

Ruptured Dissecting Intramural Duodenal Hematoma Following Endoscopic Retrograde Cholangiopancreatography

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ABSTRACT

A 34-year-old woman with schizophrenia developed abdominal pain. Ultrasound demonstrated cholelithiasis and a dilated biliary tree. The patient underwent endoscopic retrograde cholangiopancreatography (ERCP), sphincterotomy, and extraction of gallstones from the common bile duct. She developed post-procedure fever, tachycardia, and abdominal pain and was taken to the operating room for urgent cholecystectomy with intraoperative cholangiogram. At laparotomy, an intramural dissecting duodenal hematoma was discovered, which extended the length of the duodenum and ruptured. She underwent gastric pyloric exclusion, gastrojejunostomy, and healed uneventfully. ERCP is not without risks, and a degree of vigilance should be maintained in patients who develop new symptomatology following the procedure.

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is one of the most commonly performed procedures in the United States, with more than 500,000 performed annually, and the incidence has been rising.¹ It is typically indicated in the evaluation and management of biliary and pancreatic disease. It is generally regarded as a benign procedure, but it is not without potential complications.¹⁻³ ERCP is associated with postprocedure pancreatitis in 3-5% of patients.⁴⁻⁶ Other complications, including duodenal perforation (rate of 0.08-1.6%), hemorrhage or hematoma (0.2-6%), and infection (0.3-5%) have been reported but are rare.^{1,7-10}

CASE PRESENTATION

A 34-year-old woman with schizophrenia developed right upper quadrant abdominal pain. Her serum bilirubin was 2.9 mg/dL, and right upper quadrant ultrasound demonstrated cholelithiasis, a dilated proximal common bile duct (CBD) at 9 mm with an inability to visualize the distal CBD, and no pericholecystic fluid or gallbladder wall thickening. She underwent ERCP with 6-mm sphincterotomy followed by balloon dilation and extraction of gallstones. The ampulla was carefully examined to confirm adequacy of sphincterotomy and to ensure hemostasis (Figure 1). The next day, the patient developed fever, abdominal pain, vomiting, and tachycardia. Her hemoglobin dropped from 13.6 gm/dL to 11.9 gm/dL, she developed a leukocytosis of 25,000/ μ L from 11,400/ μ L, and a rise in bilirubin to 4.9 mg/dL. Out of concern for acute cholangitis and lack of immediate gastroenterology availability during night, she was taken urgently to the operating room. Upon laparoscopic entry, a large amount of hemoperitoneum was discovered.

The laparoscopic entry was converted to open surgery, and a large circumferential, intramural duodenal hematoma extending the entire length of the duodenum was found. The pressure from the hematoma tore away the serosa, narrowed the duodenal lumen, and ruptured into the abdomen (Figure 2). The patient underwent cholecystectomy with placement of a T-tube, gastric pyloric exclusion, gastrojejunostomy, and placement of an anterograde

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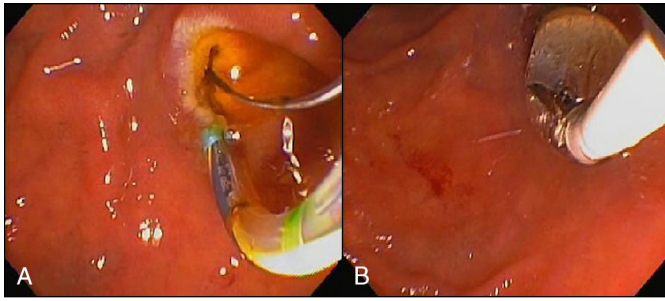


Figure 1. Endoscopic appearance of ampulla and surrounding duodenal mucosa. (A) Biliary sphincterotome entering the CBD. (B) Withdrawal of balloon from ampulla without evidence of hemorrhage or hematoma.

gastrojejunal Moss feeding tube and retrograde 16-French nasogastric tube. Her postoperative course was complicated by prolonged ileus, persistent tachycardia, and continued high drain output believed to signify persistent duodenal inflammation and edema. She tolerated a regular diet by day 14 with subsequent removal of Moss and nasogastric tubes. At her 2-month follow-up, a cholangiogram demonstrated a normal biliary tree, and the T-tube was removed (Figure 3).



Figure 2. View at laparotomy of ruptured duodenal hematoma with surrounding hemoperitoneum and retracted serosal margin.

