

## CASE REPORT

# Multimodality Approach To Diagnose Gastric Diverticulum : A Rare Cause Of Acute Abdomen

M Y Rizal<sup>1</sup>, Nor Hanipah Zubaidah<sup>2</sup>, A H Shaker<sup>2</sup>

<sup>1</sup> Department of Surgery, Hospital Pengajar Universiti Putra Malaysia, Persiaran MARDI-UPM, 43400 Serdang, Selangor

<sup>2</sup> Department of Surgery, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.

### ABSTRACT

Gastric Diverticulum (GD) is a rare form of diverticular disease where it is defined as out-pouching of gastric wall. Majority of patients are asymptomatic but it may present with variable symptoms mimicking other diseases. We report a case of GD mimicking sealed perforated gastric ulcer based on clinical presentation and Contrast-Enhanced Computed Tomography (CECT) abdomen images.

*Malaysian Journal of Medicine and Health Sciences* (2022) 18(SUPP13): 15-17. doi:10.47836/mjmhs18.s13.5

**Keywords:** Gastric diverticulum, Perforated gastric ulcer, Diverticular disease, Oesophago-Gastro-Duodeno-Scopy (OGDS), Contrast-Enhanced Computed Tomography (CECT) Abdomen

### Corresponding Author:

Mohd Rizal Mohd Yusof, MMed Surgery

Email: mohdrizalmy@upm.edu.my

Tel: +603-97692667

### INTRODUCTION

Gastric Diverticulum (GD) is an out-pouching of the gastric wall. GDs are rare and they are commonly detected incidentally during diagnostic endoscopy. GD prevalence in radiographic contrast study and at Oesophago-Gastro-Duodeno-Scopy (OGDS) ranges from 0.04% and 0.01% to 0.11%, respectively (1). The incidence of GD is equally distributed between males and females and typically present in the fifth and sixth decades (2). Most GDs are asymptomatic. Symptoms varies and may present with a vague sensation of fullness or discomfort in the upper abdomen (1). GD also can present with upper gastrointestinal (UGI) bleeding and perforation. We report an interesting case of GD patient who presented as symptomatic peptic ulcer disease and on Contrast-Enhanced Computed Tomography (CECT) abdomen images revealed as sealed Perforated Gastric Ulcer (PGU).

### CASE REPORT

A 64-year-old lady went to emergency department with two days history of abdominal pain with a pain score of 6/10. There were no nausea, vomiting, dysphagia, haematemesis, melena, anorexia or any other upper gastrointestinal symptoms. Clinically, she was afebrile, haemodynamically stable but there was tenderness over the epigastric region. After analgesia

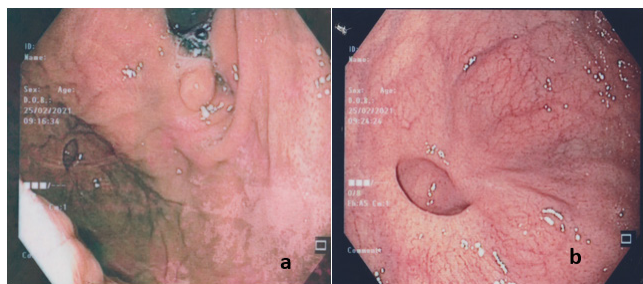
was given her abdominal pain resolved but the next day she had another similar episode of the abdominal pain. She was tender over the epigastric region despite haemodynamically stable. Her complete blood counts, renal function, liver panels and inflammatory marker were all normal. A plain Chest Radiograph (CXR) showed no air under right hemidiaphragm. In view of the acute abdomen, a Contrast-Enhanced Computed Tomography (CECT) of the abdomen and pelvis was performed which showed diffuse stomach wall thickening at gastroesophageal junction with focal outpouching loculated fluids collection containing air-fluid level at posterior wall of stomach measuring 1.2 x 1.5 cm (Figure 1). A possible diagnosis of sealed Perforated Gastric Ulcer (PGU) was made based on the CECT findings. She was then managed conservatively with broad spectrum intravenous antibiotic and her abdominal pain completely resolved. After 5 days of conservative management, an Oesophago-Gastro-Duodeno-Scopy (OGDS) was performed and showed moderate mucosal erosion at gastric body and a single diverticulum at posterior wall of gastric fundus (Figure 2a); The lumen of the diverticulum was clean, no sign of inflammation, slough, bleeding or signs of perforation (Figure 2b). She was discharged home well with oral Proton Pump Inhibitor (PPI). She was followed up at outpatient clinic one week later and she was asymptomatic and well.

