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CASE REPORT

Intermittent gastric outlet obstruction caused by a prolapsing antral gastric polyp

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Abstract

Most gastric polyps have an asymptomatic presentation and are an incidental finding on upper endoscopy. Symptomatic presentations can range from an ulcerated polyp leading to anemia and occult bleed to complete gastric outlet obstruction. We report a case of an 89-year-old woman who presented with postprandial nausea and early satiety. Her upper endoscopy revealed a 2 cm pedunculated hyperplastic polyp arising from the antrum of the stomach which was seen prolapsing into the pylorus causing intermittent gastric outlet obstruction. In the present report, we statistically analyzed 39 prolapsing gastric polyps previously reported in the English literature and demonstrate the current utility of monopolar snare polypectomy in establishing a histological diagnosis while offering simultaneous treatment. Additionally, we review the literature for the management of all hyperplastic gastric polyps in relation to advancements in digestive endoscopy.

Key words: Hyperplastic polyps; Stomach; Endoscopy

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INTRODUCTION

Gastric polyps are usually an incidental finding on upper endoscopy with an incidence of 1%-5%[1-2]. Rarely, larger gastric polyps can present with symptoms. Symptomatic presentations can range from an ulcerated polyp leading to anemia and occult bleeding to complete gastric outlet obstruction. We describe a case of intermittent gastric outlet obstruction by a hyperplastic antral polyp and its subsequent management. We also review the literature for the management of hyperplastic gastric polyps in relation to advancements in digestive endoscopy.

CASE REPORT

An 89-year-old woman with hypertension presented for evaluation of intermittent postprandial nausea and dull epigastric pain for 3 mo. She complained of early satiety and a 2.3 kg weight loss. She denied dysphagia or any change in bowel habits. On exam, her abdomen had normoactive bowel sounds and mild tenderness over the epigastrium. She had a negative Murphy's sign. The liver and spleen were not palpable. At admission, laboratory tests revealed hemoglobin of 11.2 g/dL with a mean corpuscular volume of 78.5 fl. Serum iron was 57 μg/dL and total iron-binding capacity was 346 μg/dL. Upper and lower gastrointestinal endoscopies were recommended because of the patient's epigastric pain and iron deficiency anemia. Upper endoscopy exposed a 2 cm pedunculated polyp arising from the antrum of the stomach. This polyp was

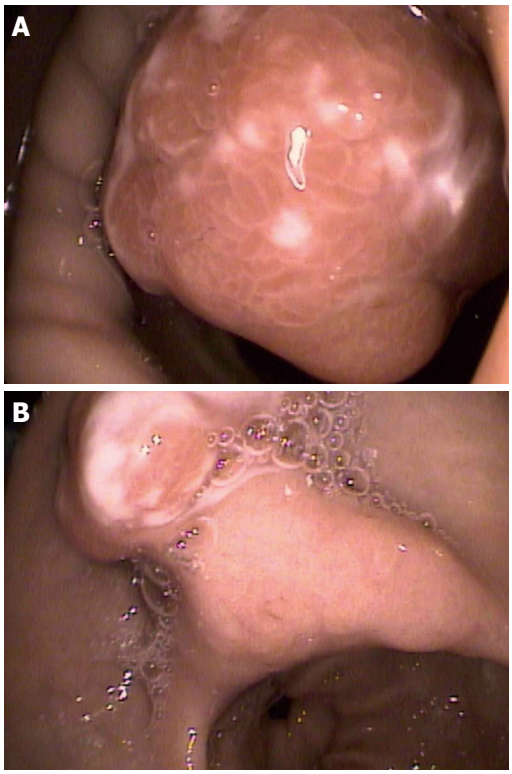

Figure 1 Polyp was seen prolapsing into the pylorus of the stomach causing intermittent gastric outlet obstruction.

seen prolapsing into the pylorus of the stomach causing intermittent gastric outlet obstruction (Figure 1A and B). The polyp was excised with monopolar snare polypectomy and sent for pathology. Pathology revealed a hyperplastic polyp without metaplasia, dysplasia, or malignancy (Figure 2). Furthermore, the surrounding antrum was biopsied for pathology, which showed chronic inactive gastritis and negative staining for *Helicobacter pylori* (*H. pylori*). Colonoscopy was unremarkable. After excision of the polyp, the patient returned to the GI Clinic 2 wk post procedure with complete resolution of her Abdominal pain symptoms.

