

# An Uncommon Cause of Peritonitis: Perforation of Undiagnosed Gastric Cancer

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## Abstract

## Case Report

Gastric cancer, while common, rarely presents as an acute surgical emergency, with perforation occurring in less than 5% of cases. This report details a 53-year-old male who presented with abdominal pain and vomiting, leading to a diagnosis of perforated gastric adenocarcinoma confirmed by imaging and subsequent total gastrectomy. The case underscores the challenges of diagnosing perforated gastric cancer, which often mimics benign conditions. Effective imaging, especially CT scans, is crucial for timely diagnosis and management. Given the high mortality associated with surgical interventions, further research is needed to establish standardized treatment guidelines for this rare complication.

**Keywords:** Peritonitis, Perforation, Gastric cancer, CT scan.

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## INTRODUCTION

Gastric cancer is the fifth most common cancer worldwide and the second leading cause of cancer mortality [1]. Although not typically a surgical emergency, it can lead to acute complications like hematemesis and perforation, resulting in peritonitis [2].

Perforation occurs in fewer than 5% of patients and represents less than 1% of gastric cancer cases [3]. Patients usually present with sudden, severe abdominal pain, which can progress to septic shock if untreated [4]. Computed tomography (CT) is the most effective imaging technique for detecting gastrointestinal perforations, while an upright chest X-ray often shows free air under the diaphragm. A contrast-enhanced abdominal CT can reveal free air, mesenteric fat stranding, and bowel wall thickening, helping to locate the perforation [5].

This case report describes a 53-year-old male presenting with an acute abdomen, which revealed peritonitis resulting from a perforated unknown gastric cancer.

## CASE REPORT

A 53-year-old male patient, who is a chronic smoker with a history of gastroesophageal reflux,

presented to the emergency department with symptoms resembling peritonitis, including persistent, generalized abdominal pain and vomiting lasting for the past two days.

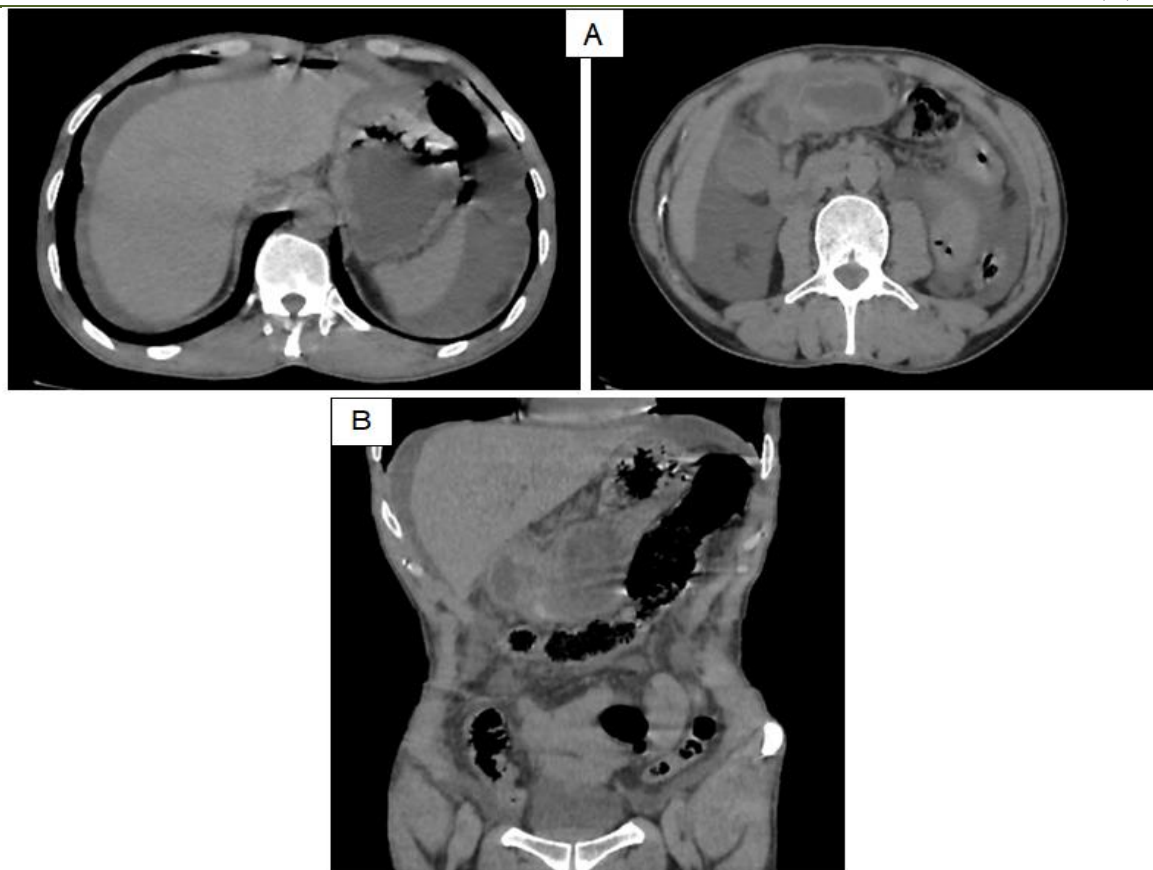
Upon clinical examination, the patient was in poor general condition, with a temperature of 37.5°C and normal blood pressure. The abdomen was moderately distended and exhibited diffuse tenderness.

