Case Report

Giant colonic diverticulum of the transverse colon as a rare cause of surgical acute abdomen: A case report

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ABSTRACT

A colonic diverticulum larger than 4 cm in size is referred to as a giant colonic diverticulum and is an uncommon occurrence. Globally, <200 cases of large colonic diverticula have been documented. The majority of the giant colon diverticulum arises from the sigmoid colon. However, we here described a case report of a 68-year-old female who presented with acute abdominal pain, along with chronic constipation. An abdominal computed tomography scan revealed an enormous giant colonic diverticulum measuring 17 cm × 11.7 cm × 7.8 cm with a 1.3 cm neck orifice, arising from the transverse colon along the antimesenteric border of the colon. The patient underwent an exploratory laparotomy with excision of the transverse colonic giant diverticulum and stapler anastomosis.

Key words: Giant colonic diverticulum, Transverse colon, Diverticulectomy, Colectomy

The diverticulum is a sac-like protrusion of the colonic mucosa through weak points, which corresponds to the point where the vasa recta penetrates the circular muscle layer of the colon [1]. Less than 200 cases of giant colon diverticulum have been documented [2], making it a highly uncommon presentation of diverticular illness. Giant colon diverticula are colonic diverticula >4 cm in size, first described in 1946 by Bonvin and Bonte [3]. McNutt *et al*. described three different types of giant colonic diverticulum, namely, inflammatory diverticulum, pseudodiverticulum, and true diverticulum [4]. A giant colonic diverticulum is a rare entity most commonly seen arising from the sigmoid colon. Only a few cases of giant colonic diverticulum of the transverse colon have been published in India [5,6].

Here, we present a rare case of giant colonic diverticulum arising from the transverse colon, treated surgically with exploratory laparotomy with *en bloc* resection and stapler anastomosis. The rationale behind reporting this case is the uncommon location of the giant colonic diverticulum at the transverse colon, which needs to be considered as a differential diagnosis in patients presenting with a symptom of pain in the abdomen.

CASE REPORT

A 68-year-old female presented to the hospital with a complaint of upper abdominal pain for the past year. The discomfort was mostly in the epigastric area, was not radiating, and had been steadily getting worse over the previous 2–3 months. The pain was not associated with eating or changing movements. There were no complaints of fever with chills, vomiting, loose motion, or bleeding per rectum. The patient had no complaints of weight loss or dysphagia. The patient had reported chronic constipation, which was alleviated with laxatives. The patient did not have any comorbidities. Prior medical history included a lumbar compression fracture. In addition, the patient has had Parkinson's disease for a year and is being treated with a combination of levodopa and syndopa. No significant surgical history was found.

The patient was afebrile and presented with a pulse of 77 bpm, a blood pressure of 130/90 mmHg, and a SpO_2 of 98% on RA. During the physical examination, the patient was found to have regular heart sounds and clear lung sounds on auscultation. An abdominal examination found decreased bowel sounds, no tenderness to deep palpation in the epigastric region, and negative rebound tenderness. The remainder of the physical examination was unremarkable. No clinical evidence of diverticulitis, abscess, peritonitis, or intestinal perforation was seen.

A computed tomography (CT) of the abdomen and pelvis with contrast was performed, which showed a moderately large, narrow-necked diverticulum arising from the transverse colon, measuring 17 cm × 11.7 cm × 7.8 cm with a 1.3 cm neck orifice (Fig. 1). The diverticulum was extensively filled with fecal matter and was seen displacing the stomach posteriorly with an

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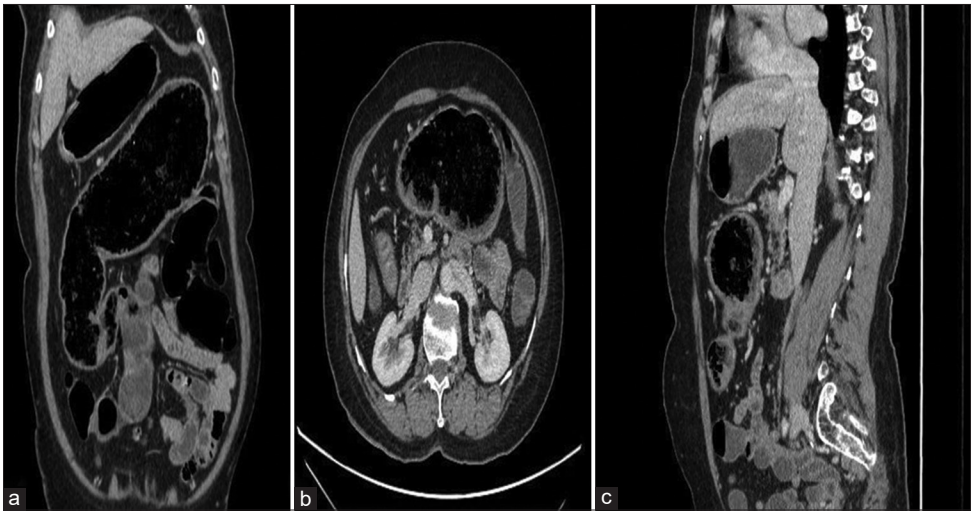

Figure 1: Computed tomography scan images of the abdomen and pelvis showing a moderately large, narrow-necked diverticulum arising from the transverse colon, measuring 17 cm × 11.7 cm × 7.8 cm

extrinsic mass effect over it. No evidence of retroperitoneal or mesenteric lymphadenopathy was seen. A chest X-ray showed inhomogeneous radio-opacity in the right lower zone, which was treated with antibiotics, nebulization, and chest physiotherapy. The laboratory values showed hemoglobin 13.2 g/dL, white blood cell count 7730/cumm, platelet count 239 × 103/cumm, liver function test, and serum creatinine was found to be normal. Serum electrolytes were within normal range; fasting blood glucose was within normal limits. Viral hepatitis markers such as Hepatitis B surface antigen and hepatitis C virus were negative. Tumor markers, including carcinoembryonic antigen, were 0.88 ng/mL, showing normal findings.