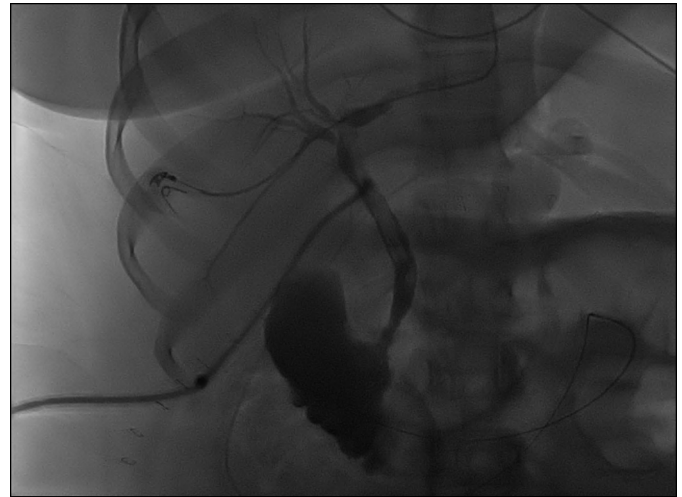


Figure 3. T-tube cholangiogram obtained 70 days following surgery demonstrating absence of biliary stone or stricture and prompt filling of duodenum without luminal compression.

DISCUSSION

ERCP is a common procedure in the management of choledocholithiasis prior to cholecystectomy, and is associated with various, infrequent complications.^{2,3,11-14} Duodenal hematoma is a rare complication of ERCP and is typically caused by blunt trauma from the endoscope.^{7,8} The position of the duodenum, with the posterior wall fixed anterior to the vertebral column, a rich submucosal vascular supply, and a lack of well-developed retroperitoneal serosa, make the duodenum susceptible to hematoma formation.^{9,10} The low rate of occurrence in combination with the typical insidious and vague clinical manifestations of this complication make early detection difficult. Management is typically supportive, requiring patience for the resolution of hematoma.^{8-10,15} Occasionally, when complicated (i.e., large hematoma or causing biliary obstruction), biliary drainage with or without aspiration and drainage of the hematoma has been reported.^{7,16}

Prior studies have cited a rate of approximately 1% for hemorrhage following ERCP and sphincterotomy.¹³ Contrary to hematoma, hemorrhage is more likely to present acutely with symptomatic anemia, abdominal pain, hematemesis, or melena. Risk factors for hematoma and hemorrhage include coagulopathy, anticoagulant use within 72 hours of the procedure, local inflammation, observed bleeding at the time of the procedure, and low endoscopist case volume.^{2,3,13,14} Management of hemorrhage typically includes endoscopic epinephrine or sclerosant injection and electrocauterization.¹⁷ When refractory, angioembolization and, very rarely, surgical enterotomy and oversewing are effective in establishing definitive control.^{17,18}

The most effective measure for preventing hemorrhage is avoiding unnecessary sphincterotomies.^{13,14} Use of a mixed current during sphincterotomy has been shown to decrease

bleeding risk compared to pure-cut current. Performing the sphincterotomy along the 11-1 o'clock arc above the major papilla, where there is the least concentration of blood vessels, and prophylactic injection of hypertonic saline-epinephrine proximal to the papilla has also been shown to lower the risk.^{13,14}

Despite modifiable risk factors, complications may be unpredictable and unavoidable. To our knowledge, we report the only known case of a ruptured, circumferentially dissecting duodenal hematoma following ERCP. Our patient had gallstones in the CBD, which may have caused local inflammation and hyperemia, but this is common among those undergoing ERCP. She did not have any other significant risk factors for hemorrhage, nor did she have clinically apparent bleeding. Her vague initial postprocedure symptoms followed by an acutely worsening condition including tachycardia, worsening abdominal pain, new-onset fever, and increasing bilirubin levels presented a confusing clinical picture favoring infection rather than ruptured hematoma. Urgent intervention was indicated, and without a gastroenterologist available to perform ERCP, the patient was taken for cholecystectomy and intraoperative cholangiogram. The source was thought to be a delayed pancreaticoduodenal perforating arterial hemorrhage that dissected the duodenal wall rupturing at various locations, thus giving way to partial intra- and extraperitoneal hematoma. However, this was difficult to confirm as bleeding had ceased by the time of the operation, so angiography was not indicated and repeat endoscopy was not performed. Gastric pyloric exclusion is a rarely performed procedure, most commonly indicated in trauma when the duodenum is so irreparably damaged that diversion is necessary to mitigate patient injury.¹⁹ Fortunately, the severity of her illness was recognized in a timely manner and her postoperative course was manageable. Following recovery, the patient and family declined repeat endoscopy and computed tomography angiogram for evaluation of a potential underlying, predisposing lesion.

ERCP remains an effective and relatively safe procedure in the management of biliary and pancreatic disease. As incidence of ERCP continues to rise, it is important to be aware of all possible complications. Clinical vigilance must be maintained even among low-risk patients who develop new symptomatology following the procedure.

DISCLOSURES

Author contributions: E. Weiss wrote the manuscript and is the article guarantor. M. Tadley and M. Kaplan wrote and edited the manuscript. PS Leung edited the manuscript.

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Informed consent was obtained for this case report.

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