant hepatitis, Caroli's disease, and prior surgical resection. Anomaly may be associated with biliary tract disease, hepatic calcification and other congenital anomalies such as agenesis of right hemidiaphragm, intestinal malrotation, intrathoracic kidney [7]. Our patient had not any history of above mentioned medical condition, and right hepatic vein was intact. However, right portal vein and dilated right duct were not detectable in CT or cholangiography. Accordingly we suggested severe atrophy of right lobe rather than agenesis of right liver.

The pathogenesis of this congenital anomaly is not fully explained; however, the abnormal development and thrombosis of the supplying portal venous segment during embryologic growth have been suggested as possible pathogenic mechanisms [8]. Recently, biliary leakage after cholecystectomy in right liver agenesis was reported [1].

An 87-year-old man underwent attempted laparoscopic cholecystectomy. The procedure was characterized by sig-

nificant inflammation and bleeding requiring conversion to an open procedure. Postoperatively, the patient had continued bile drainage from his surgical drain. He was referred to tertiary institution and found to have complete transection of his common bile duct. Incidentally, he was noted on imaging studies to have absence of his right liver with associated left liver hypertrophy. This was characterized by complete absence of the right portal vein and right bile duct [1]. Bile duct injury during cholecystectomy could be happened, moreover it is likely to be occurred in the setting of anomalous bile duct with severe inflammation of GB. Surgeon makes effort to recognize the anatomy of biliary tract, when he is faced with difficult cholecystectomy. Successful laparoscopic cholecystectomy was performed in agenesis of right liver [9]. However, there was minimal inflammation, the anomaly of liver rapidly detected intraoperatively. Our case and Field's case [1] were had significant inflammation. We recognized the right lobe atrophy preoperatively by CT, during operation massive bleeding and difficulty of laparoscopic approach due to GB inflammation had led to conversion. We are always awaking to importance of liver atrophy can induce the biliary injury during operation.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article

was reported.

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