



Case Report

Two case-reports: Conservative management of complicated duodenal diverticulitis

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Abstract

Duodenal diverticulitis is a rare pathology, few cases in the literature have been reported, so the experience and knowledge of the surgeon regarding diagnosis and treatment in this matter is still somewhat limited. The objective of the article is to present two clinical cases of patients with complicated duodenal diverticulitis managed medically with a satisfactory evolution and present a literature review for diagnosis and management.

Keywords: Abdominal pain; Conservative management; Duodenal diverticulitis; Duodenal diverticulum

Introduction

The Duodenal Diverticulum (DD) was first described by Chommal in 1710. In 1951 Patterson and Bromberg first described a case of DD bleeding. Only a few cases have been reported in the literature, so the experience and knowledge of the surgeon in terms of diagnosis and treatment in this area is still somewhat limited. [1-3] DD corresponds to small sacculations into the wall of the gastrointestinal tract as a result of increased intraluminal pressure and weakness in the muscle wall, which could involve the mucosa and submucosa in case of an acquired lesion, what is known as a false diverticula, or also involving the muscular layer, known as a true diverticula. The duodenum is the second most common site in the intestine, involved in the formation of diverticula after the colon. [4]. The incidence of DD has been 1-5% in radiological series and 11-22% in autopsy series. [1,2,5,6] Its prevalence varies according to the portion of the duodenum, 62% of cases are found in the second portion of the duodenum within a radius of 2 cm, usually contiguous to the duodenal papilla, also called juxta-ampullary duodenal diverticulum. Another 30%

of cases are located in the third portion of the duodenum and only 8% of cases in the fourth portion of the duodenum. [1,2,5,6] Generally, this pathology occurs after the age of 40, with more than 60% of the cases reported in patients older than 70 years, with no predominance of sex [3].

Regarding its clinical presentation, extraluminal or false DD tends to be asymptomatic in 95% of cases, being discovered incidentally during the diagnostic investigation of other pathologies. [7,8] In the 5% of DDs that become symptomatic, the most typical symptoms come from biliopancreatic complications (acute cholangitis, jaundice, or acute pancreatitis), diverticulitis, perforation (more common in D2), and hemorrhage (usually in D3 or D4). [2,8] Diverticulitis is the most common among these, presenting as a colicky abdominal pain of moderate-intensity, located in the epigastrium, without radiation, accompanied by nausea and vomit. Currently, it is more commonly diagnosed incidentally by an abdominal and oral IV contrast CT scan as a rounded image, with well-defined edges that protrude from the duodenal lumen, with air or fluid-filled. [3,4,7] Unlike extraluminal DD, intraluminal or true DD is more frequently symptomatic. Typical symptoms occur in adults between the ages of 30-50 and rarely in childhood. It usually presents as an intermittent duodenal

obstruction in 40% of cases, acute pancreatitis in 20% of cases, gastrointestinal bleeding in 25% of cases. Biliary symptoms occur in the context of a complication, so we can find nausea, vomiting, recurrent episodes of cholangitis, or acute pancreatitis. The diagnosis can be made through an upper endoscopy by demonstrating a protrusion of the duodenal mucosa in the form of a “glove finger”; or by an upper gastrointestinal series with the pathognomonic image of a non-opaque sac surrounded by intraluminal barium; or by ERCP which allows us to observe the relationship of the DD with the duodenal ampulla. [3] Regarding the management of DD, we can divide it into conservative or surgical. In asymptomatic extraluminal DD, intervention is not indicated, since the risk of developing symptoms or complications is relatively low (1-5%) [2,5,9].