The patient underwent exploratory laparotomy with excision of the transverse colon diverticulum with stapler anastomosis. An enormous colonic diverticulum that emerged from the transverse colon along the anti-mesenteric boundary was discovered during surgery (Fig. 2).

Histopathology proved the presence of a giant transverse colon diverticulum, with no evidence of dysplasia, malignancy, or granuloma. Histopathology findings diagnosed the presence of all four layers of the colon as seen in the true diverticulum (Fig. 3), which could be classified as Type III giant colon diverticulum as per McNutt's *et al*. classification of giant colonic diverticulum [4]. The patient was discharged without any complications post 8 days of surgery.

Figure 2: Gross anatomy of the giant transverse colonic diverticulum measuring 17 cm × 11.7 cm × 7.8 cm with a 1.3 cm neck orifice seen on laparotomy

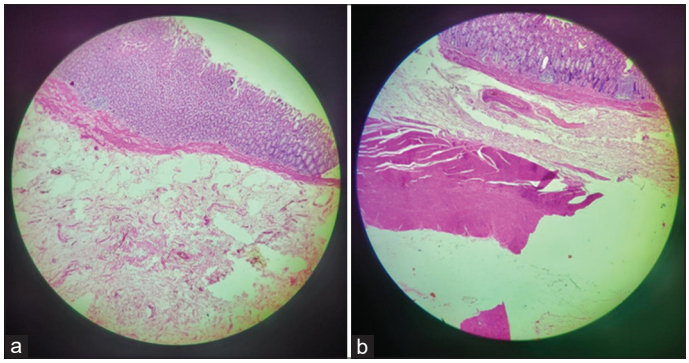

Figure 3: As all four layers of gastrointestinal tract (mucosa, submucosa, muscularis propria, and serosa) are present, hence, it is a true diverticulum

DISCUSSION

The diverticulum is a sac-like protrusion of the colonic mucosa where the vasa recta penetrates the circular muscle layer of the colon [1]. Diverticulosis coli is a common cause of abdominal pain, most commonly seen in the western population, where 50–70% of cases present in older patients >80 years of age [7]. Diverticular disease can be classified as uncomplicated diverticulitis or complicated diverticulitis, which encompasses the formation of an abscess, fistula, intestinal obstruction, or intestinal perforation [8]. Giant colon diverticulum is a rare presentation of diverticular disease, defined as colonic diverticula >4 cm, also known as 'air cyst", "giant gas cyst" [9], or "phantom tumor" [10], with <200 cases reported to date worldwide [2].

Giant colon diverticulum is classified by McNutt *et al*. as the following: Type 1-Pseudo diverticulum, which is composed of

muscularis mucosa only (22% of cases). The ball valve, which traps colonic gas inside the sigmoid diverticulum and causes it to gradually grow, is one potential mechanism. Type 2 – Inflammatory diverticulum, which is composed of scar tissue and arises from perforation and abscess formation (66% of cases). Type 3 – True diverticulum arising from all muscular layers and the myenteric plexus (12% of cases). This type is presumed to be due to intestinal duplication [4].

Giant colonic diverticulum most commonly arises from the sigmoid colon [2], but this case shows the presence of giant colonic diverticulum arising from the transverse colon. Only a few case reports of giant colonic diverticulum arising, namely, from the cecum and transverse colon, have been published in India [5,6]. A systematic review of 166 cases of giant colonic diverticulum was performed, which showed that the symptoms of giant colonic diverticulum included abdominal pain (69%), constipation (17%), sensation of abdominal mass (17%), vomiting (12%), and diarrhea (11%) [2]. A previous study has described a giant transverse colonic diverticulum mimicking gastrocolic fistula, where the classical features of gastrocolic fistula included feculent vomiting, diarrhea, and weight loss [11]. Abdominal mass was present on physical examination in 48% of the cases, with fever and abdominal tenderness directing toward diverticulitis complications such as abscess, perforation, obstruction, or peritonitis.

A CT scan of the abdomen with contrast is the most useful diagnostic tool in diagnosing the size, location, and relation of the giant colonic diverticulum with its surrounding structures, as well as, detecting the presence of any complications. The European Association for Endoscopic Surgery and Society of American Gastrointestinal and Endoscopic Surgeons 2018 consensus conference on acute diverticulitis management [12] strongly recommends the use of a CT scan as a diagnostic tool when acute diverticulitis is suspected. In this case, the giant colon diverticulum was treated surgically with exploratory laparotomy with *en bloc* resection and stapler anastomosis. The mainstay of treatment for giant colonic diverticulum includes a colic resection with an *en bloc* resection of the diverticulum, which is performed in 57.2% of the cases. Hartmann's procedure was used in 11.4% of the cases in the setting of complications such as free perforation, and a diverticulectomy was performed in 10.2% of the cases [2].

CONCLUSION

Giant colonic diverticulum is a rare entity, most commonly seen in sigmoid colon. This case highlights the presence of a giant colonic diverticulum of 17 cm × 11.7 cm × 7.8 cm, in an unusual location of the transverse colon, treated with surgical resection of the diverticulum. Giant colonic diverticulum associated with diverticulitis must be considered in the differential diagnosis of the acute abdomen along with acute appendicitis, acute cholecystitis, or colonic carcinoma.

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