DISCUSSION

This patient had a hyperplastic antral gastric polyp causing intermittent gastric outlet obstruction. These cases are sporadically reported in the literature. Short *et al*[3] reviewed 30 prolapsing gastric tumors reported in the English literature up to 1965. In the present report, we analyzed the past 39 gastric polyps leading to gastric outlet obstruction found in the English- literature[4-36] (Table 1). Furthermore, we reviewed the literature for the management of both symptomatic and asymptomatic hyperplastic gastric polyps. Prior to the advent of endoscopy, physicians relied on characteristic intraluminal filling defects on radiography and subsequent laparatomy for definitive treatment of symptomatic gastric polyps[4]. Nonoperative endoscopy has reduced the surgical risk of open laparatomy. One of the first reported cases treated by endoscopy was by Brandt *et al*[5] in 1973. He removed a 1.5 cm pedunculated

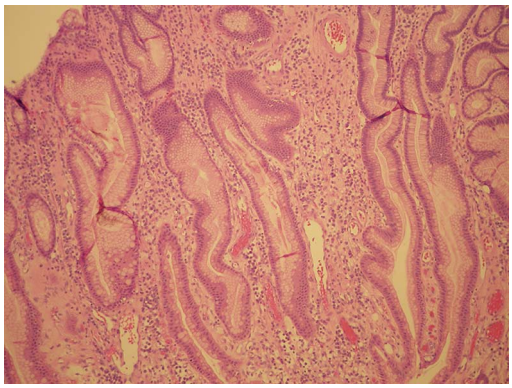

Figure 2 Pathology revealed a hyperplastic polyp without metaplasia, dysplasia, or malignancy.

adenomatous polyp with snare polypectomy in a sixty-five year old female who presented with postprandial midepigastric pain.

Gastric polyps causing gastric outlet obstruction seem to be more prevalent in elderly females with a 64 percent female predominance (23 patients) and a median age of onset of 72 years in female[4-11,17,19,22,23,25,27-29,32-35] adults. Race was not specified in the majority of cases. Only four pediatric cases have been reported[13,14,16,18]. The pediatric cases presented within the first year of life, mimicked pyloric stenosis, and required surgical removal. In adults, case presentations ranged from mild epigastric pain to more dramatic presentations of severe iron deficiency anemia[26] and even acute pancreatitis[22,29]. The majority of symptomatic gastric polyps had an antral location with a median size of 5 cm (range 1.5-13 cm)[4,6,8,10-12,15,17,19-22,25-27,29,30,33,35]. The median size of polyps removed endoscopically was 3 cm (range 1.5-8 cm)[6,11,17,21,25-27,29,30,33,35], while the median size of surgically removed polyps was 6 cm (range 3.5-13 cm)[4,8,10,12,15,17,19,20,22,36]. Kumar *et al*[17] have reported the largest endoscopically treated polyp causing intermittent gastric outlet obstruction to date. They removed an 8 cm polyp: two-thirds of the polyp was snared and the remainder excised at a subsequent visit. Histologically, there were 15 hyperplastic polyps[7,11,17,19,21-23,25-27,30,34,35], 5 adenomas[5,8,10,17,31], 4 adenocarcinomas[8,12], 3 lipomas[15,20,24], 2 inflammatory[32,33], and 1 leiomyoma[17]. The other cases only specified the polyp as benign[4,6,9,28,29]. Of the polyps reviewed, 7 harbored malignancy[7-8,12,31].