Case Presentation

Case 1

97-year-old female patient with long-standing systemic arterial hypertension under medical treatment. Her current condition began 5 days before her admission to the emergency service when she presented insidiously colicky abdominal pain of moderate-intensity, located in the epigastrium with radiation to both flanks, without aggravating, mitigating, or accompanying symptoms. She progressed 12 hours before admission with said symptoms, adding fever of up to 39 °C and increased pain. Upon admission, she was afebrile with vital signs within normal parameters, and laboratory studies reported normochromic normocytic anemia

with leukocytosis at the expense of associated neutrophilia. At physical examination on general abdominal inspection it was observed general abdominal distension with no visible masses or scars; diminished bowel sounds on auscultation; her abdomen was painful in epigastrium and both flanks on palpation with no evidence of peritoneal irritation, masses or organomegaly; resonant sounds on percussion in epigastrium. It was decided to take an Abdomen CT with IV and oral contrast, which showed an image compatible with a diverticulum in the second portion of the duodenum measuring 5.5 X 5.2 X 3.8 cm, with food retained inside and micro-perforation data, with changes in the paraduodenal fatty planes, with extrinsic compression effect on the distal portion of the common bile duct and pancreatic duct, which were dilated. (Figure 1) It was decided to proceed with a conservative approach, which consisted of an intravenous fluid plan, carbapenem-based antibiotic therapy, non-steroidal anti-inflammatory drugs, a proton pump inhibitor, and a liquid diet. A soft diet was introduced on the 2nd day of Hospital Stay (HS), showing a decrease in pain and symptomatic improvement. On her 4th day of HS, an improvement was also shown in the laboratory results, showing the leukocyte count within normal parameters, which is why he proceeded to progress to a low-fat diet. A control abdominal CT scan was requested, which showed no clinical signs of acute inflammation or micro-perforation of the DD. On the 5th day of HS, the patient continued with conservative treatment with no signs of recurrence, which is why her discharge was decided.

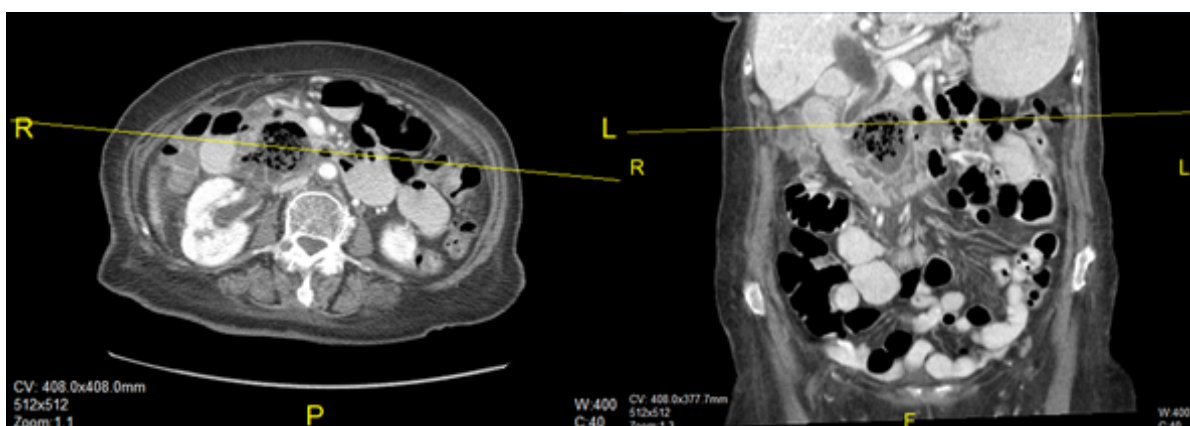


Figure 1: Computerized Axial Tomography of the abdomen that identified an image compatible with a diverticulum in the second portion of the duodenum measuring 5.5 X 5.2 X 3.8 cm, with food retained inside, perforation data with changes in the paraduodenal fatty planes, with extrinsic compression effect on the distal portion of the common bile duct and pancreatic duct. (A) cross-section, (B) coronal section.

