

# Dorsal Stomach Perforation by Peptic Ulcer. Case Report and Review the Literature

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## Abstract

## Case Report

**Background:** Dorsal perforation due to stomach ulcer is a rare condition and it should always be included in the differential diagnosis of acute upper quadrant pain. Our report evaluates the presentation, diagnosis, management and outcomes of this uncommon acute surgical condition. **Case presentation:** The aim of this case report was to review the current literature and report on a case involving a 65-year-old Caucasian female presented to the emergency department with persistent right upper abdominal pain, nausea, vomiting and loss of appetite. Contrast-enhanced CT scans of abdomen showed a dorsal stomach perforation with free air and contrast intraperitoneal and in retroperitoneal space. A posterior gastric perforation of peptic ulcer was confirmed by exploratory laparotomy; ulcerectomy with primary suture closure was performed. The patient was discharged 25 days after the operation. **Conclusions:** When pneumoperitoneum was confirmed by radiological examination, posterior perforation of peptic ulcer should be actively excluded in high risk patients. A high index of suspicion is mandatory.

**Keywords:** Dorsal gastric perforation, peptic ulcer.

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## INTRODUCTION

The patient in this case came to the hospital because of upper abdominal pain, and subsequent abdominal sonography and computed tomography (CT) investigation led to the detection of free intraperitoneal fluids, free air and contrast. Although clinically, posterior perforation due to stomach ulcer are relatively rare, it remains one of the causes of acute upper quadrant pain, and it should always be included in the differential diagnosis.

The differential diagnosis of acute right upper quadrant pain is more complicated, when a history of alcohol abusos with alcohol addiction syndrom, liver cirrhosis with ascites, a history of stomach ulcer with upper GI bleed, Soor-esophagitis, esophagus varices, a history of chronic pain syndrom, depression and high blood pressure, a history of right upper limb amputation was described. Our patient described such of medical history. One of the most common causes of pain in the right upper abdomen is gallbladder stones or cholecystitis, stomach ulcer or gastritis, stomach perforation, pancreatitis, kidney stones, colitis and more. Stomach perforation is often associated with peptic ulcer disease, iatrogenic causes, trauma and

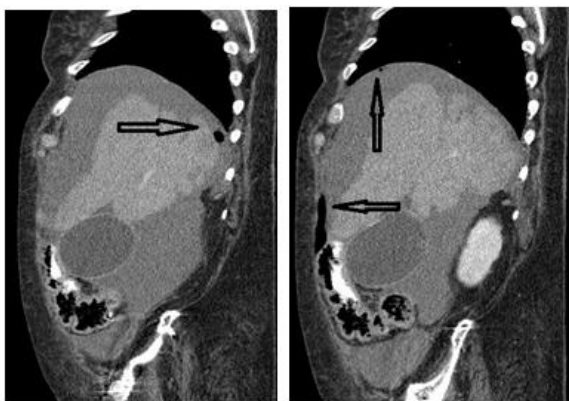
cancer [1]. Early diagnosis and therapy in these cases is imperative to improve patient's chances of survival.

## CASE PRESENTATION

A 65-year-old Caucasian female presented to the emergency department with persistent right upper abdominal pain, nausea, vomiting and loss of appetite, after consuming amount a large of alcohol a days before admission to our hospital. She described the pain to be stabbing in character, did not mention fever, or any other symptoms. The patient had a history of stomach ulcer with upper GI bleed, liver cirrhosis, Soor-esophagitis, esophagus varices, a history of chronic pain syndrom, depression and high blood pressure. She was taking painkillers and any other medication, had a surgical history of right upper limb amputation, she was abusing alcohol with alcohol addiction syndrom.

A physical examination revealed a normal body temperature, a normal heart rate, mild tenderness in the right upper abdomen, no rebound pain, negative Murphy's sign, and no pain on percussion in the liver and kidney areas. Laboratory investigation revealed a C-reactive protein (CRP) of 1.81 mg/dL (0-5 mg/dL), normal value of white blood count, GOT-AST of 52

U/L (3.1-6.8 qmol/L), Gamma-GTof 569 U/L (<40), LDH of 291 U/L (135-214 U/L), Glucose of 190 mg/dL (82-115 mg/dL). Abdominal sonography revealed ascites, hydrops of the gallbladder by gall stones and liver cirrhosis. Initial treatment to his admission to our surgical department employed fluids, intravenous administration of antibiotics (Rocephin 2g), stomach-protecting and symptomatic supportive treatment and nothing by mouth diet. The day after admission, her abdominal pain reoccurred, mainly in the lower abdomen this time, was persistent and could not be relieved. It could not elicit the sign of peritonitis. He had nausea, without vomiting and no fever. Laboratory investigations were performed. C-reactive protein (CRP) level was 17.33 mg/dL (0-5 mg/dL). CT-Scan of abdomen with contrast was performed. Contrast-enhanced CT-Scan described free intraabdominal fluids and air (Fig.1).

