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Spontaneous hepaticoduodenal fistula functioning like a bilioenteric anastomosis following bile duct injury: Case report

Safra yolu yaralanmasını takiben bilioenterik anastomoz gibi işlev gören spontan hepatikoduodenal fistül: Olgu sunumu

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Bile duct injury is a serious complication of laparoscopic cholecystectomy. We report a case of spontaneous hepaticoduodenal fistula following bile duct injury. Initially, Roux-en-Y hepaticojejunostomy had been planned for the patient, but as the patient did not show any symptoms or findings of biliary obstruction, we preferred a non-operative management. The fistula allowed adequate biliary drainage, and the patient has been followed regularly by the outpatient clinic with good clinical results for approximately five years.

Key words: Laparoscopic cholecystectomy, bile duct injury, hepaticoduodenal fistula

Safra yolu yaralanması laparoskopik kolesistektominin ciddi bir komplikasyonudur. Safra yolu yaralanmasını takiben gelişen bir spontan hepatikoduodenal fistül olgusunu sunmaktayız. Başlangıçta hastaya Roux-en-Y-hepatikojejenostomi planlansa da, hastada biliyer obstrüksiyon semptom veya bulguları olmadığı için medikal izlemi tercih ettik. Fistül yeterli biliyer drenaja izin verdi ve hasta 5 yıla yakın sürece normal klinik bulgularla düzenli olarak poliklinikten izlendi.

Anahtar kelimeler: Laparoskopik kolesistektomi, safra yolu hasarı, hepatikoduodenal fistül

INTRODUCTION

Over the last decade, laparoscopic cholecystectomy (LC) replaced open cholecystectomy as the procedure of choice for symptomatic gallstones, as a result of better cosmetic result, shorter hospital stay, faster return to work (1), and lower perioperative mortality (2). However, this initial enthusiasm was tempered by a rise in the incidence of iatrogenic bile duct injuries (BDIs) (2-4), the incidence of which is estimated to be at least twice that of the open procedure (0.5% versus 0.25%). This rise was initially attributed to the learning curve. However, the incidence of BDI following LC has not yet decreased to that following open cholecystectomy. It has been suggested that BDIs due to LC are more likely to be severe, due to the mechanism of their occurrence (5). Additionally, BDIs are more likely to pass unrecognized during a laparoscopic procedure, resulting in a poorer outcome.

We report a case of spontaneous hepaticoduodenal fistula between the common hepatic duct and the duodenum after BDI, which allowed adequate biliary drainage. Although hepaticojejunostomy is the treatment of choice for such patients, a non-operative management was conducted for this case.

CASE REPORT

A 29-year-old female patient was admitted with a diagnosis of biliary peritonitis and sepsis. She had abdominal pain, jaundice, fever, nausea, and vomiting, and her general condition was poor. Thirteen days before, she underwent LC in a local hospital and was reoperated because of biliary drainage from the umbilical port site and biliary peritonitis on the 5th postoperative day. During the reoperation, biliary leak was detected from a small

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bile duct. It was thought to be an accessory duct and was ligated. The patient was referred to our hospital because of biliary drainage from the abdominal drains and increasing bilirubin levels. Blood tests revealed a leukocytosis of 34300/mm^3, total and direct bilirubin levels of 10.54 and 8.49 mg/dl, respectively. Urea and creatinine levels were found to be mildly elevated (63 and 1.48 mg/dl, respectively). Ultrasonography (USG) revealed massive intraabdominal fluid and right pleural effusion, and bile was aspirated by paracentesis. Following a short course of supportive treatment with fluid and electrolyte replacement, the patient underwent emergency laparotomy. During laparotomy, massive infected bile was observed in the abdominal cavity, and a Strasberg type E_3 injury was detected. After drainage and lavage of the abdominal cavity, two catheters were placed into the right and left hepatic ducts in order to obtain external drainage of bile as hepatostomy. The abdominal cavity was drained with multiple drains. In the postoperative period, the patient's general condition improved. The drains were removed and she was discharged on the 14th postoperative day with the hepatostomy catheters. Bilirubin levels decreased significantly. A Hepp-Couinaud hepaticojejunostomy was planned after eight weeks because the patient's general condition and severe inflammation during the operation did not allow an early biliary reconstruction.

Figure 1. Fistulography showing the internal fistula between the biliary system and the duodenum. Intrahepatic bile ducts and passage into the duodenum can be seen.