Case 2

42-year-old female, with a history of long-standing multiple sclerosis under medical treatment, started 3 days previously with stabbing pain, of moderate intensity, located in the epigastrium with radiation to the right iliac fossa, aggravated by movement and food intake, attenuated at rest, accompanied by nausea without reaching vomiting. She persisted with this symptomatology, which is why she was admitted for evaluation and management. Upon admission, she was afebrile with vital signs within normal parameters, finding leukocytosis at the expense of neutrophilia in laboratory studies. At physical examination on general abdominal inspection it was observed general abdominal distension with no visible masses or scars; diminished bowel sounds on auscultation; her abdomen was painful in epigastrium and right iliac fossa on

palpation with no evidence of peritoneal irritation, masses or organomegaly; resonant sounds on percussion in epigastrium. Computed tomography imaging of the abdomen/pelvis with IV and oral contrast demonstrated a saccular image was visualized in the third portion of the duodenum, with changes in the surrounding fat, showing data suggestive of acute inflammation. (Figure 2) Due to her comorbidities and when finding the patient stable, it was decided to start conservative management with analgesics and a double antibiotic scheme. On his 2nd day of HS, he presented clinical improvement with a significant decrease in pain, for which conservative treatment was maintained, and later he progressed to a soft diet. On the fourth day, a normal diet was started and on the fifth day of hospitalization, the discharge was decided due to clinical improvement, to be followed up by outpatient consultation.

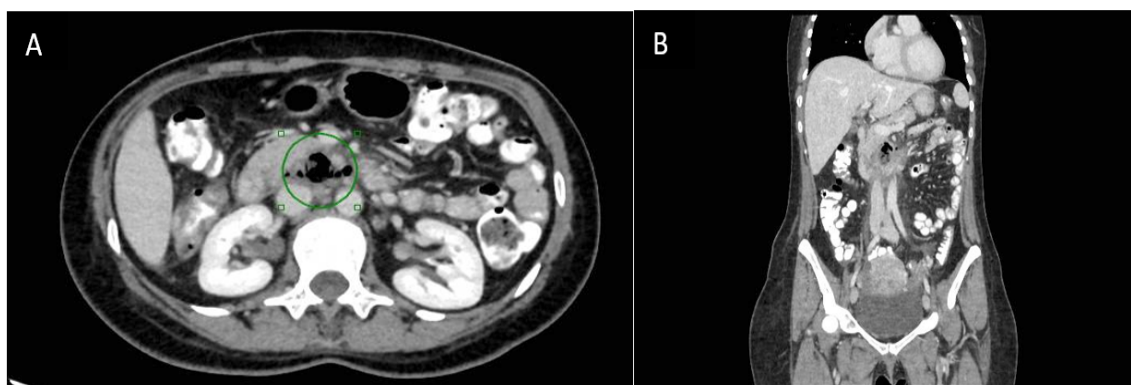


Figure 2: Computerized Axial Tomography of the abdomen that identified a saccular image in the third portion of the duodenum, with changes in the surrounding fat, showing data suggestive of acute inflammation with perforation towards the posterior aspect of the duodenum. (A) cross-section, (B) coronal section.

Results

The patient's course with adequate intrahospitalary evolution. The discharge was decided due to clinical improvement, to be followed up by outpatient consultation.

Discussion

Perforation of the DD is the rarest but most serious complication of the diverticulum. In the existing case series, the main causes of perforation in a DD are diverticulitis (62%), enterolithiasis (10%), iatrogenic (5%), ulceration (5%), trauma (4%), and foreign bodies. [6,10] The presentation of the symptoms of a perforated DD can vary and will not, in most cases, be pathognomonic. Pain is the main symptom that will lead the patient to seek medical help. In the case of intraperitoneal perforation, it will be abdominal pain, located in the right upper quadrant or the epigastrium, as in the cases presented here. Some patients may complain of back pain, especially if the perforation is retroperitoneal. Other symptoms

will be fever, nausea, or vomiting. Some patients will report a long history of vague signs and symptoms that can only be related to DD retrospectively. Such signs can be weight loss, jaundice, and fullness over a period of months or even years. [6,10-12] This variety of clinical presentations can confuse the clinician and therefore high suspicion is required. The symptoms can easily be attributed to other more frequent intra-abdominal pathologies such as acute cholecystitis, biliary or pancreatic obstruction, pancreatitis, peptic ulcer, retrocecal appendicitis, intestinal neoplasms, pancreatic pseudocyst, or even colitis. It is practically impossible to differentiate between a perforated duodenal ulcer and a perforated DD preoperatively, since the main distinguishing feature will be the fact that the duodenal ulcer mainly affects the bulb, while the DD will be located, more often, in the second part of the duodenum [10,13].

