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Complete torsion of gallbladder following laparoscopic cholecystectomy: A case study

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ABSTRACT

INTRODUCTION: Gallbladder torsion is mainly associated with a floating gallbladder. From an anatomical perspective, laparoscopic cholecystectomy is a more optimal treatment than open cholecystectomy.
PRESENTATION OF CASE: An 84-year-old woman visited the Onomichi General Hospital because of progressive pain in the right upper quadrant of her abdomen. Physical examination revealed a positive Murphy sign and peritoneal irritation. Laboratory data demonstrated that inflammatory marker levels were increased. Abdominal ultrasonography showed that blood flow in the cystic artery was reduced and the gallbladder was swollen. Abdominal contrast-enhanced computerized tomography indicated that the swollen gallbladder was modestly enhanced and the fundus was displaced under the midline and detached from the gallbladder bed. The cystic duct was twisted. Magnetic resonance cholangiopancreatography showed that the root of the cystic duct was unclear and the extrahepatic bile duct had V-shaped distortion. The gallbladder neck showed a tapering interruption with the common biliary duct. We made a preoperative diagnosis of gallbladder torsion. Accordingly, emergency laparoscopic cholecystectomy was performed. The intraoperative findings included a dark swollen gallbladder that was twisted in the counterclockwise direction. The patient was discharged without any postoperative complications on day 7.
DISCUSSION: Combined acute onset of abdominal pain with characteristic radiological findings made it possible to precisely diagnose gallbladder torsion.
CONCLUSION: Laparoscopic cholecystectomy can be the gold standard treatment for gallbladder torsion after a preoperative diagnosis is made.

1. Introduction

Gallbladder torsion is a relatively rare disease, with only 500 cases published since Wendel first reported the condition in 1898 [1,2]. Gallbladder torsion is often associated with a floating gallbladder, which occurs when adhesion between the gallbladder and liver is lost. Gallbladder mobility is classified as either type I or type II according to the Gross classification [3]. This condition occurs more frequently in elderly women [3]. Preoperative diagnosis of gallbladder torsion is difficult because the findings of physical examination and radiological images mimic those of acute cholecystitis. Furthermore, laboratory data often indicate acute inflammation, based on increases in white blood cell (WBC) count and C-reactive protein (CRP) levels, without abnormal liver function or alterations in biliary enzyme levels [4–6].

Radiological findings play an important role in achieving a precise diagnosis, with distortion of the gallbladder fundus toward the abdominal center, a V-shaped extrahepatic duct, and torsion of the cystic duct being the well-known magnetic resonance cholangiopancreatography (MRCP) findings [7,8]. Because we made a preoperative diagnosis, laparoscopic rather than open cholecystectomy was performed as an appropriately treatment.

We report this case with a review of the literature. This work has been reported in line with the SCARE criteria [9].

2. Presentation of case

An 84-year-old woman was admitted to the Department of Surgery of Onomichi General Hospital for complaints of progres-

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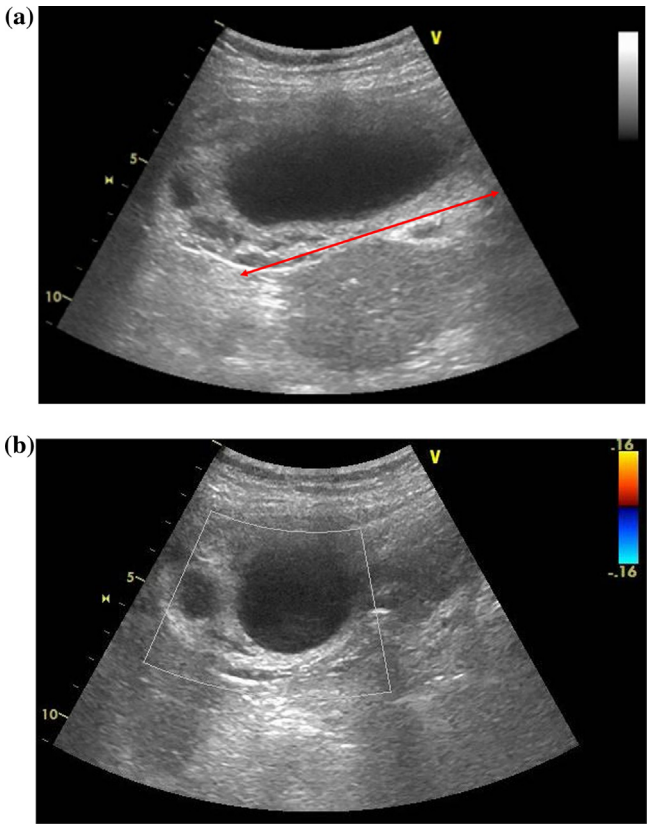

Fig 1. Findings of abdominal ultrasonography (US).
US images showing a swollen gallbladder (a) and reduced blood flow to the gallbladder (b).

