Gastric Outlet Obstruction Caused by Superior Mesenteric Artery Syndrome: A Case Report

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- Superior mesenteric artery (SMA) syndrome is a rare cause of duodenal obstruction, resulting from compression of the third part of the duodenum between the aorta and SMA. It is often associated with weight loss or loss of mesenteric fat.
- We report a 75-year-old male with a history of gastroesophageal reflux disease who presented with one week of epigastric pain and recurrent vomiting. On admission, he was cachectic but stable, with mild epigastric tenderness. Endoscopy revealed a markedly dilated stomach with fluid retention. Contrast-enhanced CT demonstrated gastric and duodenal dilatation, with an aortomesenteric angle of 18° and distance of 6 mm, consistent with SMA syndrome. Due to persistent symptoms and massive gastric dilatation, urgent open gastrojejunostomy with Braun anastomosis was performed. The patient had an uneventful recovery with improved oral intake and weight gain during follow-up.
- SMA syndrome accounts for only 0.1–0.3% of upper gastrointestinal obstructions and typically occurs in young females. This case is unusual in an elderly male with severe gastric dilatation, highlighting the importance of early recognition and timely intervention. Although conservative treatment is generally first-line, urgent surgery is indicated when complications such as massive gastric dilatation arise to prevent life-threatening sequelae.

Introduction

- Introduction: Superior mesenteric artery (SMA) syndrome is a rare cause of duodenal obstruction resulting from compression of the third portion of the duodenum between the aorta and SMA, often associated with significant weight loss or reduced mesenteric fat. (1,2)

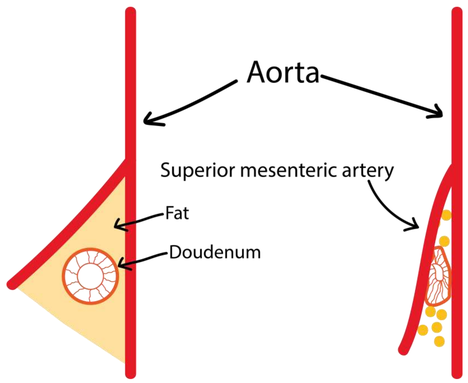

Figure 1: Superior mesenteric artery (SMA) syndrome. Superior mesenteric artery compressing the duodenum, featuring the superior mesenteric artery syndrome. Source (https://en.wikipedia.org/wiki/Superior_mesenteric_artery_syndrome)

Case presentation

- A 75-year-old male was admitted with a one-week history of progressively worsening epigastric pain accompanied by repeated episodes of vomiting undigested food shortly after meals. He reported early satiety, poor oral intake, and unintentional weight loss. His past medical history was notable only for gastroesophageal reflux disease, and he had no history of prior abdominal surgery or trauma.
- On physical examination, the patient appeared cachectic but remained hemodynamically stable. Abdominal examination revealed mild epigastric tenderness without guarding or rebound. Laboratory tests were unremarkable aside from mild electrolyte imbalance secondary to repeated vomiting.
- Upper gastrointestinal endoscopy demonstrated a markedly dilated stomach with significant fluid retention, but no evidence of mechanical obstruction such as stricture, ulcer, or malignancy. A contrast-enhanced computed tomography (CT) scan was subsequently performed, revealing pronounced gastric and proximal duodenal dilatation. The aortomesenteric angle was reduced to 18°, with an aortomesenteric distance of 6 mm, findings consistent with superior mesenteric artery (SMA) syndrome. Based on these results, a diagnosis of gastric outlet obstruction secondary to SMA syndrome was established.

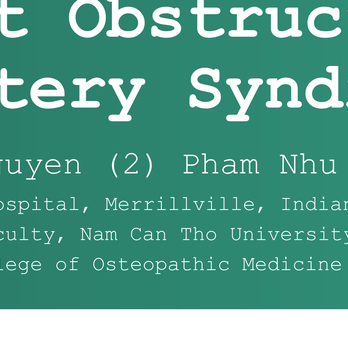

Figure 2: Sagittal contrast-enhanced CT scan of the abdomen demonstrating marked gastric and duodenal dilatation. The aortomesenteric angle is reduced to **18°** (yellow lines), consistent with superior mesenteric artery (SMA) syndrome.

Figure 3: Axial contrast-enhanced CT image showing a markedly dilated stomach with retained fluid, consistent with gastric outlet obstruction secondary to superior mesenteric artery (SMA) syndrome.

Discussion

- Superior mesenteric artery (SMA) syndrome is a rare but clinically significant cause of upper gastrointestinal obstruction, representing only 0.1–0.3% of reported cases (3) . It most frequently affects young females with low body mass index or recent rapid weight loss due to depletion of retroperitoneal fat. Our case is unusual, as it occurred in an elderly male and was further complicated by severe gastric dilatation. This degree of dilatation substantially increased the risk of aspiration, gastric ischemia, and potential perforation, making early recognition and prompt treatment essential.
- Conservative management, including nutritional support and postural measures, is generally regarded as the initial treatment of choice, especially in patients without complications. However, when massive gastric dilatation, persistent symptoms, or risk of life-threatening sequelae are present, surgical intervention should not be delayed. **Laparoscopic duodenojejunostomy** is considered the treatment of choice with high success rates. In this patient, an open **gastrojejunostomy with Braun anastomosis** was selected due to urgent presentation and institutional preference, providing effective symptom relief (4) . The favorable postoperative course, with improvement in oral intake and weight gain, highlights the role of timely surgery in complicated presentations of SMA syndrome.

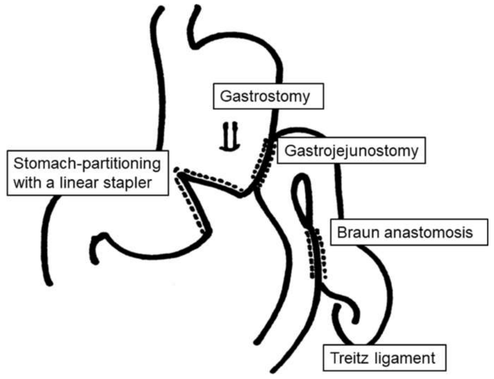

Figure 4: Schematic illustration of the surgical procedure performed. A **side-to-side gastrojejunostomy** was created to bypass the obstructed duodenum, combined with a **Braun anastomosis** between the afferent and efferent jejunal loops to reduce bile reflux. The **stomach was partially partitioned using a linear stapler**, and the position of the **Treitz ligament** is shown for orientation. (Source: https://surgicalcasereports.springeropen.com/articles/10.1186/s40792-022-01522-6)

- SMA syndrome should be considered in patients with unexplained gastric outlet obstruction, particularly in the setting of weight loss.
- Our case emphasizes that SMA syndrome can also present in elderly patients, outside the usual demographic of young, underweight females, and that severe gastric dilatation may complicate the course. Such massive dilatation not only worsens symptoms but also predisposes patients to serious sequelae including aspiration, gastric ischemia, and perforation.
- While conservative management remains the initial therapeutic strategy, including nutritional rehabilitation and postural therapy, clinicians should be alert to situations where conservative therapy fails or when complications are imminent. In these circumstances, timely surgical intervention is crucial to prevent morbidity and mortality. The successful outcome in our patient following gastrojejunostomy with Braun anastomosis illustrates that surgery provides effective decompression and durable symptom relief.

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