At diagnosis, laboratory tests will be indicative, but not specific for perforation. It appears that in most cases the white blood

cell count will rise associated with neutrophilia. [14-16] Clinical images are an essential complement to our work with a patient with acute symptoms and, in most cases, they will make a diagnosis or establish the indication for surgical treatment. Plain radiography and ultrasound do not have much to offer in perforated DD, since free subdiaphragmatic air will appear in about 10% of cases. It should always be kept in mind that retroperitoneal perforation will not cause free intraperitoneal air. The computed tomography of the abdomen is the most useful modality in the diagnosis of a perforated DD. [10] You will be able to identify even small amounts of free air in the abdominal cavity, free fluid, fat chaining, and the formation of an abscess. All of the above signs can also be seen in a duodenal ulcer perforation. Once the diagnosis of a perforated DD is made, the ideal treatment option for each patient must be chosen. Until recently, the only viable option was surgery, with a considerable mortality rate, as previously reported. A wide variety of operations have been described, depending on the severity of the situation and the location of the diverticulum and perforation. Diverticulectomy, stapled or hand-sewn in one or two layers, the use of an omental patch, segmental duodenectomy and duodenum-jejunostomy, duodenal occlusion and biliary diversion, the Whipple procedure that preserves the pylorus are all techniques that have been used in the treatment of a perforated DD [17].

In the case of complications with biliopancreatic manifestations, juxta-ampullary DD will be suspected. Symptomatic periampullary diverticula can be treated conservatively or operatively, depending on the type of complication. Conservative management consists of nasogastric decompression and wide spectrum antibiotic coverage in cases of perforation. Endoscopic treatment has been reported with high success rates [10,11]. Surgery is only reserved for severe complications and septic conditions. Diverticulectomy can be performed alone while in more complicated cases a more extensive surgical approach such as a subtotal gastrectomy followed by Billroth II reconstruction, or a Roux-en-Y gastroenteroanastomosis or a pylorus-preserving

duodenopancreatectomy (pylorus-preserving Whipple procedure) can be applied [17]. In all our cases conservative therapy was chosen. In the event of failure of endoscopic treatment, a biliary-enteric bypass is recommended, preferably a Roux-en-Y bypass with morbidity of 1-8% and low mortality of less than 6% [18,19]. In case of bleeding due to erosion of the DD in the pancreatoduodenal arch with upper gastrointestinal bleeding, hemostasis by endoscopy should be implemented as the first line. Surgical intervention is the most effective treatment in the context of a failure in endoscopic treatment; being diverticulectomy the most common procedure over the simple hemostatic suture [8].

The management of intraluminal DD is less well defined than that of extraluminal DD. [9] Symptomatic cases should be treated by endoscopic fenestration using a cauterizing sphincterotome or by endoscopic dilation, to avoid laparotomy. If endoscopic treatment fails or is impossible, surgical treatment would consist of duodenotomy with resection of the intraluminal DD, as the treatment of choice. It is important to always identify the biliary duct before diverticulectomy, to avoid a lesion of the papilla or bile ducts. [3] Consistent with our approach to the two cases discussed in this article, some cases were successfully treated conservatively. Until recently, conservative treatment was reserved for patients with significant comorbidities and high perioperative risk. In more recent years, several patients with contained perforations with the formation of small abscesses or a few locules of free air were treated with bowel rest, nasogastric tube, antibiotics, intravenous fluids, with varying levels of success. Some eventually required surgery, another percutaneous drainage of the abscess cavity, therefore it is important to carry out the treatment individually. [6,10] In the cases presented, the good general condition of the patient, in combination with the small size of the abscess, were the key factors that led us to the decision to try to manage the perforation conservatively with a favorable outcome (Figure 3) [20,21].

