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Case report

Complicated giant diverticulum of rectosigmoid colon in elderly

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ABSTRACT

Introduction: Giant colonic diverticulum (GCD) is a rare condition defined by diverticular size over 4 cm. Its presentation is usually asymptomatic.

Present of case: We herein report a rare presentation of ruptured GCD in elderly man who suffered from abdominal pain. The patient underwent primary repair and ileostomy to shorten the operation time instead of Hartmann's operation. Post-operative CT revealed complicated GCD with rupture.

Discussion: The exact mechanism of GCD generation is questionable. Most of case is discovered by radiologic exam or computed tomography (CT) incidentally. The most common complications of GCD are perforation and abscess formation.

Conclusion: Symptoms of GCD are like those of usual diverticulosis. But, considering the severity of complications, it is better to prioritize surgical treatment at diagnosis.

1. Introduction

Diverticulosis is a common condition that can be found in up to 12.1% of the population in Korea [1]. But giant colonic diverticulum (GCD) defined as diverticulum over 4 cm is rarely known [2]. Our case report is presenting a complicated GCD (Mcnutt type 2) with perforation which was treated surgically. This paper has been reported in line with the SCARE criteria [3].

2. Case presentation

A 70-year-old man came to the emergency room with progressive and severe abdominal pain which was started 8 h ago. He had history of uncontrolled diabetes mellitus, essential hypertension, and percutaneous coronary intervention years ago. There had been no gastrointestinal symptoms including bowel habitus alternations except bloody spotting after a defecation once or twice a year. He had no experience of gastroscopy and colonoscopy in his life. He was afebrile, with a heart rate of 142 beats/min, blood pressure 135/78 mm Hg and respiratory rate of 20/min. Physical examination showed abdominal rigidity and rebound tenderness through whole abdomen. A plain abdominal X-ray showed pneumoperitoneum and conglomeration of feces in the mid pelvis (Fig. 1). Unfortunately, abdomino-pelvic computed tomography (AP-CT) was not available at that moment.

In the exploratory laparotomy, there was an about 5 cm length, visceral rupture in the rectosigmoid area, and fecal material was coming out of ruptured bowel and soiling the surroundings (Fig. 2). To shorten the operation time, ileostomy and primary closure were underwent instead of Hartmann's operation.

Postoperative AP-CT was taken before removing drainage tube on postoperative days (POD) 6. It showed a single 3.5 × 2.9 cm cavity occupying the lower abdomen, which shows a highly enhanced, thin inner rim such as a mucosal surface. And the cavity was filled with gas-fecal material mix. It had a 0.9 cm opening communicating to a colonic lumen (Fig. 3). The postoperative recovery was uneventful, and the patient was discharged on POD 8.

Ileostomy reversal and colonic segmental resection including the diverticular was performed 2 months later. The large diverticular was strongly adhered to the surrounding tissue so that it was very difficult to dissect from the surrounding tissues.

Pathological assessment of the specimen showed a localized, exophytic & protruding, giant diverticular sac, 4.0 × 3.5 × 3.5 cm, which didn't exist intestinal layers inside sac lumen. There was a single opening communicating colonic lumen, the colorectal mucosa demonstrates a diverticular dimple, 10x6mm, with extensive mucosal erosion to ulceration (Fig. 4).

3. Discussion

GCD first described by Bonvin & Bonte in 1946. It is rare entities with

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Fig. 1. Pre-operative, plain abdominal X-ray.
The image showing pneumoperitoneum and conglomeration of feces in the lower abdomen.

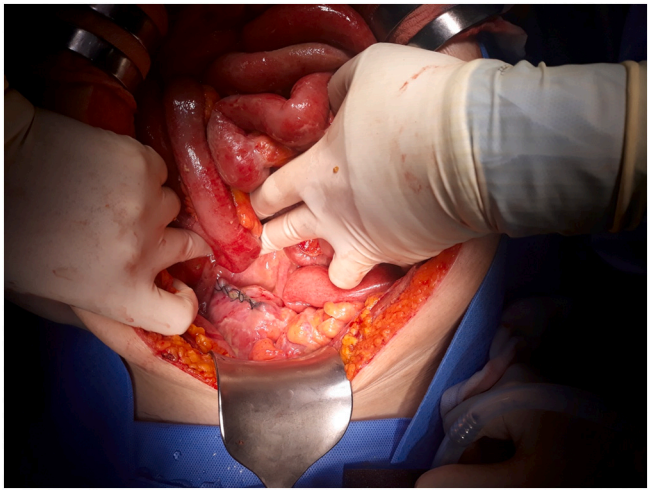

Fig. 2. Intra-operative image.
Ruptured viscera in the lower abdomen closured primarily.

