

Brunner's Gland Adenoma—An Uncommon Cause for Intussusception and Gastric Outlet Obstruction

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ABSTRACT

Brunner's gland adenoma is extremely uncommon small bowel tumors with an incidence of <0.01% and account for less than 1% of all gastrointestinal tumors. They are branched acinotubular glands found within the submucosal layer and located between the pyloric ring and the major duodenal papilla. Brunner's glands produce an alkaline secretion containing viscous mucin to protect the duodenum from acidic gastric chyme. Although these lesions are usually asymptomatic and are incidentally discovered on upper gastrointestinal endoscopy, they may occasionally present with symptoms of upper gastrointestinal hemorrhage, duodenal obstruction, and more rarely with biliary fistulation or intussusception. We present an atypical case of a large 9-cm Brunner's gland adenoma causing duodenojejunal intussusception in a 44-year-old Chinese man, who presented with long-standing epigastric pain, nausea, and vomiting.

KEYWORDS: Intestinal Obstruction, Brunner's Gland

INTRODUCTION

A 44-year-old Chinese man with no previous comorbidities, no chronic medications, and no surgical history presented to the emergency department with an episode of self-limiting acute epigastric pain, nausea, and vomiting for 2 days.¹⁻³ His bloating was worse after meals and increased in relation to the portion of food consumed. He reported long-standing intermittent epigastric discomfort with bloating for 3 months. His vital signs were within normal limits. The physical examination revealed no remarkable findings. His abdomen was soft without any palpable abdominal mass, guarding, or rebound tenderness. Laboratory investigations did not reveal any significant abnormality.

CASE REPORT

Upper gastrointestinal endoscopic examination performed showed large amount of food residue in the stomach, although the patient was adequately fasted. His stomach was capacious, with a distorted antrum. The first part of the duodenum was distorted and dilated with



Figure 1. EGD findings: Left: Antrum. Right: Duodenum as seen on entry of esophagogastroduodenoscopy. EGD, esophagogastroduodenoscopy.



Figure 2. CTAP: Distended gastric cavity with the presence of intussusception, demonstrating pathognomonic findings of a target-like mass. CTAP, computed tomography of the abdomen and pelvis.

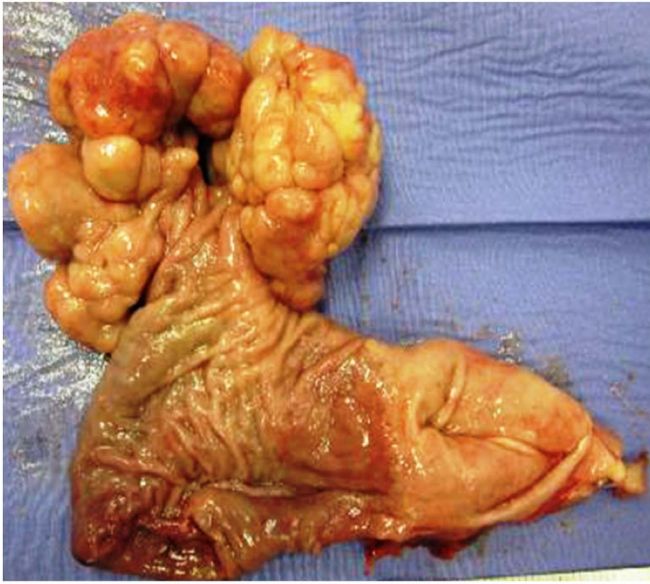


Figure 3. Postoperative specimen showing a large polyp measuring 9.0 × 5.0 × 4.0 cm arising from the first part of the duodenum.

prominent valvulae conniventes (Figure 1), which are normally only seen starting in the distal length of the duodenum closer to the duodenojejunal flexure.⁴ Computed tomography showed a long segment duodenojejunal intussusception, seen as a target-like mass, with proximal dilatation of the stomach (Figure 2). Subsequent surgical laparotomy revealed a large polyp measuring 9.0 × 5.0 × 4.0 cm, arising from the first part of the duodenum (Figure 3). Histology showed features of a benign Brunner's gland adenoma (BGA) consisting of multiple nodules of closely packed