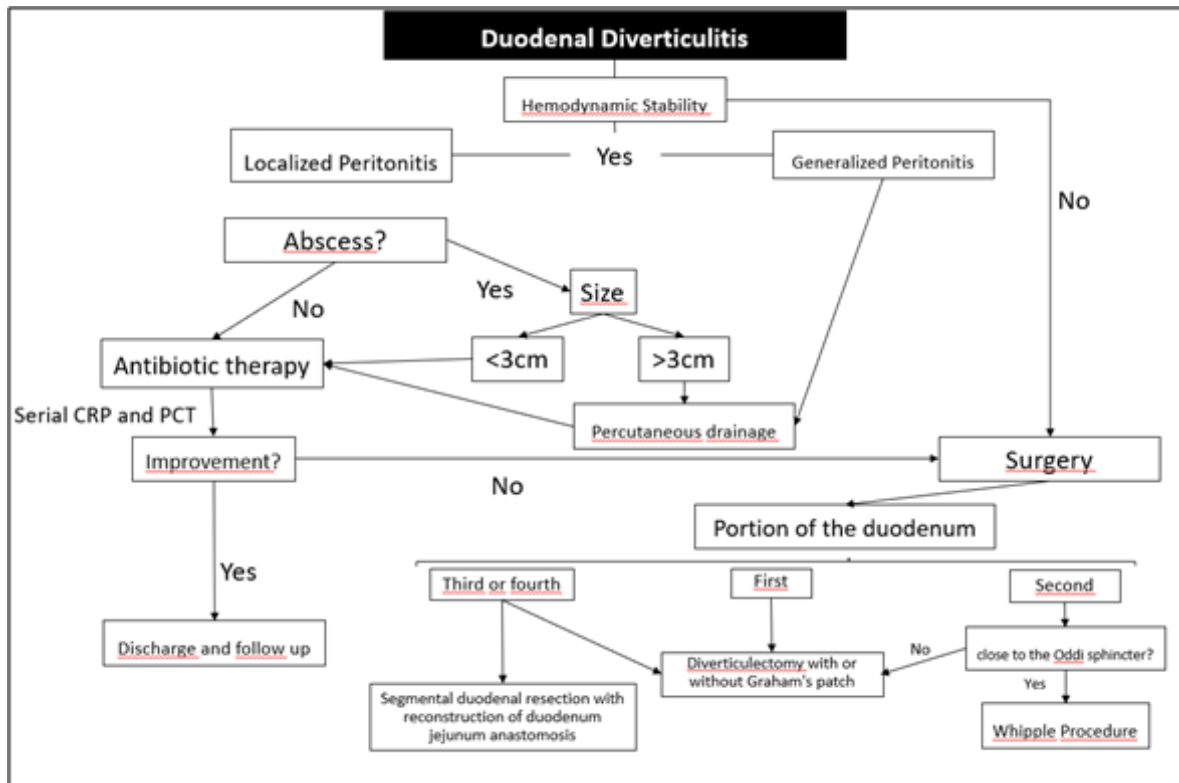


Figure 3: Algorithm for the treatment of Complicated duodenal diverticular disease. CRP: C-reactive protein, PCT: Procalcitonin.

Conclusions

Perforated DD represents a challenge for clinicians, in terms of diagnosis and treatment. We report two cases of complicated duodenal diverticulum with perforation, which was treated with conservative management, which consisted of hydration, analgesia, and antibiotic therapy; being successful in both cases. Since there is no well-established management for DD, conservative management is recommended for those patients admitted stable with no evidence of peritoneal irritation; leaving the surgical treatment for those where the patient is unstable and/or with symptoms of peritoneal irritation.

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