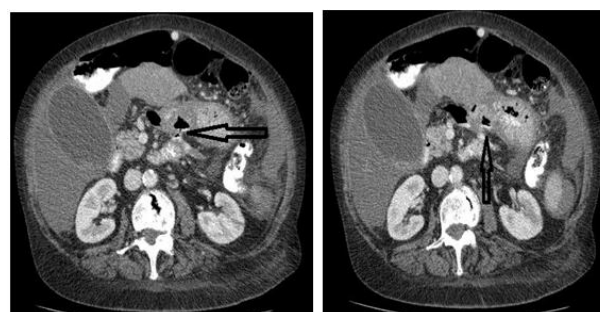


**Fig-1: Abdominal CT demonstrating free air and fluids in the intraperitoneal space**

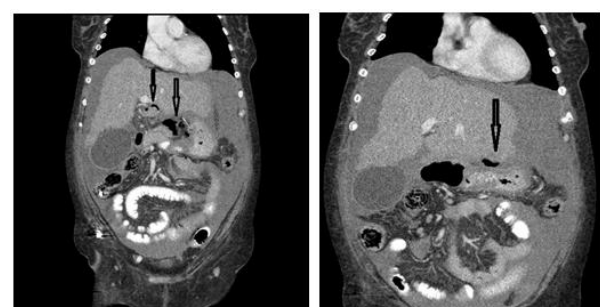
It also exposed free contrast and air in retroperitoneal space (Fig. 2 and 3). With the consent of our patient, an exploratory laparotomy was performed. Over 2 litres of purulent fluids, stomach contents and ascites were drained from the peritoneum. There was about 2.5 × 2 cm perforation in the transverse mesocolon. Generalised peritonitis was noted. The anterior surface of the stomach, duodenum and the rest of the gastrointestinal tract was intact. The intraperitoneal exploration also showed hydrops of gallbladder by stones and advanced liver cirrhosis. Opening of the bursa omentalis showed a dorsal perforation of prepyloric region, about 3 x 3 cm in size, through the bursa omentalis and meso-transverse, no retroperitoneal abscess, no tumor. A small amount of tissue around the perforation was removed, and one-layer closure with intermittent Vicryl 2.0 sutures was applied to the site of the leakage, the cholecystectomy was performed, the defect in the transverse mesocolon was repaired, the peritoneal cavity lavaged, one drain was placed in the area of the anastomosis and the other one was placed in the Douglas pouch. The pathological examination showed the tissue contained chronic stomach ulcer, signs of acute peritonitis and C-gastritis, without discovery of *Helicobacter pylori*.

After the operation, our patient was admitted to the intensive care unit, an enteral nutrition tube was inserted and fluid feeding provided. Prophylactic eradication therapy and Distraneurin therapy was initiated, symptomatic supportive treatments were continued. After 8 days a new operation was required after fascial dehiscence by refractory ascites. The abdominal wall was successfully multilayer reconstructed and reinforced with Vicryl-Mesh.

Our patient was observed to reach a stable condition, she was discharged after 25 days and was placed on proton pump inhibitors etc. We follow up the patient 6 months after with good outcome.



**Fig-2: Abdominal CT demonstrating a dorsal stomach perforation with free retroperitoneal contrast and air**



**Fig-3: Abdominal CT demonstrating free air and in the retroperitoneal space**

## DISCUSSION

The main predisposing factors described for peptic ulcer perforation are *Helicobacter pylori* infection, alcohol abuse, smoking, the use of non-steroidal anti-inflammatory drugs (NSAIDs), chronic stress, age >60 years [2, 3]. Its occurrence may be masked by acute accompanying disease and the diffuse nature of symptoms of this pathology leading to delays in patient presentation to the surgeon and attendant increase in morbidity and mortality. The more common type of perforation associated with the stomach is an anterior perforation [4]. On the other part, only 5-8% of ulcers lie in the posterior wall of the stomach and untreated, may also perforate. Posterior perforation of peptic ulcer is rare, and high morbidity and mortality rates are reported for this condition in the literature [5-7]. Chin-HoWong *et al.* [8] in 2003 reported an of 1.7% incidence of posterior perforated peptic ulcer from all

cases, during the 12½-year period. M. Zimmermann *et al.* [9] in 2014 reported during a period of 15 years (01/1996–12/2010), 45 patients who were operated because of a perforated gastric or duodenal ulcer at University Hospital Lübeck in Germany, only 3 patients (6.7%) with a posterior gastric perforation were reported. Despite *Helicobacter pylori* is one of the main predisposing factors for peptic ulcer perforation encountered by Chin-HoWong [8] and M. Zimmermann [9], in our case a *Helicobacter pylori* infection was not discovered.