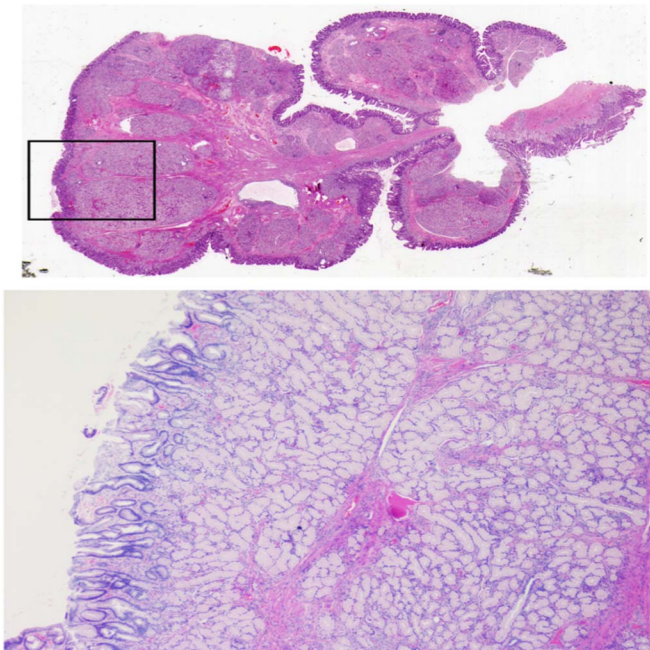


Figure 4. Histological findings. Histopathological appearance of a giant Brunner's gland adenoma stained with Hematoxylin and Eosin. Area of magnification showing lobules of hyperplastic Brunner's glands separated by fibromuscular septa.

Brunner's glands, separated by fibromuscular septa. No mitotic figures were observed (Figure 4). Our patient underwent an uneventful postoperative recovery with resolution of symptoms.

DISCUSSION

Brunner's glands are named after the Swiss anatomist Johann Conrad Brunner, who first described them in 1,688.⁵ Hyperplasia of Brunner's glands to form a lesion greater than 1 cm is described as a Brunner's gland adenoma (BGA) or Brunner's gland hamartoma.⁶ Brunner's glands are located predominantly in the first part of the duodenum and produce alkaline secretions containing mucus, pepsinogen, and urogastrone in response to acid stimuli. Their size and number decrease progressively in the distal parts of the duodenum. Most BGAs are in the duodenal bulb (57%), followed by second (27%) and three times a day (7%) parts of the duodenum. They are seldom found in the pyloric canal (5%), jejunum (2%), or proximal ileum (2%).⁶

The etiology and pathogenesis of BGAs are not fully understood. Suggested causes include factors causing chronic local irritation, such as *Helicobacter pylori* infection, Billroth II reconstruction, or chronic pancreatitis.^{7,8}

BGA is a benign lesion, but there have been case reports describing neoplastic lesions arising from the Brunner's gland.⁹ Most patients with BGA are asymptomatic and are only incidental during endoscopy or imaging studies. Symptomatic patients with BGA tend to have adenomas larger than 2 cm in size and commonly present with gastrointestinal bleeding or obstructive symptoms.¹⁰ Less common presenting symptoms include intussusception, biliary fistula, recurrent pancreatitis, or obstructive jaundice. To date, there have been few published case reports of BGA associated with acute or chronic gastric outlet obstruction and intussusception.

