

Giant diverticulum with complicated acute diverticulitis resolved by laparoscopic treatment

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ABSTRACT

Introduction: Giant diverticulum (GD) is a rare presentation in diverticular disease with few cases reported in Chile and nearly 200 worldwide.

Aim: To update knowledge on this topic and discuss its management from a complicated case.

Material and methods: A 34-year-old patient with a history of a Hinchey Ia complicated acute diverticulitis episode of a GD found on a computed tomography. Five years later, the patient presents with a new Hinchey IV complicated episode. A laparoscopic sigmoidectomy with primary anastomosis without protective ileostomy is performed.

Results and discussion: The suggested treatment for all cases facing diagnosis is *en bloc* resection of the diverticulum and the diseased colonic segment given the risk of complications and underlying neoplasia. In complicated cases, there are no particular recommendations for DG, but it is possible to apply the same current treatment recommended for acute diverticulitis. This implies the possibility of the laparoscopic approach and primary anastomosis with or without diverting ileostomy, depending on the case. Diverticulectomy is not recommended and in the case of surgical contraindication, percutaneous drainage, stent or antibiotics only are valid alternatives.

Key words: giant diverticulum, acute diverticulitis, primary anastomosis, protective ileostomy, Chile.

INTRODUCTION

Diverticular disease has a high prevalence worldwide, affecting 65% of the population over 65 years of age and increasing by 10% every 10 years from that age onwards. Diverticula are usually multiple, a few millimeters in diameter, and predominantly affect the sigmoid colon in the Western population. Eighty percent present asymptotically (diverticulosis) and 20% with some complication.¹

The giant diverticulum (GD) is a rare finding in the context of diverticular disease; it was first described in France in 1946 and to date only around 200 cases have been reported worldwide. It is defined as one that measures 4 or more cm in diameter. It tends to be single and is preferentially (81%) located in the sigmoid colon.^{2,3} In Chile, three articles with a total of 6 cases have been published on this condition,^{2,4,5} the most relevant, for describing its surgical management at the local level, was published in 2009 by Bannura et al.⁴

The aim of this publication is to present a case of a complicated GD, update the knowledge on this topic and discuss its management with the available evidence.

CASE

A 34-year-old obese man, with a history of multiple previous consultations for recurrent hypogastric abdominal pain, presents with an episode of complicated acute diverticulitis Hinchey Ia of the Sartelli classification,⁶ with fever (40°C), C-reactive protein (CRP) 3 mg/dL and leukocytosis (15.000 cells/mm³). Computed tomography (CT) showed that the origin of the condition was a giant diverticulum measuring 11.1 x 5.9 cm with calcified stercoraceous content (Fig. 1). He progressed favorably with antibiotic treatment and was discharged. Five years later he consulted again for a new episode of acute diverticulitis, afebrile, with CRP of 2.5 mg/dL and leukocytosis (12.500 cells/mm³). The CT scan described findings similar to the previous episode, without collections, free fluid or pneumoperitoneum (Fig. 2). Despite four days of antibiotic therapy, he presented increased abdominal pain with signs of peritoneal irritation, fever up to 38°C and increased inflammatory parameters (CRP 39 mg/dL, WBC 13.000 cells/mm³). A new CT scan showed increased signs of diverticulitis in relation to the giant diverticulum, with pneumoperitoneum, pneumoretroperitoneum, mild ascites and signs of pelviperitonitis (Fig. 3).

In the context of complicated acute Hinchey IV diverticulitis, it was decided to perform laparoscopic sigmoidectomy. Intraoperatively, a large diverticular mass formed by the distal sigmoid colon adhered to the mesentery of the distal ileum made dissection difficult. The resection of the diseased sigmoid segment was completed with adequate descent of the healthy colon, allowing a stapled descending rectal anastomosis to be performed with a negative pneumatic test. Diverting ileostomy was not performed since there were no risk factors for anastomotic leak. The patient had a favorable postoperative outcome and was discharged after nine days of hospitalization and five days of surgery.

Pathology reported diverticular disease without underlying neoplasia, with a single 5 x 5 cm diverticulum and a 1 cm hole in the mucosa, compatible with a pseudodiverticulum (type I) of McNutt classification⁷ (Fig. 4).

At 60 days of follow-up there was no further discomfort or new episodes of diverticulitis.

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Figure 1. Computed tomography. Large diverticulum of the sigmoid colon with calcified stercoraceous content and gas inside in transverse (A) and coronal (B) sections. Inflammatory changes of the wall and adjacent adipose tissue are observed (arrow).

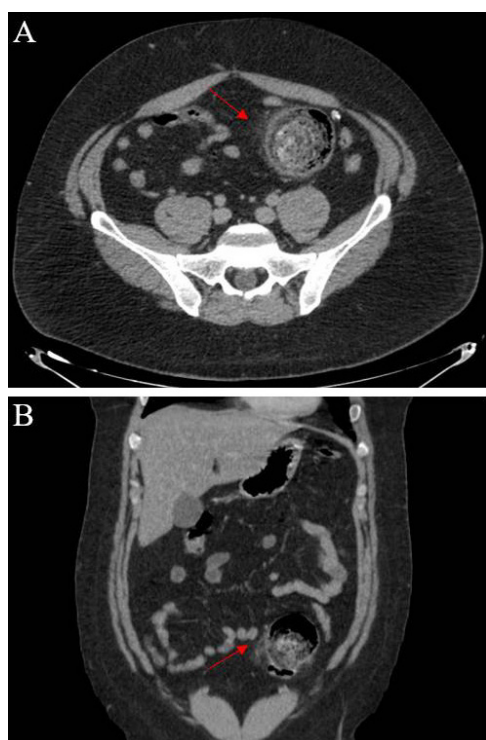


Figure 2. Computed tomography. Large diverticular image with fecal content inside, thickened wall and surrounding peripheral inflammatory changes are shown (arrows).