The particular importance of gastric polyps is their tendency towards malignancy. In our patient, we were not only able to establish a histopathological diagnosis at the time of upper endoscopy but also offer definitive therapy. However, there are no set guidelines for the optimal management of all gastric polyps at the time of initial upper endoscopy. For a symptomatic polyp, endoscopic or surgical excision is often pursued to relieve symptoms and to achieve a histological diagnosis. The management strategy is less clear in asymptomatic gastric polyps. Certainly, the rate of malignant transformation varies among the different histological subtypes of gastric polyps. Fundic gland and inflammatory fibroid polyps have virtually no malignant potential. Hyperplastic polyps have

Table 1 Characteristics of gastric polyps leading to gastric outlet obstruction

Characteristics	
Adults (*n*)	36
Sex (*n*)	
Male	13
Female	23
Age (yr)	
Median	70
Range	41-89
Size of all polyps (cm)	
Median	5
Range	1.5-13
Size of endoscopy removed (cm)	
Median	3
Range	1.5-8
Size of surgically removed (cm)	
Median	6
Range	3.5-13
Histological subtype (*n*)	
Hyperplastic	15
Adenoma	5
Adenocarcinoma	4
Lipoma	3
Inflammatory	2
Leiomyoma	1
Benign unspecified	6

up to a 2.1% rate of malignant transformation[37,38], and the rate is significantly higher for adenomatous polyps (up to 40%)[39].

Unfortunately, besides fundic gland polyps which have a clear typical feature, upper endoscopy cannot reliably distinguish the type of gastric polyp by gross inspection. Therefore, it is important to make a histopathological diagnosis, although whether to biopsy or excise gastric polyps is not always clear. Forceps biopsy can come with sampling error[40,41], and polypectomy has its own risks, such as bleeding and perforation with rates of 7.2% and 0.45%, respectively[40].

Because of the risks associated with polypectomy, some authors have recommended conservative medical management and endoscopic surveillance of smaller hyperplastic polyps. Although the exact pathogenesis is not known, hyperplastic polyps have been associated with chronic inflammation and irritation of the gastric mucosa. *H. pylori* infection is the most commonly associated condition that predisposes hyperplastic gastric polyp formation. *H. pylori* associated hyperplastic polyps show increased cyclooxygenase-2 (COX-2) expression. The importance is that COX-2 expression plays an important role in tumor enlargement, partly through enhanced angiogenesis[42]. Several prospective studies have demonstrated the regression of hyperplastic polyps after eradication of *H. pylori* infection[43-45]. However, not all hyperplastic polyps are associated with documented *H. pylori* infection, and there are no data demonstrating regression of hyperplastic polyps greater than 1 cm in diameter after *H. pylori* treatment. Less common associations include autoimmune gastritis, environmental gastritis, chemical gastropathy, Zollinger-Ellison syndrome, cytomegalovirus gastritis, amyloidopathy, gastric antral vascular ectasia, post-antrectomy stomach[46], and post solid organ transplant recipients[47,48].

A hyperreparative process in response to these tissue insults gives hyperplastic polyps their characteristic histological features. Hyperplastic polyps consist of dilated, elongated, architecturally distorted foveolar epithelium with a surrounding edematous stroma holding varying degrees of active and chronic inflammation. Rarely, dysplasia and carcinoma may occur within and around the polyp. If adenocarcinoma is found after polypectomy, a synchronous adenocarcinoma in another part of the stomach maybe found in up to 30% of cases[49]. Therefore, it is prudent to investigate surrounding polyps and to biopsy the surrounding gastric mucosa for associated gastritis and pathology.

The possible relationship between gastric hyperplastic polyps and gastric cancer remains unknown. Different molecular biologic factors in hyperplastic gastric polyps have been investigated for gastric carcinogenesis. Jain *et al*[50] reviewed the literature for these mechanisms and found over expression of *p53* gene mutation, Ki-67 labeling indices, and microsatellite instability as the most implicated markers. Other markers such as ERB-2, APC, DCC, LOH at 17p have not been found in association with dysplasia. Future studies which are designed to identify the utility of analytical tests such as gene array and microsatellite instability testing to predict which hyperplastic polyps carry malignant potential are needed. Currently, the only prognostic factor is polyp size. Ginsberg *et al*[51] demonstrated that cancer risk increases with polyp size and recommended all polyps greater than 0.5 cm be removed regardless of the histological subtype.

