

# Giant Colon Diverticulum: Rare Manifestation of a Common Disease

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**D**iverticular disease of the colon is a common condition, with a prevalence of about 60% in people over the age of 70 [1]. Its incidence appears to be increasing, especially in the western world [2]. A giant colonic diverticulum is defined as a diverticulum larger than 4 cm in diameter [2]. The GCD can be congenital with a muscular layer, or acquired as a rare complication of the diverticular disease. GCD mostly presents after the sixth decade, has an equal gender distribution, and affects the sigmoid colon in 90% of the cases. It is a rare entity, with fewer than 200 cases discussed in the literature since it was first reported by Bonvin and Bonte in 1946 [3]. In this article we present the case of a patient with giant sigmoid diverticulum complicated with diverticulitis, and describe the clinical presentation, diagnosis and treatment of this uncommon condition.

## PATIENT DESCRIPTION

A 62 year old man was referred from a psychiatric institution to our emergency department because of diffuse abdominal pain and constipation, without fever. His past medical history was positive for major depression, diverticulosis and diver-

iculitis of the descending colon that was treated conservatively. One year before his admission, he underwent a colonoscopy and a benign polyp was removed. Since then he suffered intermittently from dull lower abdominal pain, with no history of anorexia, nausea, vomiting, weight loss, or change in bowel habit or gastrointestinal blood loss. Abdominal examination revealed a soft, non-tender abdomen with normal peristalsis and without a palpable abdominal mass. Digital rectal examination was normal. Blood tests showed leukocytosis and elevated C-reactive protein. Plain abdominal radiograph showed a large, oval, homogenous radiolucency in the right upper quadrant that was smoothly marginated [Figure A]. For further evaluation, contrast-enhanced computed tomography of the abdomen using a 64-multi-detector CT scanner was performed. The CT scan revealed an 11 × 10 cm, predominantly gas-filled structure in the right upper abdomen, containing a small amount of fluid and communicating with the sigmoid colon [Figure B]. The wall of this gas-filled structure and the surrounding fat were thickened, indicating recent inflammation [Figure C]. The appearance was of a giant sigmoid diverticulum, complicated by infection. The patient was treated conservatively with intravenous antibiotics. Several weeks later, he underwent an uneventful laparoscopic sigmoidectomy. Intraoperative findings revealed an inflammatory giant sigmoid diverticulum.

## COMMENT

GCD has been reported in different parts of the colon, but up to 90% of cases occur

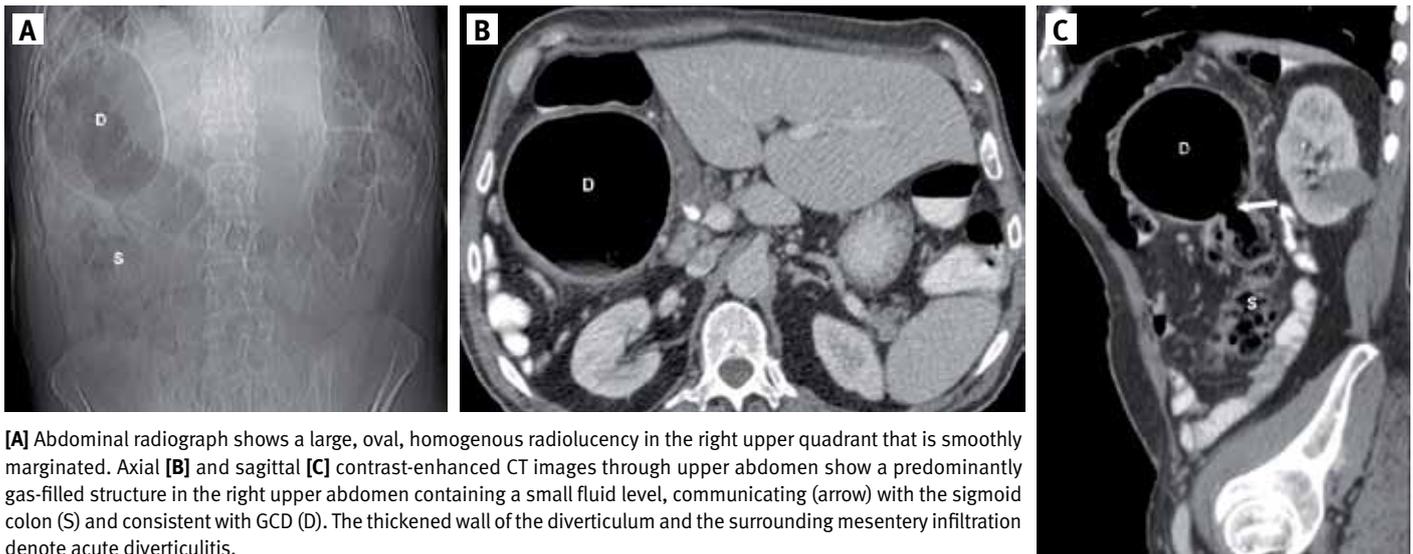
in the sigmoid colon. The mean age of presentation is between 60 and 79 years, and the most frequently reported size of the diverticulum ranges from 4 to 30 cm [2]. The pathogenesis of GCD is still obscure, although associated colonic diverticulitis has been reported in over 90% of cases [2].