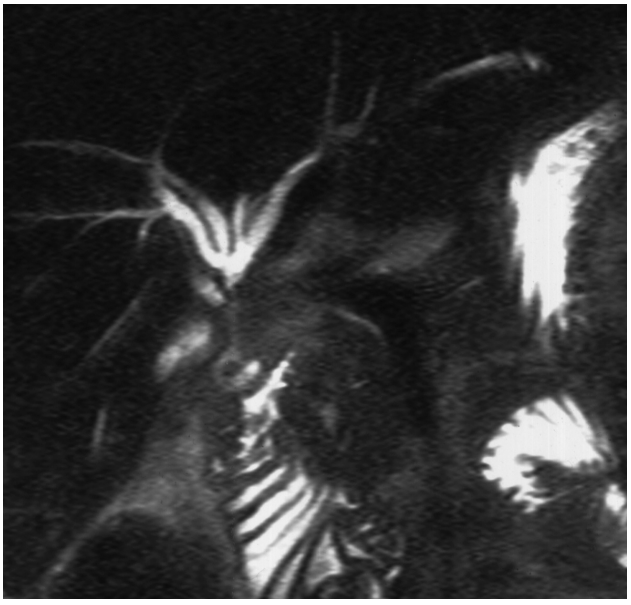

Figure 2. MRCP image showing minimal dilatation of intrahepatic bile ducts and hepatic ducts.

The patient was hospitalized again seven weeks later as the drainage of bile through the external catheters ceased. Although bile was not drained externally, she did not exhibit jaundice. Her total and direct bilirubin levels were 1.10 and 0.30 mg/dl, respectively. An internal fistula was thought to develop and a fistulography was performed via the external catheters (Figure 1). Fistulography showed an internal fistula between the hepatic duct and the duodenum. Gastroduodenoscopy revealed a fistula opening in the first portion of the duodenum and magnetic resonance cholangiopancreatography (MRCP) showed minimal dilatation of intrahepatic bile ducts and hepatic ducts (Figure 2). As the patient did not have jaundice, elevated bilirubin levels or any other findings of benign biliary stricture, a non-operative approach was preferred. The patient was informed about this situation and was followed regularly. After a one-year-follow-up with normal bilirubin levels, normal liver function tests and normal sonographic findings, the patient presented with itching and a minimal elevation in liver function tests. However, she did not have jaundice and her bilirubin levels were normal. Alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), and gamma glutamyl transferase (GGT) levels were mildly elevated. Endoscopic retrograde cholangiography (ERC) revealed a fistula opening in the first portion of the duodenum (Figure 3). Papilla of Vater was also can-

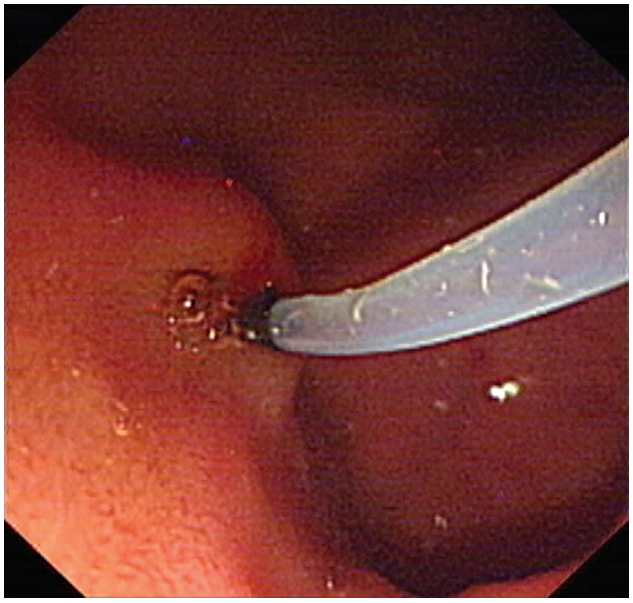

Figure 3. Fistula opening, cannulated in the first portion of the duodenum during ERC.

nulated and the common bile duct was found to be completely obstructed. After a few days, the itching disappeared and liver function tests returned to normal levels. The patient was followed uneventfully for 18 months until she was admitted once more with itching and minimal elevation in liver function tests. ERC was performed and a plastic stent was placed through the fistula tract (Figure 4). Itching improved and liver function tests again returned to normal levels. After three months, a follow-up ERC was performed and the stent was found to be displaced. Intrahepatic bile ducts were not dilated (Figure 5), and bilirubin levels and liver function tests were at normal levels. From this point onward, the patient was followed regularly for 27 months without jaundice or any other symptom and with normal liver function tests. Sonographic examinations did not show any dilatation of the biliary tree.