The clinical significance of larger gastric polyps is this risk of malignancy. As a result most gastroenterologists advocate the excision of polyps greater than 0.5 cm with biopsies of the surrounding gastric mucosa. Most labs use electrocautery snare polypectomy, but some polyps, specifically sessile polyps, may not be amenable to this technology because of the risk of bleeding and perforation. Endoscopic mucosal resection (EMR) techniques have successfully removed sessile polyps with accurate histological assessment[52]. Again, the risk of bleeding and perforation exists. Immediate surgical intervention is indicated in the case of large perforations. Endoscopic closure using metallic clips or suturing is appropriate for small perforations after therapeutic endoscopic procedures[53].

Larger sessile polyps have a greater propensity to bleed because of larger feeding vessels. Endoscopic ultrasound (EUS) would theoretically minimize the risk of bleed by visualizing the blood vessels at the base of the gastric polyp. Bardan *et al*[54] evaluated the use of preprocedure EUS with snare polypectomy in 102 patients to minimize the risk of bleeding. However, no significant difference among bleeding rates between patients undergoing polypectomy with and without preprocedure EUS was found. A potential explanation is that bleeding after polypectomy

may originate from blood vessels undetected by the EUS technique[54]. However, these data were not collected using more advanced EUS technologies such as newer mini probes with higher frequencies that may detect smaller vessels and better delineate submucosal margins.

Other techniques have been explored. Lo *et al*[55] studied the proficiency of endoscopic band ligation (EBL) used to minimize bleeding risk in the removal of seventy hyperplastic polyps. Although they demonstrated the effectiveness in minimizing bleeding risks with bleeding polyps and even sessile hyperplastic polyps, this technology may have limited utility for larger polyps and gastric adenomas at risk for malignant transformation[55]. EBL does not allow for complete resection and complete histological evaluation of these polyps. Additional electrocautery would be needed. Therefore, this technology is rarely employed. Methods such as hypertonic saline epinephrine injection, endoloops, and endoscopic hemoclips are currently utilized to control bleeding with polypectomy.

Most adenocarcinomas found within hyperplastic polyps are the differentiated type and few signet ring cell carcinoma have been reported[56]. Data specific to gastric hyperplastic polyps and gastric cancer are not available because of limited case reports. We recommend surveillance endoscopy and EUS staging for early gastric cancer. EUS allows for imaging of the gastric wall, the degree of invasion, and regional lymph node involvement. Lymph node metastasis is present in about 10% of cases of early gastric cancer[57]. The mainstay of treatment is gastrectomy. Newer EMR and endoscopic submucosal dissection technologies are gaining popularity in the absence of lymph node metastasis. Takekoshi *et al*[58] reported an 85% cure rate in a series of 308 patients. The five-year survival rate was 86%, a rate similar to more aggressive surgical approaches[58]. Hiki *et al*[59] reported a recurrence rate of 4.2% in their series. The main disadvantage of endoscopic methods is the risk of incomplete tumor resection. Ryu *et al*[60] investigated 344 gastric adenocarcinoma and concluded that in cancers with greater than 500 μm of submucosal invasion or a mucosal cancer larger than 3 cm, surgery should be considered because of the risk of lymph node metastasis.

Newer technologies are emerging to distinguish the histological subtype at the time of initial endoscopy. Li *et al*[61] demonstrated the use of confocal laser endomicroscopy with upper endoscopy to characterize gastric hyperplastic polyps and adenomas. This development would obviate the need for initial biopsy and eradicate unnecessary polypectomy and associated risks. However, not all endoscopy labs have access to this technology. More accessible technologies such as magnification chromoendoscopy and narrow band imaging need larger prospective trials to prove their utility. The optimal management strategies for hyperplastic polyps have not yet been defined. As our knowledge of hyperplastic polyps continue to grow and advancements in digestive endoscopy continue to develop, our case demonstrates the current utility of diagnostic and therapeutic monopolar snare polypectomy in a symptomatic hyperplastic gastric polyp.

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