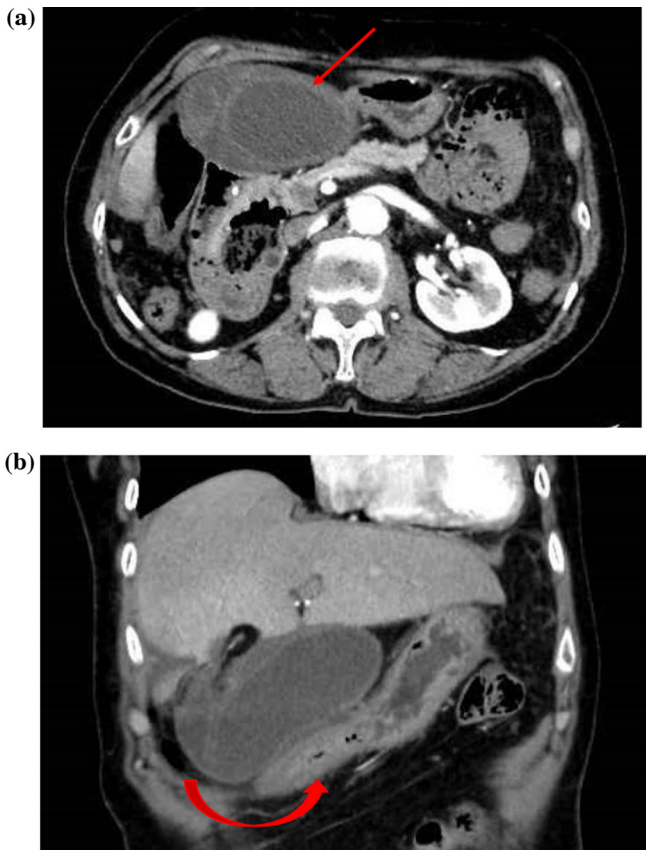

Fig. 2. Findings of abdominal contrast enhanced computed tomography (CT).
(a) CT image showing a swollen gallbladder and poorly enhanced mucous membrane.
(b) The gallbladder wall is thick and the fundus gallbladder is displaced below the midline.

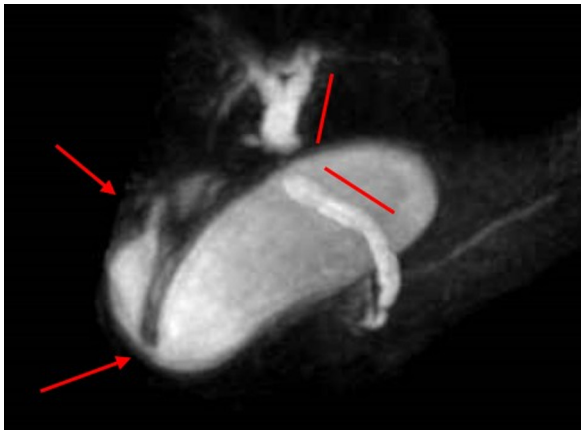

Fig. 3. Findings of abdominal magnetic resonance cholangiopancreatography (MRCP).
MRCP image showing tapering of the gallbladder neck and cystic duct (arrow). The extrahepatic bile exhibits a V-shaped distortion (line) and the fundus of the gallbladder is displaced toward the abdominal center.

sive pain in the right upper quadrant of the abdomen and nausea. She had a slight fever; however, all other vital signs were within the normal range. Physical examination showed tenderness in the abdominal right upper quadrant as well as a positive Murphy sign and peritoneal irritation. Her medical history included left breast cancer. Laboratory data showed that her WBC count and CRP level were elevated. Liver function and biliary enzyme levels were normal. Abdominal ultrasonography (US) showed a swollen gallbladder with scarce blood flow in the wall (Fig. 1a and b). Mild ascites was noted on the liver surface. There were no findings suggesting the presence of stones. Abdominal contrast-enhanced computerized tomography (CT) showed a swollen gallbladder and poorly enhanced mucous membranes. The gallbladder wall was thick and the fundus was displaced toward the center of the abdomen (Fig. 2a and b). MRCP demonstrated that the gallbladder was swollen and the gallbladder neck and cystic duct were tapered. The extrahepatic bile duct was distorted into a V shape (Fig. 3). A preoperative diagnosis of gallbladder torsion was made, which was followed by an emergency laparoscopic cholecystectomy. The operative findings indicated the presence of a dark-red swollen gallbladder that was twisted by 360° in a counterclockwise rotation, with the neck and cystic duct being rotated by 180° (Fig. 4a). After the rotation was corrected, the gallbladder was only attached to the neck and cystic duct. After ligating the cystic artery and cystic duct, the gallbladder was successfully removed (Fig. 4b). The operation time was 134 min and the total intraoperative bleeding volume was 20 ml. The postoperative course was uneventful and the patient was discharged on postoperative day 7. Histopathologic findings of the gallbladder showed acute and chronic cholecystitis with massive hemorrhage (Fig. 5).

3. Discussion

Gallbladder torsion is most commonly seen in patients between the sixth and eighth decades of life, with a female-to-male ratio of 3:1 [1]. Several risk factors for gallbladder torsion, including kyphoscoliosis, forceful peristaltic movements, adhesions, atherosclerosis of the cystic artery, and sigmoid volvulus, have been previously reported [1]. A floating gallbladder, which occurs after