fewer than 200 cases reported in the literature [4]. It is defined that the diverticular size is over 4 cm [2,4,5] and 90% of GCD originated from the sigmoid colon [4,5]. GCD mainly is demonstrated age at diagnosis between the ages of 32 and 90 and occurs at the higher frequency in elderly men [5,6].

There are several hypotheses on the theory of GCD generation, but there is no established theory yet [6]. And there are reports that the diameter should be at least 4 cm or more, even though the diameter can change depending on the situation [7].

McNutt et al. classified GCD in three types. Type I is a pseudodiverticulum containing remnants of muscularis mucosa or muscularis propria and gradually increasing in size (22%). Type II is an inflammatory diverticulum without any intestinal layers, which is secondary to a local perforation of the mucosa and submucosa, creating an abscess cavity that communicates intermittently with the bowel lumen. The diverticulum contains fibrous scar tissue (66%). Type III is a true diverticulum consisting of all the layers of the bowel (12%) [4].

Most of patients are asymptomatic so that the majority are discovered incidentally by radiologic examinations. The symptoms of GCD are like those of usual diverticulosis [4]. But, with a complication rate of 28% and an operative mortality of 5%, GCD seems to have a high clinical significance. In 2% of the cases, a carcinoma inside the GCD is found [8]. Complications with the highest incidence include perforation, pneumoperitoneum, volvulus, small bowel obstruction (secondary to adhesion to the large bowel), adhesion with bladder, malignancy developing inside the diverticulum, and bleeding. There is a report that perforation was diagnosed at presentation or at the time of surgery in 44/166 patients (26.5%) [2]. Therefore, it is better to perform surgical treatment at an early stage.

Endoscopy is not very helpful in diagnosis, and it is diagnosed mostly by radiologic examination or CT [2]. The radiologic findings revealed a large round or oval cavity with soft, radiolucency, about 6–27 cm in size, and air-fluid level was observed in 25% of these cases. Rarely, thin calcifications along the walls may be seen [4]. In Barium enema, an average of 60% of cases show the finding of barium filling in the diverticulum, which can be confirmed [9]. Multiple diverticula are present in approximately 15% of patients. On CT, it can be diagnosed by confirming a cavity like plain abdominal radiography, close to the colon, thin-walled, and having an air-fluid level [5].

The principle of treatment is resection of the diverticulum and the adjacent colon, but some authors propose a diverticulectomy when the giant diverticulum is solitary, developing on a healthy colon and located on the antimesenteric border [2].

4. Conclusion

Colonic diverticulum is a commonly found disease, but GCD is a rare entity disease. Most GCDs are asymptomatic and found in radiologic exams, but they are also discovered due to complications such as perforation. In most cases, surgical resection is treatment of choice.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Ethical approval

This is a case report; therefore, it did not require ethical approval from an ethics committee.

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Guarantor

HaengJin Ohe MD, FACS.

Research registration number

None.