The 65-year-old Caucasian female, falls within the age range of 18-91, with a history of stomach ulcer with upper GI bleed, consumption of alcohol, the use of non-steroidal anti-inflammatory drugs reported by Chin-HoWong [8] and M. Zimmermann [9]. Posterior perforations tend to present late due to the insidious onset of symptoms. These ulcers penetrate into the retroperitoneal space or the lesser sac or through meso-transverse into the peritoneal space. Bursa omentalis represents a potential space. All this explains the vague complaints that characterize such perforations when they occur [10]. We could not elicit generalized abdominal tenderness and board-like rigidity suggestive of peritonitis in our case. Chin-Ho Wong could not described the sign of peritonitis in 25% of their cases. The most common misdiagnoses, gallbladder stones or cholecystitis, appendicular and kidney diseases, aortic aneurysm etc. occur because presenting with pain in the right upper abdomen and common symptoms like nausea, loss of appetite, or vomiting. This symptoms can distract the surgeon from the stomach perforation.

An erect abdominal roentgenograms can be use in patients when diagnosis of perforation is suspected. Pneumoperitoneum is pathognomonic and represent a crucial sign in clinical decision-making. In the absence of these radiographic signs, an urgent CT-Scan should be considered. Our case report supports the use of routine CT-Scan of abdomen with contrast, particularly in high-risk patients (those with a history of peptic ulcer disease and upper GI bleed or use of nonsteroidal anti-inflammatory drugs, abusing alcohol, liver cirrhosis, ascites etc.) with equivocal clinical abdominal findings. The abdominal CT demonstrated free air and contrast in the intraperitoneal and retroperitoneal space, clue of a retroperitoneal perforation in our patient. CT-Scan is more accurate than erect abdominal roentgenogram in the detection of pneumoperitoneum and can also identify other intraperitoneal and retroperitoneal pathology [11]. She underwent an emergency exploratory laparotomy, dorsal perforation of peptic ulcer was confirmed. Generalised peritonitis was noted. Over 2 litres of purulent fluids, stomach contents and ascites were drained from the peritoneum. A small amount of tissue around the perforation was removed, and one-layer closure with intermittent sutures was applied to the site of the leakage, the cholecystectomy was performed, the defect in the transverse mesocolon

was repaired. Generalized peritoneal contamination requires diligent peritoneal lavage and can complicate gastric perforation. The treatment of choice for all patient reported by Chin-HoWong and M. Zimmermann with posterior gastric perforation was exploratory laparotomy. Chin-HoWong reported massive peritoneal contamination in 66% and M. Zimmermann in 70% of their patient. There is some controversy whether repaired large ulcers such our patient had, because of the risk for re-leak [12]. Despite the large ulcer sizes, leakage from the repair site was not recorded. Patient was discharged after 25 days and follow up 6 months after with good outcome.

Posterior perforation of peptic ulcer is an uncommon surgical emergency and may be missed because of their rarity and anatomic location. It is therefore important for the surgeon to be aware, particularly in high-risk patients, that a potential source of any persistent upper abdominal pain is a posteriorly perforated peptic ulcer. Careful evaluation of imaging findings and clinical symptoms is necessary in this patients to prevent misdiagnosis. Understanding the diagnostic findings and common pitfalls, along with a knowledge of the differential diagnoses, can improve diagnostic accuracy and prevent unnecessary therapies.

## CONCLUSION

Most times the diagnosis is often difficult and is made intra-operatively. A high degree of suspicion is required to make an advanced pre-operative diagnosis of posterior gastric perforation, even if other acute accompanying disease was reported. Abdominal CT scan of abdomen with contrast should be done in high-risk patients with nonspecific abdominal symptoms. The best chance for survival of the patient lies in prompt, thorough surgical exploration.

## Author contributions

Dr. Medic Ovidiu-Angel Matei: manuscript drafting, translate, review.

Dr. Dr. Lorena Matei: manuscript design and drafting, translate

Prof. Dr. med. Wolfram Lamade: review the manuscript

All authors have no conflict of interest to declare. All authors read and approved the final manuscript.

## Compliance with ethical standards

Informed consent was obtained from patient. Human rights all procedures have been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

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