

Case Report: Mechanical Benign Gastric Outlet Obstruction in Adult

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Abstract

Gastric outlet obstruction (GOO) refers to incomplete or complete flow of gastric contents into the duodenum from a partial or complete obstruction in the region of the distal stomach, pylorus, or duodenal bulb. Presentation usually include vomiting and early satiety after little eating. Currently, GOO represents an unusual complication of PUD with a 2% incidence, in 80% of cases secondary to scarring from long term inflammation in untreated or chronic bulbar ulcers.

Keywords: Gastric Outlet Obstruction; Peptic Ulcer Disease; Inflammation; Oral Contrast; Partial or Complete Obstruction

Abbreviations

PUD: Peptic Ulcer Disease; GOO: Gastric Outlet Obstruction; CT Scan: Computerized Tomography

Introduction

Gastric outlet obstruction (GOO) refers to incomplete or complete flow of gastric contents into the duodenum from a partial or complete obstruction in the region of the distal stomach, pylorus, or duodenal bulb. Presentation usually include vomiting and early satiety after little eating.

Clinical History

A 58- year- old gentleman, with Type 2 diabetes mellitus and Ongoing Essential (primary) hypertension, known peptic ulcer disease, No vomiting, and no significant dyspepsia at first presentation. First endoscopy reveal Duodenal/pyloric channel ulcer with narrowing causing gastric outlet obstruction. No helicobacter identified. Second presentation after 14month with Symptomatic, sometimes history of vomiting after 2 - 3 hours of eating.

Imaging

First CT



Figure 1: Axial post-contrast CT at first presentation: Peptic ulcer causing GOO in a 57-year-old patient. Reveal a much dilated stomach (Thick arrow) caused by focal narrowing of the gastric antrum and duodenal bulb with transitional zone (Thin arrow in a and b). Note, the enhancing wall (thin arrow) of gastric antrum and duodenal bulb.

Second CT after 14 month

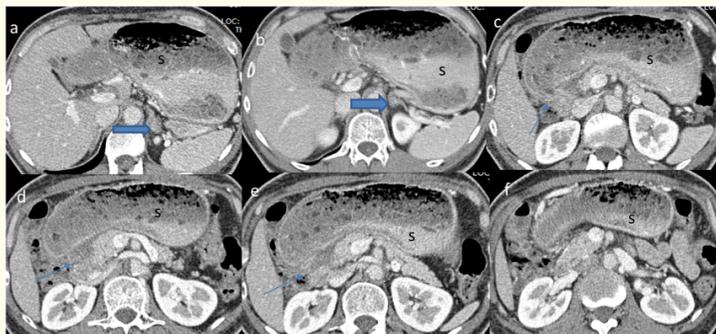


Figure 2: Axial post oral and IV contrast axial images reveal Circumferential antral/first part of duodenal thickening with significant surrounding fat stranding (Thin arrow in image #c, d and e) and upstream gastric dilatation and stagnant gastric content (S in Image a, b, c, d, e and f) as described above with no large appreciable mass. Left adrenal nodule which is stable since last CT likely representing benign adenoma (Thick arrow in Image # a and b).

Findings of second CT

Axial post oral and IV contrast axial images reveal circumferential antral/first part of duodenal thickening with significant surrounding fat stranding and upstream gastric dilatation as described above with no large appreciable mass. Differential diagnosis include known peptic ulcer disease with inflammatory process or possibility of underlying malignancy cannot be excluded completely for correlation with endoscopy and histopathologic finding. Oral contrast passing smoothly and seen up to distal small bowel indicating partial obstruction (Figure 3). Left adrenal nodule which is stable since last CT likely representing benign adenoma (Figure 2). Chronic partial gastric outlet obstruction lead to superimposed infection in our case.

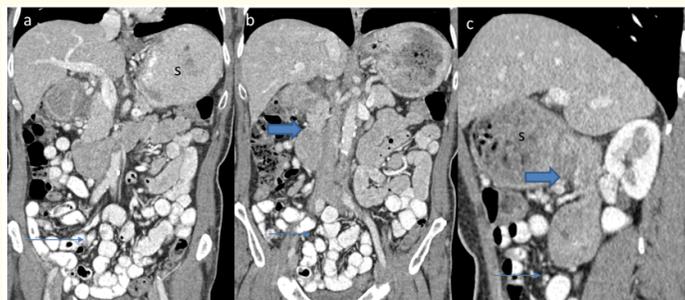


Figure 3: Coronal reconstruction post oral and IV contrast axial images reveal Circumferential antral/first part of duodenal thickening with significant surrounding fat stranding (Thick arrow in image #a, b and c) and upstream gastric dilatation and stagnant gastric content (S in Image a, b and c) as described above with no large appreciable mass. Oral contrast passing smoothly and seen up to distal small bowel indicating partial obstruction (Thin arrow in Image # a, b and c).

Discussion

Definition of Gastric outlet obstruction is any process causing delay in emptying of the stomach. Its process are similar to those of intestinal obstruction - functional and mechanical.

Endoscopic findings from Cerner

FINDINGS:
Normal esophagus and gastroesophageal junction
On entering the stomach it was full of food particles and fluid peristaltic waves were strong towards the antrum.
There was an antral ulcer above pyloric channel with infiltration around and masslike effect. Biopsies were taken.
Pyloric channel identified and passed easily to the D2 and duodenal bulb were normal

ENDOSCOPIC DIAGNOSIS:
Gastric outlet obstruction secondary to antral ulcer which looks malignant

Figure

Histopathology report (from Cerner)

The biopsy includes fragments of nonspecialized gastric mucosa as well as pieces of fibrinopurulent debris. There is dense active chronic inflammation with foci of intestinal metaplasia. Significant number of eosinophils are also seen in the lamina propria. Numerous Candida-like organisms are present within the purulent debris. There is no dysplasia or invasive malignancy.

