

## GASTRIC DIVERTICULA ON THE GREATER CURVATURE

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**GASTRIC DIVERTICULA ON THE GREATER CURVATURE (Abstract):** Gastric diverticula are extremely rare in the surgical pathology and is usually asymptomatic. Their discovery is in most cases incidentally, on radiographic examination or autopsy. The most frequent localization is on the posterior wall of the cardia and on the lesser curvature of the stomach. Symptomatic gastric diverticula are rare, mainly occurring in patients between 20 and 60 years of age. We present a rare case of gastric diverticula on the greater curvature in a 46-year-old female from urban area. Intraoperatory, the diverticula was discovered on the greater gastric curvature after endoscopic exploration and gastrotomy, next to splenic root. The diverticul was resected with an linear stapler device. Surgical intervention effectively relieves symptoms. In adults, laparoscopic resection seems to be an attractive alternative to conventional surgery, although some authors experienced problems in identifying the diverticulum intraoperatively.

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### INTRODUCTION

Gastric diverticula are extremely rare in surgical pathology and is usually asymptomatic. In most cases the discovery of this diverticula is incidentally by radiologic findings or autopsy. This kind of diverticula are not larger than 10 cm. The most frequent localization is on the posterior wall of the cardia and on the lesser curvature of the stomach. We present a case of a diverticulum localised on the great curvature of the stomach with a particular surgical technique.

### CASE PRESENTATION

We described a case of 46 years old female, admitted to First Surgical Clinic, „St. Spiridon” Hospital Iași on February 12, 2007, with epigastric pain, eructation, retrosternal pyrosis, gastro-esophageal reflux disease (GERD), nausea and epigastric fullness. The debut was 7 years ago by dyspepsia. She was diagnosed at the Institute of Gastroenterology Iași in 2001 with gastric diverticula. Symptoms tended to appear unrelated with meals or time of day. No specific food intolerance was notated. During this time she had received the usual medical treatment of a soft diet, antispasmodics, alkalis and proton pump inhibitor (pantoprazole). The attacks would last several weeks. Her past surgical history (appendectomy in 1995, open cholecystectomy in 1996 from acute cholecystitis) was significant for selection a surgical approach. She was also diagnosed in 2003 with chronic hepatitis with C virus.

The patient was a well nourished female, apparently in good health. General examination revealed nothing remarkable except inferior limbs bilateral hydrostatic varices. Examination of her abdomen revealed median postoperative skin scars with normal aspect, pain at the palpation of the epigastria. From blood analysis with pathological significance was ALT= 47 U/L, AST= 49 U/L.

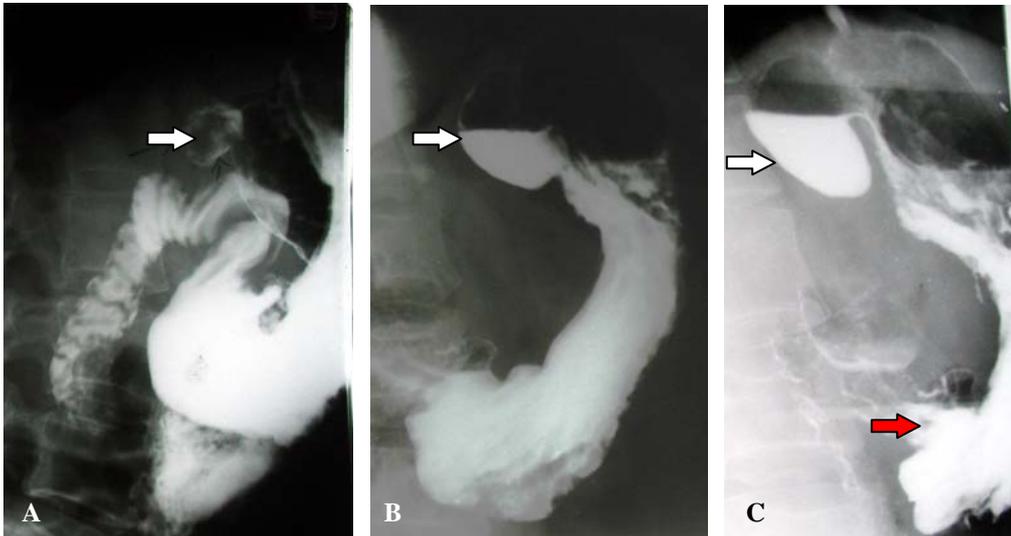
The X-ray exam after barium meal shows a gastric diverticulum partially filled with barium localised under cardia, a duodenal ulcer and gastroesophageal reflux in Trendelenburg position (Fig 1).

