Enteral Stents for Malignant Gastric Outlet Obstruction

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KEYWORDS

• Gastric outlet obstruction • Enteral stent • Gastrojejunostomy
• Malignancy

Malignant gastric outlet obstruction (GOO) is defined as the inability of the stomach to empty because of mechanical obstruction at the level of either the distal stomach or the proximal small bowel.[1] GOO is a late complication of a variety of cancers including pancreatic, gastric, duodenal, ampullary, cholangiocarcinoma, and metastatic carcinoma, with pancreatic cancer the most common cause.[1,2] An estimated 43,140 cases of pancreatic cancer and 21,000 cases of gastric cancer were diagnosed during the year 2010.[3,4] GOO occurs in approximately 15% to 20% of patients diagnosed with malignancies such as pancreatic cancer.[5–7] It has been reported that surgical options are unsuccessful in up to 85% of pancreatic malignancies and as many as 40% of patients with gastric cancer.[1,8,9] Clinical symptoms of GOO include severe nausea, intractable vomiting, abdominal pain, malnutrition, and dehydration.[7,10] These symptoms may be misinterpreted by clinicians as side effects of chemotherapy and radiation or simply as manifestations of advanced cancer.[1] Malignant GOO is frequently associated with unresectable disease. Once GOO is diagnosed, mean life expectancy ranges from 7 to 20 weeks.[2,11–14]

The classic palliative management for patients with GOO is open or laparoscopic gastrojejunostomy; however, the past decade has seen the introduction and widespread use of enteral stents to manage these patients.[15–17] The ability to use enteral stents as a palliative measure to alleviate symptomatic GOO provides an alternative to surgery and other approaches including enteral and parenteral nutrition. Enteral stent placement has also been shown to improve the quality of life in patients with GOO.[16,18–20]

This article reviews the etiology, evaluation, and treatment of malignant GOO with a focus on enteral stents.

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TYPES OF CANCER ASSOCIATED WITH GOO

GOO is commonly encountered in the context of a variety of cancers including pancreatic, gastric, duodenal, ampullary, cholangiocarcinoma, hepatobiliary, metastatic, and recurrent malignancy following surgical resection.[15,18,21–23] One study involving 176 patients treated at 4 major centers over 7 years cited primary pancreatic malignancy as the most common reason for GOO, corroborating findings from other investigators. Gastric malignancies were the next most common reason for GOO.[24] Other studies have supported pancreatic malignancy as being the most common site to require and benefit from the use of an enteral stent, although some studies have had conflicting data, with gastric malignancy being the most common, followed by pancreatic malignancies.[7,25–27] Metastatic cancers to the bowel itself, such as colon cancer, bulky lesions, or adenopathy at the porta hepatis, are also common causes of GOO.[7] Duodenal, ampullary, cholangiocarcinoma, hepatobiliary, and recurrent malignancies are usually less common in incidence than either pancreatic or gastric malignancies, but have been repeatedly reported.[22,24,25]

SYMPTOMS AND DIAGNOSIS OF GOO

Symptoms of GOO include nausea, vomiting, weight loss, dehydration, hypoalbuminemia, jaundice, and the inability to tolerate oral intake.[1,7,10,17] Symptoms of GOO can overlap with symptoms of the primary malignancy and may be missed by clinicians, or be attributed to different treatments including chemotherapy and/or radiation.[1]

Diagnosis is based on history, physical examination, results of imaging studies, and findings at endoscopy. A history suggestive of vomiting undigested food hours after eating and nonbilious emesis is strongly suggestive of GOO: these findings imply that food cannot leave the stomach and that the second portion of the duodenum has been isolated from the proximal stomach, respectively.[1,28]

Physical examination in these patients can be of value, and one may elicit a succession splash on auscultation of the upper abdomen, similar to that seen in children with pyloric stenosis. This maneuver has a sensitivity of 48% if a splash is heard more than 3 hours following ingestion of food.[29]

Imaging techniques vary widely and include plain abdominal radiographs, ultrasonography, upper gastrointestinal (UGI) contrast studies, and abdominal computed tomography (CT). Plain films may show an enlarged gastric bubble, dilated proximal duodenum, and limited air in the small bowel. UGI contrast studies can be performed with either barium or water-soluble contrast. These tests will often demonstrate the location and severity of the site of obstruction, and can be particularly helpful if GOO is incomplete. CT studies may also show a distended stomach, dilated proximal duodenum, decompressed distal small bowel, and the obstructing lesion itself.

The gold standard for the diagnosis of GOO is endoscopy (**Fig. 1**). Endoscopy is not recommended until appropriate history, physical, and imaging studies are completed. Upper endoscopy can then be performed allowing direct visualization and assessment of severity, nature, site, and biopsy of the obstruction.[30] If the stricture can be traversed with the endoscope this is helpful, but in practice is rare. Fluoroscopy should be used to enhance visibility and safety during the entire procedure. Deployment of an enteral stent involves first traversing the stricture with a soft flexible guide wire. Some endoscopists prefer to then advance a catheter across the stricture and then exchange the soft wire for a stiffer guide wire, but there is no universally accepted preference for type of guide wire. The catheter can also be used to inject contrast across the stricture to fully delineate its length and geometry, which greatly aids in the