The diagnosis of BGA can be challenging. Imaging findings are usually nonspecific and may suggest adenoma, adenocarcinomas, lymphoma, carcinoid tumors, gastrointestinal stromal tumors, leiomyomas, leiomyosarcomas, and metastatic disease.¹¹ Being submucosal in origin, traditional endoscopic punch biopsies are usually negative. Because a Brunner's gland may be covered by normal mucosa, confirmatory diagnosis is only established after a deep endoscopic or a surgical biopsy, with consequent histological examination of the excised mass.¹² Treatment options include endoscopic removal of small and/or pedunculated stalked lesion, endoscopic mucosal resection with piecemeal technique for larger adenomas, and surgical resection where endoscopic therapy is not feasible.¹³ Endoscopic management is the preferred initial mode of therapy. Where feasible, endoscopic ultrasound can provide further information about the depth of involvement and any submucosal vasculature that may be associated with the BGA. Cases of BGA with an intact muscularis propria layer can be managed endoscopically with endoscopic submucosal dissection.¹⁴ In our case, surgery was preferred because of a large lesion complicated with intussusception.

DISCLOSURES

Author contributions: R. Teh: manuscript writing, data acquisition, approval of final version, and agreement to all aspects of work. TW De, C. Weihao, and AA Qurishi: manuscript review, data acquisition, approval of final version, and agreement to all aspects of work. AA Qurishi is the article guarantor.

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REFERENCES

1. Stewart ZA, Hruban RH, Fishman EF, Wolfgang CL. Surgical management of giant Brunner's gland hamartoma: Case report and literature review. *World J Surg Oncol*. 2009;7(1):68.
2. Sorleto M, Timmer-Stranghöner A, Wuttig H, Engelhard O, Gartung C. Brunner's gland adenoma—a rare cause of gastrointestinal bleeding: Case report and systematic review. *Case Rep Gastroenterol*. 2017;11(1):1–8.
3. Gupta A, Rajput D, Kumar U, Gupta S, Singh A, Sanyal S. Brunner's gland hamartoma presenting as gastric outlet obstruction: Unusual presentation and review of literature. *Trop Doctor*. 2019;50(1):68–70.
4. Small intestine: Imaging approach and differential diagnosis. In: Federle MP, Poullos PD, Sinha SR (eds). *Imaging in Gastroenterology*. Amsterdam, Netherlands: Elsevier, 2018, pp 200–3.
5. Abbass R, Al-Kawas FH. Brunner gland hamartoma. *Gastroenterol Hepatol (N Y)*. 2008;4(7):473–5.
6. Rocco A, Borriello P, Compare D, et al. Large Brunner's gland adenoma: Case report and literature review. *World J Gastroenterol*. 2006;12(12):1966–8.
7. Destek S, Gul VO. Brunner's gland hyperplasias and hamartomas in association with *Helicobacter pylori*. *Can J Gastroenterol Hepatol*. 2019;2019:1–6.
8. Mumtaz R, Shah IA, Ramirez FC. Brunner's gland hamartoma simulating a pancreatic mass with duodenal obstruction. *Gastrointest Endosc*. 2002;56(6):a129591–934.
9. Akino K, Kondo Y, Ueno A, et al. Carcinoma of duodenum arising from Brunner's gland. *J Gastroenterol*. 2002;37(4):293–6.
10. Levine JA, Burgart LJ, Batts KP, Wang KK. Brunner's gland hamartomas: Clinical presentation and pathological features of 27 cases. *Am J Gastroenterol*. 1995;90(2):290–4.
11. Block KP, Frick TJ, Warner TF. Gastrointestinal bleeding from a Brunner's gland hamartoma: Characterization by endoscopy, computed tomography, and endoscopic ultrasound. *Am J Gastroenterol*. 2000;95(6):1581–3.
12. Krishnamurthy P, Junaid O, Moezzi J, Ali SA, Gopalswamy N. Gastric outlet obstruction caused by Brunner's gland hyperplasia: Case report and review of literature. *Gastrointest Endosc*. 2006;64(3):464–7.
13. Jung Y, Chung IK, Lee TH, et al. Successful endoscopic resection of large pedunculated Brunner's gland hamartoma causing gastrointestinal bleeding arising from the pylorus. *Case Rep Gastroenterol*. 2013;7(2):304–7.
14. Keihanian T, England JS, Amin S. Endoscopic resection of a duodenal Brunner gland hamartoma presenting with GI bleeding. *VideoGIE*. 2020;5(10):486–7.

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