



A Rare Case of Gastric Diverticulum and Review of Literature

ABSTRACT

Gastric diverticulum is an abnormal protrusion of the stomach wall, typically manifesting as outpouching in the fundus, particularly along the posterior wall. Gastric diverticulum is a condition commonly observed in individuals and usually remains asymptomatic. However, certain patients may present with a range of abdominal symptoms, including but not limited to epigastric pain and discomfort, nausea, vomiting, dyspepsia, early satiety, a vague sensation of postprandial fullness, belching, halitosis, anorexia, and dysphagia. A 73-year-old male patient who had a colectomy several months ago was admitted to the general surgery clinic because of a massive abdominal hernia presenting with abdominal pain, halitosis, frequent belching, and dyspepsia symptoms. Esophagogastroduodenoscopy revealed an approximately 5 cm diverticulum localized to the gastric fundus and also found erosive pangastritis and duodenitis. Gastric diverticula share similar characteristics with their intestinal counterparts, characterized by a size ranging from 1 to 11 cm, and can be either congenital or acquired. The treatment strategy for gastric diverticulum largely depends on the patient's clinical symptoms. In the case of asymptomatic diverticula, which are usually incidentally discovered, there is currently no consensus on treatment. EGD and radiological imaging play essential roles in diagnosing GD. Treatment options for GD are primarily dependent upon the patient's symptoms, and surgical intervention is generally recommended in cases when GD is significant in size.

Keywords: Diverticula, gastric diverticulum, open resection, surgery

Gastric diverticulum is an abnormal protrusion of the stomach wall, which typically manifests as outpouching in the fundus, particularly along the posterior wall (1). In 1661, Moebius was the first to describe gastric diverticula, further elaborated by Road in 1774 (2). These diverticula are exceedingly rare, with an estimated prevalence ranging from 0.01% to 0.11%, and are the least common form of gastrointestinal diverticula (3). Gastric diverticulum is a condition commonly observed in individuals, which usually remains asymptomatic. However, certain patients may present with a range of abdominal symptoms, including but not limited to epigastric pain and discomfort, nausea, vomiting, dyspepsia, early satiety, a vague sensation of post-radial fullness, belching, halitosis, anorexia, and dysphagia. Currently, there are approximately 30 reported gastric diverticula cases in the literature. Here, we present a case of a patient who underwent an open diverticulectomy due to gastric diverticulum.

CASE

A 73-year-old male patient who had a colectomy several months ago was admitted to the general surgery clinic because of a massive abdominal hernia presenting with abdominal pain, halitosis, frequent belching, and dyspepsia symptoms. Despite this, he denies experiencing weight loss, vomiting, tiredness, and jaundice. He had no history of substance abuse or smoking. There is no evidence of an inherited disease in the family.

The abdominal CT examination revealed a 5 cm mass in the gastric fundus that is filled with air. Further diagnostic evaluations have eliminated other potential diagnoses, indicating that the mass is associated with a particular type of diverticula (Figure 1).

Esophagogastroduodenoscopy revealed an approximately 5 cm diverticulum, which is localized to the gastric fundus, and additionally found an erosive pangastritis and duodenitis (Figure 2). A subsequent abdominal computed tomography (CT) showed multiple millimetric diverticula in the sigmoid colon.

Elgun Samadov¹

Chichak Mammadli²

Arturan Ibrahimli³

Iqbal Babazade⁴

Zohra Abdullazada⁵

Altay Aliyev³

¹Department of Surgery, Liv Bona Dea Hospital, Baku, Azerbaijan

²Department of General Medicine, Azerbaijan Medical University, Baku, Azerbaijan

³Department of Oncology, Liv Bona Dea Hospital, Baku, Azerbaijan

⁴Azerbaijan Medical University, Baku, Azerbaijan

⁵Department of Surgery, Scientific Center of Surgery after M. A. Topchubashov, Baku, Azerbaijan

Corresponding author:

