Giant Sigmoid Diverticulum: A Case Report

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Key Words
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Abstract
Objectives: To report an unusual presentation of a giant sigmoid diverticulum in the colon. Clinical Presentation and Intervention: The patient presented with an abdominal mass, altered bowel habits, and increasing weight. The provisional diagnosis was made by barium enema and CT scan. The patient underwent laparotomy, revealing a perforated giant sigmoid diverticulum that was excised using Hartmann’s procedure. The perforation could have been precipitated by the barium enema study. The histopathology of the resected specimen revealed giant sigmoid diverticulum with no evidence of malignancy. Conclusion: CT scan was adequate for diagnosis of the suspected giant sigmoid diverticulum. Surgical intervention was successfully used to excise the diverticulum.

Introduction
Diverticulosis of the colon was a rare condition at the beginning of the 20th century with an incidence of 5%. Now it is much more common, affecting 35–50% of individuals over the age of 60 [1, 2]. Low-fiber diet is a major contributing factor [3]. The condition has also been termed giant sigmoid diverticulum, giant colonic diverticulum, giant gas cyst, giant air cyst, and giant cyst [3, 4]. The exact cause of giant colonic diverticulum is not known; however, many authors suggested the flap-valve effect of a chronic diverticulum with narrow neck [1, 5, 6]. We report the first case of a giant diverticulum mainly containing fecal matter.

Case Report

A 48-year-old Syrian male presented with recurrent attacks of abdominal pain of 5 years’ duration, associated with altered bowel habits, and increasing weight. Abdominal examination revealed a huge abdominal mass measuring 30 × 30 cm, extending from the pelvis to the costal margin, mainly on the left side. Laboratory investigations were normal except for low serum albumin (16 g/l). Plain abdominal X-ray revealed a huge soft tissue density mass with mottling occupying almost the entire pelviabdominal area. There was a crescent of air surrounding the mass, with no evidence of air within bowel loops or pneumoperitoneum. The visualized gas-filled bowel loops were displaced by the mass, with normal diameter. In view of the mottled appearance of the mass, the possibility of communication with the colon was raised and hence a giant colonic diverticulum with fecal contents was suspected (fig. 1). Abdominal ultrasound examination revealed a huge echogenic mass in the mid abdomen separated from the liver and spleen, with no evidence of abscess or ascitic collection.
Water-soluble contrast enema revealed a huge sigmoid diverticulum communicating with the lumen of the sigmoid colon. CT scan of the abdomen with contrast revealed a huge well-defined pélviabdominal mass with heterogeneous attenuation of mainly fat and gas contents and few specks of calcification suggestive of fecal matter. The mass measured $32 \times 18 \times 16$ cm. A well-defined wall was noted with an 8-cm communication with the sigmoid colon. The wall of the sigmoid colon adjacent to the mass showed mild narrowing and thickening. There was no evidence of diverticuli in the remaining colon, obstruction, and pneumoperitoneum. These findings were consistent with a giant sigmoid diverticulum with mainly fecal contents (fig. 2). The patient had preoperative bowel preparation with Golytely and both oral and intravenous antibiotics. The exploratory laparotomy revealed a giant sigmoid diverticulum which had perforated at the apex with localized collection between the sigmoid diverticulum and the anterior abdominal wall. Hartmann’s procedure was performed to excise the giant diverticulum which contained fecal matter weighing 9.5 kg.

On the 7th postoperative day the patient developed wound dehiscence which was repaired; on the 10th postoperative day the patient was reexplored because of intra-abdominal sepsis revealing infected peritoneal fluid with no evidence of bowel leak or ischemia. Unfortunately, the patient developed severe septic shock with renal and hepatic failure. He was managed in the ICU and on the 20th postoperative day the patient died. Histopathology confirmed a perforated giant sigmoid diverticulum, with no neoplastic changes.

**Discussion**

Giant sigmoid diverticulum is an unusual presentation of a colonic diverticulum. Only 135 patients have previously been reported in the world literature up to the year 2004 [1, 7]. The pathological results were not included in approximately 15% of the cases, largely due to either the conservative treatment in about 10 cases or because they had not been reported.

Most giant colonic diverticula are 4–9 cm in diameter with few measuring more than 25 cm, as in this case. The size of a giant colonic diverticulum may vary over time and intermittently be palpable, hence occasionally referred to as ‘phantom tumor’ [7–10].

A giant colonic diverticulum may be completely asymptomatic and an incidental finding. In symptomatic patients the predominant manifestation is abdominal pain or abdominal mass [1, 11] as in our patient. Less commonly, patients may present with nausea, vomiting, fever, constipation, diarrhea, abdominal bloating, and

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**Fig. 1.** Plain abdominal X-ray, anteroposterior and lateral views of the huge soft tissue mass with mottled appearance outlined with a crescent of air (arrows).

**Fig. 2.** CT scan of abdomen and pelvis with oral and intravenous contrasts revealing a giant diverticulum arising from the sigmoid colon, measuring about $32 \times 18 \times 16$ cm and mainly containing fecal matter.
large gastrointestinal bleeding (melena) [10]. Patients may also present with an acute abdomen secondary to perforation, volvulus, focal infarction, and small bowel obstruction; the mortality in such conditions can be up to 5% [1, 3, 5, 6, 11]. Risk of carcinoma within a giant colonic diverticulum is 2% [11].

A plain abdominal X-ray film usually reveals a solitary anteriorly placed, gas-filled cyst varying in size from 6 to 33 cm in diameter. In our case the giant sigmoid diverticulum was filled with feces, giving a similar picture to fecal impaction. This may be due to a wide neck of the giant sigmoid diverticulum. Usually the wall of the cyst is smooth and regular; but when it is irregular or lobulated an additional inflammatory or neoplastic process should be suspected [11]. Occasionally, the wall may show evidence of calcification, which is probably due to chronic inflammatory changes [11]. An air-filled level within the giant sigmoid diverticulum has been reported in 25% of cases [11].

Ultrasound examination, in adult patients, does not seem to be the radiological examination of choice for detecting a giant colonic diverticulum but it was useful in our case. Generally, preliminary examination should be done to rule out other soft tissue or cystic masses.

CT scan demonstrates size, contents, wall thickness, and the presence of a communication channel between the cyst and the gastrointestinal tract [5–7, 9].

Barium enema is the most commonly used investigation, however, it has been reported that perforation can occur within 24 h [2, 5, 6, 8]. In our case barium enema was suspected as a cause for the perforation.

Treatment of a giant colonic diverticulum is surgery, to avoid any potential complications. Resection of the diverticulum and adjacent sigmoid colon with primary end-to-end anastomosis is advised [5, 6, 11, 12]. For complicated cases, two-stage bowel resection with colostomy (Hartmann’s procedure) is recommended [1], as was done for our patient.

The conservative management of an asymptomatic giant colonic diverticulum should be reserved only for high-risk patients who are unable to tolerate surgery or who are unwilling to have surgery.

## Conclusion

CT scan was adequate for the diagnosis of a suspected giant sigmoid diverticulum. Surgical intervention was successfully used to excise the diverticulum.

### References