### DISCUSSION

Gastric Diverticulum (GD) is a rare condition which is defined as out-pouching of the gastric wall which most often occurs in the posterior wall of the fundus as was demonstrated in this patient (3). GD is the least common



**Figure 1: Contrast-Enhanced Computed Tomography (CECT) images of diffuse stomach wall thickening at gastroesophageal junction with focal outpouching loculated fluids collection containing air-fluid level at posterior wall of stomach measuring 1.2 x 1.5 cm (arrow) which mimicking a sealed Perforated Gastric Ulcer**



**Figure 2: (a) An Oesophago-Gastro-Duodeno-Scopy (OGDS) image of single diverticulum seen at posterior wall of stomach fundus (b) A clean and healthy-looking gastric diverticular lumen with no signs of any perforation such as slough or inflammatory tissue**

diverticulum of the gastrointestinal tract with prevalence rates ranging from 0.04% (165/380,000) in Upper Gastrointestinal (UGI) contrast studies, 0.01–0.11% in OGDS and 0.02% (6/29,900) in autopsy studies (2,3). Although most patients are asymptomatic but they may present with vague and variable symptoms (1).

Modalities to diagnose GD include OGDS, UGI contrast studies and CECT of abdomen. Even though CECT scan is readily available and noninvasive procedure to diagnose GD, this modality is less sensitive and may lead to misdiagnosis (3). Some of the reported CT failed to identify an air bubble in the lesion that was in continuity with the gastric lumen (3) and this led to misdiagnosis of sealed PGU as in our case. The CECT findings of this patient showed diffuse stomach wall thickening with inflammatory changes at gastroesophageal junction and focal out-pouching loculated fluids collection containing air-fluid level at posterior wall of the stomach. The presence of stomach wall inflammation made the visualization or determination of air within GD on CECT was more challenging and led to misdiagnosis.

In PGU, erect chest X-ray and CECT have high accuracy of showing free air in peritoneum. CECT in PGU shows evidence of air seen is typically outside from gastric lumen but as in GD, the air is within the gastric wall or lumen, which is the CECT characteristic feature of GD. The rare incidence of GD and its sporadic CECT findings resulted in the prevalence rate of 0.12% for diagnosis based on CECT (4). As most of the GDs are situated along the dorsal or posterior wall of the stomach, CECT scans performed in prone position may facilitate air movement to the top and formed an air-fluid level (3). This can facilitate radiologists to identify if the air bubbles seen adjacent to gastric wall, either outside or within the gastric lumen, and thus have accurate diagnosis of GD based on CECT.

OGDS is a recommended modality to confirm the diagnosis of GD. OGDS can confirm the location and size of the diverticular neck, and also provides an opportunity for biopsy if a coexisting illness is suspected (3). Abdominal tenderness with signs of peritonitis are common clinical signs of PGU. OGDS is contraindicated in patient with PGU as it can worsen the clinical condition. However our patient has remained hemodynamically stable with no classical signs of PGU despite the contradictory CECT report. Due to the dispute in clinical assessment with the radiological findings, an OGDS was performed to finally confirm the diagnosis of GD.

In general, combination of investigation modalities are very useful and should be considered in rare clinical presentations to ensure accurate diagnosis. Especially when the clinical presentations and the radiological findings are contradictory. OGDS is an essential tool to diagnose GD and the decision of performing it should not be excluded by other modality.

There is no specific treatment for an asymptomatic diverticulum (2). The use of PPI therapy for several weeks has been reported to alleviate symptoms of dyspepsia in confirmed cases of GD (2). As in this patient, she had inflammation of gastric mucosa and the use PPI would improve inflammation of gastric mucosal lining of the diverticulum. Surgical resection continues to be the main treatment when the GD are large (>4 cm in diameter), in symptomatic patients or with complications such as ulceration, UGI bleeding, perforation, and malignant transformation. In our patient, she had acute abdominal pain which resolved with PPI and remained asymptomatic at follow up visit.

**CONCLUSION**

Gastric Diverticulum (GD) is a rare condition and diagnosing it can be challenging. The presentation is largely asymptomatic but it can mimic sealed Perforated Gastric Ulcer (PGU) as in this patient. Therefore multimodality approach including clinical findings,

radiological imaging and OGDS examination will be useful to diagnose this rare entity. Treatment options is mainly conservative and surgery is only considered in complicated GD.

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