DISCUSSION

Bile duct injury is the most severe complication of LC. It causes significant morbidity and may be life-threatening. The management of patients with BDI injury depends on the type of injury and time of diagnosis (3, 6, 7). Ductal damage is recognized during the primary operation in approximately 25% of the patients and in the immediate postoperative period in 33%. The remaining patients are recognized after six months (8). Immediate operative management of BDI includes primary repair or Roux-en-Y hepaticojejunostomy. When BDI is found in the immediate postoperative period, a Roux-en-Y hepaticojejunostomy is recommended for patients with acceptable local condition (9). When an injury presents several weeks after LC, initial treatment should include drainage of the abdominal collection, biliary decompression and antibiotic treatment (6). If the patient is unstable with fluid and electrolyte imbalance or sepsis, biliary reconstruction should be delayed until a more stable condition is achieved. Treatment of sepsis, regulation of fluid-electrolyte imbalance and percutaneous drainage or limited surgery including biliary decompression and abdominal drainage should be performed (10). This waiting period also allows resolution of inflammatory reaction and provides healthier ducts in which a high quality repair can be performed (10). On the first admission of the patient, hepatostomy was preferred as the patient was unstable because of biliary peritonitis and sepsis. In addition, during laparotomy, severe inflammation and peritonitis were observed, which did not allow a safe and high- quality

Figure 4. ERC image. Cholangiography from the papilla of Vater showed complete obstruction of the common bile duct. Intrahepatic bile ducts were visualized from the fistula opening and a plastic stent was placed through to the fistula tract.

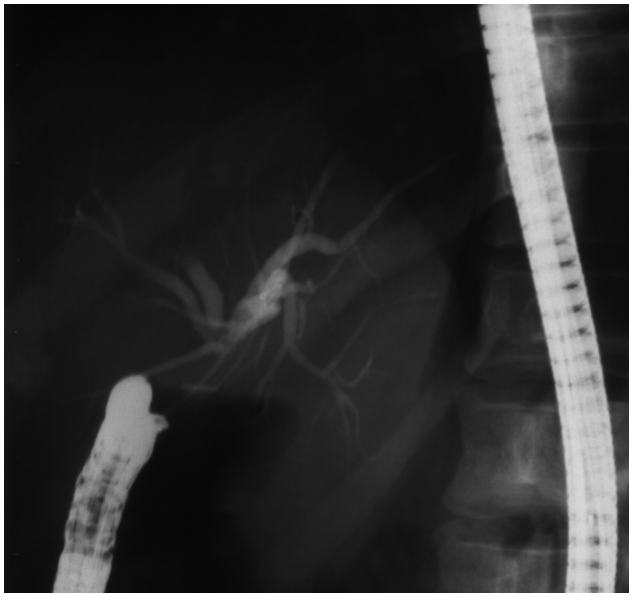

Figure 5. Cholangiography through the fistula opening showing normal intrahepatic biliary anatomy.

reconstruction. Therefore, reconstruction was avoided and a limited surgical procedure was performed in order to drain the biliary collection. Roux-en-Y hepaticojejunostomy operation was planned eight weeks later. Following an uneventful postoperative period, the patient was discharged and was followed by our outpatient clinic. The drainage ceased seven weeks later and the patient developed a hepaticoduodenal fistula. As the patient did not show jaundice or elevated bilirubin levels, we preferred to pursue a non-operative management with her permission. During a total follow-up period of approximately five years, the patient was hospitalized only two times for itching and minimal elevation in liver function tests. Except for these two cases, she did not exhibit any complaints. Throughout this period, a plastic stent was inserted into the fistula tract; however, it was found to be dislocated three months later. Otherwise, no long-term stenting or any kind of operative approach was considered to be necessary.

Our hospital is a tertiary center for gastrointestinal surgery to which cases of complex BDI from other centers are referred. During the management of this patient, a hepaticojejunostomy was planned eight weeks after hepatostomy and drainage procedure. Hepaticojejunostomy, which is the procedure of choice for major biliary injuries, was a reasonable option for our patient. However, during the waiting period, the patient developed a hepaticoduodenal fistula that allowed adequate drainage of the bile into its physiological outlet. Unlike our general approach, we preferred a clinically focused individualized approach, which is effective and less invasive. The patient was clearly informed that regular follow-up was crucial and that operation may become necessary in the event of a biliary obstruction. In conclusion, although bilioenteric anastomosis is generally necessary for BDIs, this fistula was managed non-operatively as it functioned as a patent bilioenteric anastomosis.

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