Chichak Mammadli
✉ dr.chichek@gmail.com

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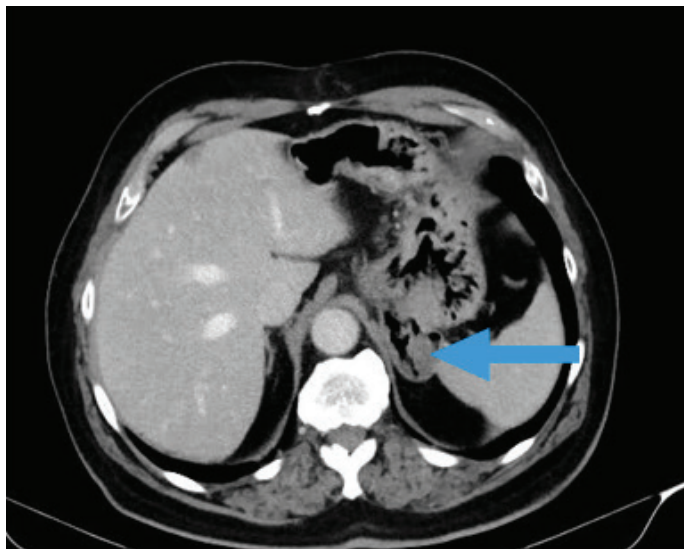


Figure 1. A well-defined sacular collection projected from the gastric fundus (blue arrow), Axial view of Computer Tomography (CT) abdomen showing gastric diverticulum.

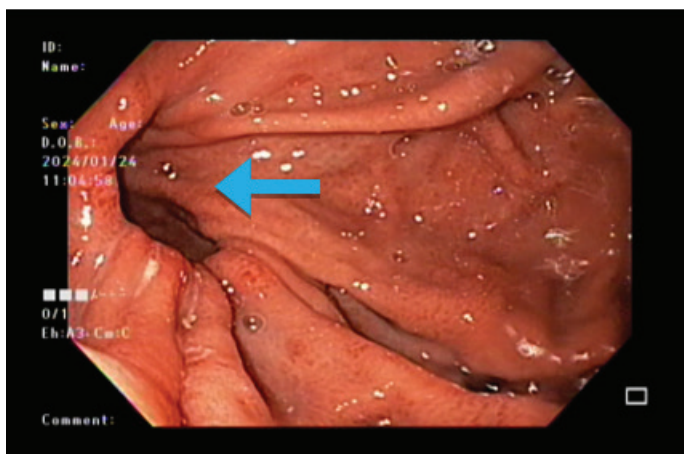


Figure 2. Upper gastrointestinal endoscopy. Endoscopic view of a gastric diverticulum (blue arrow) located in the gastric fundus.

The operation decision was made because of the presence of a substantial abdominal hernia in our patient. The laparoscopic approach was denied because of the patient's history of previous surgery and the presence of a giant incisional hernia.

The abdomen was opened with a 10 cm midline abdominal incision; under the omentum, a giant, about 5-6 cm-sized diverticulum was exposed in the gastric fundus and resected by GIA 80 stapler and taken out (Figure 3).

The patient was discharged on postoperative day 4 without complications during his stay. The patient was feeling well in his routine examination 2 months after the surgery without any complaints.

DISCUSSION

Gastric diverticulum is a rare type of diverticulum that can be asymptomatic or present with various symptoms such as epigastric pain and discomfort, nausea, vomiting, dyspepsia, early sati-



Figure 3. Intraoperative procedure, gastric diverticulum resection.

ety, a vague sensation of postprandial fullness, belching, halitosis, anorexia, and dysphagia. The incidence of GD is similar in men and women, and it is most observed during the 50th and 60th decades of life (4).