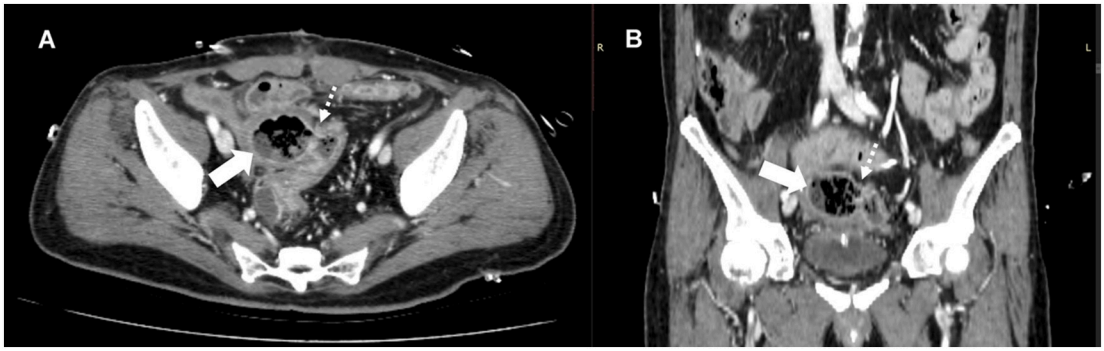

Fig. 3. Abdomino-Pelvic computed tomography.
A. Axial plane, B. coronal plane, the sac (white arrow) with highly enhanced rim filled with mixture of gas and fecal and, it is communicated with the colon via thin channel (dotted arrow).

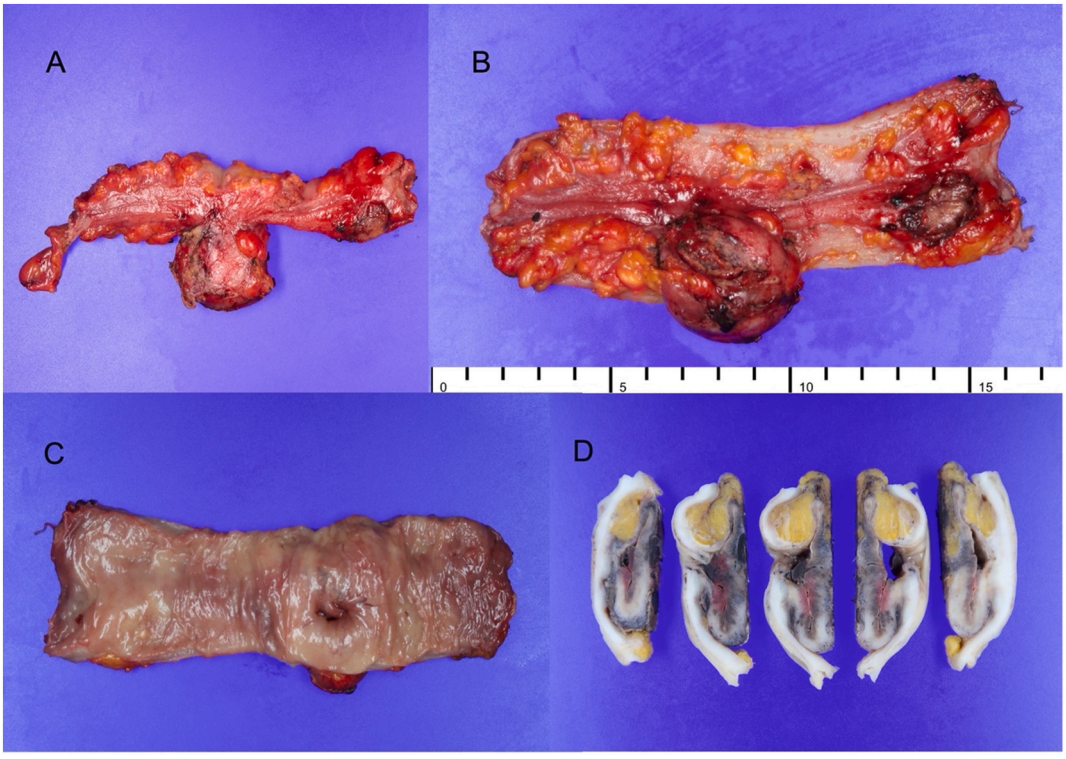

Fig. 4. Pathologic images of the specimen.
A, B. A localized, exophytic & protruding, giant diverticular sac, 4.0 × 3.5 × 3.5 cm.
C. An opening of the sac observed in the colon lumen.
D. Meticulous serial sections showing localized, extensive mural hemorrhagic necrosis of diverticular wall.

CRediT authorship contribution statement

H.J. Ohe: Conceptualization, data curation, writing of original draft
Y.G. Chang: Review, supervision.

Declaration of competing interest

The authors declare that we have no conflict of interest.

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