There are three histological types of GCD: a) true congenital diverticulum with a normal colonic structural wall, b) pseudo-diverticulum with a mainly mucosal wall, and c) inflammatory GCD with a reactive scar tissue wall that occurs as a result of previous perforation of the small diverticulum. In the last type of GCD there is a ball-valve mechanism, which has been suggested by Nano et al. [4] to be the cause of a gradual increase in the size of the diverticulum culminating in GCD. Depending on the colonic lumen pressure, the air passes through the communicating tract, leading to an intermittently prominent abdominal mass or phantom tumor.

Palpable abdominal mass is present in 60% of the cases and is the most common finding on clinical examination [2]. Complicated GCD may present with acute abdomen due to diverticulitis (as in our case), perforation, focal intestinal ischemia or bowel obstruction – a scenario with a mortality rate of up to 5%.

Plain supine abdominal radiography, a simple and available diagnostic tool, can be used as the first-line investigation. Usually, a large air-filled structure with or without air fluid levels can be seen in close proximity to the sigmoid colon. Barium enema is useful in showing a communication with the bowel in about two-thirds of reported cases; however, it may complicate with perforation, ending with emergency

GCD = giant colonic diverticulum



**[A]** Abdominal radiograph shows a large, oval, homogenous radiolucency in the right upper quadrant that is smoothly margined. Axial **[B]** and sagittal **[C]** contrast-enhanced CT images through upper abdomen show a predominantly gas-filled structure in the right upper abdomen containing a small fluid level, communicating (arrow) with the sigmoid colon (S) and consistent with GCD (D). The thickened wall of the diverticulum and the surrounding mesentery infiltration denote acute diverticulitis.

surgery. MDCT with multiplanar reformation and three-dimensional imaging could emerge as an ideal non-invasive technique that offers a unique opportunity to evaluate the presence of GCD, its size, exact location, contents and wall thickness, as well as the surrounding mesentery and accompanying complications. On CT, the GCD usually appears as a predominantly gas-filled structure containing a small amount of fluid and communicating with the colon. The thickened wall of the diverticulum and the surrounding mesentery infiltration represent acute diverticulitis and localized peritonitis [5]. CT scan of the abdomen provides valuable anatomic information that can be very useful in the differential diagnosis of GCD.

The treatment approach for GCD depends on the severity of the clinical presentation, age and the physiological reservoir of the patient. Elderly and high risk patients with asymptomatic GCD can

MDCT = multi-detector computed tomography

be managed conservatively. Surgery is the recommended treatment for symptomatic non-complicated GCD in the low risk patient. Colostomy with primary end-to-end anastomosis is the preferred procedure. For complicated cases, emergent two-stage bowel resection with colostomy (Hartmann's procedure) is recommended. In the GCD, the inflammatory process can result from increased intra-diverticular pressure, causing venous congestion and edema of the diverticular wall and, consequently, strangulation and microperforation. In these patients, conservative treatment with intravenous antibiotics, fasting, and intravenous fluid maintenance is recommended.

In conclusion, although GCD is rare, physicians and surgeons should consider it in any patient with acute abdominal pain and the finding of a large gas-filled structure in close proximity to the colon on plain film or CT scan. The presenting clinical symptoms are usually non-specific. Knowledge of the imaging appearances

and an understanding of the clinical significance of this rare condition are essential for making the correct diagnosis, reducing possible complications and planning patient treatment.

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**“The greatest of faults, I should say, is to be conscious of none”**

Thomas Carlyle (1795-1881), Scottish satirical writer, essayist, historian and teacher

**“People see God every day. They just don't recognize him”**

Pearl Bailey (1918-1990), African-American actress and singer