Gastric diverticula share similar characteristics with their intestinal counterparts, characterized by a size ranging from 1 to 11 cm, and can be either congenital or acquired. Congenital diverticula are "true diverticula" and involve all gastric wall layers. These are believed to occur more commonly along the posterior wall of the gastric fundus due to embryonal origin, a defect in the fusion of the dorsal and ventral mesentery, resulting in the formation of a diverticulum. In contrast, an acquired diverticulum is a "false diverticulum" lacking the muscular or serosal layer. It tends to occur in the antrum and may be attributed to various causes such as peptic ulcer disease, malignancy, pancreatitis, gastric outlet obstruction, or post-Roux-en-Y gastric reconstruction (5). False diverticula are classified into pulsation and traction types. The pulsation type results from conditions associated with increased intraluminal pressure or impaired gastric wall, such as gastric ulcer, gastric malignancy, or previous surgery. On the other hand, the traction type is secondary to perigastric adhesions caused by inflammatory lesions of adjacent organs such as the spleen, the pancreas, the liver, or the gallbladder. 70-75% of congenital gastric diverticula are in the posterior wall of the fundus of the stomach, 2-3 cm below the gastroesophageal junction, and 3 cm from the lesser curve (6). Conversely, acquired diverticula are less frequent and are typically located in or near the antrum (6). Lesions are generally singular and range in size from 1 to 5 cm; however, occasional reports of lesions are 10 to 11 cm in diameter. Patients with gastric diverticula often exhibit non-specific and varying symptoms. Symptoms may include upper gastrointestinal (UGI) bleeding, upper abdominal pain, reflux, bloating, anorexia, and halitosis. Additionally, complications of a gastric diverticulum may

manifest as massive UGI bleeding, ulceration, diverticulitis, or perforation, which may be caused by food retention and the release of gastric juices within the mucosal sac. Endoscopy is a valuable adjunct in the identification of a diverticulum. Upper endoscopy, ultrasound, and upper gastrointestinal barium studies can also detect other upper gastrointestinal pathologies. However, in cases where the diverticulum is not barium-filled, an upper barium study may fail to detect it. Occasionally, posterior wall diverticula can be identified through an upper barium study (7).

In contrast, the available literature advises the utilization of EGD as the gold standard examination for an accurate diagnosis (7). This modality is valuable not only in verifying the location and size of the gastric diverticulum but also in providing the opportunity to conduct a biopsy if there is a suspicion of a concomitant illness. Due to the similarity of clinical symptoms between gastric diverticulum and other common gastrointestinal illnesses, the accurate diagnosis of this condition can be challenging. On the other hand, gastric diverticulum may exacerbate symptoms already associated with more prevalent gastrointestinal pathologies. According to Palmer's study, a significant proportion of patients (30 out of 49) with gastric diverticulum have other gastrointestinal diseases that cause their symptoms (8).

The treatment strategy for gastric diverticulum largely depends on the patient's clinical symptoms. In the case of asymptomatic diverticula, which are usually incidentally discovered, there is currently no consensus treatment. Depending on clinical needs, symptomatic patients may receive treatment with PPI therapy, histamine H₂ receptor antagonist therapy, or antacid therapy. Studies have shown that PPI therapy, when administered over several weeks, can effectively alleviate symptoms in confirmed cases of GD (9). Gastric diverticula greater than 4 cm in diameter are more susceptible to complications and are less likely to respond favorably to medical management (10).

In the case of large, symptomatic, or complicated (such as those presenting with perforation, bleeding, or malignancy) diverticula, surgical intervention is recommended. According to a study conducted by Palmer, among nine patients with symptoms who underwent open surgery, 6 demonstrated favorable postoperative outcomes. In surgery, two primary options exist for resection procedures: laparoscopic and open resection. Since the late 1990s, after the first laparoscopic resection of a gastric diverticulum, it has become a favorable approach and is considered uncritical and feasible.

CONCLUSION

In a nutshell, gastric diverticula are rare benign conditions that can cause diverse symptoms. Thus, they may be challenging to diagnose and may require unnecessary interventions. EGD and radiological imaging play essential roles in the diagnosis of GD. Treatment options for GD are primarily dependent upon the patient's symptoms, and surgical intervention is generally recommended in cases when GD is significant in size.

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