Perforated duodenal diverticula. Case report and treatment options

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Abstract

Background: The presence of duodenal diverticula was first described in 1710 by Chromel. The duodenum is the second most common site of diverticula in the digestive tract. Anatomically, duodenal diverticula are located in 10-67% of cases in the second portion of duodenum, and its finding in most cases is incidental. About 90% of patients appear asymptomatic, manifesting symptoms mostly once complications have been established such as gastrointestinal bleeding and perforation.

Clinical case: We report the case of a 78-year-old woman who arrived at our Emergency department with dyspnea, moderate epigastralgia, abdominal bloating, constipation and difficulty in passing gas. Laparotomy was performed to identify duodenal diverticulum in the third portion of the duodenum with a 5-mm perforation in its cupula. Diverticulectomy was carried out.

Conclusions: The diagnosis of duodenal diverticulum as a cause of acute abdomen must be considered in the differential diagnosis in acute abdomen, supported by imaging and endoscopy. Surgical management of duodenal diverticulum, in particular the resection of the diverticulum, remains as the recommendation for treatment with less morbidity and optimal recovery.

Key words: diverticula, acute abdomen.

Introduction

Duodenal diverticula, according to Avalos et al., were first described by Chromel in 1710 and were seen on imaging studies in 1913 by JT Case. Whereas duodenal diverticulum is the second most common site for diverticula in the digestive tract after the colon, followed by the jejunum, the diagnosis is limited to cases with complications and symptoms.1,2

Duodenal diverticula are found in 10-67% of the second portion of the duodenum, being rare in the third and fourth portion. They are considered mostly as true diverticula, i.e., having a congenital etiology because they have three layers of thickness. Nevertheless, there are false diverticula, although to a lesser extent.1,3

Duodenal diverticulum is usually a finding that is diagnosed most often in an incidental manner. Various studies describe its discovery in 0.16-5% of radiological contrast studies, 14.5-23% in autopsy and 9-24% in endoscopic studies. In Mexico, Avalos et al. described them including 11.6% in endoscopic cholangiography. One option is early diagnosis using computed tomography (CT) scan; however, it remains dependent on the quality of the imaging system and the skills of the operator.1,3,4

Duodenal diverticula are classified as:

- Intraluminal: exceptional and result from congenital membranes5
- Extraluminal: the most common, lacking their own musculature6

Male/female predisposition is 1:1.6, with an increase in incidence beginning at the age of 50 years and occasionally before the age of 30. About 90% of the patients are asymptomatic and when they do have symptoms are due to the complications: gastrointestinal bleeding, perforation, diverticulitis and obstruction; the latter constrained by the lack of emptying of the diverticulum. Neoplasms are extraordinarily abnormal.2,3
Clinical Case

This case is of a 78-year-old female patient with a positive smoking history from her youth to the rate of eight cigarettes per day, alternating every third day, alcoholism in the past 4 years for clinical depression with medical treatment with alprazolam. She arrived at the emergency room because of dyspnea from moderate exercise, moderate epigastric pain, abdominal distention, constipation and difficulty passing gas. Her care was initiated in the emergency room with an upper endoscopy that reported the following: *Candida*-caused esophagitis, hiatal hernia, erosive gastroduodenitis, prepyloric gastric ulcers Forrest III and duodenal diverticulum.

The patient was admitted due to a study protocol by the internal medicine physicians due to her oliguria and dyspnea. Abdominal ultrasound was normal. Clinical studies were reported as follows: leukocytes 7,800, hemoglobin 13 g, platelets 202,000, glucose 97 mg/dL, BUN 21 mg/dL, creatinine of 1.02 mg/dL, PT 17, INR 1.23. The day after her admission, her abdominal pain worsened, with tachycardia and direct data of peritoneal irritation. She remained in the care of general surgery, which identified subdiaphragmatic air with a chest x-ray (Figure 1). Simple x-ray of the abdomen found accumulation of gas in the right upper quadrant (Figure 2). She was diagnosed with acute abdominal gastric perforation secondary to stress ulcers. Urgent surgical exploration was decided upon.

A midline laparotomy was performed through the supraumbilicus to the cavity. The greater omentum was found with gas insufflation and in the retroperitoneum, at the duodenum level, free intraabdominal intestinal fluid escaped from the upper gastrointestinal tract. The Kocher maneuver was performed and duodenal diverticulum was identified in the third portion, with a 5-mm perforation in its cupula. It was released in the entire from the diverticular base, the anterolateral of the third portion of the duodenum (Figures 3 and 4). The head of the pancreas was free as well as the insertion of the retropancreatic portion of the common bile duct. Diverticulectomy was subsequently performed (Figure 5) with Heineke-Mickulickz plasty and closure of the two planes (Figure 6).

In the immediate postoperative period, the patient experienced ventilatory difficulty that required intubation, and she was transferred back to the intensive care unit. The clinical outcome was appropriate. Nasojejunal tube was left in place and the patient tolerated an enteral diet on the fifth day, and the Penrose capillary drain was removed on the seventh day without clinical evidence of an intestinal leak. She was extubated and discharged from intensive care on the ninth day and she continued satisfactory performance. The patient was discharged from the hospital on the 30th day. Histopathological report was a diverticulum with ulceration and recent bleeding.
among the possible causes of acute abdominal pain in patients with previous evidence of diverticulum due to endoscopy or prior contrast studies.

Symptomatic diverticula are limited to <10% and, of these, only 1-2% require surgical treatment. Within the localization, the finding in the third portion of the duodenum represents 10%, and surgical exploration is necessary in the duodenal segment once the decision is made to intervene the patient.5 Treatment options that can be offered to the patient range from the most conservative with percutaneous drainage and antibiotics to the digestive derivatives. Conservative treatment has limitations because it excludes patients in poor

condition or those with systemic inflammatory response data.6-9

Among the most common procedures for patient care is the manual diverticulectomy with plasty in one or two planes and the use of automatic staplers, with no significant differences in the results of one or another. There are more radical treatments such as bili digestive derivations, Jaboulay or Finney pyloroplasties in the case of a diverticulum in the first portion of the duodenal vs. the Billroth I operation. There are also minimally invasive options including laparoscopic resection including radical treatment, such as the derivations.1,6,10-13 Primary closure with Graham patch was attempted with questionable results, so this practice has been abandoned. In the literature, there are reports of conservative treatment for perforation of duodenal diverticulum.12

Discussion

Perforation of duodenal diverticulum should be considered among the possible causes of acute abdominal pain in patients with previous evidence of diverticulum due to endoscopy or prior contrast studies.

Symptomatic diverticula are limited to <10% and, of these, only 1-2% require surgical treatment. Within the localization, the finding in the third portion of the duodenum represents 10%, and surgical exploration is necessary in the duodenal segment once the decision is made to intervene the patient.5 Treatment options that can be offered to the patient range from the most conservative with percutaneous drainage and antibiotics to the digestive derivatives. Conservative treatment has limitations because it excludes patients in poor

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In this case, the diverticulum resection was decided on because during the short period between clinical testing and the diagnosis, there was favorable intraoperative evidence. Diagnosis of duodenal diverticulum remains to be a complex one, despite technological advances. Surgical treatment offers satisfactory results and, in 2008, Martinez et al. proposed medical treatment as an option.

In conclusion, duodenal diverticulum is a diagnosis that should be considered in patients with acute abdominal pain. In complicated cases, surgical treatment remains to be the cornerstone because diverticulectomy offers optimal results.

References