A Rare Cause of Acute Abdomen: Perforation of Duodenal Diverticulum Containing Ectopic Pancreatic Tissue

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ABSTRACT

Perforation is a rare but serious complication of a duodenal diverticulum and often presents itself with nonspecific symptoms and signs. Ectopic pancreatic tissue within a duodenal diverticulum is another rare situation. In this article, we report a case of an 87 year-old woman who presented with spontaneous perforation of the duodenal diverticulum. Operative resection and simple closure of the duodenum was performed. Ectopic pancreatic tissue was observed within the diverticulum at histological evaluation.

Key Words: Duodenal diverticulum, perforation, acute abdomen, ectopic pancreatic tissue

Introduction

Duodenum is the second most common site of diverticula after the colon (1-3). The incidence of duodenal diverticulas is reported as 1 to 6% in upper gastrointestinal contrast studies, 12 to 27% in endoscopic studies and up to 22% in postmortem analysis (4, 5). The aetiology of duodenal diverticulas remains unknown. The classification of diverticulas can be made as intraluminal or extraluminal, true or false, and congenital or acquired. Diverticulas are mainly located along the pancreatic border of the duodenum, and approximately 60-75% of these are found within 2 cm of the ampulla of Vater (6, 7).

Duodenal diverticulas mostly remain asymptomatic. They can be diagnosed when a diverticula related complication develops. The possible complications include common bile duct obstruction, acute or chronic recurrent pancreatitis, partial duodenal obstruction, diverticulitis, ulceration, perforation, bleeding, enterolith formation and malignant degeneration.

Perforation, although rare, is the most serious complication of duodenal diverticulas. It has a mortality rate of up to 30% (2, 3). Diverticula perforation can occur as a result of preceding diverticulitis, ulcerations, enterocolitis, blunt abdominal trauma or diagnostic procedures (6, 7). To the best of our knowledge, there is only one case with a perforated extraluminal diverticulum containing ectopic pancreatic tissue (8). Upper gastrointestinal endoscopy was the cause of perforation in that case (8). Here, we report a case with a spontaneously perforated extraluminal duodenal diverticulum which contained ectopic pancreatic tissue.

Case Report

An 87 year old lady was admitted to our emergency department complaining of severe epigastric pain that had been ongoing for 48 hours and was progressively worsening. On admission, the patient was tachycardic and subfebrile (37.2°C). Her physical examination revealed right upper quadrant tenderness suggestive of peritonitis. Her white blood cell count was 29x10³/mcL, and she was in a septic status. Plain abdominal X-ray was normal. Subsequent abdominal ultrasonography showed diffuse intraabdominal anechoic free liquid. Emergent exploratory laparotomy was then performed. Intraoperative examination showed diffuse, fibro-purulent, bilious free liquid. Complete duodenal mobilization revealed a duodenal diverticulum originating from the posterolateral part of the second portion of the duodenum. The diverticulum was perforated from the apex. The diverticulum was dissected free and a 30 mm abdominal stapler was used to perform diverticulectomy (Figure 1). Histopathologic examination of the specimen demonstrated a duodenal diverticulum containing ectopic pancreatic tissue (Figure 2).

Discussion

Duodenal diverticula are not rare, but complications are uncommon and usually require surgical treatment. The frequency of duodenal diverticula increases with age and the overall estimated incidence is 5-22% in a healthy population (6, 9). Approximately 90% of duodenal diverticula are solitary.
The signs of acute abdomen were established, and the patient was admitted to our emergency service 48 hours late. At the admission the signs of acute abdomen were established, and the patient was in septic status. Therefore further investigation was not considered and emergent exploratory laparotomy was performed.

Although surgical intervention is the most common approach, there are a few reports of conservative management with antibiotics and percutaneous drainage (4, 20, 21). The treatment of choice is diverticulectomy with a simple duodenal closure and concomitant drainage (2, 6). When there is duodenal inflammation, a diversion such as gastrojejunostomy or tube durodenostomy should be performed. Laparoscopic approach is also possible, but the position of the diverticulum is important (1). Only mildly affected patients are likely to benefit from non-operative management, which consists of nasogastric decompression, percutaneous drainage and wide spectrum antibiotics. In our case, diverticulectomy was performed using a 30 mm intraabdominal stapler.

Treatment of duodenal diverticula has surgical complications such as bile duct injury, duodenal fistula formation, abscess formation, pancreatitis and sepsis (2). The overall surgical complication rate is reported to be 41%, with a 20% rate of duodenal fistula formation and a 4% rate of intraabdominal abscess formation (6).

In conclusion, perforation is a rare but serious complication of duodenal diverticula. Surgeons should keep in mind that diverticula may perforate spontaneously and lead to acute abdomen. Spontaneous perforation may be a result of a complication of the ectopic pancreas. Successful management requires clinical awareness and early diagnosis.

**Conflict of Interest**

No conflict of interest was declared by the authors.

**References**

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