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Abstract
Cholecystocolic fistula is a rare complication of gallstone disease that is most commonly diagnosed at the time of surgery. It is generally considered to be a contraindication to laparoscopic cholecystectomy because of the difficulties involved in its management intraoperatively. Laparoscopic stapling or suturing techniques have been reported as feasible and safe methods for repairing such fistulas; however, these procedures are not always able to be performed due to technical difficulties. We exteriorized a cholecystocolic fistula through an umbilical incision, whereby it was repaired safely and easily. This report describes our new technique for managing a cholecystocolic fistula found incidentally during a laparoscopic cholecystectomy.

Key words Cholecystocolic fistula · Laparoscopy · Cholecystectomy

Introduction
Biliary intestinal fistula is a rare complication of gallstone disease. According to large cholecystectomy series, the overall incidence of internal biliary fistulas ranges from 1.2% to 5.0%.1,2 Cholecystocolic fistula accounts for 10%–20% of all enteric biliary fistulas.1,3 Because this type of fistula does not always occur in patients with a history of acute gallbladder inflammation and tenacious inflammatory visceral adhesions, the diagnosis is usually made at the time of surgery. Failure to recognize this complication due to the presence of surrounding adhesions may lead to fecal peritonitis when the fistula is divided.

Cholecystoenteric fistula is generally considered an indication for conversion to open surgery during laparoscopic cholecystectomy4 and the conventional surgical treatment of cholecystocolic fistula involves cholecystectomy, division of the fistula, and closure of the fistulous tract.1 We describe herein a new method for managing cholecystocolic fistula found incidentally during a laparoscopic cholecystectomy.

Case Report
A 58-year-old woman with a history of gallstones spanning approximately 15 years was admitted to our hospital after suffering recent episodes of sporadic abdominal pain in the right upper quadrant. Her body temperature was normal and her leukocyte count was 5700 cells/µl. There was no elevation of aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase, or bilirubin. Computed tomography and ultrasonography showed a thick-walled gallbladder containing a large stone, 3 cm in diameter, and features of scleroatrophic cholecystitis, without any pneumobilia. Thus, an elective laparoscopic cholecystectomy was performed. Four trocars were positioned in the usual way, and no additional trocar was necessary. Laparoscopy revealed a thick-walled and contracted gallbladder surrounded by edematous adhesions. Although many of the adhesions were divided easily, dense adhesions connected the fundus of the gallbladder with the proximal portion of the transverse colon and these could not be bluntly dissected (Fig. 1). These strong adhesions between the gallbladder and colon raised our suspicion of a cholecystocolic fistula. Dissection of Calot’s triangle was done smoothly and routine intraoperative cholangiography demonstrated a normal biliary tree with no evidence of stones, and normal flow into the duodenum. The cholecystectomy was continued in the usual manner, leaving the adhesions with the trans-
verse colon at the fundus. Careful dissection enabled the fundus of the gallbladder and the transverse colon to be identified and separated from the surrounding tissues. The gallbladder and transverse colon were then delivered extracorporeally, without any dissection of the hepatic flexure of the colon, through the umbilical incision after it was enlarged to 3.5 cm (Fig. 2). We subsequently confirmed the presence of a fistula between the gallbladder and the transverse colon. The fistula was divided and the gallbladder was separated from the transverse colon extracorporeally. The opening into the colon was closed with a two-layer suture and the colon was returned to the abdominal cavity. On completion of the operation, the abdominal cavity was irrigated and hemostasis was confirmed. A drain was placed in the subhepatic space, passed through the midclavicular port, and left in situ for 48 h. The operating time was 202 min and blood loss was 20 ml. Oral fluids were allowed from postoperative day (POD) 1 and a normal diet was started on POD 2. Postoperative recovery was uneventful and the patient was discharged on POD 11. At follow-up after 1 year, the patient did not complain of any clinical symptoms. Histologic examination of the resected specimen confirmed the presence of chronic cholecystitis and a cholecystocolic fistula.

Discussion

Cholecystoenteric fistula is a rare condition. The duodenum is the most common portion of the intestine to be involved by internal biliary fistulas because of its proximity, and the next most frequent site is the hepatic flexure of the colon. Cholecystocolic fistula accounts for 10%–20% of all enteric biliary fistulas. It is impossible to distinguish cholecystoenteric fistula from recurrent acute cholecystitis on the basis of clinical symptoms and laboratory data. Identification of a fistula by cholecystography or cholangiography is also unusual, making preoperative diagnosis difficult. The intraoperative finding of dense adhesions to the gallbladder should raise the suspicion of a cholecystoenteric fistula, in which case surgeons should be aware that they might have to manage an unexpected fistula intraoperatively.

Various laparoscopic procedures for the management of cholecystoenteric fistulas have been reported as feasible and safe. Laparoscopic stapling techniques can