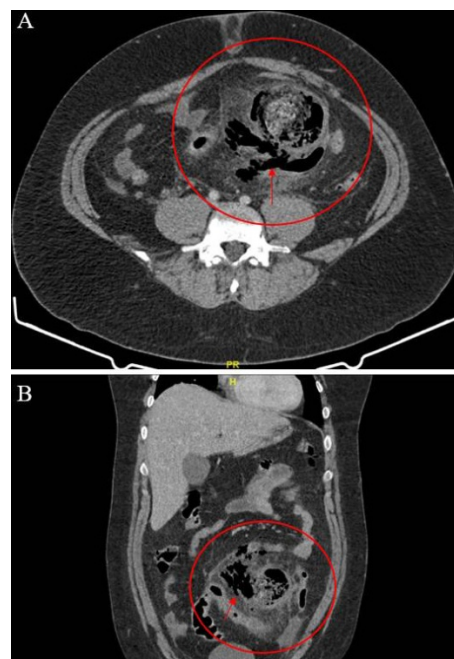


Figure 3. Computed tomography. Increased signs of diverticulitis in relation to the giant diverticulum of the sigmoid colon (circle), with the appearance of pneumoperitoneum and pneumoretroperitoneum (arrows) in transverse (A) and coronal (B) sections.

DISCUSSION

The pathophysiology of GD is the persistent entry of gas into the diverticulum through a valve mechanism, causing that in most cases no contrast medium is observed in the diverticulum.⁸ McNutt in 1988 described the classification of GD: pseudodiverticulum (type I) composed only of muscularis mucosa (22% of cases), inflammatory diverticulum (type II) composed of scar tissue arising from perforation and abscess formation (66%) and true diverticulum (type III) composed of all muscle layers and the myenteric plexus (12%).⁷

The most common symptoms are abdominal pain (69%) and constipation (17%) and in 47% of cases a mass can be palpated. Only 10% are asymptomatic and 28% present some complication, such as perforation.³ The age at presentation is between 60 and 79 years, and the size of the diverticulum is between 4 and 9 cm.⁸ Perioperative mortality is classically described as around 5%, however, in the last 12 years no associated mortality has been reported.

Historically, diagnosis has been made with a barium enema, which is less sensitive and associated with a higher risk of perforation than computed tomography, the current standard.^{3,8} Colonoscopy is not useful for diagnosis because in up to 83% of cases the diverticulum is not found due to a very small ostium. Furthermore, in complicated cases it has a greater risk of perforation. The literature is not clear about the benefit of colonoscopy in the absence of a contraindication.⁸

The treatment of choice for asymptomatic and uncomplicated cases is *en bloc* resection of the diverticulum and the diseased segment of the colon with primary anastomosis, with or without diverting ileostomy. This treatment has reported zero mortality and minimal morbidity. For complicated cases, the evidence is insufficient to make a particular recommendation, so our suggestion is to follow the current evidence that suggests that this same treatment is safe in complicated acute diverticulitis.⁹

In 2% of the cases described in the literature, a carcinoma is found within the GD, so we recommend performing the surgery following oncological criteria.⁸

Laparoscopic resolution is described in only 5% of GDs, despite the fact that it has been reported to be safe.¹⁰⁻¹² It seems that surgeons consider the open approach safer due to the risk of GD perforation and associated peritoneal fecal contamination. At the moment it is recommended as long as the surgeon has the adequate skills and equipment.¹¹ Non-surgical treatment is not recommended due to the substantial risk of complications and development of carcinoma.¹³

In the present case, since it was a young patient with no major comorbidities, the laparoscopic approach and primary anastomosis without diverting ileostomy was preferred, with favorable results. It should be noted that the diagnosis had been made five years earlier when the presentation was not complicated, at which time elective surgery would have been more timely.

Regarding other therapeutic alternatives, diverticulectomy is not recommended due to its greater risk of recurrence due to dehiscence, explained by the adjacent inflammatory tissue. In the case of patients with very high surgical risk or who reject surgery, percutaneous drainage, occlusion of the diverticular lumen with a stent or simply antibiotic treatment can be performed, ideally with subsequent elective resection.³

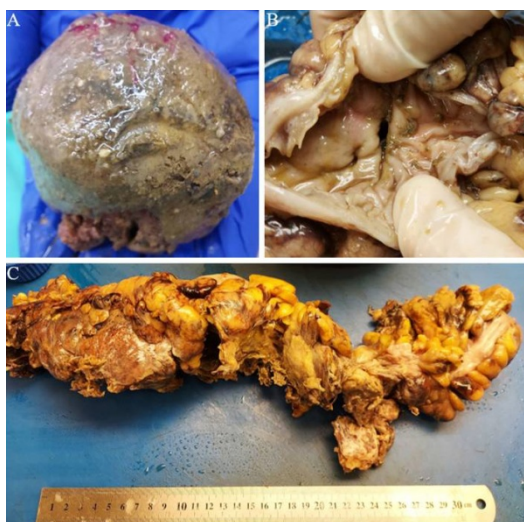


Figure 4. Operational sample. **A.** Calcified stercoraceous content with at least 5 years of evolution was found inside the diverticulum. **B.** The mucosal defect towards the diverticulum can be observed from the lumen of the colon. **C.** Complete segment of descending sigmoid colon with the perforation site where the giant diverticulum was located.

CONCLUSION

GD is a rare presentation of acute diverticulitis. There are few reports in Chile. Given its high rate of complications, elective treatment is recommended over diagnosis. Laparoscopic excision with primary anastomosis and without diverting stoma is a valid alternative in selected patients.

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