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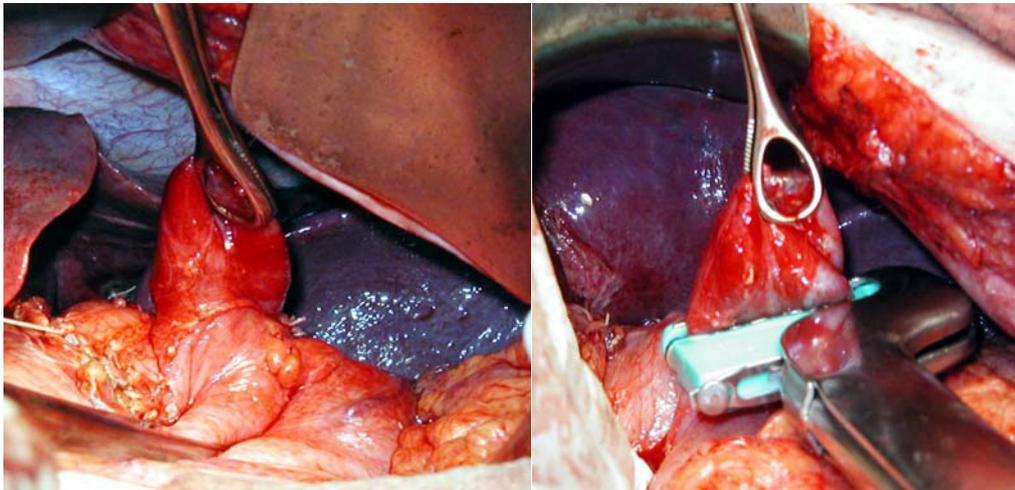
The diagnosis by imagistic findings was subcardial gastric diverticulum.

After orotracheal intubation, the operation was performed by open approach (median iterative laparotomy). After adhesiolysis and intraoperative endoscopy and gastrotomy, the diverticulum was discovered on the greater gastric curvature next to splenic root (not on the lesser curvature). The diverticulum was resected by a stapler device (TA 30) and handsewn gastrorraphy (Fig. 2).



**Fig.1 Barium meal: white arrow - gastric diverticula; red arrow – duodenal ulcer**

A. 2 cm subcardial gastric diverticula (X-ray exam performed in 2001);  
B, C. 5 cm subcardial gastric diverticula (X-ray exam performed in 2007).



**Fig. 2. Surgical treatment: diverticulectomy with stapler device (TA 30)**

The pathological report: grossly, the diverticulum to measure 5 cm. in length and 3 cm in width. Its neck was only 1.5 cm. in diameter. The wall of the sac was 3 mm in thickness and was lined by a mucosa having well developed rugae similar to those of the stomach. Microscopically, the appearance was gastric mucosa of fundus type, with chronic gastritis (submucosa with edema and hemorrhagic infiltration and muscular coats were replaced by fibrous tissue) and ulcerations.

The postoperative course was uneventful. The postoperative hospital stay was 8 days, and the follow-up to 30 days and 3 months respectively, revealed disappear of all the symptoms.

## DISCUSSION

Gastric diverticula were first described in 1661 by Moebius and in 1774 by Roax [1]. Helmont in 1804, was another early writer who described this unusual condition [2]. Backus [3] and Moses [4] in different reports, both in 1946, stated that there were only slightly more than 150 reported cases at that time. In some of these, the diagnosis was not definitely established. Palmer [5] described a series of 20 symptomatic patients with gastric diverticula. Rivers, Stevens and Kirklin in 3662 routine autopsies found four gastric diverticula [6]. In the roentgen examination of the stomach in 782 patients, Shiflett recorded an incidence of 0.65% [1].

Gastric diverticula are an uncommon form of diverticular disease. Gastric diverticula are more frequent for females (2/1), but the last studies consider that are equally distributed between male and female patients [7]. The gastric diverticulum has been also described in newborns, usually associated with pyloric or duodenal obstruction [5].

Gastric diverticula have been classified by Schmidt and Walters [8] as follows: True type (congenital) diverticula, in which all layers of the stomach are present due to malformation or interrupted development during the fetal period. False (acquired) diverticula, which are secondary to some other type of gastric pathologic condition; the false diverticula are further subdivided into the following groups: (a) *pulsation type*, which may be secondary to conditions associated with increased intraluminal pressure (difficult labor, pyloric obstruction, severe vomiting, coughing, constipation, foreign bodies etc.) or from the eroding effect of gastric ulcers or carcinoma; (b) *the traction type*, (due to perigastric adhesions resulting from inflammatory lesions of the spleen, gallbladder, pancreas, liver, or peritoneum).

