The Successful Surgical Management of Perforation After Endoscopic Sphincterotomy: Report of Two Cases

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Abstract: Retroperitoneal perforation following endoscopic sphincterotomy (EST) is an infrequent but serious complication with a high mortality rate in patients who do not receive prompt treatment. We report herein two cases of perforation, diagnosed 3 and 7 days after EST, one of whom was treated by choledochojejunostomy (Roux-en-Y) and suturing of the perforation site with jejunal patching, and the other by pancreatoduodenectomy. Both operations were successful as emergency treatments and therefore we consider that radical surgery should be attempted for cases of perforation after endoscopic sphincterotomy with a delayed diagnosis.

Key Words: endoscopic sphincterotomy, perforation, peritonitis

Introduction

Perforation is one of the most severe early complications of endoscopic sphincterotomy (EST) and its mortality rate is reported to be very high when surgery is not performed within 24 h. We describe herein two patients diagnosed 3 and 7 days after perforation, respectively, one of whom underwent a biliary bypass operation and suturing of the perforation site with jejunal serosal patching, while the other underwent pancreatoduodenectomy. Both procedures proved to be successful emergency treatments.

Case Reports

Case 1

A 68-year-old woman with severe angina on exertion was diagnosed as having cholecysto-choledocholithiasis and underwent EST, immediately after which she developed upper abdominal pain. As her serum amylase and white blood cell count (WBC) were both elevated 1 day postoperatively, to 3,285 U/l and 10,700/µl, respectively, a diagnosis of acute pancreatitis following EST was made and conservative treatment initiated. However, since the WBC increased further to 20,590/µl and the C-reactive protein (CRP) to 25.1 mg/dl 3 days after EST, with aggravation of the upper abdominal pain, the patient was referred to our surgical department. Plain abdominal X-ray showed free air in the upper abdomen (Fig. 1) and computed tomography (CT) presented a clear image of air around the right kidney (Fig. 2).

Emergency laparotomy was performed 3 days after EST, which revealed air in the retroperitoneal space around the head of the pancreas, the leakage of bile, and marked inflammation in the posterior aspect of the head of the pancreas. A sound inserted into the papilla through a duodenal incision revealed a perforation, 1 cm in length, of the bile duct along the posterior surface of the pancreas. Many residual stones were palpated in the gallbladder and common bile duct. Biliary bypass was considered to prevent the leakage of bile from the perforation. After resection of the gallbladder, the common bile duct was cut at the upper margin of the pancreas, and the stones in the common bile duct were removed. An end-to-side choledochojejunostomy was performed, the distal end of the common bile duct being closed with sutures. The perforation site was sutured from the posterior surface of the pancreas, and jejunal serosal patching was performed (Fig. 3).

After the operation, the fluid from the retroperitoneal drain became clear, and the early postoperative course was uneventful. However, the patient died of acute myocardial infarction 24 days after the operation.
Case 2

EST was performed on a 54-year-old man with cholecystolithiasis, immediately after which he developed upper abdominal pain. A naso-gastric tube was inserted 1 day after EST for abdominal distension, at which time his WBC had increased to 13,560/μl, and the serum amylase level was also slightly elevated to 449 U/l. No free gas was noted by plain abdominal X-ray. Two days after EST, the upper abdominal pain persisted, and another plain abdominal X-ray showed a large amount of intestinal gas due to paralytic ileus, but there were no evident images of free gas (Fig. 4). However CT revealed a collection of fluid around the head of the pancreas and right kidney (Fig. 5) and the patient was referred to our surgical department 3 days after EST. We suspected a periduodenal hematoma or duodenal perforation but, as the abdominal pain had subsided and the WBC had decreased to 6,900/μl, the patient was just observed, even though the CRP was high at 23.9 mg/dl. His condition remained unchanged until 7 days after EST, when he passed massive bloody stools. As bleeding from the site of the papillary incision was confirmed by endoscopy, an emergency operation was performed 7 days after EST.

Laparotomy disclosed marked edema and inflammation at the head of the pancreas and duodenum and the collection of a large amount of pus mixed with bile and blood in the retroperitoneal space. When the head of the pancreas was mobilized, a perforation, 1.2 cm in length, was found along the posterior wall of the duodenum near the papillary region, and the surrounding tissues were markedly weakened due to severe inflammation. Since repair was considered impossible, a total stomach-preserving pancreatectoduodenectomy was performed. Reconstruction was carried out by a Billroth I-like procedure with a gastropancreatic anastomosis (Fig. 6). The postoperative course was generally uneventful.

Discussion

Early complications following EST, such as hemorrhage, acute pancreatitis, cholangitis, and perforation, are reported in about 10% of patients. According to a report by Bell et al., perforation was observed in 88 (1.3%) of 6,790 cases of EST, 45 of whom underwent surgery with a result of 23 deaths, being 26% of the total cases of perforation. Thus, perforation is one of the most severe complications after EST.

Abdominal pain is the most common symptom to indicate perforation after EST, being demonstrated by both our patients from immediately after the EST,