Diagnosis

Gastric antral ulcer biopsy: Severe active chronic gastritis with intestinal metaplasia and candida-like organisms.

Relevant anatomy

The stomach is a muscular, hollow and dilated part of the digestive tube. It is located mainly in the left upper quadrant beneath the diaphragm and is attached superiorly to the esophagus and distally to the duodenum.

The stomach is divided into the following parts:

- Cardia
- Fundus
- Body
- Antrum
- Pylorus

Inflammation, scarring, or infiltration of the antrum and pylorus are associated with the development of gastric outlet obstruction.

The duodenum begins immediately beyond the pylorus and is mostly a retroperitoneal organ with a C-shaped structure, outlining the head of the pancreas. It is intimately related to the gallbladder, liver, pancreas and colon. Therefore, any process occurring in any adjacent structure may cause outlet obstruction due to extrinsic involvement.

Presentation

Patient with Gastric outlet obstruction (GOO) is mechanical obstruction usually comes with non-bilious vomiting, nausea, colicky epigastric pain, decrease appetite and sometimes, upper gastrointestinal bleeding [1].

The pathology which lead to a mechanical impairment of the gastric flow to duodenum can be classified as benign or malignant.

In recent days majority patients with GOO have a malignant etiology, unlike in the past, when peptic ulcer disease was more prevalent. This has to do with the disseminated use [2] of proton pump inhibitors and *Helicobacter pylori* eradication therapy.

Gastric outlet obstruction - Differential diagnosis

Inflammatory disorders

1. Peptic ulcer disease: Peptic ulcer disease with or without secondary stricture is the most common cause of benign GOO.
2. Duodenitis: Inflammation of the duodenum is manifested by thickening of the duodenal wall. If there is no visible cause for this process as a peptic ulcer or adjacent inflammatory process it is important to think of medical causes, such as:
 - Infectious disease (most commonly *Helicobacter pylori*).
 - Acquired immunodeficiency syndrome.
 - Hematologic abnormality (Henoch-Schonlein purpura).

The described inflammatory findings tend to be nonspecific, and correlation with the clinical history is essential for the diagnosis.

Imaging findings

Plain abdominal radiographs mainly show dilated stomach with little or no air distally. Prior to endoscopy and biopsy, CT imaging allows confirming mechanical nature, level (transition point) and probable cause of GOO [1-5]. The retained gastric content provides luminal distension without administering oral contrast, which is poorly tolerated and may potentially cause inhalation. GOO secondary to PUD is suggested by more or less symmetric, edematous pyloric-duodenal mural thickening with interrupted mucosal enhancement or ulcer outpouching. In some patient as in our case, it may present as a tight stricture measuring 2 - 3 cm in length, with or without abnormal mural thickening, solid tissue or extrinsic mass.

Differential diagnosis of PUD-related gastric outlet obstruction

Relation to PUD, other causes of GOO are much more common. Malignancies [5] usually present with dysphagia, weight loss and anaemia and it is worrisome in patient over 50 years of age. In young people and adolescents, Crohn's disease should be considered, although very rare in the upper digestive tract without typical ileocecal involvement. Delayed gastric emptying or gastroparesis secondary to diabetes, central nervous system or smooth muscle disorders such as scleroderma and amyloidosis, post-viral syndromes and medications such as anticholinergics and narcotics may mimic GOO.

Etiology

Gastric outlet obstruction can be due to malignant or benign causes. Mechanical causes can be divided into benign and malignant. The commonest benign cause is peptic ulcer disease leading to scarring and pyloric stenosis. Pancreatic pseudocysts can also cause the same appearances. Malignant causes include pancreatic and gastric tumors as well as metastases.

Diabetic gastroparesis and ileus/pseudo-obstruction are functional causes of obstruction.

Gastric dilatation

Acute gastric dilatation is usual imaging finding in patient with mechanical gastric outlet obstruction. However, gastric dilatation can occur as a functional abnormality in the absence of obstruction and is believed to be the result of a reflex paralysis of the neuromuscular system. Recent advances in computed tomographic (CT) technology and three-dimensional (3D) imaging software have sparked renewed interest in using CT to evaluate gastric disease. Multidetector row CT scanners allow thinner collimation, which improves the visualization of subtle tumors as well as the quality of the 3D data sets. When water is used as an oral contrast agent, subtle disease is easier to detect, especially when a rapid contrast material bolus is intravenously administered. Adenocarcinoma is the most common gastric malignancy

and typically appears as focal or segmental wall thickening or a discrete mass. Gastric lymphoma can have a CT appearance similar to that of adenocarcinoma. Both gastric adenocarcinoma and lymphoma may be associated with adenopathy. Gastrointestinal stromal tumors (GISTs) tend to appear as well-defined masses that arise from the gastric wall and may be exophytic when large. GISTs are usually not associated with significant adenopathy. In addition to gastric malignancies, CT can also help detect inflammatory conditions of the stomach, including gastritis and peptic ulcer disease. CT angiography is especially helpful for depicting the gastric vasculature, which may be affected by a variety of disease conditions [6].

Conclusion

Clinical history along with imaging findings are very helpful in detecting causes of GOO. CT is modality of choice which reveals underlying pathology of GOO as well as other complications along with 3-D reformation. Endoscopy and tissue diagnosis is further helpful to rule out or exclude other etiology as in our case which will be helpful in treatment plan.

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