Symptomatic gastric diverticula are rare, mainly occurring in patients between 20 and 60 years of age. Only 4% of gastric diverticula occur in patients younger than 20 years old [9]. The presented case was 46 years old.

The size was between 2 and 10 cm and originate mostly on the posteromedial border of the fundus, close to the gastro-oesophageal junction. They are rarely seen originating from the greater curvature and may then represent true congenital diverticula containing the three layers of the gastric wall [10]. In our case the size of gastric diverticulum was 5 cm.

The literature in the field quotes around 200 cases in the whole world (only 30 reported cases described until 1930). A large percentage of patients with gastric diverticula remain asymptomatic throughout life. This is probably because of the posterior location of the diverticulum and its broad base, and because it is usually a true fullthickness diverticulum and not a pseudodiverticulum. The symptoms a patient seeks treatment for depend on the size and location of the diverticulum, the width of the base, and the presence of ectopic tissue within the diverticulum. Patients with symptomatic gastric diverticula visit their physicians with complaints of pain, emesis, weight loss, iron deficiency anemia, or complications such as bowel obstruction, bleeding, gastroesophageal reflux, and perforation [1,5,7,10-12]. Gastric diverticula may also be associated with ectopic mucosa, ulcers, and neoplastic changes [13,14]. In rare cases the diverticulum became symptomatic after laparoscopic Roux-en-Y gastric bypass [15] or arising in a patient who had previously undergone anterior lesser curve seromyotomy for chronic duodenal ulcer disease [16].

Barium study will display a mucosa-lined contrast-filled outpouching with airfluid level in upright position. Diverticula that do not communicate with the gastric lumen may erroneously lead to a diagnosis of intramural tumour, particularly if they are large. On CT they are typically depicted as an abnormal rounded soft tissue shadow in the left paravertebral region simulating an adrenal mass if they are completely filled with fluid. The exact diagnosis is evident when an air fluid level is noted or if the diverticulum is filled with perorally

administered contrast medium. Differential diagnoses include a hiatus hernia and a healed ulcer crater.

The majority of cases of symptomatic gastric diverticula can be treated medically. Those cases, in which no symptoms are present, need no specific treatment. In the cases which produce only mild symptoms and in which there has been no evidence of serious hemorrhage, impending perforations, or associated gastric ulcer, conservative treatment should be tried. A soft diet with antacids, antispasmodics and proton pump inhibitor (pantoprazole) will often relieve the symptoms [1,5,7,10].

The poor response to medical therapy in our case suggests that nonsurgical therapy for symptomatic gastric diverticula is not warranted. The optimal surgical therapy is resection of the diverticulum with primary repair. It can be difficult to see the diverticula and reports have described missed diverticula during surgery. This can be avoided by performing a gastrostomy through the anterior gastric wall when having trouble finding the diverticulum, so that a finger can be inserted through the neck of the diverticulum. Intraoperative endoscopy with placement of the scope or a biopsy clamp into the diverticulum also may improve localization. The therapeutic method used is flexible gastroscopy performed intraoperatively to help localize the diverticulum, which was resected with an stapling device. Closure after resection can be accomplished with a handsewn or surgical stapling technique. The procedure may be effectuated by laparoscopy with advantage minim invasive abroad [5,9,15,17]. If the gastric diverticulum cannot be visualized or safely resected, then conversion to an open procedure is required [5].

However, not all patients with gastric diverticula will become symptom free after resection, indicating that symptoms could be related to other gastrointestinal tract pathology (most commonly peptic ulcer disease). This implies that before selecting patients for surgical resection of gastric diverticula, a thorough evaluation for other causes of abdominal pain should be performed. Surgical intervention effectively relieves symptoms in our case. The main indications for surgical intervention are to differentiate gastric diverticula from peptic ulcer disease or malignancy and to treat symptoms [5,13,14]. However, given the low complication rate and rarity of gastric diverticula, medical therapy with proton pump inhibitor also has been advocated.

The new therapeutic method used are: gastroscopy (with an stapling device).

## CONCLUSION

The case presented was particular by localisation (on the greater curvature) and the delayed surgical treatment (after 6 years from the diagnosis).

The gastric diverticula is a rare cause of dyspepsia or non-specific digestive symptoms. The positive diagnosis is usually ... tranzit baritat soi gastroscopie, as in our case.

The stapling resection is the choice procedure for this kind of diverticula. The laparoscopic approach is better than open technique, but in this case, we can't performed this approach because the precedent surgical procedures (open cholecistectomy).

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