Laboratory results indicated a white blood cell count of 14,020/L, hemoglobin of 10 g/dL, C-reactive protein of 84 mg/L, urea of 17 mg/dL, creatinine of 1 mg/dL, and blood lipase of 135 U/L.

A CT scan of the abdomen revealed pneumoperitoneum, predominantly in the supra-mesocolic region, along with peritoneal effusion and peritonitis due to gastric perforation of a lesion. The patient was initially referred to the operating room for a straightforward closure of the gastric wall defect but ultimately underwent a total gastrectomy.

The anatomopathological examination concluded that the diagnosis was gastric adenocarcinoma.

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**Figure 1: Abdominal CT scan (A) axial (B) coronal images showing air around the perforation site, in the omental bursa and the peritoneum, peritoneal effusion visible in the peri-hepatic, peri-splenic regions, both paracolic gutters and the pelvic area. It also shows a lesion on the gastric lesser curvature with infiltration into the adjacent mesenteric fat**



**Figure 2: Total gastrectomy surgical specimen**

## DISCUSSION

Gastric cancer (GC) is rarely revealed by perforation, occurring in less than 1% of cases, as noted by Franco R *et al.*, [6]. Age is a key factor: patients with perforated GC tend to be older (average 65 years)

compared to those with benign ulcers (around 50 years) [7]. However, our 53-year-old patient presented with a perforated GC, which is unusual. Weight loss has been mentioned as a possible indicator of malignancy [8].

Clinically, it often resembles peptic ulcer perforations or other hollow organ ruptures, making accurate preoperative diagnosis challenging [9].

The main causes of spontaneous perforation are ischemia and necrosis [10]. Tumor invasion weakens the stomach wall, while vascular obstruction from tumor cells can worsen ischemic injury, increasing the risk of perforation [10].

Imaging, such as abdominal X-ray and contrast-enhanced CT, is crucial for confirming perforation and detecting signs of malignancy, although perforation can reduce CT sensitivity due to the absence of digestive opacification [11]. A multidetector-row CT is highly recommended, scanning the entire abdomen with a collimation of 1 to 2.5 mm and producing axial images of 5-7 mm thickness, with multi-planar reconstructions if needed [12]. Intravenous contrast is essential for identifying the perforation site, revealing extraluminal air, perigastric fat stranding, and fluid accumulation [10]. Air typically collects near the liver, stomach, omental bursa, and intrahepatic fissure, while gastric content leakage may cause abscesses, phlegmon, or worsening peritonitis [12].

Surgical intervention for stomach perforation, regardless of tumor type, carries a significant risk of mortality, ranging from 10% to 40% [13]. The choice of surgical approach for perforated gastric cancer (PGC) depends on various factors, including the diagnosis, comorbidities, level of peritoneal contamination, hemodynamic stability, ongoing sepsis, and presence of metastases [14]. For PGC, initial management should address both the perforation and peritonitis, which may involve either immediate closure of the perforation, application of an omental patch or even an emergency total or partial gastrectomy if indicated, as in our patient's case [13]. If the perforation is deemed non-resectable, the patient may receive palliative care.

## CONCLUSION

Acute perforation of gastric cancer is rare, and no standardized treatment guidelines exist. Importantly, the CT scan plays a crucial role in diagnosing malignancy, perforation, and evaluating the severity of sepsis.

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